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| 14. ABSTRACT<br>The Myc transcription factor triggers prostate tumorigenesis in transgenic mice and is a vital driver of aggressive prostate cancer. Our overarching hypotheses are that lncRNAs associated with MYC overexpression in prostate cancer have defined biological effects and that the expression of Myc target lncRNAs, including DANCR, have predictive value in human prostate cancer prognosis. We found that the expression of lncRNAs are highly dysregulated in patients with prostate cancer, and the direct Myc target lncRNA, DANCR, is upregulated in prostate cancer and plays a role in prostate cancer cell growth and in vivo ovarian tumorigenesis. This work resulted in a publication in Cancer Research 2018. Although DANCR has a role in tumorigenesis, analysis of TCGA data on prostate cancer revealed other lncRNAs that are statistically more relevant to prostate cancer. This work is submitted for publication and will herein be expanded. |              |                         |                            |                                              |                                           |
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## Introduction

**BACKGROUND:** Prostate cancer is a genetic disease involving multi-step changes in the genome. The human genome contains ~25,000 protein-coding genes representing less than 2% of the total genome, whereas up to 70% of the human genome is transcribed to RNA, yielding many thousands of non-coding RNAs. The recent discovery of non-coding RNA genes has dramatically altered our understanding of cancer. For example, the functional significance of small non-coding RNAs, such as microRNAs (miRNAs) in tumor genesis has been extensively characterized. However, research on long non-coding transcripts is still in its infancy. Long noncoding RNAs (lncRNAs) are operationally defined as RNA transcripts larger than 200nt that do not appear to have protein coding potential. Rapidly accumulating evidence indicates that lncRNAs are involved in the initiation and progression of cancer. First, lncRNAs act as key regulators of various fundamental biological processes that share common pathways with oncogenesis, such as development, differentiation, apoptosis, and cell proliferation. Second, the expression of lncRNAs has been found to be remarkably deregulated by epigenetic and genomic alterations in cancer. Third, several lncRNAs have been demonstrated to serve as tumor suppressors or oncogenes in cancer. lncRNAs are therefore, at the cutting edge of prostate cancer research.

**OVERARCHING CHALLENGE:** Distinguish aggressive from indolent disease in men newly diagnosed with prostate cancer.

**HYPOTHESIS:** The Myc transcription factor triggers prostate tumorigenesis in transgenic mice and is a vital driver of aggressive prostate cancer. Our overarching hypotheses are that lncRNAs associated with MYC overexpression in prostate cancer have defined biological effects and that the expression of Myc target lncRNAs, including DANCR, have predictive value in human prostate cancer prognosis. Our preliminary studies demonstrate that 1) The expression of lncRNAs are highly dysregulated in patients with prostate cancer; 2) The direct Myc target lncRNA, DANCR, is upregulated in prostate cancer; 3) Knockdown of DANCR expression induces a large number of genes including p21 and prostate cancer cell cycle arrest; 4) DANCR RNA associates with the epigenetic repressor EZH2, a core subunit in PRC2; 5) The growth effects of DANCR is attributable largely to its repression of p21 expression. Thus, we hypothesize that elevated MYC induces DANCR, which binds to the polycomb protein EZH2 and represses transcription of key target genes in prostate cancer. Further, we hypothesize that MYC target lncRNAs, including DANCR, would be prognostic biomarkers that could guide therapeutic decisions. To test the above hypothesis via the following aims: Aim 1. Define the molecular network epigenetically regulated by DANCR/EZH2 in prostate cancer. Aim 2. Characterize the functional significance of DANCR targets in prostate cancer cell biology. Aim 3. Evaluate whether DANCR and other lncRNAs are associated with clinical outcomes prostate cancer patients.

**AIMS AND STUDY DESIGN:** Aim 1. Define the molecular network epigenetically regulated by DANCR/EZH2 in prostate cancer. We hypothesize that DANCR and EZH2 synergistically regulate a distinct set of mRNAs in prostate cancer cells. Given that EZH2 (PRC2) regulates gene transcription by binding to promoter regions and modifying chromatin, we will examine if DANCR knockdown affected the EZH2-occupancy of the promoter regions in the target genes through lncRNA-EZH2-mRNA-DNA interaction. Aim 2. Characterize the functional significance of DANCR targets in prostate cancer cell biology. We hypothesize that other targets of DANCR would also have tumor suppressive effects in vitro. Hence, we propose to use functional screening to identify other biologically relevant DANCR target genes. Aim 3. Evaluate whether DANCR and other lncRNAs are associated with clinical outcomes prostate cancer patients. We hypothesize that DANCR and other selected MYC-associated lncRNAs will provide a novel set of biomarkers that could be assessed through RNA analysis. These novel biomarkers are expected to predict the clinical course of prostate cancer and hopefully aid in treatment options for patients.

**IMPACT:** Investigation of lncRNA function in prostate cancer will lead to a greater understanding of the molecular mechanisms of this disease, and should lead to novel clinical applications in oncology.

## Keywords

Prostate cancer, MYC, oncogenes, long non-coding RNAs, DANCR, PVT1

## Accomplishments

Aim 1. Define the molecular network epigenetically regulated by DANCER/EZH2 in prostate cancer. Aim 2. Characterize the functional significance of DANCER targets in prostate cancer cell biology.

Accomplishments: We have accomplished the goals of Aim 1 and Aim 2 with the publication of our paper: Lu Y, Hu Z, Mangala LS, Stine ZE, Hu X, Jiang D, Xiang Y, Zhang Y, Pradeep S, Rodriguez-Aguayo C, Lopez-Berestein G, DeMarzo AM, Sood AK, Zhang L, Dang CV. MYC Targeted Long Noncoding RNA DANCER Promotes Cancer in Part by Reducing p21 Levels. *Cancer Res.* 2018 Jan 1;78(1):64-74.

This manuscript documents the role of the lncRNA DANCER in prostate cancer cell proliferation involving the regulation of p21. We have gathered evidence that this could be the result of DANCER recruiting EZH2 to the p21 promoter to silence its expression, allowing for cell cycle progression in prostate cancer. Note that our studies also uncovered that DANCER is expressed highly in a number of other human cancers, including ovarian cancer, for which we demonstrated that therapeutic silencing of DANCER in vivo curbed ovarian tumorigenesis. These findings together document a role for DANCER in tumorigenesis, which is being corroborated by other studies published in the literature.

Aim 3. Aim 3. Evaluate whether DANCER and other lncRNAs are associated with clinical outcomes prostate cancer patients.

While DANCER is a lncRNA that is highly expressed in human prostate cancer, we have taken an unbiased approach to determine the role of genomic alterations and lncRNAs in prostate cancer in patients with African or European ancestry using the data-rich TCGA resource.

**ABSTRACT.** Men of predominantly African Ancestry (AA) have higher prostate cancer (CaP) incidence and worse survival than men of predominantly European Ancestry (EA). While socioeconomic factors drive this disparity, genomic factors may also contribute to differences in the incidence and mortality rates. To compare the prevalence of prostate tumor genomic alterations and transcriptomic profiles by patient genetic ancestry, we evaluated genomic profiles from The Cancer Genome Atlas (TCGA) CaP cohort (n=498). Patient global and local genetic ancestry were estimated by computational algorithms using genotyping data; 414 (83.1%) were EA, 61 (12.2%) were AA, 11 (2.2%) were East Asian Ancestry (EAA), 10 (2.0%) were Native American (NA), and 2 (0.4%) were other ancestry. Genetic ancestry was highly concordant with self-identified race/ethnicity. Subsequent analyses were limited to 61 AA and 414 EA cases. Significant differences were observed by ancestry in the frequency of *SPOP* mutations (20.3% AA vs. 10.0% EA;  $p=5.6\times10^{-03}$ ), *TMPRSS2-ERG* fusions (29.3% AA vs. 39.6% EA;  $p=4.4\times10^{-02}$ ), and *PTEN* deletions/losses (11.5% AA vs. 30.2% EA;  $p=3.5\times10^{-03}$ ). Differentially expressed genes (DEGs) between AAs and EAs showed significant enrichment for prostate eQTL target genes ( $p=8.09\times10^{-48}$ ). Enrichment of highly expressed DEGs for immune-related pathways was observed in AAs, and for PTEN/PI3K signaling in EAs. Nearly one-third of DEGs (31.3%) were long non-coding RNAs (DE-lncRNAs). The proportion of DE-lncRNAs with higher expression in AAs greatly exceeded that with lower expression in AAs ( $p=1.2\times10^{-125}$ ). Both ChIP-seq and RNA-seq data suggested a stronger regulatory role for AR signaling pathways in DE-lncRNAs vs. non-DE-lncRNAs. **CaP-related oncogenic lncRNAs, such as *PVT1*, *PCAT1* and *PCAT10/CTBP1-AS***, were found to be more highly expressed in AAs. We report substantial heterogeneity in the prostate tumor genome and transcriptome between EA and AA. These differences may be biological contributors to racial disparities in CaP incidence and outcomes.

It is notable that PVT1 is a lncRNA in the vicinity of the MYC oncogene and that PVT1 has been documented to bind to and stabilize MYC protein, elevating its activity. In this regard, while DANCER is not statistically differentially expressed in prostate cancer samples from patients of African versus European ancestry, elevation of PVT1 suggests that MYC activity could contribute to the pathogenesis of African descent prostate cancers. This unbiased study documents the importance of ancestral background on the genomics and transcriptomic alterations in prostate cancer.

**Impact:** Investigation of lncRNA function in prostate cancer will lead to a greater understanding of the molecular mechanisms of this disease, and should lead to novel clinical applications in oncology.

**Changes/Problems:** Technical difficulties with in situ hybridization for DANCER lncRNA.

## **Products**

Manuscript DOI: 10.1158/0008-5472.CAN-17-0815

Lu Y, Hu Z, Mangala LS, Stine ZE, Hu X, Jiang D, Xiang Y, Zhang Y, Pradeep S, Rodriguez-Aguayo C, Lopez-Berestein G, DeMarzo AM, Sood AK, Zhang L, Dang CV. MYC Targeted Long Noncoding RNA DANCR Promotes Cancer in Part by Reducing p21 Levels. Cancer Res. 2018 Jan 1;78(1):64-74.

This manuscript results directly from support by DOD grant W81XWH-15-1-0630, and it describes extensive studies performed as proposed in the grant. The work establishes that the Long Noncoding RNA DANCR, whose expression is increased in prostate cancer, is regulated by MYC and plays a role in prostate cancer cell growth and in in vivo tumorigenesis.

See Appendix

Manuscript submitted: Yuan et al. Integrative comparison of the genomic and transcriptomic landscape between prostate cancer patients of predominantly African or European genetic ancestry

See Appendix

## **Participants & Other Collaborating Organizations**

C. Dang 10% effort  
Z. Stine 75% effort  
L. Zhang (Univ. of Penn) 5%

## **Special Reporting Requirements**

None

## **Appendices**

See attached publication and submitted manuscript.

# MYC Targeted Long Noncoding RNA DANCER Promotes Cancer in Part by Reducing p21 Levels

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## Abstract

The MYC oncogene broadly promotes transcription mediated by all nuclear RNA polymerases, thereby acting as a positive modifier of global gene expression. Here, we report that MYC stimulates the transcription of DANCER, a long noncoding RNA (lncRNA) that is widely overexpressed in human cancer. We identified DANCER through its overexpression in a transgenic model of MYC-induced lymphoma, but found that it was broadly upregulated in many human cancer cell lines and cancers, including most notably in prostate and ovarian cancers. Mechanistic investigations indicated that DANCER limited the expression of cell-cycle inhibitor p21 (CDKN1A) and that the inhibitory effects

of DANCER loss on cell proliferation could be partially rescued by p21 silencing. In a xenograft model of human ovarian cancer, a nanoparticle-mediated siRNA strategy to target DANCER *in vivo* was sufficient to strongly inhibit tumor growth. Our observations expand knowledge of how MYC drives cancer cell proliferation by identifying DANCER as a critical lncRNA widely overexpressed in human cancers.

**Significance:** These findings expand knowledge of how MYC drives cancer cell proliferation by identifying an oncogenic long noncoding RNA that is widely overexpressed in human cancers. *Cancer Res*; 78(1); 64–74. ©2017 AACR.

## Introduction

MYC is a frequently amplified human oncogene that encodes the transcription factor MYC, which dimerizes with MAX to regulate both the activation and repression of gene transcription (1–9). Although MYC could have nontranscriptional roles, many of its activities could be experimentally linked to regulation of transcription (2). To understand and appreciate MYC's biological roles, early studies identified key MYC transcriptional targets that are involved in metabolism, cell growth, cell-cycle regulation, and apoptosis (1, 2). In subsequent studies, we documented that MYC

could also regulate microRNAs to modulate many different cellular processes and surmised that MYC would also have a key role in regulating biologically important long noncoding RNAs (lncRNAs; refs. 1, 10–13). lncRNAs have now been documented to play important roles in cancers (14, 15). Although we were performing the studies reported herein, a number of MYC-regulated lncRNAs or lncRNAs that regulate MYC function were recently reported to have biological activities (16–22).

Here, we report our identification of MYC-regulated lncRNAs and a highly responsive MYC-inducible lncRNA, termed DANCER, in a model of MYC-inducible human B lymphoma. DANCER was first described as a lncRNA that blocks differentiation of the epidermal progenitor cells (23). Intriguingly, we also found that a conserved murine DANCER homolog (*mDancer*) is highly expressed in an MYC-induced transgenic model of lymphoma, suggesting that DANCER is involved in MYC-induced lymphomagenesis. We document the expression of MYC-regulated lncRNAs across the spectrum of human cancers, the direct regulation of DANCER by MYC and its role in prostate and ovarian tumorigenesis. We found that loss of DANCER is associated with increased p21 (CDKN1A) expression and decreased S-phase entry and cell proliferation in prostate and ovarian cancer cell lines. Importantly, we found that nanoparticle delivered siRNAs against DANCER *in vivo* significantly diminished tumor growth in an orthotopic ovarian xenograft model (24–27). These studies document a significant role for MYC in the regulation of cell growth through the expression of lncRNAs, particularly DANCER, adding to its broad biological influence over the entire transcriptome and cell proliferation.

## Materials and Methods

### Patients and specimens

Human tumor-derived samples were studied according to the U.S. Common Rule, collected with informed consent, and

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**Note:** Supplementary data for this article are available at Cancer Research Online (<http://cancerres.aacrjournals.org/>).

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approved for use by the Johns Hopkins Institutional Review Board (approval No. NA00048544). RNA samples were isolated using TRIzol from frozen sections of matched prostate tumor and benign samples (tumor/normal pairs) obtained at radical prostatectomy at The Johns Hopkins Hospital. Tumor samples were highly enriched (generally greater than 80% tumor purity). Gleason scores ranged from 6 to 9 and pathological stage ranged from T2N0 to T3bN1. Patient ages ranged from 46 to 69.

#### Cell lines and cell culture

P493-6 cell was a generous gift of Dr. Eick at the Institute of Clinical Molecular Biology and Tumors Genetics, GSF-Research Centre, Munich, Germany. This *Mycoplasma*-free cell line is unavailable from the ATCC and has been continuously used in the Dang laboratory and authenticated by the presence of a highly inducible human MYC transgene. The PC3 and DU145 cell lines were obtained from the ATCC and are *Mycoplasma* free. Ovarian cancer OVCA432 cells was a kind gift from Dr. Kwong K. Wong, MD Anderson Cancer Center (Houston, TX). Cells are generally used for 5 to 10 passages from the initial expansion and freeze-down. Cells were maintained in a log phase of cell growth by culturing in RPMI-1640 supplemented with 10% FBS and 0.1% gentamicin sulfate (Gemini Bioproducts, Calabasas, CA) in a humidified incubator at 37°C in the presence of 5% CO<sub>2</sub> and 95% air. Cells were routinely screened for *Mycoplasma* and authentication of cells was done by the characterized Cell Line Core Facility at the UTMDACC. Cells were cultured in DMEM or RPMI-1640 with 10% FCS and 1% penicillin/streptomycin. To repress MYC expression in P493-6 cells, cultures were supplemented with 0.1 µg/mL tetracycline (Sigma) for 48 hours and harvested. Human ES cells (H1 and H9 clones) were grown on mouse embryo fibroblasts (MEF) in culture medium that consisted of 80% DMEM/F12 supplemented with 20% knock-out serum replacement (Invitrogen), 1 mmol/L L-glutamine, 0.1 mmol/L 2-mercaptoethanol, and 1% nonessential amino acids (Sigma-Aldrich).

#### Vivo-Morpholino studies

The *DANCR* mRNA was analyzed, two exon-intron junctions were inspected. The boundaries were submitted to the GeneTools design service for morpholino design (<http://www.gene-tools.com/>). The *DANCR* exon1-intron1 Vivo-Morpholino sequence is 5'-AAGACTGGAGATGCACTACCGCGC-3'. The *DANCR* exon2-intron2 Vivo-Morpholino sequence is 5'-CGCTCAAGGCTAGGAACATACCTGC-3'. The standard control nontargeting Vivo-Morpholino is the sequence designed and published by GeneTools (5'-CCTCTTACCTCAGTTACAATTATA-3').

Vivo-Morpholino treatment of P493-6 cells. Knockdown of *DANCR* was carried out with two *DANCR*-targeting antisense Vivo-Morpholino obtained from Gene Tools. Equal amount of PBS and standard control (nontargeting) Vivo-Morpholino (Gene Tools) were used as negative controls. Different amount of Vivo-Morpholinos (to achieve 0.5, 1.0, and 1.5 µmol/L concentrations) or vehicle (PBS) were added to cell culture and cells were harvested at subsequent time points (24, 48, and 72 hours).

#### RNA-seq analysis

Total RNA from P493-6 cells was extracted using TRIzol (Invitrogen) and an RNeasy Plus Mini Kit (Qiagen). Extracted RNA samples underwent quality control assessment using an Agilent Bioanalyzer (Agilent). RNA samples underwent quality control

assessment using the Agilent Bioanalyzer (Agilent) and all RNA samples submitted for sequencing had an RNA Integrity Number (RIN) >9, with a minimum of 1 µg input RNA. To normalize the expression values, we imported the aligned reads of each BAM file to Cufflinks RNA-Seq workflow to obtain the expression levels for genes by summarizing the fragments per kb per million mapped fragments (FPKM) values. Poly-A enriched library preparation and sequencing were performed at the Penn Next-Generation Sequencing Core following standard protocols. Briefly, mRNA was purified using poly(A) selection or rRNA depletion before the RNA was chemically fragmented and converted into single-stranded cDNA using random hexamer priming. The second strand was generated to create double-stranded cDNA. Library construction began with the generation of blunt-end DNA fragments from ds-cDNA. Then, A-bases were added to blunt-ends to prepare them for the ligation of sequencing adapters using the TruSeq RNA Sample Preparation Kit (Illumina). Fragments of approximately 300 to approximately 400 bp were selected by gel electrophoresis, followed by 15 cycles of PCR amplification. The prepared libraries were then sequenced using an Illumina HiSeq 2000, which generated approximately 50 to approximately 100 million unfiltered reads per sample.

For RNA-seq analysis of MYC-ON versus MYC-OFF states, the P493-6 cells, which were engineered to have tetracycline-repressible ectopic MYC, were supplemented with 0.1 µg/mL tetracycline (Sigma) for 48 hours before harvesting for the MYC-OFF state. The RNA from these cells were compared with MYC-ON cells that had continuously expressed MYC for 48 hours grown contemporaneously with the MYC-OFF cells.

#### Annotation of lncRNA, protein-coding genes, and pseudogenes

The GENCODE lncRNA annotation version 22 and the GENCODE whole genome comprehensive annotation version 22 were downloaded from the official GENCODE ftp repository: <ftp://ftp.sanger.ac.uk/pub/GENCODE/>. The GENCODE lncRNA annotation (V22), a manually curated and evidence-based lncRNA annotation containing 15,900 genes, was used to define lncRNA genes. The GENCODE whole annotation (V22) was used to define protein-coding genes (PCG) and pseudogenes, resulting in a PCG set containing 19,814 genes; a pseudogene set containing 14,477 genes; and an "other genes" set containing 10,292 genes.

#### The Cancer Genome Atlas and Cancer Cell Line Encyclopedia RNA-seq data

The poly(A)<sup>+</sup> RNA-seq (Illumine) data in FASTQ format of 496 human prostate tumor specimens and 52 matched normal adjacent tissue specimens were generated by University of North Carolina (UNC) as part of the The Cancer Genome Atlas (TCGA) project. The poly(A)<sup>+</sup> RNA-seq (Illumina) data in BAM format of 935 human cancer cell lines across 21 cancer types were generated by the Cancer Cell Line Encyclopedia (CCLE) project, a collaboration between the Broad Institute, the Novartis Institutes for Biomedical Research, and the Genomics Institute of the Novartis Research Foundation. RNA-seq files were downloaded from the Cancer Genomics Hub (<http://cghub.ucsc.edu>). The poly(A)<sup>+</sup> RNA-seq (Illumine) data in FASTQ format of Eµ-Myc mouse were generated by Dr. Bruno Amati laboratory. RNA-seq files were downloaded from Gene Expression Omnibus (GSE51011). All FASTQ files were aligned to the reference human genome (hg38, GRCh38) or reference

mouse genome (mm10, GRCm38) via RNA-STAR-based ENCODE long RNA-Seq-processing pipeline. The BAM files from CCLE project were converted to FASTQ format using Picard Tools (Broad Institute) before alignment. We imported the aligned reads of each BAM file to Cufflinks RNA-Seq workflow to obtain the expression levels for genes by summarizing the fragments per kb per million mapped fragments (FPKM) values. GENCODE annotations were used to define lncRNAs, PCGs, and pseudogenes. The log-transformed FPKM values of genes were further analyzed using BRB-ArrayTools (<http://linus.nci.nih.gov/BRB-ArrayTools.html>) according to the instructions provided.

#### qRT-PCR

Total RNA was extracted using TRIzol Reagent (Invitrogen) and reverse-transcribed using a High Capacity RNA-to-cDNA Kit (Applied Biosystems) according to the manufacturer's instructions. cDNA was quantified by real-time RT-PCR using an ABI ViiA 7 System (Applied Biosystems). PCR was performed using SYBR Green reagents (Applied Biosystems) according to the manufacturer's instructions. GAPDH was used as an internal control.

#### Chromatin immunoprecipitation assay

A total of  $1 \times 10^6$  cells were cross-linked in 1% formaldehyde for 10 minutes, and the cross-linking was terminated with 0.125 mol/L glycine. The nuclear protein and fragmented chromatin was extracted by sequential incubation in cell lysis buffer (10 mmol/L Tris-HCl pH 7.5, 10 mmol/L NaCl, 3 mmol/L MgCl<sub>2</sub>, 0.5% IGEPAL, 1 mmol/L PMSF) and nuclear lysis buffer (50 mmol/L Tris-HCl pH 8.0, 10 mmol/L EDTA, 1% SDS and protease inhibitor cocktail), followed by optimized sonication. The nuclear extract was subjected to immunoprecipitation with anti-MYC antibody (sc-764, Santa Cruz Biotechnology). The immunoprecipitate was washed sequentially in Dialysis buffer (50 mmol/L Tris-HCl pH 8.0, 2 mmol/L EDTA, 0.2% Sarkosyl) and Wash buffer (100 mmol/L Tris-HCl pH 9.0, 500 mmol/L LiCl, 1% NP-40, 1% Deoxycholic acid). The cross-linking of chromatin was reversed and DNA purified with gel purification kit (QIAGEN). qPCR was performed to detect the relative amount of interest chromatin regions in the immunoprecipitate (forward primer: TCCTTCCCATTTTATCCCCTG; reverse primer: AGAGACTAATGCAGGAATTCAGC).

#### Affymetrix microarray

Total RNA (300 ng) was amplified using a WT Expression Kit (Ambion) according to the manufacturer's instructions. cRNA (10 µg) was used for reverse transcription and 5.5 µg cDNA was hybridized to a Human Exon 1.0 ST (Affymetrix) according to the manufacturer's protocol. After overnight hybridization, the chips were terminally labeled and scanned using an Affymetrix GeneChip 3000 7G scanner.

#### Gene ontology and gene set enrichment analyses

Gene ontology (GO) analysis was performed by Database for Annotation, Visualization and Integrated Discovery (DAVID) v6.7 (<http://david.abcc.ncifcrf.gov/>). Gene set enrichment analysis (GSEA) algorithm (<http://www.broadinstitute.org/gsea/index.jsp>) was used to identify the pathways that were significantly enriched between DANCR low and high tumor samples.

#### SNP array data processing and copy-number analysis

The TCGA SNP array (Affymetrix Genome-Wide Human SNP Array 6.0) data in CEL format of 496 patients' paired tumor and germline-derived DNA specimens of prostate cancer were downloaded from the TCGA Data Portal (<https://gdc.cancer.gov/>). The CEL files were imported to the Partek Genomic Suite to perform segmentation and calculate the predicted copy number for each given gene. A predicted copy number larger than 2.3 or smaller than 1.7 was considered as a copy-number gain or loss for each gene, respectively.

#### siRNA transfection

siRNA oligonucleotides targeting DANCR were ordered from Sigma. Cells were seeded in 6-well plates in antibiotic-free media overnight, and then transfections were performed using the Lipofectamine RNAiMAX transfection reagent (Invitrogen). Cells were incubated in the media containing the transfection mixture. All transfection experiments were performed with 50 nmol/L of each siRNA. In control experiments, cells were transfected with an equivalent amount of nontargeting (NT) siRNA.

#### Cell-cycle assay

The cell cycle was analyzed using an *in situ* cell proliferation kit FLUOS (Roche) according to the manufacturer's instruction. Briefly, cells were labeled with bromodeoxyuridine (BrdUrd) for 40 minutes before trypsinization. Cells were rinsed with PBS, and then fixed by adding 70% ice-cold ethanol. Fixed cells were incubated with 4 mol/L HCl at room temperature for 30 minutes then washed with PBS. The cells were then incubated with anti-BrdUrd-FLUOS antibody at room temperature for 45 minutes, washed with PBS, and resuspended in 0.1 mL PBS. Cell suspensions were incubated with 7-AAD for 5 minutes and immediately analyzed by flow-cytometry. The data were analyzed by FlowJo software (Tree Star).

#### Liposomal nanoparticle preparation

siRNA oligonucleotides targeting DANCR for *in vivo* delivery were encapsulated into 1,2-dioleoyl-sn-glycero-3-phosphocholine (DOPC; Avanti Polar Lipids, Inc.) DOPC-nano delivery system. Briefly, DOPC and siRNA were mixed in the presence of excess tertiary butanol at a ratio of 1:10 (w/w) siRNA:DOPC. Tween 20 was added to the mixture in a ratio of 1:19 Tween 20: siRNA-DOPC. The mixture was vortexed, frozen in an acetone/dry-ice bath, and lyophilized. Before *in vivo* administration, this preparation was hydrated with PBS at room temperature at a concentration of 250 µg miRNA per kilogram per mouse injection (each mouse received 200 µL of DOPC-siRNA-PBS solution by the intraperitoneal route).

#### *In vivo* ovarian cancer model and tissue processing

Female athymic nude mice were purchased from the National Cancer Institute, Frederick Cancer Research and Development Center (Frederick, MD) and maintained according to guidelines set forth by the American Association for Accreditation of Laboratory Animal Care and the US Public Health Service policy on Human Care and Use of Laboratory Animals. All mouse studies were approved and supervised by the MD Anderson Cancer Center Institutional Animal Care and Use Committee. All animals used were between 8 and 12 weeks of age at the time of injection. To determine the therapeutic efficacy of DANCR lncRNA silencing, we used a

well-characterized orthotopic model of ovarian carcinoma. To establish the tumors, OVCA432 ovarian cancer cells ( $2.0 \times 10^6$ ) were trypsinized, suspended in 200  $\mu$ L of Hanks Balanced Salt Solution (Gibco) and injected into intraperitoneal cavity of mice on day 1. Seven days after cell injection, mice were randomly divided into 3 groups ( $n = 10$  mice/group): (i) Control siRNA/DOPC or (ii) *DANCR1* siRNA/DOPC or (iii) *DANCR2* siRNA/DOPC. To assess tumor growth, treatment began by injecting siRNA/DOPC nanoparticles twice weekly (150  $\mu$ g/kg body weight) through intraperitoneal injection. Mice were monitored daily for adverse effects of therapy and tumor volume of each group was quantified by the IVIS-200 bioluminescence and fluorescence imaging system (Caliper Life Sciences Inc.) every week. At the time of sacrifice, mouse weight and tumor weight were recorded. Tumor tissue was harvested and either snap-frozen in liquid nitrogen for lysate preparation or fixed in formalin for paraffin embedding, or frozen in optimum cutting temperature medium (Miles, Inc.) to prepare frozen slides. The individuals who performed the necropsies, tumor collections, and tissue processing were blinded to the treatment group assignments.

## Results

### Intergenic lncRNA, *DANCR*, responsive to MYC is broadly expressed in multiple cancers types

In our early studies of MYC-regulated transcriptomes using exon microarrays (28), we found a lncRNA (then termed *KIAA0114*) that was induced by MYC that was later annotated as *DANCR* (Supplementary Fig. S1). As such, we sought to determine the global effect of MYC on lncRNA expression in the P493-6 cell line that was engineered from a peripheral human B lymphocyte, immortalized by an Epstein-Barr viral genome and harbors a tetracycline-regulated MYC transgene. The addition of tetracycline to these cells shuts off MYC expression and renders P493-6 cells nonproliferative (29). We cultured P493-6 cells with (MYC-OFF) and without tetracycline (MYC-ON). The RNAs from both conditions were harvested and subjected to RNA sequencing (RNA-seq) analysis. To estimate the RNA expression level of a given lncRNA, we calculated the fragments per kilobase of transcript per million mapped reads (FPKM) value for each lncRNA gene expression. On the basis of two independent experiments, we identified 545, 1,525, and 159 MYC-regulated lncRNAs, PCGs and pseudogenes, respectively, which was defined as those with a fold change larger than 5 in RNA-seq experiment (Fig. 1A; Supplementary Table S1). These MYC-regulated lncRNAs were further classified into two locus biotypes based on their location with respect to PCG loci: (i) the lncRNA transcripts do not intersect with any PCGs and were therefore considered as intergenic lncRNAs; and (ii) the remaining lncRNAs that intersect PCGs in some way (antisense, sense-overlapping or sense-intronic transcripts) were referred as genic lncRNAs. We found that more than half of the MYC-regulated lncRNAs were genic lncRNAs (56.3% 307/545, Fig. 1A; Supplementary Table S2). In addition, we analyzed whether the overlapping PCGs (for genic) or nearest PCGs (for intergenic) were also regulated by MYC activation in P493-6 cells. The nearest PCGs are the closest genes with no distance cutoff. We found that small percentage of lncRNAs and their corresponding PCGs was coregulated by MYC, although the MYC-regulated genic lncRNAs showed relatively higher percentage (24.1%, 74/307) compared with MYC-regulated intergenic

lncRNAs (14.3%, 34/238, Fig. 1B). In our study reported here, we focus specifically on the MYC-regulated intergenic lncRNAs.

To explore the expression of these intergenic lncRNAs in cancer, we analyzed the expression of these MYC-regulated intergenic lncRNAs in the cell line collection from the CCLE (30). The CCLE cell lines consist of 935 human tumor cell lines that originate from 21 different cancer types including melanoma, epithelial, hematopoietic, and neurological cancers and representing common and rare types of cancer in both adults and children (Supplementary Table S3). Using the data from RNA-seq analysis on these cell lines, we characterized the expression pattern of the MYC-regulated intergenic lncRNAs that were identified in P493-6 cells. Most MYC-regulated intergenic lncRNAs, identified from P493-6 cell lines, are specifically expressed at high levels in the hematopoietic malignant cells (Fig. 1C). For example, ENSG00000198106 (SNX29P2) was only highly expressed in large B lymphoma cell lines but not other cancer types (Fig. 1C and D). Among the 238 MYC-regulated intergenic lncRNAs, only five were broadly expressed in nearly all CCLE cell lines with high FPKM value (the average FPKM > 5): ENSG00000226950 (*DANCR*), ENSG00000260260, ENSG00000196756, ENSG00000276529, and ENSG00000255198 (Fig. 1C). Then, we asked whether the expression levels of these five MYC-regulated intergenic lncRNAs identified from P493-6 cells were correlated with the MYC expression in CCLE cell line panel. In this regard, the expression levels of three MYC genes (MYC, MYCL, and MYCN) were retrieved from CCLE RNA-seq, and a multivariate linear regression analysis indicated that the expression of all three MYC genes were significantly and positively correlated with the expression levels of 4/5 intergenic lncRNAs except ENSG00000255198 ( $P < 0.001$ , Fig. 1E). Notably, we found that MYC was the strongest factor affecting the expression levels of these four intergenic lncRNA than MYCL and MYCN (Fig. 1E). These observations suggest that these four intergenic lncRNAs are regulated by MYC broadly among many cancer cell types. Because *DANCR* is the intergenic lncRNA with highest expression level across CCLE cell lines, is strongly correlated with MYC expression, and has been previously reported to be involved in cell differentiation (23), we chose this intergenic lncRNA for further study.

### MYC directly regulates *DANCR*

Given the significant induction of *DANCR* by MYC in a model cell line and the correlation of their expression across a broad panel of human cancers, we sought to determine whether *DANCR* is a direct MYC target. The hallmarks of direct MYC target genes include documentation of MYC binding by chromatin immunoprecipitation (ChIP) and an alteration of RNA levels. We corroborated the genome-wide RNAseq study with RT-PCR that *DANCR* is one of the most highly induced MYC-responsive genes with a >15-fold induction [as compared with reported MYC targets: ODC1 (4.6-fold), LDHA (7.5-fold), NCL (5.8-fold), and NPM1 (6.7-fold)] in the P493-6 human B-cell model (Fig. 2A). Because the prostate cancer cell line PC3 is an MYC-dependent cell line, and the known link between MYC and human prostate cancer (31), we sought to determine whether expression of *DANCR* in PC3 cells depends on MYC. Indeed, knocking down MYC expression with siRNA resulted in diminished *DANCR* expression (Fig. 2A). Using available genome-wide MYC ChIP data (6), we found that *DANCR* is robustly bound by MYC upon MYC induction in the P493-6 cells in a time-dependent manner (Fig. 2B). The

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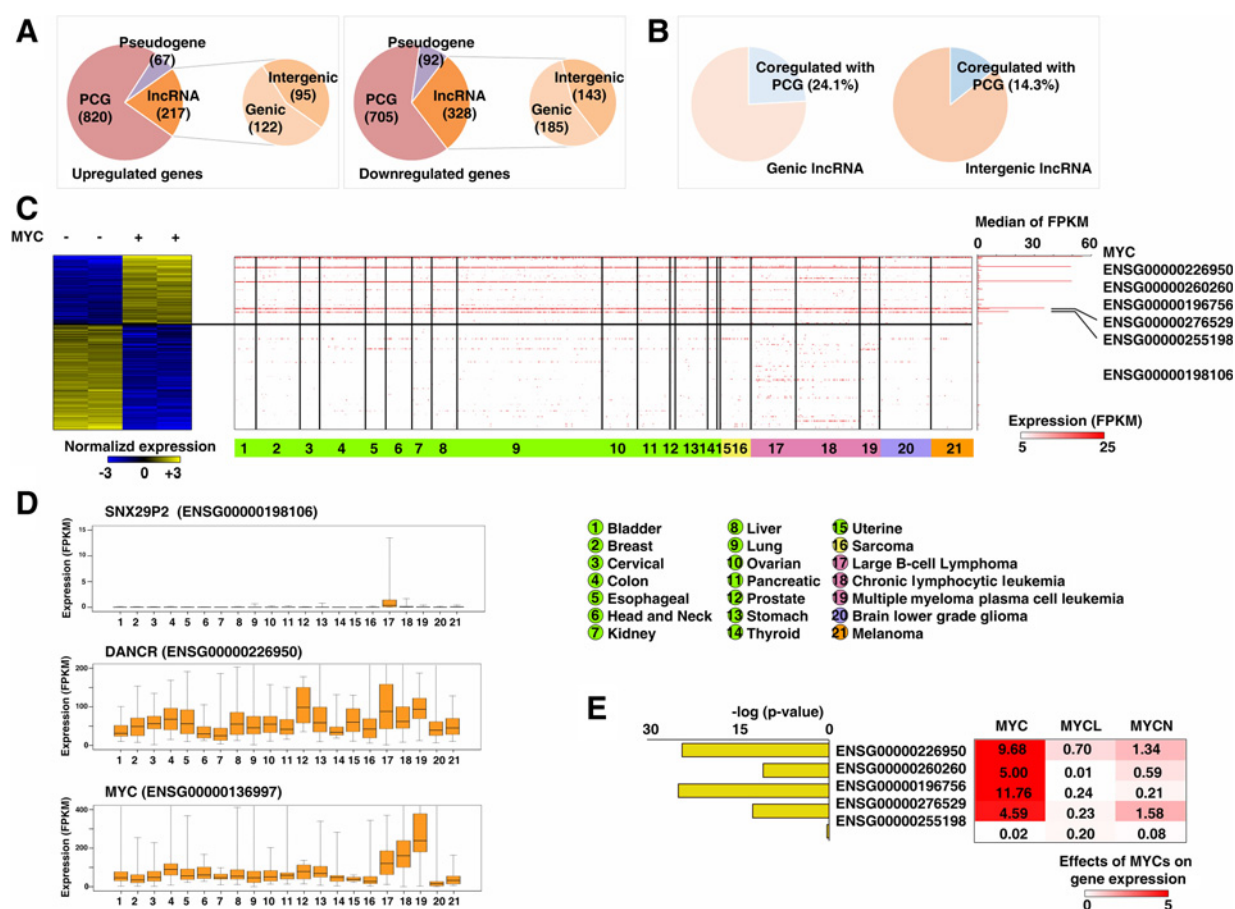
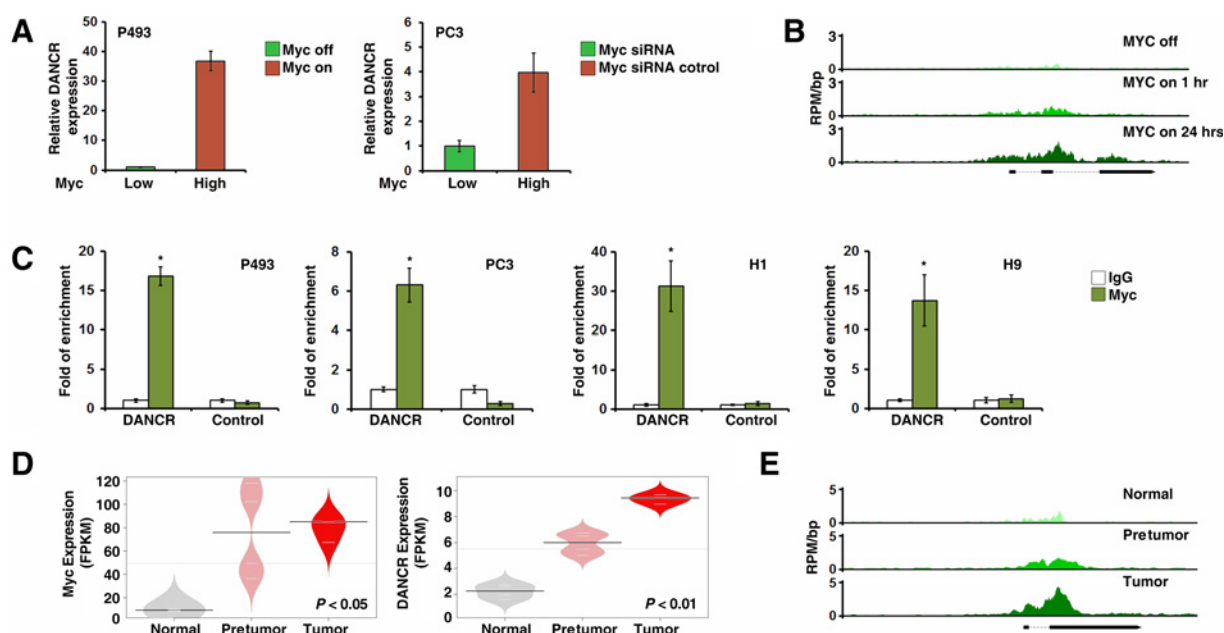


Figure 1.

Identification of *DANCR*, an intergenic lncRNA that is broadly expressed in multiple types of cancers and regulated by MYC. **A**, The number of the MYC-regulated (left, upregulation in MYC ON; right, downregulation in MYC ON) PCGs, lncRNAs and pseudogene in P493-6 cells, lncRNAs analyzed as genic and intergenic inset. **B**, The percentage of lncRNAs that were coregulated with the nearest PCGs of the MYC-regulated genic lncRNAs (left) and intergenic lncRNAs (right). **C**, Left, heatmap of the expression of intergenic lncRNAs that are significantly altered due to the change of MYC expression in P439-6 cells. The experiment was repeated. Each row represents a lncRNA; each column represents a condition. The rows above the black line are lncRNAs upregulated by MYC; those below the black line are lncRNAs downregulated by MYC. Yellow, high expression; blue, low expression. Middle, heatmap of the FPKM value of MYC-regulated lncRNAs (from left) in CCLL cell lines. Each row represents an intergenic lncRNA, and each column a cell line. The cell lines are grouped by cancer types, which is color-coded and numbered at the bottom of the panel. Red, high expression; white, low or nondetected expression. Right, mean of FPKM of MYC-regulated lncRNAs (from left) in CCLL cell line collections. Five lncRNAs were expressed at high levels across multiple cancer types. **D**, The box plot of FPKM of *SNX29P2*, *DANCR*, and *MYC* in different cancer types. *SNX29P2* is a B-cell cancer-specific intergenic lncRNA. *MYC* expression was also included at the top of the panel. **E**, The correlation between the expressions of MYC family genes and each of the five ubiquitously expressed intergenic lncRNAs in CCLL cell line panel. Left, the *P* value of multivariate linear regression analysis for the correlation of *MYC*/*MYCL*/*MYCN* and five intergenic lncRNAs. Right, heatmap of the fraction of variance of MYC-regulated intergenic lncRNA expression explained by three MYC family members. The MYC expression level showed strongest efforts on 4/5 intergenic lncRNAs (red).

peak of MYC binding in intron 2 corresponds to a conserved canonical 5' CACGTG3' Myc consensus-binding site (UCSC Genome Browser). In addition to validating the ChIP-seq data in P493-6 cells, we found using ChIP-PCR that MYC binds *DANCR* in PC3 prostate cancer cells (Fig. 2C). Further, we found that *DANCR* expression, like MYC, decreased with BMP4-induced trophoblastic differentiation of human embryonic stem cell lines H1 and H9 (28) and also document the binding of MYC to the *DANCR* locus in these stem cell lines (Fig. 2C). Collectively, these data provide evidence that *DANCR* is a bona fide highly responsive direct MYC target gene in a number of cell systems.

Because *DANCR* was found in our study using an MYC-inducible lymphoma model, we determined whether the mouse *DANCR* (*mDancr*) homolog (Supplementary Fig. S2) might also be induced in an MYC-mediated transgenic mouse Eμ-myc lymphoma model. In this model, a pre-malignant lymphoid hyperplastic (pre-tumor) state occurs before the development of frank tumor. As such, we compared *mDancr* expression from publicly deposited RNA-seq data (9) in normal, pre-tumor, and tumor lymphocytes from the Eμ-myc mice. Remarkably, *mDancr* increased significantly from normal to pre-tumor and was found highest in frank tumor, correlating very well with the expected increase in MYC expression in this model (Fig. 2D). Furthermore, the extent of Myc binding to

**Figure 2.**

*DANCR* is a direct MYC target gene. **A**, RT-PCR analysis reveals induction of *DANCR* in P493-6 cells by MYC activation and reduction of *DANCR* expression with MYC knockdown in PC3 cells. Cells were transfected with siRNA over 3 hours and cells were collected 24 hours after transfection for analysis. **B**, MYC ChIP-seq histograms illustrating MYC binding to *DANCR* as a function of time after induction of MYC in P493-6 cells (data from GEO GSE36354). **C**, ChIP-qPCR illustrating the binding of MYC to the *DANCR* locus in P493-6, PC3, and human H1 and H9 embryonic stem cells. Control represents ChIP signals from a locus located approximately 1.9 kb away from the *DANCR* transcriptional start site. **D**, RNA-seq analysis reveals induction of *mDancr* in Eμ-myc transgenic mouse model. **E**, MYC ChIP-seq histograms illustrating MYC binding to *mDancr* as a function of time after induction of MYC in Eμ-myc transgenic mouse model (data from GEO GSE51011). Error bars, SD. \*,  $P < 0.05$ ;  $t$  test.

the *mDancr* as determined by chromatin immunoprecipitation increased across the spectrum from normal to frank tumor (Fig. 2E).

#### Elevation of MYC and *DANCR* in human prostate cancers

In addition to loss of tumor suppressors such as *PTEN*, human prostate cancers have been linked to elevated MYC expression. In fact, we documented that MYC protein levels correlate extremely well with advanced stages of prostate cancer but not with metastatic disease (31). MYC has also been used in mouse models, illustrating its power to drive prostate tumorigenesis *in vivo* (32). Because of MYC's significant role in prostate cancer, we examined the expression of MYC and *DANCR* among human prostate cancer and found that both are elevated in tumor versus normal pairs from TCGA (Fig. 3A). We corroborated these data with RNAs isolated from paired primary human normal and prostate tumors using RT-PCR, illustrating elevated MYC and *DANCR* mRNA expression in prostate cancer (Fig. 3B). Because MYC is frequently amplified in prostate cancer, we also determined whether *DANCR* could be independently amplified and found that although MYC amplification is frequent, the *DANCR* locus is infrequently amplified (Fig. 3C). These observations suggest that elevated *DANCR* expression results from MYC-induction in prostate cancer and not a result of *DANCR* gene amplification. In this regard, we examined the correlation between MYC and *DANCR* expression in prostate cancers from TCGA (Fig. 3D) and found a significant correlation.

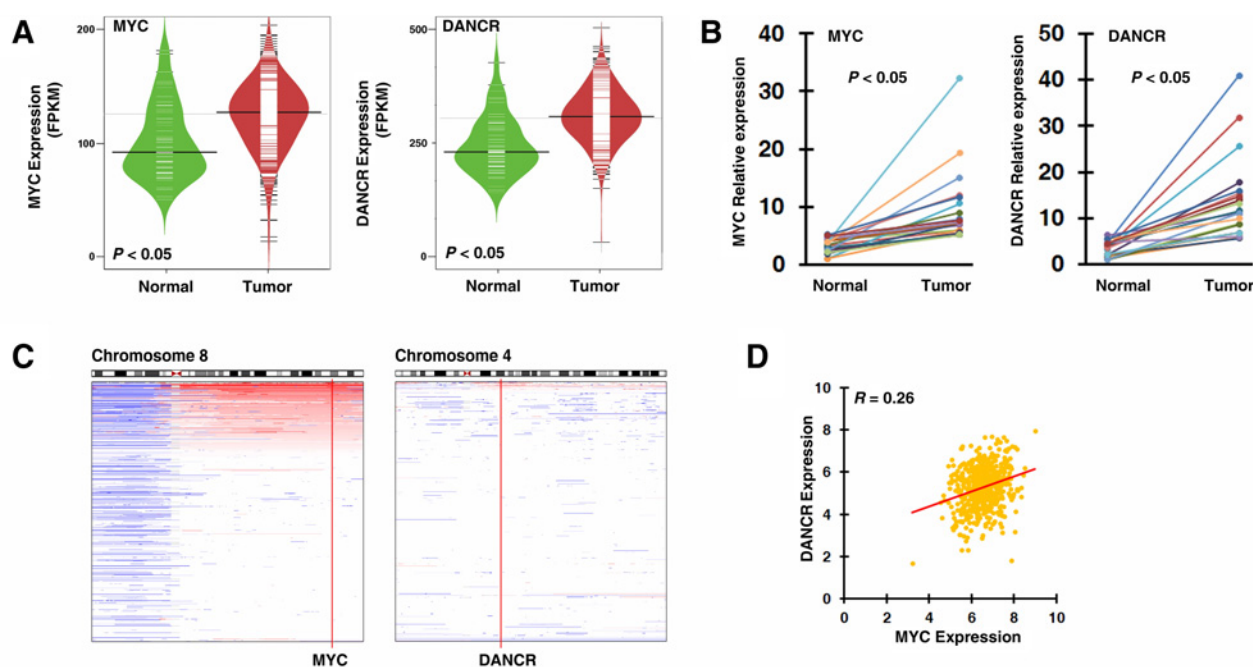
#### Functional role of *DANCR*

To determine the functional role of *DANCR*, we sought to delineate how its loss of function affects the transcriptome with

the hypothesis that *DANCR* participates in gene silencing similar to other known lncRNAs. Specifically, we ruled out its potential role in cis-regulating nearby genes, by measuring the expression of *ERVMER34-1* and *USP46* upon knockdown of *DANCR* by siRNAs (Supplementary Fig. S3). Indeed, we found no significant changes in the expression of these nearby genes. Hence, we performed global gene-expression array analysis and as expected, found that knockdown of *DANCR* led to up-regulation of genes, but there were also a significant number of downregulated genes (Fig. 4A). Because lncRNAs have been associated with chromatin repressors, we focused on genes that were upregulated by *DANCR* knockdown. Gene ontology analysis of the upregulated genes demonstrates a significant representation of those involved in cell-cycle regulation and DNA dynamics (Fig. 4B; Supplementary Table S4). Further network analysis reveals key cell cycle and DNA replication hubs (Fig. 4C) are highly represented in the upregulated genes. These findings suggest that *DANCR* plays a key role in regulating the cell cycle.

We then determined whether loss of *DANCR* affects the cell cycle and used pulsed BrdUrd-labeling for cell-cycle analysis. As shown in Fig. 4D, knockdown of *DANCR* resulted in a significant decrease in S-phase entry by the prostate PC3 cancer cells associated with a significant increase in p21 protein induction (Fig. 4E) that correlates with the increase in p21 (*CDKN1A*) mRNA levels found in gene-expression arrays (Supplementary Table S5). The inhibition of S-phase entry and induction of p21 with loss of *DANCR* are corroborated by the finding that *DANCR* expression inversely

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**Figure 3.**

Correlation of MYC and DANCER expression in human prostate cancer. **A**, MYC and DANCER expression levels are elevated in paired tumor versus normal prostate samples from TCGA. **B**, RT-PCR analysis of primary human paired tumor versus normal prostate samples illustrates increased MYC and DANCER expression in tumors. **C**, MYC is frequently amplified in prostate cancers and DANCER is not. Degree of red corresponds to degree of amplification. **D**, MYC mRNA expression correlates with DANCER expression amongst human prostate cancers in TCGA.

correlates with p21 mRNA expression in human prostate cancers in the TCGA dataset (Fig. 4F). Consistent with these findings, we also knocked down DANCER in P493 cells using Vivo-Morpholinos and found that they could also curb the growth of P493 cells (Supplementary Fig. S4A and S4B). Furthermore, the diminished growth of P493 cells was associated with an increased in p21 (Supplementary Fig. S4C). These observations collectively suggest that MYC induction of DANCER results in the suppression of p21, which is required for cell-cycle progression.

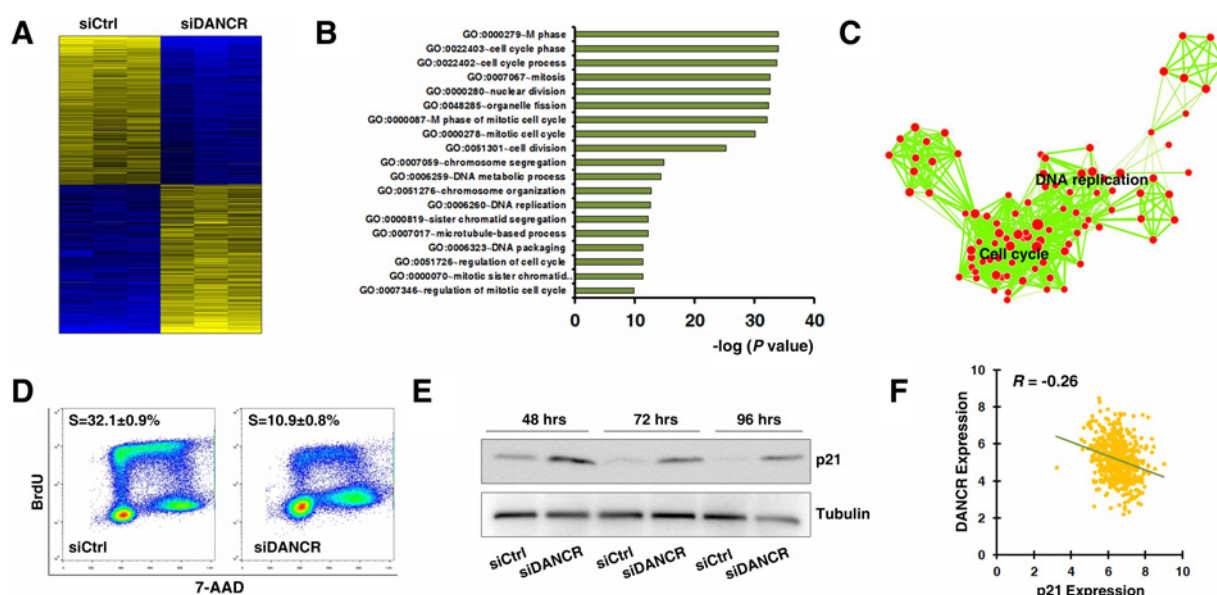
#### Role of p21 (CDKN1A) in DANCER-mediated cell growth

To further determine the role of p21 in DANCER-mediated proliferation, we examined the effects of DANCER knock down on the prostate cell lines PC3 and DU145 and the ovarian cancer cell line OVCAR432. Using two different siRNAs (siDANCER1 and siDANCER2), we found that the siRNA-treated cells had significantly slowed growth (Fig. 5A). To specifically address whether p21 induction is involved in the slowed growth induced by DANCER knockdown, we determined whether the simultaneous knockdown of p21 could rescue the slowed growth of PC3 cells caused by loss of DANCER. As shown in Fig. 5B, simultaneous knockdown of p21 diminished its expression in PC3 cells treated with siDANCER. Importantly, simultaneously loss of p21 partially rescued slowed growth due to siDANCER, but not to the diminished proliferation caused by knockdown of MYC (siMYC; Fig. 5C). The lack of rescue by loss of p21 in siMYC-treated cells is consistent with the broad effect of MYC on the cancer transcriptome and on cancer cell growth, whereas loss of p21 could partially rescue a more restricted effect of siDANCER. These obser-

vations indicate that the induction of p21 following loss of DANCER is functionally significant in slowing DANCER-dependent cell proliferation.

#### lncRNA DANCER silencing reduces tumor burden in ovarian tumors

On the basis of our *in vitro* findings, we next asked whether DANCER silencing *in vivo* would affect the tumor growth. To determine the therapeutic efficacy, we used orthotopic ovarian OVCAR432 tumor model. Markedly lower luciferase activity was detected in DANCER silencing (siRNA packaged in DOPC nanoliposomes) groups compared with the control group (Fig. 6A), illustrating diminished tumorigenesis in DANCER silenced mice. As shown in Fig. 6B, both DANCER1 siRNA and DANCER2 siRNA treated animals showed significant reduction in tumor growth compared with control siRNA treated ones (79% and 81%, *P* value 0.0005 and 0.0001, respectively; Fig. 6B and C). Similarly, compared with control siRNA-treated animals, both DANCER siRNA-treated groups showed significant reduction in number of tumor nodules (78% and 81%; *P* value 0.0031 and 0.0028, respectively; Fig. 6C) as well as ascites (*P* value 0.028; Fig. 6D), suggesting that silencing of DANCER lncRNA played an effective role in reducing the tumor burden. There was no obvious toxicity noted in the animals during therapy experiments, as assessed by changes in behavior, feeding habits, and mobility. The mean body weight was also similar between the treatment groups (Fig. 6E). Consistent with the *in vitro* effects of siDANCER on the cell cycle, Fig. 6F and G document the reduction of Ki67 (cell cycle) expression in the siDANCER-

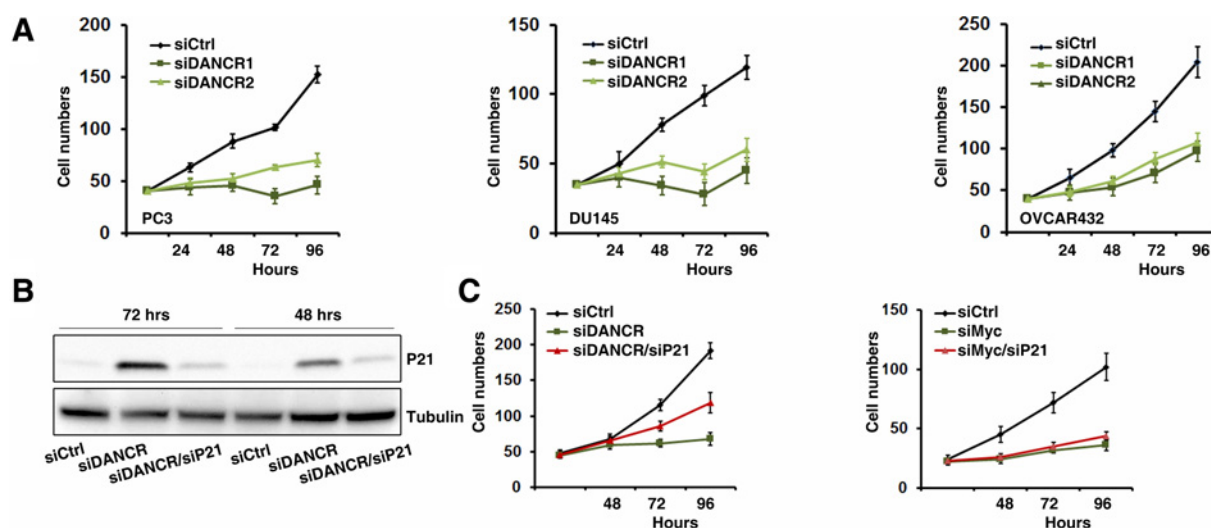
**Figure 4.**

Transcriptomic and cell-cycle effects of loss of *DANCR* expression. **A**, Heatmap of expression of mRNAs in response to knockdown of *DANCR* by siRNA (siDANCR) as compared with control (Ctrl). Blue, downregulated. **B**, Gene ontology analysis of genes induced upon *DANCR* knockdown. **C**, Functional hubs of genes induced upon *DANCR* knockdown as analyzed by DAVID analysis on the basis of gene ontology term. **D**, Pulsed BrdUrd analysis of the cell cycle of control (left) and *DANCR* (right) knockdown PC3 cells. The proportions of cells in other phases were control (G<sub>1</sub>, 41%; G<sub>2</sub>M, 25%) and siDANCR (G<sub>1</sub>, 56%; G<sub>2</sub>M, 30%). **E**, Induction of p21 protein with loss of *DANCR* expression illustrated by immunoblot for p21 at the indicated time points after siDANCR transfection. Tubulin served as loading control. **F**, Inverse correlation of p21 (*CDKN1A*) mRNA and *DANCR* mRNA expression in human prostate cancers from TCGA.

treated tumors, which demonstrated increased apoptosis (Fig. 6H and I). These findings illustrate that silencing *DANCR* *in vivo* significantly reduces ovarian tumor burden in an orthotopic xenograft model.

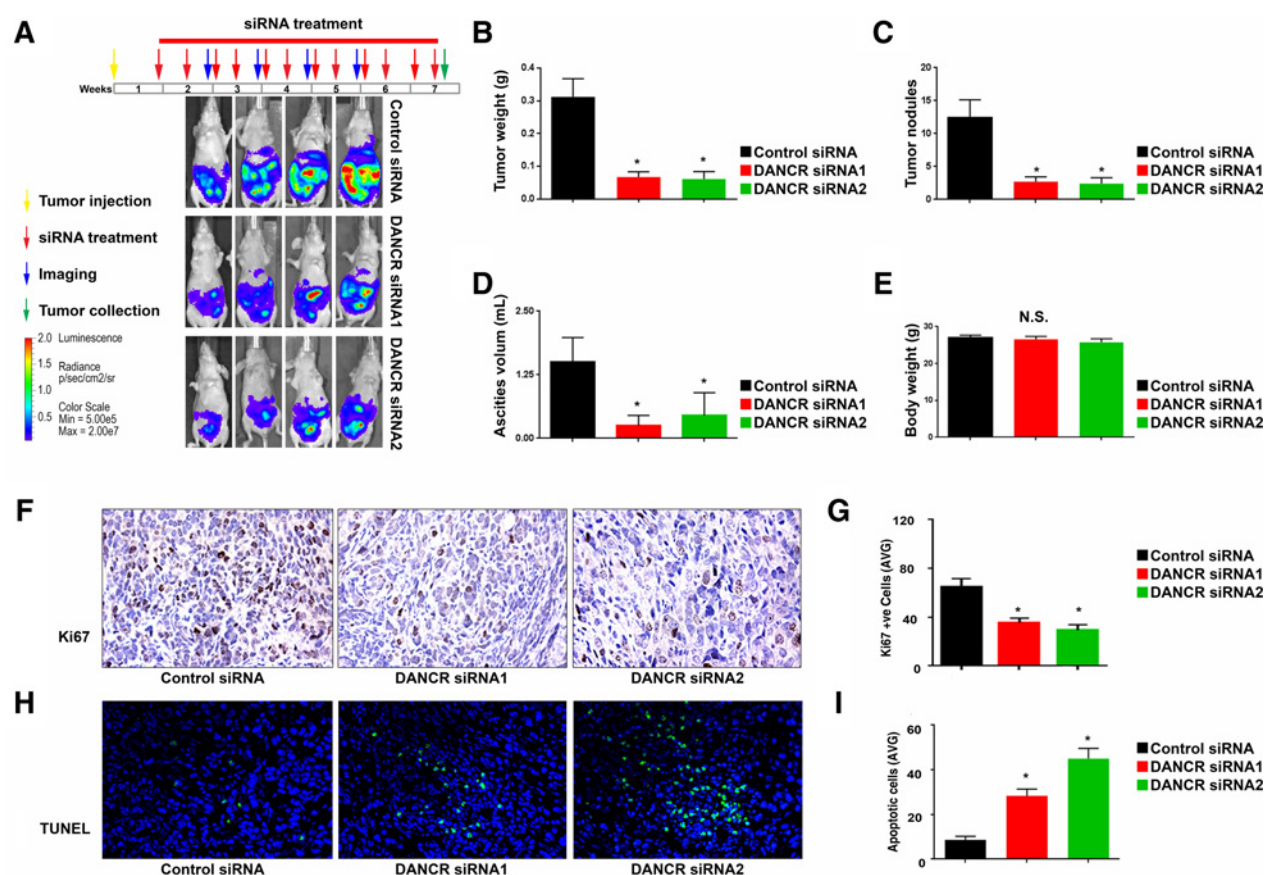
## Discussion

*MYC* is a human oncogene that is both downstream and upstream of lncRNAs with its expression being regulated by lncRNAs at the transcriptional and translational levels, and its

**Figure 5.**

Loss of *DANCR* expression diminishes growth of prostate and ovarian cancer cell lines. **A**, Effects of two different siRNAs targeting *DANCR* (siDANCR1; siDANCR2) on growth (cell number) of PC3 and DU145 prostate or OVCAR432 ovarian cancer cells as compared with control siRNA (Ctrl). **B**, Induction of p21 by loss of *DANCR* expression and the suppression of p21 expression 48 and 72 hours after cotransfecting with siRNA targeting *DANCR* and p21 in PC3 cells. The immunoblot for p21 is shown with tubulin serving as loading control. **C**, Diminished growth caused by siDANCR, but not by knockdown of *MYC* (siMYC), could be partially rescued by simultaneous knockdown of p21 expression in PC3 cells.

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**Figure 6.**

Therapeutic efficacy of DANCER siRNA in the OVCAR432 ovarian orthotopic mouse model. **A**, Illustration of the DANCER siRNA treatment timeline. Arrows indicate different events (yellow, cell injection; red, siRNA treatment; blue, bioluminescent imaging; green, tissue harvesting). Seven days following tumor cell injection, mice were randomly divided (10 mice per group) to receive therapy into following groups: (i) Control siRNA/DOPC or (ii) DANCER1 siRNA/DOPC or (iii) DANCER2 siRNA/DOPC. Nanoliposomal-siRNA nanoparticles were administered twice weekly at a dose of 150  $\mu$ g/kg body weight. Representative bioluminescent images of animals receiving control and DANCER siRNAs during treatments. **B–E**, Tumor weight (**B**), tumor nodule (**C**), ascites (**D**), or body weight (**E**) in DANCER silencing groups compared with controls. **F** and **G**, Cell proliferation in OVCAR432 tumors. **F**, Ki67 staining. **G**, Quantification of the proliferation rate. **H** and **I**, Cell apoptosis in OVCAR432 tumors. **H**, TUNNEL staining. **I**, Quantification of the apoptotic rate. Error bars, SEM. \*,  $P < 0.05$  vs. Control siRNA.

product MYC in turn regulates lncRNAs in a complex network of target genes. Expression of the MYC proto-oncogene is exquisitely regulated at the transcriptional, translational, and post-translational levels, because deregulated MYC oncogene is a powerful transforming gene. As such, MYC expression is under tight control of many regulatory mechanisms, including lncRNAs and miRNAs. Here, we focus on the ability of oncogenic MYC to drive the expression of lncRNAs, particularly a target termed DANCER, which we document to have a significant role in MYC-mediated cell proliferation.

In our earlier studies using exon arrays, we found KIAA0114 (aka, DANCER) as a very responsive MYC target in the P493-6 cells, leading us to examine the global effect of MYC on lncRNA expression. During the course of our studies, DANCER was identified as an antagonist of keratinocyte differentiation and its anti differentiation role was further reported in osteoblasts, in which its function could be mediated through EZH2—perhaps through direct RNA–protein interaction (23, 33). DANCER was subsequently found to be induced by MYC in the P493-6 cell system among many lncRNAs (34, 35). Further-

more, MYC is reported to induce other lncRNAs that have a variety of biological activities including metastasis and cell cycle regulation (18, 36–38). We focused our work on determining whether DANCER is a bona fide MYC target and further explored its function in MYC-induced cell proliferation. How DANCER functions through affecting the transcriptome, however, was unknown.

Here, we found that DANCER expression is elevated broadly among many human cancer cell lines and document its elevated expression in association with MYC in human prostate cancers. This observation suggests a potential broad role of DANCER across different tumor types and its expression could be affected by other oncogenic pathways. Importantly, we rigorously document DANCER as a direct MYC target gene in several cell types, spanning from mouse lymphoid, and human prostate cancer to human embryonic stem cells. Through gene expression analysis of the prostate cancer cell line PC3, we found that siRNA-mediated loss of DANCER expression resulted in elevation of mRNAs that are involved in the cell cycle, particularly p21. Because both PC3 and DU145 prostate cancer

cell lines have mutant p53, wild-type p53 does not seem necessary for loss of *DANCR* to induce p21 expression (39). Functionally, siRNA-mediated diminished *DANCR* expression resulted decreased cell proliferation of prostate and ovarian cancer cell lines. The diminished proliferation of PC3 cells with *DANCR* knockdown could be partially rescued with simultaneous reduction of p21 with siRNA. The partial rescue is consistent with the possible multifaceted role of *DANCR* in cell proliferation, a topic that would require extensive mechanistic future studies. Collectively, we establish *DANCR* as a direct MYC target that suppresses p21 expression, among other transcriptomic effects, to promote cell proliferation. It is notable the MYC has been shown to inhibit p21 expression through other mechanisms, such as its interference with MIZ1-mediated transactivation of p21, interference with SP1 activation of p21, activation of AP4 that in turn transrepresses p21, or activation of miR-17-92 that in turn represses p21 (40). However, in contrast with *DANCR*, knockdown of MYC resulted in growth arrest that could not be rescued by knockdown of p21. This observation is consistent with the broad effect of MYC on cell growth and proliferation, and suggests that *DANCR* may have a more limited role with p21 being an important node for *DANCR*'s function in influencing cell proliferation. The exact mechanism by which *DANCR* mediates p21 suppression is beyond the scope of our current study and is deserving of future studies.

The occurrence of *DANCR* in the cytoplasm of many mammalian cell lines suggests that it may have a cytosolic function independent of transcription (41, 42). As such, the exact mechanism function of *DANCR* in the cytosol as well as its role in the nucleus will require significant depth of investigation in future studies. Notwithstanding the lack of full mechanistic understanding of *DANCR* function, the elevation of *DANCR* expression across a broad spectrum of human cancers, the direct regulation of *DANCR* by MYC, the effect of *DANCR* on p21 expression and cell proliferation, and the ability to curb *in vivo* tumorigenesis with nano-particle-mediated siRNA-targeting *DANCR* are documented herein and provide a path for further studies of this intriguing lncRNA. Consistent with our results, *DANCR* was recently reported to increase stemness in liver cancer (43) and correlate with tumor progression in colon

cancer (44). Our study further adds to the foundation for the exploration of other MYC-induced lncRNAs that may have roles in tumorigenesis.

## Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

## Authors' Contributions

**Conception and design:** Y. Lu, G. Lopez-Berestein, L. Zhang, C.V. Dang  
**Development of methodology:** Y. Lu, L.S. Mangala, C. Rodriguez-Aguayo, G. Lopez-Berestein, A.K. Sood, C.V. Dang  
**Acquisition of data (provided animals, acquired and managed patients, provided facilities, etc.):** Y. Lu, Z.E. Stine, D. Jiang, Y. Xiang, S. Pradeep, A.M. DeMarzo, A.K. Sood  
**Analysis and interpretation of data (e.g., statistical analysis, biostatistics, computational analysis):** Y. Lu, Z. Hu, Z.E. Stine, L. Zhang, C.V. Dang  
**Writing, review, and/or revision of the manuscript:** Y. Lu, Z.E. Stine, G. Lopez-Berestein, A.K. Sood, L. Zhang, C.V. Dang  
**Administrative, technical, or material support (i.e., reporting or organizing data, constructing databases):** Y. Lu, X. Hu, Y. Zhang, C.V. Dang  
**Study supervision:** Y. Lu, C.V. Dang  
**Other (in vivo experiments):** L.S. Mangala,

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# Cancer Research

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## MYC Targeted Long Noncoding RNA DANCR Promotes Cancer in Part by Reducing p21 Levels

Yunqi Lu, Zhongyi Hu, Lingegowda S. Mangala, et al.

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## Integrative comparison of the genomic and transcriptomic landscape between prostate cancer patients of predominantly African or European genetic ancestry

--Manuscript Draft--

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| <b>Full Title:</b>                         | Integrative comparison of the genomic and transcriptomic landscape between prostate cancer patients of predominantly African or European genetic ancestry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Short Title:</b>                        | Genomic and transcriptomic landscape between prostate cancer patients of African or European ancestry                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| <b>Abstract:</b>                           | Men of predominantly African Ancestry (AA) have higher prostate cancer (CaP) incidence and worse survival than men of predominantly European Ancestry (EA). While socioeconomic factors drive this disparity, genomic factors may also contribute to differences in the incidence and mortality rates. To compare the prevalence of prostate tumor genomic alterations and transcriptomic profiles by patient genetic ancestry, we evaluated genomic profiles from The Cancer Genome Atlas (TCGA) CaP cohort (n=498). Patient global and local genetic ancestry were estimated by computational algorithms using genotyping data; 414 (83.1%) were EA, 61 (12.2%) were AA, 11 (2.2%) were East Asian Ancestry (EAA), 10 (2.0%) were Native American (NA), and 2 (0.4%) were other ancestry. Genetic ancestry was highly concordant with self-identified race/ethnicity. Subsequent analyses were limited to 61 AA and 414 EA cases. Significant differences were observed by ancestry in the frequency of SPOP mutations (20.3% AA vs. 10.0% EA; $p=5.6 \times 10^{-03}$ ), TMPRSS2-ERG fusions (29.3% AA vs. 39.6% EA; $p=4.4 \times 10^{-02}$ ), and PTEN deletions/losses (11.5% AA vs. 30.2% |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>EA; <math>p=3.5 \times 10^{-03}</math> ). Differentially expressed genes (DEGs) between AAs and EAs showed significant enrichment for prostate eQTL target genes (<math>p=8.09 \times 10^{-48}</math> ). Enrichment of highly expressed DEGs for immune-related pathways was observed in AAs, and for PTEN/PI3K signaling in EAs. Nearly one-third of DEGs (31.3%) were long non-coding RNAs (DE-lncRNAs). The proportion of DE-lncRNAs with higher expression in AAs greatly exceeded that with lower expression in AAs (<math>p=1.2 \times 10^{-125}</math> ). Both ChIP-seq and RNA-seq data suggested a stronger regulatory role for AR signaling pathways in DE-lncRNAs vs. non-DE-lncRNAs. CaP-related oncogenic lncRNAs, such as PVT1 , PCAT1 and PCAT10/CTBP1-AS , were found to be more highly expressed in AAs. We report substantial heterogeneity in the prostate tumor genome and transcriptome between EA and AA. These differences may be biological contributors to racial disparities in CaP incidence and outcomes.</p> |
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| <b>Question</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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September 8, 2019

*PLoS Genetics*

Editorial office

Dear Editor,

Enclosed please find the manuscript by Yuan and Kensler *et al* entitled “*Integrative comparison of the genomic and transcriptomic landscape between prostate cancer patients of predominantly African or European genetic ancestry*” that we are submitting for your consideration for publication in *PLoS Genetics* as a research article.

Disparities in cancer defined by self-identified race or ethnicity (SIRE) have been a long-standing and persistent challenge.<sup>1</sup> It is well documented that certain racial and ethnic populations in the US experience higher incidence of specific cancer types, higher incidence of aggressive cancers, and higher mortality. The Cancer Genome Atlas (TCGA) data resource contains multi-omic profiles and clinical annotations of large-scale samples, and therefore serves as an excellent resource for the evaluation of the relationship between genetic ancestry and genomic alterations in cancers. As part of the Functional Cancer Genome project (FCG: <http://52.25.87.215/home/>), we previously integrated multiple computational algorithms to estimate the global and local genetic ancestry of each TCGA patient (n = 11,122, involving 33 cancer types from 27 primary sites) using genome-wide genotyping data, and assigned each individual to an ancestral population. We have made this information available in the Cancer Genetic Ancestry Atlas (TCGAA, <http://52.25.87.215/TCGAA>), a publicly accessible resource, to assist researchers with analyzing, visualizing, and downloading multidimensional genetic ancestry information for each patient in TCGA.<sup>2</sup>

Using this novel resource, we performed a cancer type specific analysis of the influence of genetic ancestry on genomic alterations in prostate cancers – a malignancy for which there are some of the largest cancer disparities by race and ethnicity in the US.<sup>3</sup> We found that there is substantial heterogeneity in the genomic alterations and transcriptomic dysregulation occurring in men of African (AA) and European (EA) ancestry in the TCGA prostate cancer cohort. *SPOP* mutations, *TMPRSS2-ERG* fusions, *PTEN* deletions/losses, immune signaling, and expression of non-coding RNAs were identified as potential contributors to prostate cancer racial disparities.

We believe that our studies are impactful and will be of significant interest to the readers of *PLoS Genetics* for the following reasons:

- Racial disparities in cancer incidence and outcomes have been a long-standing and persistent challenge. The elevated prostate cancer mortality rate in men of African descent represents one of the largest cancer disparities by race and ethnicity in the US.
- TCGA provides a unique resource to understand the genetic basis of prostate cancer racial disparities across multi-dimensional genomic and transcriptomic profiles.
- We revealed that dysregulation of the non-coding transcriptome and genes regulated by prostate eQTLs may contribute to prostate cancer racial disparities.

- We reported that the tumor transcriptome among AA men with prostate cancer has enrichment for immune-related pathways.
- Our comprehensive characterization of genetic ancestry and genomic/transcriptomic alterations would provide new insight into the biology of prostate cancer racial disparities in the AA population.
- Our results highlight the critical need for research investigating the underlying genomic basis of prostate cancer disparities and to potentially therapeutically exploit the distinct tumor biology in AA men.
- We developed TCGAA Prostate (<http://52.25.87.215/TCGAA/prostate>), a publicly accessible resource, to assist researchers with analyzing and visualizing genetic ancestry information from TCGA prostate cancer cohort.

Collectively, our study provides novel genomic resources (<http://52.25.87.215/TCGAA/prostate>) and new insight into the genomic contribution to prostate cancer disparities. We believe our study will be of significant interest to the readers of *PLoS Genetics*.

Neither the submitted paper nor any similar paper, in whole or in part, other than as an abstract or preliminary communication, has been or will be submitted to, or published in, any other primary scientific journal.

Thank you for your kind consideration. We look forward to hearing your decision at your earliest convenience.

Sincerely,

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**Integrative comparison of the genomic and transcriptomic landscape between prostate cancer patients of predominantly African or European genetic ancestry**

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**ABSTRACT**

Men of predominantly African Ancestry (AA) have higher prostate cancer (CaP) incidence and worse survival than men of predominantly European Ancestry (EA). While socioeconomic factors drive this disparity, genomic factors may also contribute to differences in the incidence and mortality rates. To compare the prevalence of prostate tumor genomic alterations and transcriptomic profiles by patient genetic ancestry, we evaluated genomic profiles from The Cancer Genome Atlas (TCGA) CaP cohort (n=498). Patient global and local genetic ancestry were estimated by computational algorithms using genotyping data; 414 (83.1%) were EA, 61 (12.2%) were AA, 11 (2.2%) were East Asian Ancestry (EAA), 10 (2.0%) were Native American (NA), and 2 (0.4%) were other ancestry. Genetic ancestry was highly concordant with self-identified race/ethnicity. Subsequent analyses were limited to 61 AA and 414 EA cases. Significant differences were observed by ancestry in the frequency of *SPOP* mutations (20.3% AA vs. 10.0% EA;  $p=5.6\times10^{-03}$ ), *TMPRSS2-ERG* fusions (29.3% AA vs. 39.6% EA;  $p=4.4\times10^{-02}$ ), and *PTEN* deletions/losses (11.5% AA vs. 30.2% EA;  $p=3.5\times10^{-03}$ ). Differentially expressed genes (DEGs) between AAs and EAs showed significant enrichment for prostate eQTL target genes ( $p=8.09\times10^{-48}$ ). Enrichment of highly expressed DEGs for immune-related pathways was observed in AAs, and for PTEN/PI3K signaling in EAs. Nearly one-third of DEGs (31.3%) were long non-coding RNAs (DE-lncRNAs). The proportion of DE-lncRNAs with higher expression in AAs greatly exceeded that with lower expression in AAs ( $p=1.2\times10^{-125}$ ). Both ChIP-seq and RNA-seq data suggested a stronger regulatory role for AR signaling pathways in DE-lncRNAs vs. non-DE-lncRNAs. CaP-related oncogenic lncRNAs, such as *PVT1*, *PCAT1* and *PCAT10/CTBP1-AS*, were found to be more highly expressed in AAs. We report substantial heterogeneity in the prostate tumor genome and transcriptome between EA and AA. These differences may be biological contributors to racial disparities in CaP incidence and outcomes.

**Data availability:** The raw data generated by this study are public available through the TCGAA Prostate (<http://52.25.87.215/TCGAA/prostate>).

**AUTHOR SUMMARY**

Disparities in cancer defined by self-identified race or ethnicity have been a long-standing and persistent challenge. It is well documented that certain racial and ethnic populations in the US experience higher incidence of specific cancer types, higher incidence of aggressive cancers, and higher mortality. The Cancer Genome Atlas (TCGA) data resource contains multi-omic profiles and clinical annotations of large-scale samples, and therefore serves as an excellent resource for the evaluation of the relationship between genetic ancestry and genomic alterations in cancers. In this study, we performed a cancer type specific analysis of the influence of genetic ancestry on genomic alterations in prostate cancers – a malignancy for which there are some of the largest cancer disparities by race and ethnicity in the US. We found that there is substantial heterogeneity in the genomic alterations and transcriptomic dysregulation occurring in men of African (AA) and European (EA) ancestry in the TCGA prostate cancer cohort. *SPOP* mutations, *TMPRSS2-ERG* fusions, *PTEN* deletions/losses, immune signaling, and expression of non-coding RNAs were identified as potential contributors to prostate cancer racial disparities. Our comprehensive characterization of genetic ancestry and genomic/transcriptomic alterations would provide new insight into the biology of prostate cancer racial disparities in the AA population.

## INTRODUCTION

Prostate cancer (CaP) is the second leading cause of cancer death in US males, accounting for an estimated 31,620 deaths in 2019 [1]. Incidence, morbidity, and mortality rates of CaP vary substantially by race/ethnicity, representing one of the largest cancer disparities by race/ethnicity in the US [2, 3]. Elevated CaP rates in men of African descent have also been observed globally [4]. While socioeconomic factors and healthcare utilization are significant drivers of these disparities, differences in tumor genomics by race/ethnicity may also contribute to CaP disparities [5]. Mounting evidence suggests that CaPs are phenotypically and genomically heterogeneous by race/ethnicity, potentially signifying differences in tumor etiology [5]. Although genome-wide association studies (GWAS) have identified approximately 200 loci associated with CaP risk and outcomes [6-10], most have not replicated in populations of African descent. GWAS conducted in African men have revealed novel susceptibility loci [11-13]. Recent progress in characterizing CaP genomes [14-19] has motivated efforts to identify genomic contributors to CaP racial disparities. Genomic profiling studies have revealed differences in mutations, copy number alterations, fusions, gene expression, and splicing variants by patient race/ethnicity [20-42]. However, few studies have comprehensively examined CaP heterogeneity by race/ethnicity across multiple genomic platforms within a single sample cohort.

The Cancer Genome Atlas (TCGA) contains data on multidimensional genomic profiles including gene expression, copy number alterations, mutations, transcript fusions, and epigenetic aberrations for 33 common adult cancers, including CaP [14]. Given that a substantial proportion of the US population is represented by genetically admixed populations, these data are a unique resource for the study of cancer racial disparities [43-46]. Recently, we created The Cancer Genetic Ancestry Atlas (TCGAA; <http://52.25.87.215/TCGAA/>) [47], which provides estimates of genetic ancestry and quantitative ancestral composition for TCGA patients (n=11,122, involving 33 cancer types from 27 primary sites). We demonstrated that self-identified race/ethnicity (SIRE) and genetic ancestry inferred by our approach were highly correlated across patients. Our estimation of the global and local genetic ancestry for each patient in TCGA, including those patients for whom SIRE is not

available, allows for rigorous analysis of the influence of genetic ancestry on genomic alterations across multiple cancer types. For example, we reported that AA patients had higher frequencies of *TP53* mutations and lower frequencies of genomic alterations affecting genes in the PI3K pathway than EA patients [47]. To further interrogate the genomic mechanisms that may contribute to racial disparities in CaP, we compared the frequency of genomic alterations and transcriptomic profiles across groups defined by genomically-inferred ancestry in TCGA CaP cohort.

## RESULTS

### Genetic ancestry and clinical characteristics of the TCGA prostate cancer cohort

Among the 498 patients with genotyping information (SNP Array) in the TCGA CaP sample, 83.1% self-identified as White, 11.4% Black, 2.4% Asian, 0.2% American Indian/Alaska Natives. Race was unavailable for 2.8% of patients (**Table S1**). In the total sample, only 1.4% of men self-identified as Hispanic or Latino; self-identified Hispanic or Latino status was unavailable for 20.9% of men. We estimated genetic ancestry for all 498 patients by integrating multiple computational algorithms as described previously [47]. Using EIGENSTRAT and the k-NN algorithm [48], 83.1% of men were classified as EA, 12.2% AA, 2.2% EAA, 2.0% NA, and 0.4% other ancestry (**Table S2**). Self-identified race/ethnicity (SIRE) and inferred genetic ancestry were concordant for 96.9% of men but differed for four AAs and two EAs (**Figure 1A**). Next, STRUCTURE [49] and LAMP [50] were used to quantitatively determine the ancestral composition for each patient across the global genome and at particular chromosomal loci (**Tables S3 and S4**). As expected, many patients exhibited diversity in ancestral composition inferred by STRUCTURE (**Figure 1B**), though these estimates were strongly correlated with classifications determined by EIGENSTRAT and SIRE. By integrating the above analyses, we generated a comprehensive view of the distribution of genetic ancestry and SIRE for the TCGA CaP sample (**Figure 1C**). Given the limited sample sizes of EAA and NA patients, our subsequent analyses focused on the comparison between AAs and EAs (**Figure S1**). We also evaluated the associations between genetic ancestry and clinical characteristics (**Table S5**). Briefly, in TCGA prostate cohort, AAs had a lower median age at diagnosis than EAs

(56 vs. 62 years,  $p=2.0\times 10^{-5}$ ) (**Figure 1D**), and 13.1% of AAs had tumors with Gleason score 8 or above versus 43.7% of EAs ( $p=1.4\times 10^{-6}$ ) (**Figure 1E**). The distributions of pathological stage, vital status, and progression event status did not differ between AAs and EAs in the TCGA CaP sample.

### Genetic ancestry and genomic alterations

The distribution of the seven CaP molecular subtypes defined by the TCGA consortium [14] was compared between AAs and EAs (**Figures 2A and 2B**). The prevalence of the ERG subtype was 27.3% among AAs and 48.6% among EAs ( $p=2.3\times 10^{-3}$ ), while the SPOP subtype was more prevalent among AAs (22.7% vs. 9.1% EA,  $p=1.7\times 10^{-3}$ ) (**Figure 2B**). Next, the spectrum of genomic alterations, including somatic mutations, transcript fusion events, and somatic copy number alterations (SCNAs), was compared between AAs and EAs at both global and individual gene levels (**Figure 2A**). We fit published mutational signature profiles [51] to somatic single nucleotide variations using the deconstructSigs R package [52]. Mutational signatures 1 (aging), 5 (clock-like) and 6 (mismatch repair [MMR]) were considered (**Table S6**), but the contributions of these signatures did not differ between AAs and EAs (all  $p>0.05$ ). The median mutation burden did not differ between EA and AA patients ( $p=0.15$ ). Among 21 CaP genes curated from the published literature [14, 15, 34, 53] with mutation frequency  $\geq 1\%$  in the TCGA CaP cohort, only the frequency of *SPOP* mutations differed significantly between EAs and AAs ( $p=5.6\times 10^{-3}$ ) (**Table S7**). *SPOP* mutations were present in tumors of 20.3% of AAs and only 10.0% of EAs (**Figure 2C**). *SPOP* mutations were preferentially found in the MATH domain for both AAs and EAs. Compared to EAs, AAs also harbored a significantly higher subclonal fraction of *SPOP* mutations ( $p=8.5\times 10^{-3}$ ), as estimated by the ABSOLUTE algorithm [54]. The total burden of transcript fusion events did not differ by genetic ancestry ( $p=0.59$ ); however, the *TMPRSS2-ERG* fusion was more frequently observed in EAs than AAs (39.6% vs. 29.3%,  $p=4.4\times 10^{-2}$ ) (**Table S8 and Figure 2D**). The distribution of *TMPRSS2-ERG* breakpoint sites was similar between EA and AA men. Comparison of the weighted Genome Instability Index (wGII) [55] suggested that global levels of genomic instability and somatic copy number alterations did not differ by ancestry ( $p=0.20$ ). Recurrent focal SCNAs were estimated by the Genomic Identification of Significant Targets in Cancer (GISTIC)

algorithm [56]. After controlling for clinical factors and global genomic disruption, the frequency of five recurrent focal SCNAs (one amplification and four deletions) significantly differed between EAs and AAs (FDR corrected  $p < 0.25$ ) (**Table S9**). For example, the locus encompassing the gene *PTEN* (10q23.31) was less frequently deleted/lost among AAs ( $p = 2.29 \times 10^{-3}$ ) (**Figure 2E**).

### Genetic ancestry and the transcriptome

In the subset of 470 patients (57 AA, 413 EA) with RNA-seq profiling, 3,787 of 60,483 genes (including protein-coding and non-coding genes) were identified as differentially expressed among AAs and EAs using DESeq2 (FDR corrected  $p < 0.1$ ). Upon adjustment for age and Gleason score using a propensity score, 5,964 genes were differentially expressed between AAs and EAs (FDR corrected  $p < 0.1$ ), of which 3,015 were also differentially expressed in the unadjusted analysis (**Table S10**). For example, up-regulation of *SPINK1*, a gene defining a molecular subtype of CaP with more rapid progression in an at-risk, natural history radical prostatectomy sample [32, 42], was observed in AA group. Of these 3,015 genes, 220 genes with 2-fold or greater relative expression comparing genetic ancestry groups (69.5% upregulated in AA, 30.5% upregulated in EA) are summarized in the heatmap in **Figure 3A**. Of the 5,964 differentially expressed genes (DEGs), 46.7% were protein-coding genes and 53.3% were non-coding genes (31.3% lncRNA genes, 17.2% pseudogenes, 4.8% other non-coding) (**Figure 3B**). In the set of protein-coding DEGs, 50.6% were upregulated in AA and 49.4% were downregulated in AA. In contrast, the majority of non-coding DEGs (82.6%) were upregulated in AA. Of the DEGs, 70.2% ( $n=3,984$ ) had race-specific differences in the same direction in the normal tumor-adjacent tissue ( $OR=6.2$ ,  $p=1.2 \times 10^{-205}$ ). The Wallace *et al* [20] microarray dataset was used to validate the findings of differential expression of protein-coding genes by genetic ancestry in TCGA. Of the set of protein-coding DEGs, 61.0% ( $n=1,025$ ) had race-specific differences in the same direction in the Wallace dataset ( $OR=2.3$ ,  $p=4.7 \times 10^{-17}$ ). The DEGs identified in TCGA tumor tissue were enriched with genes regulated by normal prostate tissue eQTLs (eGenes, defined by the Genotype-Tissue Expression (GTEx) Project [57]) relative to the non-DEGs ( $OR=1.9$ ,  $p=8.09 \times 10^{-48}$ ) (**Figure 3C**). Moreover, the DEGs with the most statistically significant differential expression (FDR corrected  $p < 10^{-3}$ )

by ancestry showed greater enrichment with eGenes than those with lesser statistical significance. The identified DEGs did not show enrichment for genes whose expression levels were associated with CaP risk through a large-scale TWAS [58] ( $p=0.14$ ), or for genes identified in prior GWAS [59] of CaP risk ( $p=0.15$ ). Gene set enrichment analysis (GSEA) revealed that 18 and 13 gene sets were significantly activated and repressed, respectively, in AA tumors (FDR corrected  $p<0.1$ ) (**Tables S11 and S12, Figure 3D**). The two gene sets associated with AA and EA race in CaP by Wallace *et al* [20] were most significantly activated and repressed in AAs (both  $p<10^{-4}$ ) (**Figures 3D & 3F**). Additionally, 15 of the 18 gene sets activated in AAs represented immune-related signaling pathways (**Figure 3E**). In concordance with the lower prevalence of *PTEN* deletion/loss among AAs in the SCNA analysis, gene sets pertaining to the PTEN/PI3K pathway were repressed in AAs ( $p=1.8\times 10^{-3}$ ) (**Figures 3D & 3F**).

### Genetic ancestry and the non-coding transcriptome

Of the 15,900 manually-annotated and evidence-based human lncRNAs from the GENCODE consortium (version 22), 1,868 (11.7%) lncRNAs were identified as differentially expressed (DE-lncRNAs) between AAs and EAs by DESeq2 (FDR corrected  $p<0.1$ ) (**Table S13**). In contrast to the balance observed between the proportions of coding genes with significantly higher (7.6%) or lower (7.4%) expression in AAs relative to EAs, the proportion of lncRNAs with significantly higher expression in AAs (13.7%) greatly exceeded that with lower expression among AAs (2.6%) ( $p=1.2\times 10^{-125}$ ) (**Figure 4A**). The DE-lncRNAs were classified by their genomic location with respect to protein coding genes and 45.9% were classified as intergenic, suggesting that many of them are transcribed from protein-coding independent transcriptional units and are likely to be functional lncRNAs (**Figure 4B**). The remaining DE-lncRNAs were classified as 40.5% antisense, 5.0% exonic, and 8.5% intronic. Analysis of the subcellular localization preference of the lncRNAs revealed that DE-lncRNAs had a lower mean cytoplasmic-nuclear concentration index (CN-RCI) than lncRNAs not differentially expressed by genetic ancestry groups ( $p=9.9\times 10^{-10}$ ) (**Figure 4C**). The DE-lncRNAs were more likely to be enriched in the nucleus, supporting their potential function in gene regulation at a transcriptional level. Application of the ChromHMM [60] genomic partitioning of the LNCaP cell line by Valdes-Mora *et al* [61] revealed that the DE-lncRNAs were more likely to

be harbored in genomic regions annotated as transcribed, active promoter, and active enhancer compared to the non-DE-lncRNAs (**Figure 4D**). In contrast, the DE-lncRNAs were less likely to be located around genomic regions annotated as polycomb and bivalent promoter. The DE-lncRNAs were also significantly enriched with regulatory lncRNAs, defined as possessing at least one target gene as predicted by LongHorn [62] (OR=2.3,  $p=2.4\times 10^{-31}$ ) (**Figure 4E**). The enrichment of regulatory lncRNAs among the DE-lncRNAs was consistent across regulatory mechanisms, although there was greater enrichment for lncRNAs that act as transcriptional and post-transcriptional switches to alter transcription factor or RNA-binding protein activity. Consistent with the results among all DEGs, the DE-lncRNAs were enriched with genes regulated by normal prostate tissue eQTLs (eGenes) relative to non-DE-lncRNAs ( $p=4.3\times 10^{-27}$ ), with greater enrichment for eGenes among the lncRNAs than the protein coding genes (lncRNAs OR=2.4; protein coding genes OR=1.4) (**Figure 4F**). However, the DE-lncRNAs did not show enrichment for genes whose expression levels were associated with CaP risk in large-scale TWAS [58] ( $p=0.80$ ), or for genes identified in prior GWAS studies [59] of CaP risk ( $p=0.47$ ). Using Androgen receptor (AR) ChIP-seq data from the VCaP cell line [63], a higher level of AR binding was observed at transcription start sites of DE-lncRNAs relative to the non-DE-lncRNAs (**Figure 4G**), suggesting greater regulation of the DE-lncRNAs by AR signaling pathways. Among the 1,868 DE-lncRNAs identified by our study, the AR regulatory status for 1,807 of them has been previously characterized by Zhang *et al* [64]. Consistent our findings using the AR ChIP-seq data, 139 (7.7%) were classified by Zhang *et al* as AR-regulated as compared to 4.8% of the non-DE-lncRNAs (OR=1.6,  $p=2.3\times 10^{-6}$ ) (**Figure 4G**).

A PubMed search returned one or more related results only for 200 (10.7%) of the 1,868 DE-lncRNAs, suggesting that a clear majority of the DE-lncRNAs are unstudied (**Figure 5A**), even among the top DE-lncRNAs (**Table S13**). Of the 28 DE-lncRNAs that returned ten or more PubMed results, all have been functionally linked to cancer and 13 to CaP specifically. This strongly suggests that these DE-lncRNAs may play important roles in prostate tumorigenesis. For example, the DE-lncRNAs *PVT1*, *PCAT1*, and *PCAT10/CTBP1-AS* have been previously studied and implicated in prostate tumorigenesis [65-70]. These lncRNAs exhibited statistically significantly

higher expression among AA patients in crude and age and Gleason-adjusted analyses (**Figure 5B**; 1.4-fold, 2.1-fold and 1.6-fold, respectively). Moreover, *PVT1*, *PCAT1*, and *PCAT10* were significantly overexpressed in prostate tumors relative to tumor-adjacent normal tissues (**Figure 5C**). *PCAT1* and *PCAT10* were significantly enriched in a CaP-specific manner relative to enrichment in other cancer types (**Figure 5D**). In contrast, *PVT1* was highly expressed across multiple cancer types without specificity to CaP. Both *PCAT1* and *PCAT10* have been reported to be AR-regulated [66, 68]. This is further supported by AR ChIP-Seq analysis, which revealed that the AR binding signal was increased in regions containing or surrounding *PCAT1* and *PCAT10* in cell lines treated with synthetic androgen agonists (DHT and R1881) (**Figure 5E**). Moreover, analysis of the transcriptomic profiles generated by Takayama *et al* [66] further confirmed that expression of *PCAT1* and *PCAT10* was significantly affected by DHT stimulation. Both *PVT1* and *PCAT1* are located within 8q24.21, which is recurrently amplified in CaP, and amplified at a higher frequency among AA patients ( $p=9.3\times 10^{-3}$ ) (**Figure 5F**). There were strong correlations between DNA copy number at 8q24.21 and RNA expression of *PVT1* ( $r=0.49$ ,  $p=1.1\times 10^{-30}$ ) and *PCAT1* ( $r=0.32$ ,  $p=4.0\times 10^{-13}$ ) (**Figure 5F**). This explains in part the higher expression of *PVT1* and *PCAT1* in AA relative to EA patients.

## DISCUSSION

To further understand how tumor molecular changes may contribute to CaP racial disparities, we comprehensively analyzed the multi-dimensional omics profiles of CaPs by genetic ancestry in TCGA. Our findings buttress existing evidence that patterns of genomic and transcriptomic alterations in prostate tumors differ by patient genetic ancestry [20-42]. For example, transcriptomic analyses revealed strong upregulation of immune-related signaling pathways in AAs relative to EAs. These results are consistent with a growing body of evidence from systems-level gene expression analyses implicating immunobiological dysregulation in CaPs among AAs [20, 21, 23, 30, 38, 39]. The hypothesis that tumor immunobiology differs between AAs and EAs is supported by emerging clinical evidence. In preliminary analyses of the PROCEED Registry, AAs with metastatic castration-resistant CaP receiving the autologous cellular immunotherapy Sipuleucel-T experienced better overall survival

relative to EAs [71]. Interestingly, the differentially expressed genes (DEGs) among AA and EA men did not show enrichment for those genes potentially implicated in CaP risk in prior GWAS or TWAS. Although most current GWAS/TWAS were performed in European populations, this finding suggests that the genes potentially driving racial disparities may not be predominately among those identified by GWAS/TWAS. In contrast, we found that DEGs were significantly enriched with eGenes (i.e., genes regulated by normal prostate tissue eQTLs). This suggests that eQTLs and their affected transcripts may largely contribute to CaP racial disparities. Heterogeneity in genetic variants across populations could modulate the transcriptomic background of eGenes, and consequentially these eQTL-regulated DEGs could influence prostate tumorigenesis. Given that prostate eQTLs have been utilized to identify causal genes of CaP risk [72-74], further functional characterization of the DEGs regulated by eQTLs across genetic ancestry groups may provide new insights into molecular mechanism underlying CaP racial disparities.

Our interrogation of the lncRNA transcriptome revealed 1,868 DE-lncRNAs in CaPs between AAs and EAs. Interestingly, nearly 85% of these DE-lncRNAs had higher expression in AAs. Nearly half of the DE-lncRNAs were intergenic, mirroring results from CaP GWAS that identified risk loci in non-coding regions [73, 75]. The localization of these DE-lncRNAs in protein-coding gene deserts supports their expression as independent transcriptional units rather than as artifacts or transcriptional noise from adjacent protein coding genes. Moreover, expression of the DE-lncRNAs was enriched in the nucleus, implicating them in epigenetic transcriptional regulation - one of the major roles of lncRNAs in physiological conditions. Despite their potential functional importance, almost 90% of the identified DE-lncRNAs have not been characterized. Among the 28 highly-studied DE-lncRNAs, all have been previously reported to be involved in cancer, and 13 specifically linked to CaP, strongly suggesting that these DE-lncRNAs may play critical roles in prostate tumorigenesis and potentially contribute to racial disparities. Thus, there is an urgent need for the functional characterization of these understudied DE-lncRNAs, which would assuredly yield novel insights into their functional importance in prostate tumorigenesis and racial disparities. As examples, three functionally characterized and highly expressed

in AA DE-lncRNAs, *PVT1*, *PCAT1*, and *PCAT10/CTBP1-AS*, were further studied in the TCGA CaP dataset. *PVT1* and *PCAT1*, located in the vicinity of the *MYC* oncogene, are encompassed by the 8q24.21 protein-coding gene desert – a region harboring many cancer risk variants [76], including CaP risk SNPs in men of African ancestry [77]. We found that this region is more frequently amplified among AA patients, and there are significant and positive correlations between the expression levels of *PVT1/PCAT1* and their copy numbers. It suggests that variation in gene copy numbers may partially explain the higher expression of these two DE-lncRNAs in AA patients. Consistently, expression of *PVT1* has been found to be higher in a sample of African Caribbean CaP patients [41]. As a well-known oncogene, *PVT1* promotes tumorigenesis by stabilizing the MYC protein and encoding microRNAs. Additionally, the promoter of the *PVT1* gene regulates *MYC* transcription independently of *PVT1* RNA through competition for shared enhancers [70]. *PCAT1* is regulated by the PRC2 and is highly expressed in a subset of aggressive CaP in which it has a predominantly repressive effect on gene expression [65]. It has been reported that *PCAT1* promotes CaP proliferation and growth by interacting with AR and LSD1 [68]. *PCAT1* is also a potential repressor of *BRCA2*, leading to downstream impairment of DNA damage repair [67]. Finally, the expression levels of *PCAT1* and *PCAT10* may be regulated by AR signaling [66, 68, 78], which was additionally supported by our ChIP-seq analysis. This may explain the CaP specificity of these two DE-lncRNAs, though whether there is differential regulation for their expression by AR among AA and EA patients remains unknown. The totality of evidence from prior work and our own supports multifaceted roles of these three DE-lncRNAs in CaP etiology, suggesting that the further functional characterization of other DE-lncRNAs may provide new insights into the genomic mechanisms of prostate tumorigenesis and the genomic underpinnings of racial disparities.

As we and others have reported before [34, 79], although race and ethnicity were carefully considered during the TCGA sample collection, the absolute sample size of minority populations is still relatively small, generally precluding *de novo* identification of AA population-specific recurrent genomic alterations. The sample size of the TCGA dataset is also insufficient to compare the frequency of uncommon genomic alterations between genetic

ancestry groups. For example, although *ERF* was previously identified as recurrently mutated in the tumors of AAs [34], the prevalence of *ERF* mutations did not differ by genetic ancestry in the TCGA cohort. Finally, as information regarding patient socioeconomic status is not available in TCGA, we were unable to account for these important drivers of CaP disparities in our analyses.

In summary, interrogation of the transcriptome in the TCGA CaP dataset revealed that dysregulation of the non-coding transcriptome and genes regulated by prostate eQTLs may contribute to CaP racial disparities. The tumor transcriptome among AAs showed relative enrichment for immune-related pathways. Frequencies of common genomic alterations in CaP including *TMPRSS2-ERG* fusions, *PTEN* deletions/losses, and *SPOP* mutations differed between AAs and EAs. Few of the identified genomic aberrations with differential prevalence across genetic ancestry groups can be therapeutically targeted, and accordingly, future functional characterization is necessary to understand how these factors contribute to prostate tumorigenesis and cancer progression. Moreover, genomic profiling of tumors across racial/ethnic populations is paramount for fulfilling the potential of precision medicine.

## METHODS

### TCGA prostate cancer cohort

The genomic profiles and clinical annotations for the TCGA CaP samples were retrieved from the Genomic Data Commons (GDC; <https://gdc.cancer.gov/>, October 9, 2018). Affymetrix SNP Array 6.0 data in CEL format (n=498) were downloaded from the TCGA Cancer Genomic Cloud (<http://www.cancer-genomicscloud.org/>). Genotype-calling and subsequent estimation of genetic ancestry was performed as described before [47]. Clinical information was retrieved from GDC (as of October 9, 2018). All TCGA project data used in this study were de-identified. A flow diagram of the study participants used in specific analyses is shown in **Figure S1**.

### Associations between genetic ancestry and clinical factors

Differences in the distributions of clinical factors between AAs and EAs were evaluated using the non-parametric Mann-Whitney test for continuous variables (e.g., positive lymph node counts, prostate-specific antigen level, days to biochemical recurrence, and age at diagnosis) or Fisher's exact test for categorical variables (e.g., Gleason score and pathologic stage). For overall survival and disease-free survival analysis, the log-rank test was used to compare Kaplan-Meier survival curves and the Mantel-Haenszel method was used to estimate hazard ratios comparing AAs and EAs. All reported p-values are two-sided.

### **Adjustment for clinical factors**

Clinical factors were accounted for in all analyses comparing genetic characteristics between AA and EA patients. Age at diagnosis (mean, 61.0 years; range, 41-78 years) and Gleason score ( $\leq 6$ , 9.0%; 7(3+4), 29.8%; 7(4+3), 20.2%;  $\geq 8$ , 41.0%) were comprehensively annotated [14] and their distributions significantly differed between AA and EA patients. These two factors were used to derive a propensity score [80], treating age as a continuous variable and Gleason score as an ordinal categorical variable. The propensity score [80] was then included as a covariate in regression models testing the associations between ancestry and genetic characteristics (e.g., overall SCNA scores [81], alteration status of somatic events and expression signature scores). Propensity scores were estimated separately in the context of each molecular platform.

### **Estimation of global and local genetic ancestry**

The methods used to estimate global and local genetic ancestry for the TCGA CaP sample have been described previously [47]. Briefly, unrelated individuals from HapMap (n=1,117) and HGDP (Native American panel, n=64) were used as reference populations, which were further grouped into 7 populations according to continental distribution and migration history: West Africans (YRI), European (CEU and TSI), East Asian (CHB, CHD and JPT), Native American (Pima, Maya, Colombians, Karitiana and Surui), South Asian (GIH), African American (ASW, LWK and MKK), and Mexican (MEX). The smartpca program of the EIGENSTRAT algorithm [48] was applied to run PCA on the combined genotype data of TCGA patients and the reference populations. Eigenvectors

were computed using reference populations only, by specifying a poplist file using the -w option. The program then output the position of each individual (either from TCGA or from reference populations) on the top ten axes of variation into a file with the extension .evec. This allowed for visualization of the population structure as well as estimation of relative distance between individuals or populations. Applying a k-nearest neighbor (k-NN) classifier to find the nearest neighbors for each of the TCGA patients, we categorized TCGA patients into one of five genetic ancestry groups: European American (EA), African American (AA), East Asian American (EAA), Native American (NA), and other ancestry (OA). Priority of sample type was blood > solid normal > tumor. In addition, to investigate genetic variation within populations, STRUCTURE [49, 82, 83] was used to yield a quantitative estimate of each individual's ancestral composition and LAMP [50] was used to yield an estimation of genetic ancestry at specific chromosomal loci.

### **Molecular subtypes**

The prevalence of the seven molecular subtypes previously identified in the TCGA CaP sample was compared between men of AA and EA ancestry [14]. The subtypes are defined by the presence of ETS fusions (ERG, ETV1, ETV4 and FLI1) or mutations in SPOP, FOXA1, and IDH1. Subtype frequencies by genetic ancestry were evaluated using Fisher's Exact Test and a logistic regression model adjusted for age and Gleason score.

### **Somatic mutation signature analysis**

Mutation annotation files (MAFs) were downloaded from the GDC Data Portal (<https://portal.gdc.cancer.gov/>) using the Genomic Data Commons (GDC) Data Transfer Tool (gdc-client\_v1.2.0\_Ubuntu14.04\_x64). Single nucleotide variants (SNVs) of somatic mutations generated by the MuTect2 pipeline were identified using the MAFs. All SNVs of somatic mutations that passed quality control were included in mutational signature analyses. Each mutation was classified into one of six base substitution categories (C>A, C>G, C>T, T>A, T>C, and T>G) and the sequence context in which a mutation occurred (the bases immediately 5' and 3' of the mutated base; 16 possible combinations) was also considered. Thus, the mutational spectrum of a tumor can be summarized as a

vector of length 96, where each element represents the mutation count at one of the 96 mutated trinucleotides. A set of consensus mutational signatures identified from *de novo* extraction across 10,250 samples was published by the Wellcome Trust Sanger Institute (WTSI) Mutational Signature Framework [51]. Using the set of signatures, which are defined as prevalent in specific tumor types, deconstructSigs [52] fit a multiple linear regression model with the constraint that any coefficient must be non-negative to most accurately reconstruct the observed mutational spectra. The weights of signatures were normalized between 0 and 1 with the sum of normalized weights equal to 1. By default, in deconstructSigs, any signature contribution with a weight less than 0.06 is discarded. Cosine similarity was used to compare the mutational spectra of the original and reconstructed samples. Signatures that failed to improve cosine similarity by more than 0.02 were removed, and the sample was reanalyzed with the remaining signatures. In the CaP dataset, the age-associated signatures (signatures 1 and 5) were dominant, while the defective DNA mismatch repair (MMR)-associated signature (signature 6) also contributed to the mutational spectrum of a subset of patients. The differences in the contributions of each mutational signature among AA and EA patients were assessed using a model regressing the contribution of each signature on AA ancestry status (AA as 1 while EA as 0) adjusting for age and Gleason score. The Benjamini and Hochberg (BH) procedure was applied to control the false discovery rate (FDR) [84].

### **Somatic mutation burden analysis**

Mutation burden was defined as the total number of somatic mutations present in a tumor specimen. A linear regression model was fit to evaluate genetic ancestry as a predictor of rank-normalized mutation burden, adjusting for the propensity score.

### **Recurrently mutated gene analysis**

A list of 45 recurrently-mutated CaP genes was curated from published literature [14, 15, 34, 53]. For analysis of individual CaP genes, the TCGA PanCanAtlas MC3 dataset was downloaded as the mutation call set [85]. Only non-silent mutations were included in downstream analyses. Mutations in individual patient samples were

aggregated to gene-level. The mutation frequency of a gene was defined as the proportion of individuals in the cohort harboring mutations. Twenty-one CaP genes had mutation frequency  $\geq 1\%$  in the TCGA CaP cohort and were considered in subsequent analyses. The association between mutation frequency and genetic ancestry was assessed using logistic regression models adjusted for age and Gleason score. The Benjamini and Hochberg (BH) procedure was applied to control the false discovery rate (FDR) [84]. Mutations were classified as clonal or subclonal using the ABSOLUTE algorithm [54]. ABSOLUTE integrates genome-wide copy-number data from SNP arrays and the allelic fraction values of somatic mutations to model gene and mutation copy number in a tumor. The frequencies of clonal/subclonal mutations by genetic ancestry were evaluated using Fisher's Exact Test.

#### **Gene fusion analysis**

Gene fusion data for TCGA were retrieved from Gao *et al* [86]. Fusion burden was defined as the total number of gene fusion events present in a tumor specimen. Linear regression was used to evaluate the association between genetic ancestry and rank-normalized fusion burden, adjusting for clinical covariates. In addition, the association between genetic ancestry and the prevalence of individual fusion events was tested in logistic regression models where the dependent variable was the presence of a specific fusion event and the age- and Gleason score-derived propensity score was supplied as a covariate. Only fusion events with frequency  $\geq 1\%$  in the TCGA CaP sample were compared. The Benjamini and Hochberg (BH) procedure was applied to control the false discovery rate (FDR) [84].

#### **Recurrent focal SCNA analysis**

Segmentation files for somatic copy number alteration (SCNA) analysis were obtained from the TCGA Cloud (<http://www.cancer-genomicscloud.org/>) for 494 patients (including 61 AA and 410 EA). For each patient, a pair of segmentation files of tumor and matched control (if available) was selected for somatic copy number alteration analysis. If multiple aliquot barcodes existed for one patient, one single pair of tumor/matched control samples

was selected with the following hierarchy: (1) sample type: for tumor tissues, primary > recurrent > metastatic (Sample Type code: 01 > 02 > 06); for normal control tissues, blood > solid (Sample Type code: 10 > 11); (2) molecular type of analyte for analysis: prefer D analytes (native DNA) over G, W, or X (whole-genome amplified); (3) order of sample portions: higher portion numbers were selected; and (4) order of plate: higher plate numbers were selected. Recurrent focal SCNAs (peak regions) were identified using GISTIC 2.0 (<http://ftp.broadinstitute.org/pub/GISTIC2.0/>) [56]. After excluding tumors with more than 2,000 segments, significant peak regions were identified with q value < 0.25. The confidence level used to calculate the region containing a driver was set to 0.95 (by the `-conf` option). Fifty-eight total recurrent focal SCNAs were identified in the TCGA CaP dataset. We carefully examined the location of each peak region and no peaks were located in centromeres or telomeres (within 1 Mb).

The relative frequency of focal SCNA events at each peak region was compared between AA and EA men using logistic regression adjusting for age and Gleason score. To control the overall level of genomic disruption when comparing the alteration frequencies for each SCNA event across ancestry groups, we performed a controlled permutation test in which both the fractions of the genome affected by each of the amplifications and deletions in each sample (column-wise) and the alteration frequency of each recurrent focal SCNA (row-wise) were maintained in the permuted data. We first created a binary matrix  $X \in R^{n \times m}$  denoting the recurrent focal SCNA profile across all tumors, where  $n$  is the number of tumors,  $m$  is the total number of recurrent focal SCNAs and the  $(i, j)^{th}$  element of the matrix  $X$ ,  $X_{ij}$  is determined following:

$$X_{ij} = \begin{cases} 1 & c_{ij} \geq 0.25 \text{ and } j^{th} \text{ focal SCNA is recurrent amplified} \\ 1 & c_{ij} \leq -0.25 \text{ and } j^{th} \text{ focal SCNA is recurrent deleted} \\ 0 & \text{other} \end{cases}, \text{ in which } c_{ij} \text{ is the actual change in copy number}$$

for  $j^{th}$  recurrent focal SCNA in  $i^{th}$  tumor. We created 10,000 permutations of the matrix using the function `permatswap()` in the R package `vegan`. The genomic disruption level of each tumor (row-wise sum of the matrix) as well as each recurrent focal SCNA (column-wise sum of the matrix) were maintained in the permutations by

supplying the parameters: method="quasiswap", fixedmar="both", shuffle="both" and mtype="prab". A test statistic for the association with AA patients relative to EA patients for each recurrent focal SCNA was generated using a logistic regression model for each permuted recurrent focal SCNA profile. This model used AA ancestry status (AA as 1, while EA as 0) as the dependent variable and the binary alteration status as the independent variable, adjusting for the propensity score as a covariate. Subsequently, the significance (Z score and raw p value) of the association between each recurrent focal SCNA and genetic ancestry was determined by examining the position of the observed test statistic among the distribution of all statistics generated from the permuted recurrent focal SCNA profiles. The Benjamini and Hochberg (BH) procedure [84] was then applied to the set of raw p values to control the FDR.

### **Weighted genome instability index (wGII) analysis**

To assess chromosomal instability, the weighted Genome Instability Index (wGII) was calculated using segmentation files [55]. First, the ploidy of each tumor was assigned as the median copy number accounting for the length of segments. For each chromosome, GII was calculated as the fraction of the genome presenting aberrant copy numbers (differing more than 0.3) relative to baseline ploidy. The wGII of the tumor was calculated as the mean fraction of aberration across all 22 chromosomes, such that all chromosomes influence the score equally regardless of size. The association between genetic ancestry and wGII was evaluated using a linear regression model where the dependent variable was wGII and the independent variable was AA status (AA as 1 and EA as 0), adjusting for the propensity score.

### **Gene expression analysis**

Gene-level RNA-Seq data were downloaded using the Genomic Data Commons (GDC) Data Transfer Tool (gdc-client\_v1.2.0\_Ubuntu14.04\_x64) from the GDC Data Portal (<https://portal.gdc.cancer.gov/>). In the GDC RNA-seq analysis pipeline, reads were aligned to the GRCh38 reference genome, and then gene level expression was measured from HT-Seq raw read count using GENCODE v22 for gene annotation. For tumor expression analyses,

one single aliquot barcode was selected for each patient with the following selection hierarchy: (1) sample type: primary > recurrent > metastatic (Sample Type code: 01 > 02 > 06); (2) molecular type of analyte: prefer R analytes (RNA) over T (Total RNA); (3) order of sample portions: higher portion numbers were selected; and (4) order of plate: higher plate numbers were selected. Differential gene expression analysis between tumor samples from AA and EA patients was performed using the DESeq2 package [87] with the raw count matrix as input, adjusting for potential confounding by age and Gleason score. Similar procedures were applied for differential gene expression analysis comparing AA and EA patients in tumor-adjacent normal tissues, although analyses adjusted for age only. In addition, genes differentially expressed between tumor and adjacent normal tissues were also identified. As an external validation cohort, the microarray dataset from Wallace *et al* [20] was retrieved from the Gene Expression Omnibus (GEO) database: GSE6956 (Platform: GPL571; Affymetrix Human Genome U133A 2.0 Array; 33 AA vs. 37 EA). Differentially expressed genes were identified using the GEO2R analyzer.

### **Functional enrichment for differentially expressed genes (DEGs)**

Genes regulated by normal prostate tissue eQTLs (eGenes) were identified by the Genotype-Tissue Expression (GTEx) Project [57]. The list of eGenes (Release V7;  $qval \leq 0.05$ ) for prostate tissue was obtained from the GTEx Portal (<https://gtexportal.org/>). GWAS-related genes were defined as those located within 1Mb of GWAS SNPs. GWAS SNPs associated with CaP risk are retrieved from the NHGRI-EBI GWAS Catalog [59]. TWAS-related genes, those whose expression levels were associated with CaP risk, were identified from a prior large-scale TWAS study [58]. Enrichment for eGenes, GWAS-related, and TWAS-related genes among DEGs compared to non-DEGs was assessed by Fisher's Exact test using variable FDR thresholds (0.1, 0.01, 0.001). To identify specific gene sets that were differentially regulated in AA and EA men, we performed gene set enrichment analysis (GSEA) using the BioCarta pathways (<http://www.biocarta.com/>) and the CaP disparity-related gene sets previously reported by Wallace *et al* [20]. GSEA was performed using the GSEA pre-ranked module on GenePattern (<https://genepattern.broadinstitute.org/>). A gene list ranked by the Wald statistic calculated by DESeq2 was used. Visualization of significantly enriched gene sets was performed using Cytoscape (v3.5) [88].

## LncRNA classification

In an effort to classify lncRNA genes and reveal their potential biological roles, we determined their genomic distribution patterns relative to protein-coding loci. We first defined two classes of lncRNA genes, intergenic and genic, according to whether their boundaries overlapped with any protein-coding genes. The set of genic lncRNAs was further classified into three locus biotypes. First, we identified lncRNAs transcribed in an antisense direction and designated them as the “antisense” biotype. For lncRNAs transcribed in the same direction as the nearest gene, they could overlap protein-coding genes, sharing exonic regions (the “exonic” biotype) or intronic regions (the “intronic” biotype). LncRNAs were evaluated at a transcript level. In cases where a lncRNA gene had multiple transcripts that could be classified into different types, the hierarchy of types used to classify lncRNAs was: exonic > intronic > antisense > intergenic.

## LncRNA regulatory potential

The subcellular localization of lncRNAs can provide insight into their molecular function and we therefore compared the relative concentration index (RCI) between lncRNAs differentially expressed and non-differentially expressed with respect to genetic ancestry. RCI values were downloaded from the lncATLAS database [89]. A lower RCI value indicates enriched localization in the nucleus. RCI values of the differentially-expressed and non-differentially expressed lncRNAs were compared by Student’s *t*-test. Annotation of the genomic position also facilitates the functional interpretation of lncRNAs. Applying ChromHMM [60], Valdes-Mora *et al* [61] partitioned the LNCaP cell line into seven distinct states: active promoter, bivalent promoter, active enhancer, poised enhancer, polycomb, transcribed region, and unmarked region. A lncRNA was defined as related to a specific epigenetic state if it was located within 10kb of any of the regions annotated as that state. Enrichment for each epigenetic state among differentially-expressed and non-differentially expressed lncRNAs was evaluated using Fisher’s Exact test. Additionally, Chiu *et al* [62] previously suggested potential regulatory functions of lncRNAs in context of prostate tumors. Enrichment for overall regulatory lncRNAs and those within different

mechanisms, as classified by Chiu *et al*, among differentially expressed and non-differentially expressed lncRNAs was assessed by Fisher's Exact test. The Benjamini and Hochberg (BH) procedure [84] was applied to control the FDR.

### **Androgen receptor (AR)-regulation potential of differentially-expressed lncRNAs**

AR ChIP-seq data performed on the VCAP and LNCaP CaP cell lines from published datasets were downloaded from the GEO (GSE55064) and Nuclear Receptor Cistrome (NRCistrome, [http://cistrome.dfci.harvard.edu/NR\\_Cistrome/](http://cistrome.dfci.harvard.edu/NR_Cistrome/)). Wig profiles (assembly GRCh37/hg19) were also downloaded. The AR binding signal across lncRNAs of interest was visualized using the UCSC genome browser. The aggregation plot of ChIP-seq signals across transcriptional start sites (TSS) of differentially-expressed and non-differentially expressed lncRNAs was generated by agplus [90]. RNA-seq profiling data of AR-dependent VCaP and LNCaP CaP cell lines that were stimulated with an AR ligand, dihydrotestosterone (DHT), were obtained from GEO (GSE110905). Eighteen genes that are experimentally-validated AR transcriptional targets [14, 53] were used as positive control to find a reasonable cutoff to classify AR-regulated genes (ARGs) based on transcriptome analysis. Applying a cutoff of a 1.2-fold change, 16 (88.9%) experimentally-validated AR transcriptional target genes had elevated expression levels after DHT stimulation. Thus 1.2-fold (either enhanced or suppressed) was used to classify genes as AR-regulated. Enrichment of ARGs among differentially-expressed and non-differentially expressed lncRNAs was compared using Fisher's Exact test.

### **Literature search**

In order to investigate the extent to which the DE-lncRNAs had been previously studied, a custom script was executed to search each lncRNA in PubMed and record the number of articles returned. The name of each DE-lncRNA was first searched alone, and then in combination with "cancer" and "prostate cancer".

### **Lineage specificity of lncRNAs**

In order to characterize which CaP disparity genes were specific to CaP or common across multiple cancer types, we assayed lineage specificity using sample set enrichment analysis (SSEA), a method adapted from Gene Set Enrichment Analysis (GSEA). Tumors within TCGA were ordered according to the expression level of a specific lncRNA while a sample set was defined by a specific cancer type. Enrichment scores (ES) and normalized enrichment scores (NES) were calculated in the same way as in GSEA. Thirty-three SSEA analyses were performed for every lncRNA comparing each cancer type to the others within TCGA. Finally, we ranked genes within each cancer type by normalized enrichment score (NES) and assigned fractional ranks (for example, a fractional rank of 0.95 implies the gene ranked in the top 5th percentile of all genes in the cancer type) to assess cancer type specificity.

### **Data availability**

This study uses genomic profiling data generated by the TCGA project supported by the NCI and NHGRI. Information about TCGA and the TCGA research network can be found at the TCGA project website (<http://cancergenome.nih.gov>). The raw profiling data used for the current study are public available through the Genomic Data Commons (GDC) portal (<https://gdc-portal.nci.nih.gov>), the TCGA data portal (<https://tcga-data.nci.nih.gov/tcga/>), the GDAC Firehose of the Broad Institute (<http://gdac.broadinstitute.org/>), the TCGA Multi-Center Mutation Calling in Multiple Cancers (MC3) project (<https://doi.org/10.7303/syn7214402>), and TumorFusions data portal (<http://tumorfusions.org/>). The raw data generated by this study are public available through the TCGAA Prostate (<http://52.25.87.215/TCGAA/prostate>).

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#### **Author contributions**

J.Y., K.H.K, X.H., T.R.R. and L.Z. conceived and designed the research. J.Y., Z.H. and X.H. performed the computational analysis and statistical computations. Y.Z., T.Z., J.J., Y.P., M.L., K.T.M., J.L.T., Y.F., and R.Z. performed data collection, analysis and general discussion. J.Y., K.H.K, X.H., T.R.R. and L.Z. wrote the paper.

#### **Competing interests**

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**FIGURE LEGENDS**

**Figure 1. Genetic ancestry and clinical characteristics of the TCGA CaP population**

(A) Three-dimensional visualization of genetic variation of EA (left) and AA (right) individuals from the TCGA CaP sample and the reference populations from the HapMap and HGDP on the first three principle components calculated by EIGENSTRAT. Dot colors show concordance between inferred genetic ancestry and SIRE. (B) Pie charts showing agreement between inferred genetic ancestry by EIGENSTRAT and SIRE. Pie chart size is proportional to the number of individuals. (C) Genetic ancestry, SIRE, ancestral composition, and clinical characteristics of the patients in the TCGA CaP sample. Ancestral composition is inferred by STRUCTURE and each color represents an ancestral reference group. Individuals are ordered by hierarchical clustering using Ward's methods on distance matrix calculated as cosine dissimilarity of genetic composition. (D) Distributions of age at diagnosis among men with AA and EA ancestry. (E) Distribution of Gleason score among men with AA and EA ancestry.

**Figure 2. Comparison of genomic alterations by genetic ancestry**

(A) Overview of genomic alterations by genetic ancestry in the TCGA CaP sample. The upper panels show patient genetic ancestry estimated by EIGENSTRAT, SIRE, and ancestral composition estimated by STRUCTURE. Middle panels show participant tumor molecular subtype, mutation burden, presence of mutation signatures 1, 5, and 6, and a heatmap of the mutation frequency at 21 specific genes with  $\geq 1\%$  mutation frequency in the sample. Lower panels show total fusion burden, a heatmap of the frequency of four gene fusions with  $\geq 1\%$  frequency in the sample, total chromosomal instability, and a heatmap of the frequency of 58 recurrent focal somatic copy number alterations (red: amplification/gain; blue: deletion/loss) in the sample. Odds ratios (OR) and differences (diff) compare genomic alteration frequency among men with AA ancestry relative to men with EA ancestry. – log(p-values) are color-coded as significantly more frequent in AA men (orange), significantly less frequent in AA men (green), or no significant difference between AA and EA men (gray). (B) Distributions of seven TCGA CaP molecular subtypes among men with AA and EA ancestry. Men with AA were more likely to have SPOP

subtype tumors and less likely to have ERG subtype tumors. (C) Frequency (upper), location (middle), and clonality (lower) of *SPOP* mutations among men with AA and EA ancestry. *SPOP* mutations more frequently occurred in men with AA ancestry (upper). Mutations were preferentially located in the MATH domain for men with AA and EA ancestry. Mutations are color-coded by type: missense (green), frame-shift (red), in-frame insertion/deletion (yellow). Men with AA ancestry had a greater frequency of subclonal *SPOP* mutations than men with EA ancestry (lower). Red represents clonal mutations and blue represents subclonal mutations. (D) Frequency of the *TMPRSS2-ERG* fusion (upper) and distribution of gene breakpoint sites (lower) by genetic ancestry. The *TMPRSS2-ERG* fusion was more prevalent among men with EA ancestry, although breakpoint site patterns were similar among men with EA and AA ancestry. (E) Copy number deletions and losses at 10q23.31 were more common among men with EA ancestry than with AA ancestry (upper). The lower prevalence of 10q23.31 loss for AA men is evident when viewing copy number alterations across the genome (middle). Greater focus on the *PTEN* locus indicates that *PTEN* loss is less common among men with AA ancestry (lower).

### Figure 3. Differences in the prostate tumor transcriptome by genetic ancestry

(A) Heatmap of expression of 220 genes differentially expressed between genetic ancestry groups with fold-change >2. Red denotes a gene more highly expressed in AA men, and blue more highly expressed in EA men. Genetic ancestry is shown using EIGENSTRAT classification (top) and STRUCTURE-estimated composition (bottom). (B) Circle plots showing (from inner to outer): 1) distribution of types of differentially expressed genes (DEGs); 2) fold-change in gene expression comparing AA to EA men in tumor tissue; 3) fold-change in gene expression comparing AA to EA men in tumor-adjacent normal tissue; 4) fold-change in gene expression comparing tumor to tumor-adjacent normal tissue; 5) fold-change in gene expression comparing AA to EA men for protein-coding genes evaluated in Wallace *et al* microarray dataset. (C) Enrichment in DEGs for genes regulated by eQTLs in normal prostate tissues (eGenes) and genes identified in prior GWAS of TWAS of CaP risk. The proportion of eGenes was higher among the DEGs than non-DEGs and increased with more stringent cutoffs in the FDR (upper plot). The prevalence odds of eGenes were higher among the DEGs, while the

prevalence odds of GWAS and TWAS genes did not differ between DEGs and non-DEGs (lower plot). **(D)** Gene sets identified through gene set enrichment analysis that were significantly activated (upper plot;  $n=18$ ) and repressed (lower plot;  $n=13$ ) in tumors of AA men (FDR corrected  $p<0.1$  through permutation test). Candidate gene sets were identified from the BioCarta pathway database and Wallace *et al*. Many gene sets pertaining to immune-related signaling were activated in AA tumors, while sets related to PTEN/PI3K were repressed in AA tumors. **(E)** Network plot of the 18 gene sets significantly activated in AA tumors. Nodes are grouped by gene set function. Node size is proportional to the number of genes in the gene set and node shading reflects the Normalized Enrichment Score (NES). An edge indicates there are shared genes between gene sets and edge shading reflects the number of shared genes. **(F)** Enrichment plots of the Wallace Prostate Cancer Race (Up), T Cytotoxic Cell Surface Molecules, Wallace Prostate Cancer Race (Down), and PTEN dependent cell cycle and apoptosis gene sets.

#### **Figure 4. Comparison of the prostate tumor non-coding transcriptome by genetic ancestry**

**(A)** Proportions of DE-protein-coding and DE-non-coding genes. Red indicates statistically significantly higher expression in AA, while blue indicates lower expression in AA. Width of bars is proportional to the number of genes. **(B)** Classification of lncRNAs by genomic location relative to protein-coding genes (left). Circle plot of distribution of DE-lncRNAs by lncRNA genomic location (right). **(C)** Distributions of cytoplasmic-nuclear relative concentration index (CN-RCI) for DE-lncRNAs and non-DE-lncRNAs. DE-lncRNAs are more enriched in the nucleus (lower CN-RCI). **(D)** Odds ratios and 95% confidence intervals (95% CI) of differential expression by genetic ancestry of lncRNAs by chromatin state of the genomic region. Chromatin state is estimated by ChromHMM partitioning of the LNCaP cell. **(E)** Heatmap displaying enrichment for regulatory lncRNAs among non-DE-lncRNAs and DE-lncRNAs by regulatory mechanism (left). Odds ratios (95% CI) of differential expression by genetic ancestry of lncRNAs by regulatory mechanism (right). **(F)** Odds ratios (95% CIs) of enrichment with genes regulated by normal prostate tissue eQTLs (eGenes) for DE-genes overall, DE-protein-coding genes, and DE-lncRNAs. Odds ratios are displayed by FDR level of the differentially expressed gene. **(G)**

Average signals of AR binding at transcription start sites (TSSs) of DE-lncRNAs (red) and non-DE-lncRNAs (gray) from AR ChIP-seq data from VCaP cell (left). Circle plot showing proportion of AR-regulated lncRNAs among DE-lncRNAs and non-DE-lncRNAs (right). AR regulation was inferred by analysis of DHT-stimulated transcriptome.

**Figure 5. Characterization of the DE-lncRNAs *PVT1*, *PCAT1*, and *PCAT10/CTBP1-AS* in TCGA sample**

**(A)** Circle plot shows the percentage of 1,868 DE-lncRNAs that have been characterized based on related publications in PubMed (left). Red and gray indicate characterized and uncharacterized DE-lncRNAs, respectively. Characterized DE-lncRNAs are defined as the lncRNAs having at least one related publication. The characterized DE-lncRNAs were further ranked into three groups, with a darker shade of red indicating a greater number of related publications. Pie charts show the percentages of the characterized DE-lncRNAs with cancer-related (light blue) or CaP-related (dark blue) results among each group (right). **(B)** Crude and age- and Gleason score-adjusted expression levels of *PVT1*, *PCAT1*, and *PCAT10* in AA and EA patients. **(C)** Expression levels of *PVT1*, *PCAT1*, and *PCAT10* in prostate tumors and tumor-adjacent normal prostate tissues. **(D)** Percentile ranks of enrichment in AA men for *PVT1*, *PCAT1*, and *PCAT10* across 33 TCGA cancer types. Color of bars reflects the fold change of expression (AA vs EA) ranks in a specific cancer type relative to others. High relative expression of *PCAT1* and *PCAT10* among AA men is specific to CaPs, while high relative expression of *PVT1* occurs across cancer types. **(E)** AR binding signals at genomic loci surrounding or containing *PCAT1* (left) and *PCAT10* (right) from AR ChIP-seq analysis of two CaP cell lines (LNCaP, VCaP) treated with synthetic androgen agonists (R1881, DHT). **(F)** Expression levels of *PVT1* and *PCAT1* by copy number status (left). Number of men and frequency of SCNAs at 8q24.21 within categories of Gleason score and genetic ancestry (right).

**SUPPORTING INFORMATION LEGENDS****Supplementary Figure**

Flow diagram for identification of analytic population within The Cancer Genome Atlas (TCGA) prostate cancer dataset. Clinical and genomic data were retrieved for 498 patients. EIGENSTRAT and a k-nearest neighbors classifier were applied to classify individuals as: European American (EA), African American (AA), East Asian American (EAA), Native American (NA), or other ancestry (OA). Genomic and transcriptomic analyses were limited to 475 men classified as EA or AA who had data available for the analysis of interest.

**Supplementary Table List**

Table S1. Self-identified race and ethnicity in TCGA prostate cancer cohort.

Table S2. Global genetic ancestry annotation of TCGA-PRAD patients estimated by EIGENSTRAT.

Table S3. Global genetic ancestry annotation of TCGA-PRAD patients estimated by STRUCTURE.

Table S4. Global genetic ancestry annotation of TCGA-PRAD patients estimated by LAMP.

Table S5. Clinical characteristics of TCGA-PRAD patients.

Table S6. Differential contributions of mutational signatures among AA and EA patients.

Table S7. Differences in mutation frequency between AA and EA patients for 21 prostate cancer-related genes

Table S8. Differences in fusion event frequency between AA and EA patients.

Table S9. Differences in SCNA frequency between AA and EA patients.

Table S10. Genes differentially expressed between AA and EA patients identified by DESeq2 analysis adjusting for clinical factors.

Table S11. Gene sets significantly enriched in DEGs upregulated in AA tumors.

Table S12. Gene sets significantly enriched in DEGs downregulated in AA tumors.

Table S13. LncRNA genes differentially expressed between AA and EA patients identified by DESeq2 analysis adjusting for clinical factors.

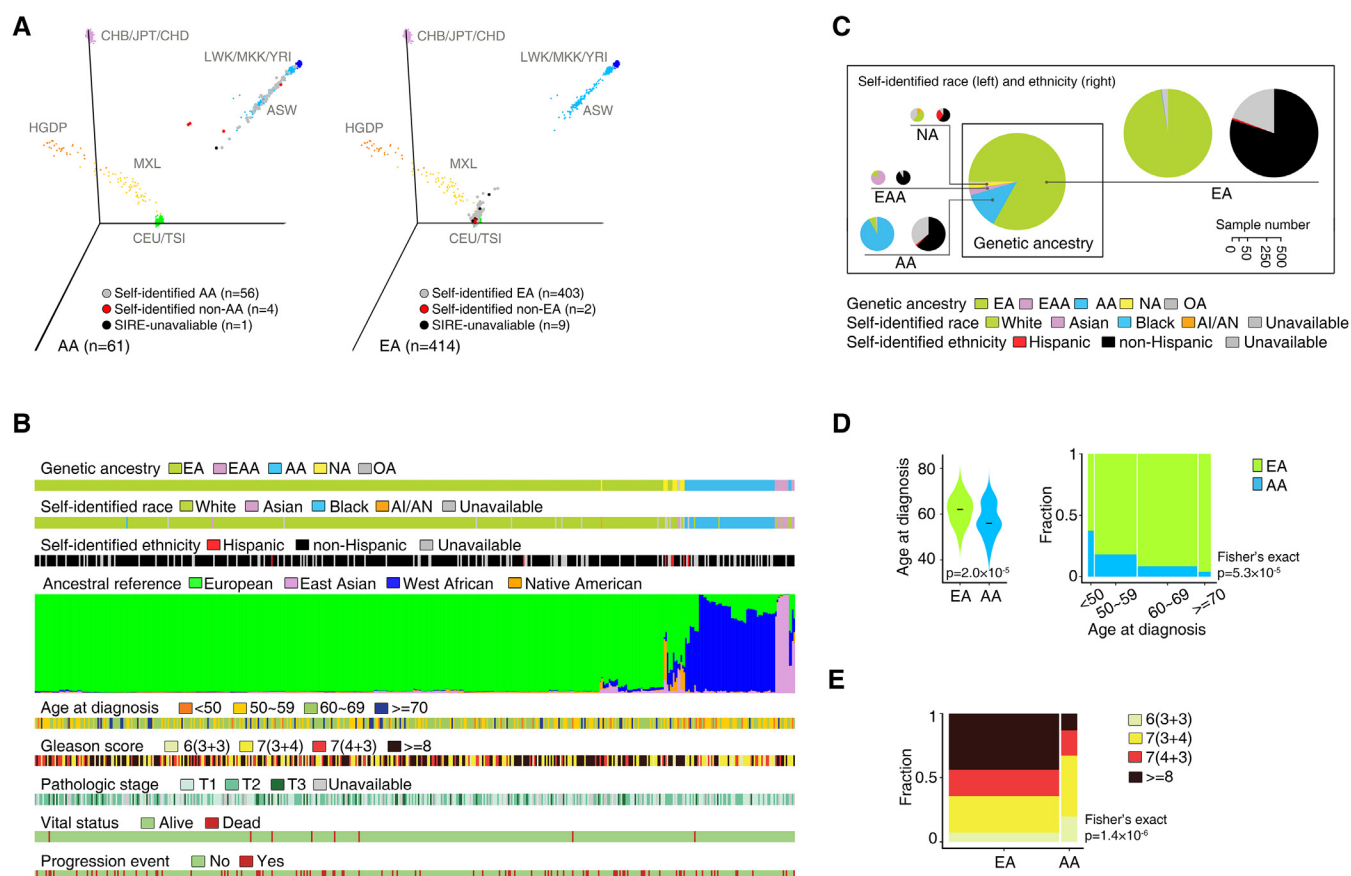
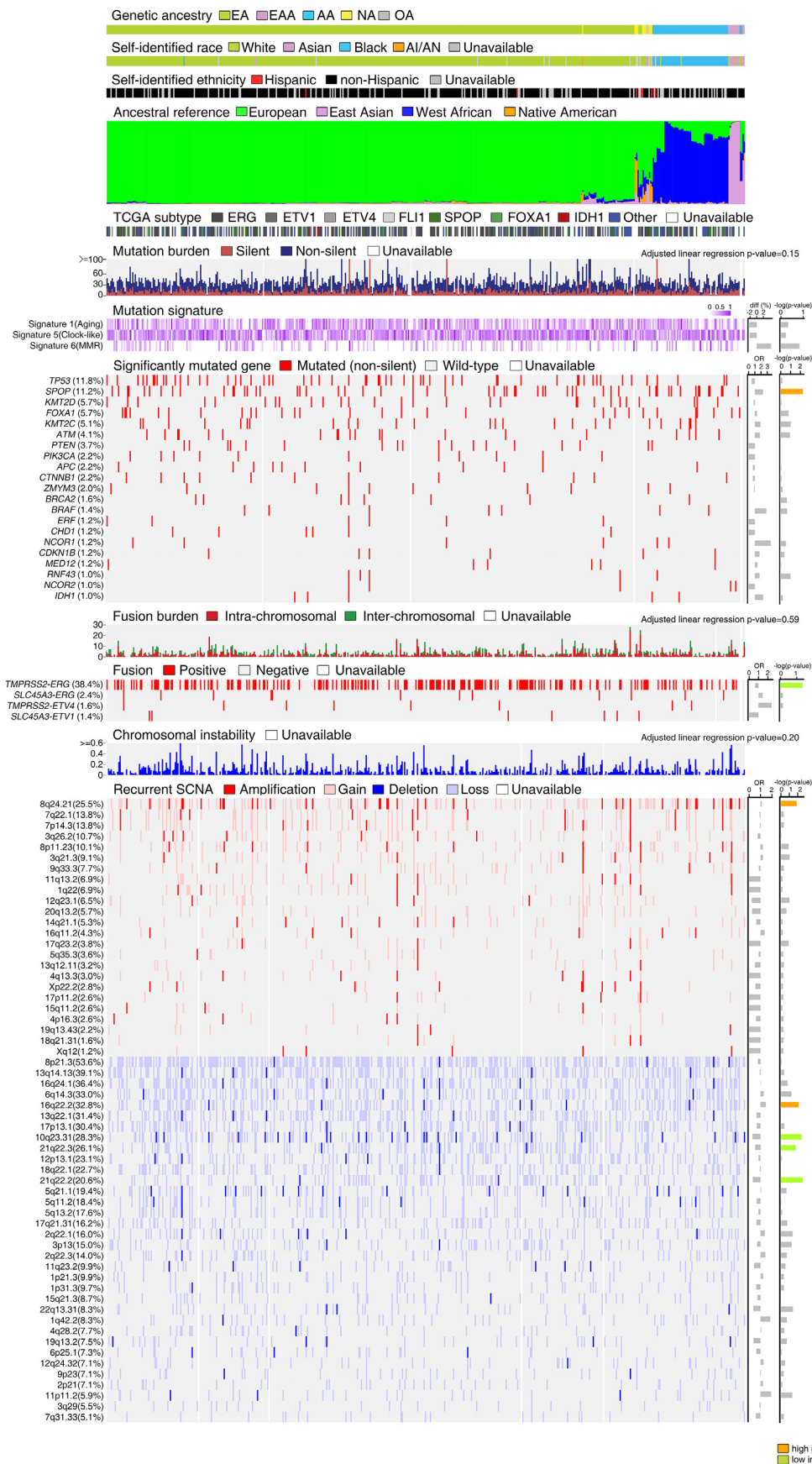


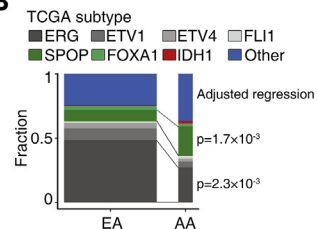
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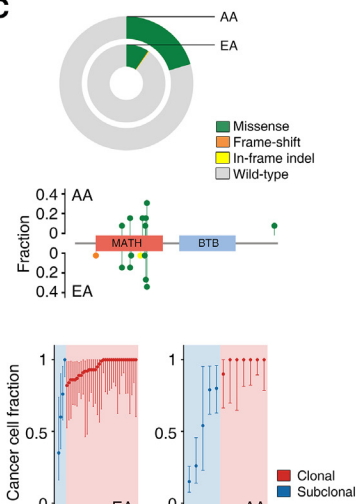
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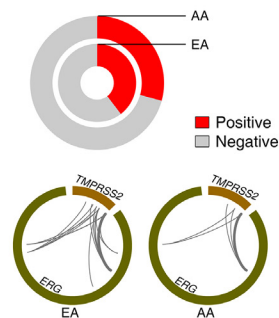
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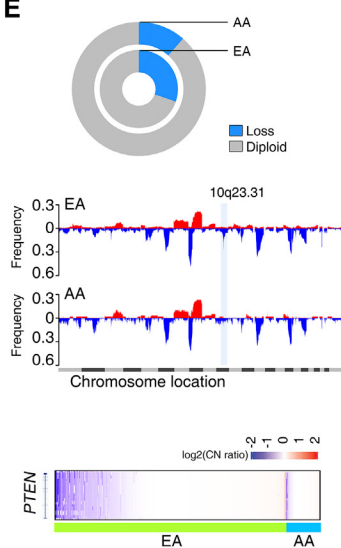


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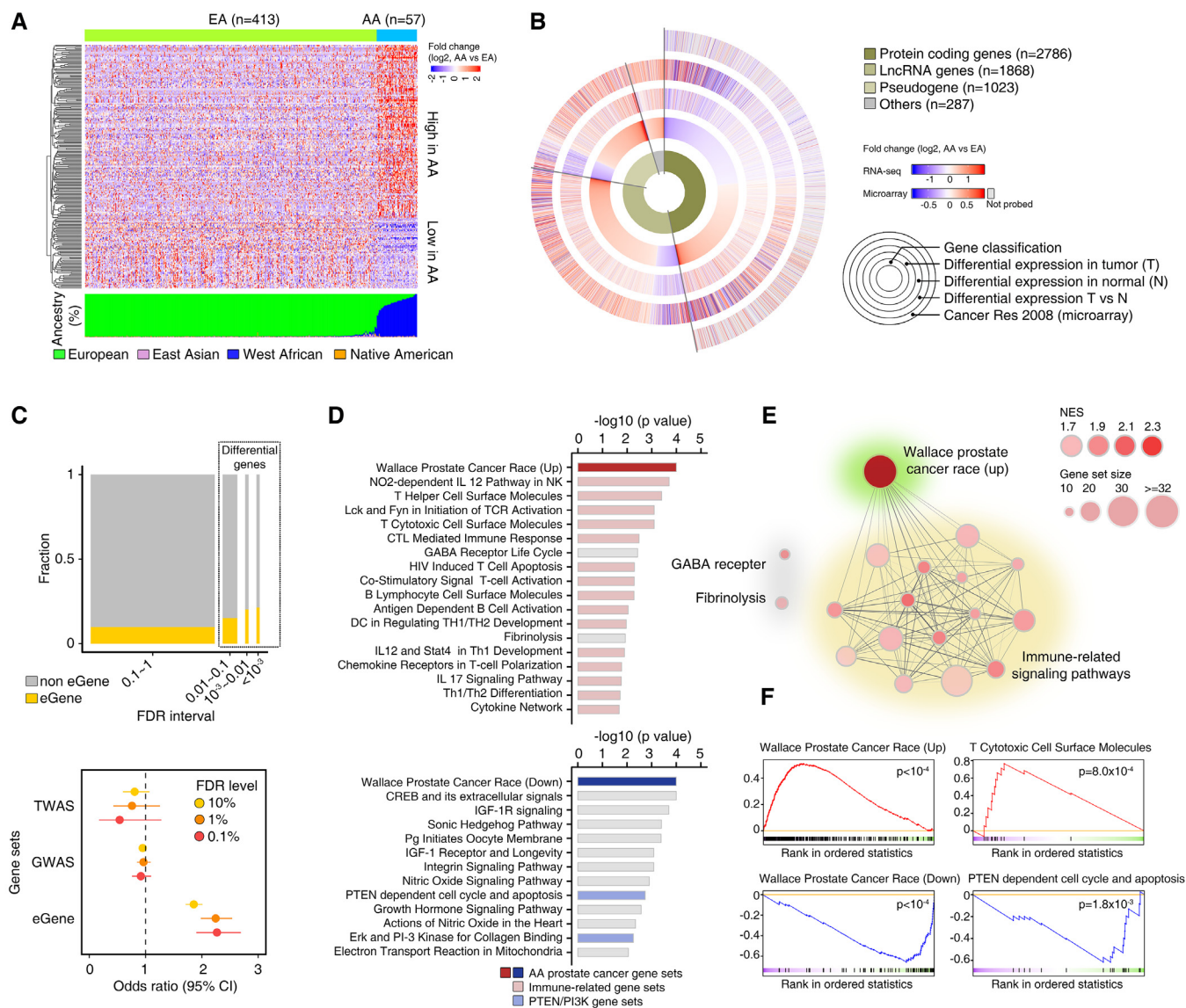


**Figure 3. Differences in the prostate tumor transcriptome by genetic ancestry**

(A) Heatmap of expression of 220 genes differentially expressed between genetic ancestry groups with fold-change >2. Red denotes a gene more highly expressed in AA men, and blue more highly expressed in EA men. Genetic ancestry is shown using EIGENSTRAT classification (top) and STRUCTURE-estimated composition (bottom). (B) Circle plots showing (from inner to outer): 1) distribution of types of differentially expressed genes (DEGs); 2) fold-change in gene expression comparing AA to EA men in tumor tissue; 3) fold-change in gene expression comparing AA to EA men in tumor-adjacent normal tissue; 4) fold-change in gene expression comparing tumor to tumor-adjacent normal tissue; 5) fold-change in gene expression comparing AA to EA men for protein-coding genes evaluated in Wallace *et al* microarray dataset. (C) Enrichment in DEGs for genes regulated by eQTLs in normal prostate tissues (eGenes) and genes identified in prior GWAS of TWAS of CaP risk. The proportion of eGenes was higher among the DEGs than non-DEGs and increased with more stringent cutoffs in the FDR (upper plot). The prevalence odds of eGenes were higher among the DEGs, while the prevalence odds of GWAS and TWAS genes did not differ between DEGs and non-DEGs (lower plot). (D) Gene sets identified through gene set enrichment analysis that were significantly activated (upper plot; n=18) and repressed (lower plot; n=13) in tumors of AA men (FDR corrected  $p < 0.1$  through permutation test). Candidate gene sets were identified from the BioCarta pathway database and Wallace *et al*. Many gene sets pertaining to immune-related signaling were activated in AA tumors, while sets related to PTEN/PI3K were repressed in AA tumors. (E) Network plot of the 18 gene sets significantly activated in AA tumors. Nodes are grouped by gene set function. Node size is proportional to the number of genes in the gene set and node shading reflects the Normalized Enrichment Score (NES). An edge indicates there are shared genes between gene sets and edge shading reflects the number of shared genes. (F) Enrichment plots of the Wallace Prostate Cancer Race (Up), T Cytotoxic Cell Surface Molecules, Wallace Prostate Cancer Race (Down), and PTEN dependent cell cycle and apoptosis gene sets.

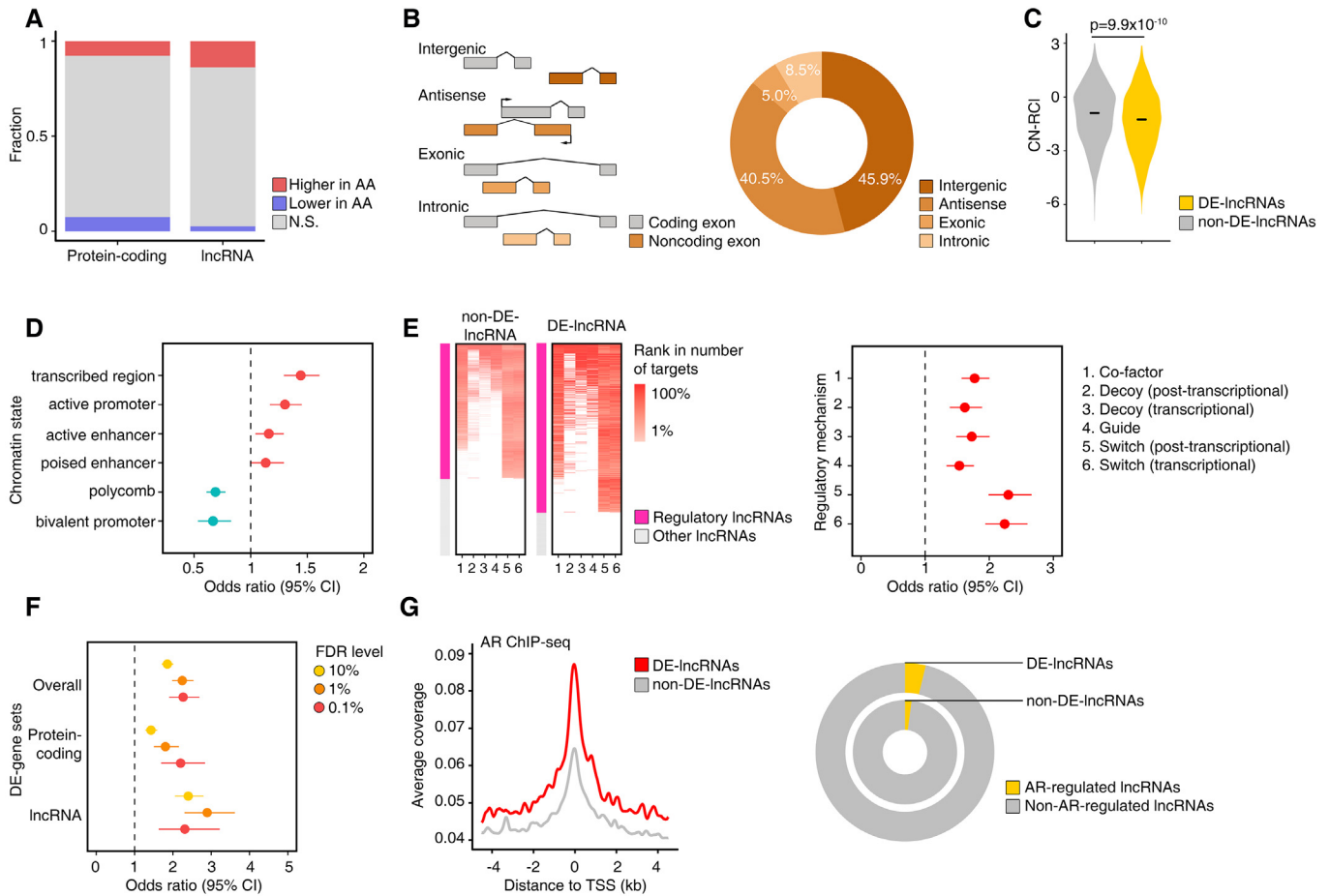


**Figure 4. Comparison of the prostate tumor non-coding transcriptome by genetic ancestry**

(A) Proportions of DE-protein-coding and DE-non-coding genes. Red indicates statistically significantly higher expression in AA, while blue indicates lower expression in AA. Width of bars is proportional to the number of genes. (B) Classification of lncRNAs by genomic location relative to protein-coding genes (left). Circle plot of distribution of DE-lncRNAs by lncRNA genomic location (right). (C) Distributions of cytoplasmic-nuclear relative concentration index (CN-RCI) for DE-lncRNAs and non-DE-lncRNAs. DE-lncRNAs are more enriched in the nucleus (lower CN-RCI). (D) Odds ratios and 95% confidence intervals (95% CI) of differential expression by genetic ancestry of lncRNAs by chromatin state of the genomic region. Chromatin state is estimated by ChromHMM partitioning of the LNCaP cell. (E) Heatmap displaying enrichment for regulatory lncRNAs among non-DE-lncRNAs and DE-lncRNAs by regulatory mechanism (left). Odds ratios (95% CI) of differential expression by genetic ancestry of lncRNAs by regulatory mechanism (right). (F) Odds ratios (95% CIs) of enrichment with genes regulated by normal prostate tissue eQTLs (eGenes) for DE-genes overall, DE-protein-coding genes, and DE-lncRNAs. Odds ratios are displayed by FDR level of the differentially expressed gene. (G) Average signals of AR binding at transcription start sites (TSSs) of DE-lncRNAs (red) and non-DE-lncRNAs (gray) from AR ChIP-seq data from VCaP cell (left). Circle plot showing proportion of AR-regulated lncRNAs among DE-lncRNAs and non-DE-lncRNAs (right). AR regulation was inferred by analysis of DHT-stimulated transcriptome.

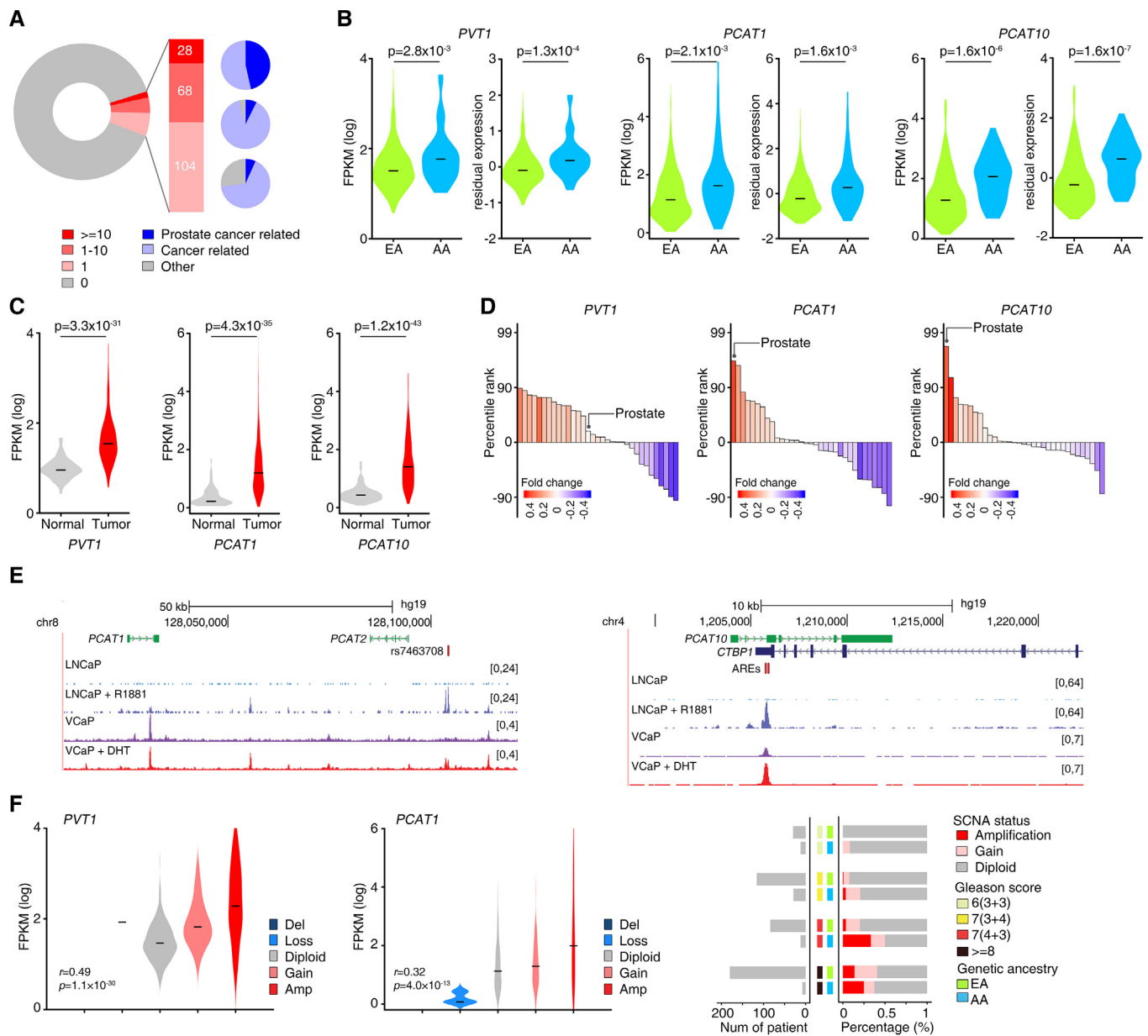


**Figure 5. Characterization of the DE-lncRNAs *PVT1*, *PCAT1*, and *PCAT10/CTBP1-AS* in TCGA sample**

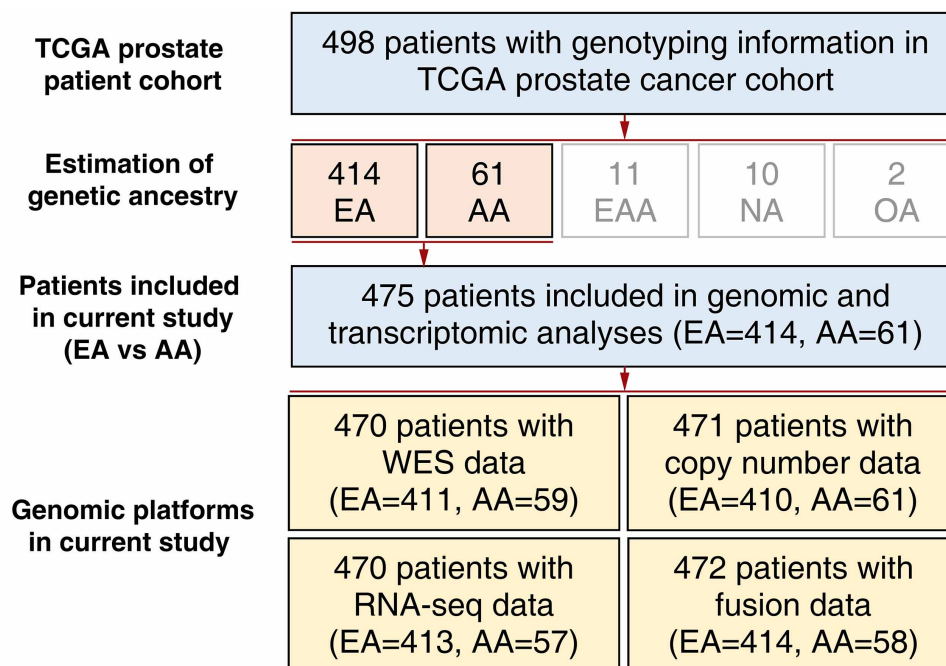
(A) Circle plot shows the percentage of 1,868 DE-lncRNAs that have been characterized based on related publications in PubMed (left). Red and gray indicate characterized and uncharacterized DE-lncRNAs, respectively. Characterized DE-lncRNAs are defined as the lncRNAs having at least one related publication. The characterized DE-lncRNAs were further ranked into three groups, with a darker shade of red indicating a greater number of related publications. Pie charts show the percentages of the characterized DE-lncRNAs with cancer-related (light blue) or CaP-related (dark blue) results among each group (right). (B) Crude and age- and Gleason score-adjusted expression levels of *PVT1*, *PCAT1*, and *PCAT10* in AA and EA patients. (C) Expression levels of *PVT1*, *PCAT1*, and *PCAT10* in prostate tumors and tumor-adjacent normal prostate tissues. (D) Percentile ranks of enrichment in AA men for *PVT1*, *PCAT1*, and *PCAT10* across 33 TCGA cancer types. Color of bars reflects the fold change of expression (AA vs EA) ranks in a specific cancer type relative to others. High relative expression of *PCAT1* and *PCAT10* among AA men is specific to CaPs, while high relative expression of *PVT1* occurs across cancer types. (E) AR binding signals at genomic loci surrounding or containing *PCAT1* (left) and *PCAT10* (right) from AR ChIP-seq analysis of two CaP cell lines (LNCaP, VCaP) treated with synthetic androgen agonists (R1881, DHT). (F) Expression levels of *PVT1* and *PCAT1* by copy number status (left). Number of men and frequency of SCNAs at 8q24.21 within categories of Gleason score and genetic ancestry (right).

# Integrative comparison of the genomic and transcriptomic landscape between prostate cancer patients of predominantly African or European genetic ancestry

## Supplementary Materials

The raw data generated by this study are public available through the TCGAA Prostate:  
<http://52.25.87.215/TCGAA/prostate>

## Supplementary Figure



Flow diagram for identification of analytic population within The Cancer Genome Atlas (TCGA) prostate cancer dataset. Clinical and genomic data were retrieved for 498 patients. EIGENSTRAT and a k-nearest neighbors classifier were applied to classify individuals as: European American (EA), African American (AA), East Asian American (EAA), Native American (NA), or other ancestry (OA). Genomic and transcriptomic analyses were limited to 475 men classified as EA or AA who had data available for the analysis of interest.

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**Table S1. Self-identified race and ethnicity in TCGA prostate cancer cohort**

|                               | Self-reported race |            |
|-------------------------------|--------------------|------------|
|                               | Number             | Percentage |
| White                         | 414                | 83.13%     |
| Black                         | 57                 | 11.45%     |
| Asian                         | 12                 | 2.41%      |
| American Indian/Alaska Native | 1                  | 0.20%      |
| Unavailable                   | 14                 | 2.81%      |

|                     | Self-reported ethnicity |            |
|---------------------|-------------------------|------------|
|                     | Number                  | Percentage |
| Hispanic/Latino     | 7                       | 1.41%      |
| non-Hispanic/Latino | 387                     | 77.71%     |
| Unavailable         | 104                     | 20.88%     |

**Table S2. Global genetic ancestry annotation of TCGA-PRAD patients estimated by EIGENSTRAT**

| Patient      | TCGA clinical annotation |                           | EIGENSTRAT assignment |
|--------------|--------------------------|---------------------------|-----------------------|
|              | Self-identified race     | Self-identified ethnicity |                       |
| TCGA-2A-A8VL | White                    | non-Hispanic/Latino       | NA                    |
| TCGA-2A-A8VO | White                    | non-Hispanic/Latino       | EA                    |
| TCGA-2A-A8VT | Asian                    | non-Hispanic/Latino       | OA                    |
| TCGA-2A-A8VV | Unavailable              | non-Hispanic/Latino       | NA                    |
| TCGA-2A-A8VX | White                    | non-Hispanic/Latino       | EA                    |
| TCGA-2A-A8W1 | Asian                    | non-Hispanic/Latino       | EAA                   |
| TCGA-2A-A8W3 | White                    | non-Hispanic/Latino       | EA                    |
| TCGA-2A-AAYF | White                    | non-Hispanic/Latino       | EA                    |
| TCGA-2A-AAYO | White                    | non-Hispanic/Latino       | EA                    |
| TCGA-2A-AAYU | White                    | non-Hispanic/Latino       | EA                    |
| TCGA-4L-AA1F | White                    | non-Hispanic/Latino       | EA                    |
| TCGA-CH-5737 | White                    | non-Hispanic/Latino       | EA                    |
| TCGA-CH-5738 | White                    | non-Hispanic/Latino       | EA                    |
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| TCGA-HC-8212 | White | non-Hispanic/Latino | AA  |
| TCGA-HC-8213 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-8216 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-8256 | Black | non-Hispanic/Latino | EA  |
| TCGA-HC-8257 | Black | non-Hispanic/Latino | AA  |
| TCGA-HC-8258 | Black | non-Hispanic/Latino | AA  |
| TCGA-HC-8259 | Black | non-Hispanic/Latino | AA  |
| TCGA-HC-8260 | Black | non-Hispanic/Latino | AA  |
| TCGA-HC-8261 | Black | non-Hispanic/Latino | AA  |
| TCGA-HC-8262 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-8264 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-8265 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-8266 | White | non-Hispanic/Latino | NA  |
| TCGA-HC-A48F | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A4ZV | Black | non-Hispanic/Latino | AA  |
| TCGA-HC-A631 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A632 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A6AL | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A6AN | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A6AO | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A6AP | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A6AQ | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A6AS | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A6HX | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A6HY | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A76W | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A76X | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A8CY | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A8D0 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A8D1 | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A9TE | White | non-Hispanic/Latino | EA  |
| TCGA-HC-A9TH | White | non-Hispanic/Latino | EA  |
| TCGA-HI-7168 | White | non-Hispanic/Latino | EA  |
| TCGA-HI-7169 | White | non-Hispanic/Latino | EA  |
| TCGA-HI-7170 | White | non-Hispanic/Latino | EA  |
| TCGA-HI-7171 | White | non-Hispanic/Latino | EA  |
| TCGA-J4-8198 | Black | non-Hispanic/Latino | AA  |
| TCGA-J4-8200 | Asian | non-Hispanic/Latino | EAA |
| TCGA-J4-A67K | White | non-Hispanic/Latino | EA  |

|              |       |                     |     |
|--------------|-------|---------------------|-----|
| TCGA-J4-A67L | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A67M | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A67N | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A67O | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A67Q | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A67R | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A67S | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A67T | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A6G1 | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A6G3 | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A6M7 | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A83I | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A83J | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A83K | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A83L | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A83M | White | non-Hispanic/Latino | EA  |
| TCGA-J4-A83N | White | non-Hispanic/Latino | EA  |
| TCGA-J4-AATV | White | non-Hispanic/Latino | EA  |
| TCGA-J4-AATZ | Asian | non-Hispanic/Latino | EAA |
| TCGA-J4-AAU2 | White | non-Hispanic/Latino | EA  |
| TCGA-J9-A52B | White | non-Hispanic/Latino | EA  |
| TCGA-J9-A52C | White | non-Hispanic/Latino | EA  |
| TCGA-J9-A52E | White | non-Hispanic/Latino | EA  |
| TCGA-J9-A8CK | White | non-Hispanic/Latino | EA  |
| TCGA-J9-A8CL | White | non-Hispanic/Latino | EA  |
| TCGA-J9-A8CM | White | non-Hispanic/Latino | EA  |
| TCGA-J9-A8CN | White | non-Hispanic/Latino | EA  |
| TCGA-J9-A8CP | White | non-Hispanic/Latino | EA  |
| TCGA-KC-A4BL | Black | non-Hispanic/Latino | AA  |
| TCGA-KC-A4BN | Black | non-Hispanic/Latino | AA  |
| TCGA-KC-A4BO | Black | non-Hispanic/Latino | AA  |
| TCGA-KC-A4BR | White | Unavailable         | EA  |
| TCGA-KC-A4BV | Asian | non-Hispanic/Latino | OA  |
| TCGA-KC-A7F3 | White | non-Hispanic/Latino | EA  |
| TCGA-KC-A7F5 | White | non-Hispanic/Latino | EA  |
| TCGA-KC-A7F6 | White | non-Hispanic/Latino | EA  |
| TCGA-KC-A7FA | White | non-Hispanic/Latino | EA  |
| TCGA-KC-A7FD | White | non-Hispanic/Latino | EA  |
| TCGA-KC-A7FE | White | non-Hispanic/Latino | EA  |
| TCGA-KK-A59V | White | Unavailable         | EA  |
| TCGA-KK-A59X | Black | Unavailable         | AA  |
| TCGA-KK-A59Y | White | Unavailable         | EA  |
| TCGA-KK-A59Z | Black | Unavailable         | AA  |
| TCGA-KK-A6DY | Black | Unavailable         | AA  |
| TCGA-KK-A6E0 | Asian | Unavailable         | EAA |

|              |             |                     |    |
|--------------|-------------|---------------------|----|
| TCGA-KK-A6E1 | White       | Unavailable         | EA |
| TCGA-KK-A6E2 | Black       | Unavailable         | AA |
| TCGA-KK-A6E3 | Black       | Unavailable         | AA |
| TCGA-KK-A6E4 | Black       | Unavailable         | AA |
| TCGA-KK-A6E5 | Black       | Unavailable         | AA |
| TCGA-KK-A6E6 | White       | non-Hispanic/Latino | EA |
| TCGA-KK-A6E7 | Unavailable | Hispanic/Latino     | NA |
| TCGA-KK-A6E8 | White       | non-Hispanic/Latino | EA |
| TCGA-KK-A7AP | White       | Unavailable         | EA |
| TCGA-KK-A7AQ | White       | Unavailable         | EA |
| TCGA-KK-A7AU | White       | Unavailable         | EA |
| TCGA-KK-A7AV | Black       | Unavailable         | AA |
| TCGA-KK-A7AW | Black       | Unavailable         | AA |
| TCGA-KK-A7AY | White       | Unavailable         | EA |
| TCGA-KK-A7AZ | White       | Unavailable         | EA |
| TCGA-KK-A7B0 | White       | Unavailable         | EA |
| TCGA-KK-A7B1 | White       | Unavailable         | EA |
| TCGA-KK-A7B2 | White       | Unavailable         | EA |
| TCGA-KK-A7B3 | White       | Unavailable         | EA |
| TCGA-KK-A7B4 | White       | Unavailable         | EA |
| TCGA-KK-A8I4 | White       | Unavailable         | EA |
| TCGA-KK-A8I5 | Black       | Unavailable         | AA |
| TCGA-KK-A8I6 | White       | Unavailable         | EA |
| TCGA-KK-A8I7 | White       | Unavailable         | EA |
| TCGA-KK-A8I8 | White       | Unavailable         | EA |
| TCGA-KK-A8I9 | Unavailable | Unavailable         | NA |
| TCGA-KK-A8IA | White       | Unavailable         | EA |
| TCGA-KK-A8IB | White       | Unavailable         | EA |
| TCGA-KK-A8IC | White       | Unavailable         | EA |
| TCGA-KK-A8ID | Unavailable | Unavailable         | EA |
| TCGA-KK-A8IF | Black       | Unavailable         | AA |
| TCGA-KK-A8IG | White       | Unavailable         | EA |
| TCGA-KK-A8IH | White       | Unavailable         | EA |
| TCGA-KK-A8II | White       | Unavailable         | EA |
| TCGA-KK-A8IJ | White       | Unavailable         | EA |
| TCGA-KK-A8IK | White       | Unavailable         | EA |
| TCGA-KK-A8IL | White       | Unavailable         | AA |
| TCGA-KK-A8IM | White       | Unavailable         | EA |
| TCGA-M7-A71Y | White       | Unavailable         | EA |
| TCGA-M7-A71Z | White       | non-Hispanic/Latino | EA |
| TCGA-M7-A720 | White       | non-Hispanic/Latino | EA |
| TCGA-M7-A721 | White       | non-Hispanic/Latino | EA |
| TCGA-M7-A722 | White       | Unavailable         | EA |
| TCGA-M7-A723 | White       | non-Hispanic/Latino | EA |
| TCGA-M7-A724 | White       | non-Hispanic/Latino | EA |

|              |       |                     |     |
|--------------|-------|---------------------|-----|
| TCGA-M7-A725 | White | Unavailable         | EA  |
| TCGA-MG-AAMC | White | non-Hispanic/Latino | NA  |
| TCGA-QU-A6IL | Asian | non-Hispanic/Latino | EEA |
| TCGA-QU-A6IM | White | non-Hispanic/Latino | EA  |
| TCGA-QU-A6IN | White | non-Hispanic/Latino | EA  |
| TCGA-QU-A6IO | Black | non-Hispanic/Latino | AA  |
| TCGA-QU-A6IP | White | non-Hispanic/Latino | EA  |
| TCGA-SU-A7E7 | White | non-Hispanic/Latino | EA  |
| TCGA-TK-A8OK | White | non-Hispanic/Latino | EA  |
| TCGA-TP-A8TT | White | non-Hispanic/Latino | EA  |
| TCGA-TP-A8TV | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A8MF | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8MG | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8MJ | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8MK | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8ML | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8MM | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8MU | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8WL | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8WN | Black | non-Hispanic/Latino | AA  |
| TCGA-V1-A8WS | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A8WV | White | non-Hispanic/Latino | EEA |
| TCGA-V1-A8WW | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A8X3 | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9O5 | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9O7 | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9O9 | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9OA | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9OF | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9OH | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9OL | Asian | non-Hispanic/Latino | EEA |
| TCGA-V1-A9OQ | White | Hispanic/Latino     | NA  |
| TCGA-V1-A9OT | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9OX | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9OY | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9Z7 | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9Z8 | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9Z9 | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9ZG | White | non-Hispanic/Latino | EEA |
| TCGA-V1-A9ZI | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9ZK | White | non-Hispanic/Latino | EA  |
| TCGA-V1-A9ZR | White | non-Hispanic/Latino | EA  |
| TCGA-VN-A88I | White | non-Hispanic/Latino | EA  |
| TCGA-VN-A88K | White | non-Hispanic/Latino | EA  |
| TCGA-VN-A88L | White | non-Hispanic/Latino | EA  |

|              |                           |                     |    |
|--------------|---------------------------|---------------------|----|
| TCGA-VN-A88M | Black                     | non-Hispanic/Latino | AA |
| TCGA-VN-A88N | White                     | non-Hispanic/Latino | EA |
| TCGA-VN-A88O | Unavailable               | Hispanic/Latino     | AA |
| TCGA-VN-A88P | White                     | non-Hispanic/Latino | EA |
| TCGA-VN-A88Q | White                     | non-Hispanic/Latino | EA |
| TCGA-VN-A88R | Black                     | non-Hispanic/Latino | AA |
| TCGA-VN-A943 | White                     | non-Hispanic/Latino | EA |
| TCGA-VP-A872 | White                     | Unavailable         | EA |
| TCGA-VP-A875 | Black                     | Unavailable         | AA |
| TCGA-VP-A876 | White                     | Unavailable         | EA |
| TCGA-VP-A878 | White                     | Unavailable         | EA |
| TCGA-VP-A879 | White                     | Unavailable         | EA |
| TCGA-VP-A87B | White                     | Unavailable         | EA |
| TCGA-VP-A87C | Black                     | Unavailable         | AA |
| TCGA-VP-A87D | White                     | Unavailable         | EA |
| TCGA-VP-A87E | Black                     | Unavailable         | AA |
| TCGA-VP-A87H | White                     | Unavailable         | EA |
| TCGA-VP-A87J | Black                     | Unavailable         | AA |
| TCGA-VP-A87K | White                     | Unavailable         | EA |
| TCGA-VP-AA1N | White                     | Unavailable         | EA |
| TCGA-WW-A8ZI | White                     | non-Hispanic/Latino | EA |
| TCGA-X4-A8KQ | White                     | non-Hispanic/Latino | EA |
| TCGA-X4-A8KS | Black                     | non-Hispanic/Latino | AA |
| TCGA-XA-A8JR | Unavailable               | Unavailable         | EA |
| TCGA-XJ-A83F | White                     | non-Hispanic/Latino | EA |
| TCGA-XJ-A83G | Black                     | non-Hispanic/Latino | AA |
| TCGA-XJ-A83H | White                     | non-Hispanic/Latino | EA |
| TCGA-XJ-A9DI | White                     | non-Hispanic/Latino | EA |
| TCGA-XJ-A9DK | White                     | non-Hispanic/Latino | EA |
| TCGA-XJ-A9DQ | White                     | non-Hispanic/Latino | EA |
| TCGA-XJ-A9DX | merican Indian/Alaska Nat | non-Hispanic/Latino | NA |
| TCGA-XK-AAIR | White                     | Unavailable         | EA |
| TCGA-XK-AAIV | White                     | Unavailable         | EA |
| TCGA-XK-AAIW | White                     | non-Hispanic/Latino | EA |
| TCGA-XK-AAJ3 | White                     | Unavailable         | EA |
| TCGA-XK-AAJA | Unavailable               | Hispanic/Latino     | NA |
| TCGA-XK-AAJP | White                     | Unavailable         | EA |
| TCGA-XK-AAJR | White                     | Unavailable         | EA |
| TCGA-XK-AAJT | White                     | Unavailable         | EA |
| TCGA-XK-AAJU | White                     | Unavailable         | EA |
| TCGA-XK-AAK1 | White                     | Unavailable         | EA |
| TCGA-XQ-A8TA | White                     | Hispanic/Latino     | EA |
| TCGA-XQ-A8TB | White                     | Hispanic/Latino     | EA |
| TCGA-Y6-A8TL | Unavailable               | Unavailable         | EA |
| TCGA-Y6-A9XI | Unavailable               | Unavailable         | EA |

|              |             |                     |    |
|--------------|-------------|---------------------|----|
| TCGA-YJ-A8SW | Unavailable | Unavailable         | EA |
| TCGA-YL-A8HJ | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8HK | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8HL | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8HM | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8HO | Black       | non-Hispanic/Latino | AA |
| TCGA-YL-A8S8 | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8S9 | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SA | White       | Hispanic/Latino     | EA |
| TCGA-YL-A8SB | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SC | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SF | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SH | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SI | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SJ | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SK | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SL | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SO | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SP | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SQ | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A8SR | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A9WH | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A9WI | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A9WJ | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A9WK | Black       | non-Hispanic/Latino | AA |
| TCGA-YL-A9WL | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A9WX | White       | non-Hispanic/Latino | EA |
| TCGA-YL-A9WY | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A8QW | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A8QX | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A8QY | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A8QZ | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9KY | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9L0 | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9L1 | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9L2 | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9L4 | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9L5 | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9L6 | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9L9 | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9LB | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9LM | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9LN | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9LS | White       | non-Hispanic/Latino | EA |
| TCGA-ZG-A9LU | White       | non-Hispanic/Latino | EA |

|              |       |                     |    |
|--------------|-------|---------------------|----|
| TCGA-ZG-A9LY | White | non-Hispanic/Latino | EA |
| TCGA-ZG-A9LZ | White | non-Hispanic/Latino | EA |
| TCGA-ZG-A9M4 | White | non-Hispanic/Latino | EA |
| TCGA-ZG-A9MC | White | non-Hispanic/Latino | EA |
| TCGA-ZG-A9N3 | White | non-Hispanic/Latino | EA |
| TCGA-ZG-A9ND | White | non-Hispanic/Latino | EA |
| TCGA-ZG-A9NI | White | non-Hispanic/Latino | EA |

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Table S3. Global genetic ancestry annotation of TCGA-PRAD patients estimated by STRUCTURE

| Patient      | TCGA clinical annotation |                           | Proportions of ancestral components for each individual |              |                 |            | EIGENSTRAT assignment |
|--------------|--------------------------|---------------------------|---------------------------------------------------------|--------------|-----------------|------------|-----------------------|
|              | Self-identified race     | Self-identified ethnicity | European                                                | West African | Native American | East Asian |                       |
| TCGA-2A-A8VL | White                    | non-Hispanic/Latino       | 0.679                                                   | 0.208        | 0.088           | 0.025      | NA                    |
| TCGA-2A-A8VO | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.002        | 0.004           | 0.005      | EA                    |
| TCGA-2A-A8VT | Asian                    | non-Hispanic/Latino       | 0.705                                                   | 0.047        | 0.015           | 0.234      | OA                    |
| TCGA-2A-A8VV | Unavailable              | non-Hispanic/Latino       | 0.590                                                   | 0.322        | 0.035           | 0.053      | NA                    |
| TCGA-2A-A8VX | White                    | non-Hispanic/Latino       | 0.991                                                   | 0.004        | 0.003           | 0.002      | EA                    |
| TCGA-2A-A8W1 | Asian                    | non-Hispanic/Latino       | 0.173                                                   | 0.053        | 0.007           | 0.767      | EAA                   |
| TCGA-2A-A8W3 | White                    | non-Hispanic/Latino       | 0.957                                                   | 0.016        | 0.003           | 0.024      | EA                    |
| TCGA-2A-AAYF | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.004        | 0.004           | 0.004      | EA                    |
| TCGA-2A-AAYO | White                    | non-Hispanic/Latino       | 0.938                                                   | 0.025        | 0.006           | 0.030      | EA                    |
| TCGA-2A-AAYU | White                    | non-Hispanic/Latino       | 0.983                                                   | 0.003        | 0.004           | 0.011      | EA                    |
| TCGA-4L-AA1F | White                    | non-Hispanic/Latino       | 0.955                                                   | 0.003        | 0.020           | 0.021      | EA                    |
| TCGA-CH-5737 | White                    | non-Hispanic/Latino       | 0.986                                                   | 0.003        | 0.004           | 0.007      | EA                    |
| TCGA-CH-5738 | White                    | non-Hispanic/Latino       | 0.983                                                   | 0.004        | 0.004           | 0.010      | EA                    |
| TCGA-CH-5739 | White                    | non-Hispanic/Latino       | 0.976                                                   | 0.009        | 0.004           | 0.011      | EA                    |
| TCGA-CH-5740 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.002        | 0.005           | 0.004      | EA                    |
| TCGA-CH-5741 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.002        | 0.008           | 0.003      | EA                    |
| TCGA-CH-5743 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.003        | 0.004           | 0.006      | EA                    |
| TCGA-CH-5744 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.002        | 0.006           | 0.005      | EA                    |
| TCGA-CH-5745 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.002        | 0.005           | 0.006      | EA                    |
| TCGA-CH-5746 | White                    | non-Hispanic/Latino       | 0.978                                                   | 0.005        | 0.008           | 0.009      | EA                    |
| TCGA-CH-5748 | White                    | non-Hispanic/Latino       | 0.982                                                   | 0.005        | 0.007           | 0.006      | EA                    |
| TCGA-CH-5750 | White                    | non-Hispanic/Latino       | 0.969                                                   | 0.004        | 0.017           | 0.010      | EA                    |
| TCGA-CH-5751 | White                    | non-Hispanic/Latino       | 0.945                                                   | 0.006        | 0.006           | 0.043      | EA                    |
| TCGA-CH-5752 | White                    | non-Hispanic/Latino       | 0.979                                                   | 0.005        | 0.008           | 0.007      | EA                    |
| TCGA-CH-5753 | White                    | non-Hispanic/Latino       | 0.980                                                   | 0.002        | 0.011           | 0.007      | EA                    |
| TCGA-CH-5754 | White                    | non-Hispanic/Latino       | 0.984                                                   | 0.002        | 0.008           | 0.005      | EA                    |
| TCGA-CH-5761 | White                    | non-Hispanic/Latino       | 0.981                                                   | 0.002        | 0.013           | 0.004      | EA                    |
| TCGA-CH-5762 | White                    | non-Hispanic/Latino       | 0.901                                                   | 0.044        | 0.005           | 0.051      | EA                    |
| TCGA-CH-5763 | White                    | non-Hispanic/Latino       | 0.980                                                   | 0.003        | 0.010           | 0.007      | EA                    |
| TCGA-CH-5764 | White                    | non-Hispanic/Latino       | 0.979                                                   | 0.002        | 0.005           | 0.014      | EA                    |
| TCGA-CH-5765 | White                    | non-Hispanic/Latino       | 0.983                                                   | 0.004        | 0.006           | 0.006      | EA                    |
| TCGA-CH-5766 | White                    | non-Hispanic/Latino       | 0.913                                                   | 0.037        | 0.012           | 0.038      | EA                    |
| TCGA-CH-5767 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.002        | 0.004           | 0.005      | EA                    |
| TCGA-CH-5768 | White                    | non-Hispanic/Latino       | 0.984                                                   | 0.003        | 0.006           | 0.007      | EA                    |
| TCGA-CH-5769 | White                    | non-Hispanic/Latino       | 0.873                                                   | 0.049        | 0.006           | 0.072      | EA                    |
| TCGA-CH-5771 | White                    | non-Hispanic/Latino       | 0.986                                                   | 0.003        | 0.006           | 0.005      | EA                    |
| TCGA-CH-5772 | White                    | non-Hispanic/Latino       | 0.986                                                   | 0.002        | 0.005           | 0.007      | EA                    |
| TCGA-CH-5788 | White                    | non-Hispanic/Latino       | 0.980                                                   | 0.005        | 0.004           | 0.011      | EA                    |
| TCGA-CH-5789 | White                    | non-Hispanic/Latino       | 0.961                                                   | 0.002        | 0.032           | 0.006      | EA                    |
| TCGA-CH-5790 | White                    | non-Hispanic/Latino       | 0.971                                                   | 0.007        | 0.007           | 0.015      | EA                    |
| TCGA-CH-5791 | White                    | non-Hispanic/Latino       | 0.976                                                   | 0.002        | 0.011           | 0.011      | EA                    |
| TCGA-CH-5792 | White                    | non-Hispanic/Latino       | 0.972                                                   | 0.004        | 0.008           | 0.016      | EA                    |
| TCGA-CH-5794 | White                    | non-Hispanic/Latino       | 0.982                                                   | 0.007        | 0.004           | 0.006      | EA                    |
| TCGA-EJ-5494 | White                    | non-Hispanic/Latino       | 0.970                                                   | 0.014        | 0.003           | 0.013      | EA                    |
| TCGA-EJ-5495 | White                    | non-Hispanic/Latino       | 0.982                                                   | 0.004        | 0.006           | 0.009      | EA                    |
| TCGA-EJ-5496 | White                    | non-Hispanic/Latino       | 0.979                                                   | 0.005        | 0.008           | 0.008      | EA                    |
| TCGA-EJ-5497 | White                    | non-Hispanic/Latino       | 0.984                                                   | 0.004        | 0.008           | 0.005      | EA                    |
| TCGA-EJ-5498 | White                    | non-Hispanic/Latino       | 0.980                                                   | 0.015        | 0.004           | 0.002      | EA                    |
| TCGA-EJ-5499 | Asian                    | non-Hispanic/Latino       | 0.985                                                   | 0.005        | 0.004           | 0.005      | EA                    |
| TCGA-EJ-5501 | White                    | non-Hispanic/Latino       | 0.984                                                   | 0.004        | 0.005           | 0.008      | EA                    |
| TCGA-EJ-5502 | Unavailable              | Unavailable               | 0.972                                                   | 0.007        | 0.013           | 0.008      | EA                    |
| TCGA-EJ-5503 | White                    | non-Hispanic/Latino       | 0.991                                                   | 0.003        | 0.003           | 0.004      | EA                    |
| TCGA-EJ-5504 | White                    | non-Hispanic/Latino       | 0.972                                                   | 0.003        | 0.013           | 0.012      | EA                    |
| TCGA-EJ-5505 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.004        | 0.004           | 0.004      | EA                    |
| TCGA-EJ-5506 | White                    | non-Hispanic/Latino       | 0.978                                                   | 0.003        | 0.007           | 0.011      | EA                    |
| TCGA-EJ-5507 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.003        | 0.004           | 0.006      | EA                    |
| TCGA-EJ-5508 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.004        | 0.006           | 0.003      | EA                    |
| TCGA-EJ-5509 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.002        | 0.005           | 0.003      | EA                    |
| TCGA-EJ-5510 | White                    | non-Hispanic/Latino       | 0.985                                                   | 0.010        | 0.003           | 0.003      | EA                    |
| TCGA-EJ-5511 | Black                    | non-Hispanic/Latino       | 0.180                                                   | 0.809        | 0.004           | 0.006      | AA                    |
| TCGA-EJ-5512 | White                    | non-Hispanic/Latino       | 0.978                                                   | 0.006        | 0.005           | 0.011      | EA                    |
| TCGA-EJ-5514 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.002        | 0.005           | 0.004      | EA                    |
| TCGA-EJ-5515 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.002        | 0.004           | 0.004      | EA                    |
| TCGA-EJ-5516 | White                    | non-Hispanic/Latino       | 0.982                                                   | 0.005        | 0.009           | 0.005      | EA                    |
| TCGA-EJ-5517 | White                    | non-Hispanic/Latino       | 0.984                                                   | 0.002        | 0.009           | 0.005      | EA                    |
| TCGA-EJ-5518 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.002        | 0.005           | 0.006      | EA                    |
| TCGA-EJ-5519 | White                    | non-Hispanic/Latino       | 0.855                                                   | 0.043        | 0.005           | 0.098      | EA                    |
| TCGA-EJ-5521 | White                    | non-Hispanic/Latino       | 0.975                                                   | 0.004        | 0.013           | 0.010      | EA                    |
| TCGA-EJ-5522 | White                    | non-Hispanic/Latino       | 0.984                                                   | 0.002        | 0.010           | 0.004      | EA                    |
| TCGA-EJ-5524 | White                    | non-Hispanic/Latino       | 0.977                                                   | 0.009        | 0.003           | 0.010      | EA                    |
| TCGA-EJ-5525 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.002        | 0.005           | 0.005      | EA                    |
| TCGA-EJ-5526 | White                    | non-Hispanic/Latino       | 0.669                                                   | 0.175        | 0.141           | 0.015      | NA                    |
| TCGA-EJ-5527 | White                    | non-Hispanic/Latino       | 0.984                                                   | 0.008        | 0.003           | 0.005      | EA                    |
| TCGA-EJ-5530 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.002        | 0.007           | 0.002      | EA                    |
| TCGA-EJ-5531 | White                    | non-Hispanic/Latino       | 0.968                                                   | 0.016        | 0.003           | 0.013      | EA                    |
| TCGA-EJ-5532 | White                    | non-Hispanic/Latino       | 0.939                                                   | 0.035        | 0.006           | 0.020      | EA                    |
| TCGA-EJ-5542 | White                    | non-Hispanic/Latino       | 0.960                                                   | 0.020        | 0.002           | 0.018      | EA                    |

|              |             |                     |       |       |       |       |     |
|--------------|-------------|---------------------|-------|-------|-------|-------|-----|
| TCGA-EJ-7115 | White       | non-Hispanic/Latino | 0.982 | 0.002 | 0.008 | 0.008 | EA  |
| TCGA-EJ-7123 | White       | non-Hispanic/Latino | 0.987 | 0.004 | 0.005 | 0.004 | EA  |
| TCGA-EJ-7125 | White       | non-Hispanic/Latino | 0.980 | 0.004 | 0.005 | 0.010 | EA  |
| TCGA-EJ-7218 | White       | non-Hispanic/Latino | 0.988 | 0.002 | 0.006 | 0.004 | EA  |
| TCGA-EJ-7312 | White       | non-Hispanic/Latino | 0.971 | 0.010 | 0.005 | 0.015 | EA  |
| TCGA-EJ-7314 | White       | non-Hispanic/Latino | 0.983 | 0.002 | 0.003 | 0.012 | EA  |
| TCGA-EJ-7315 | White       | non-Hispanic/Latino | 0.976 | 0.004 | 0.008 | 0.012 | EA  |
| TCGA-EJ-7317 | White       | non-Hispanic/Latino | 0.977 | 0.005 | 0.012 | 0.007 | EA  |
| TCGA-EJ-7318 | White       | non-Hispanic/Latino | 0.986 | 0.008 | 0.002 | 0.005 | EA  |
| TCGA-EJ-7321 | Black       | non-Hispanic/Latino | 0.084 | 0.897 | 0.014 | 0.006 | AA  |
| TCGA-EJ-7325 | White       | non-Hispanic/Latino | 0.967 | 0.007 | 0.019 | 0.007 | EA  |
| TCGA-EJ-7327 | White       | non-Hispanic/Latino | 0.987 | 0.004 | 0.005 | 0.005 | EA  |
| TCGA-EJ-7328 | White       | non-Hispanic/Latino | 0.988 | 0.002 | 0.006 | 0.004 | EA  |
| TCGA-EJ-7330 | White       | non-Hispanic/Latino | 0.984 | 0.004 | 0.003 | 0.009 | EA  |
| TCGA-EJ-7331 | White       | non-Hispanic/Latino | 0.982 | 0.002 | 0.010 | 0.006 | EA  |
| TCGA-EJ-7781 | White       | non-Hispanic/Latino | 0.978 | 0.006 | 0.002 | 0.014 | EA  |
| TCGA-EJ-7782 | Black       | non-Hispanic/Latino | 0.321 | 0.669 | 0.005 | 0.006 | AA  |
| TCGA-EJ-7783 | White       | non-Hispanic/Latino | 0.984 | 0.006 | 0.004 | 0.007 | EA  |
| TCGA-EJ-7784 | White       | non-Hispanic/Latino | 0.992 | 0.002 | 0.002 | 0.003 | EA  |
| TCGA-EJ-7785 | White       | non-Hispanic/Latino | 0.984 | 0.005 | 0.003 | 0.008 | EA  |
| TCGA-EJ-7786 | White       | non-Hispanic/Latino | 0.983 | 0.004 | 0.006 | 0.007 | EA  |
| TCGA-EJ-7788 | White       | non-Hispanic/Latino | 0.971 | 0.002 | 0.018 | 0.009 | EA  |
| TCGA-EJ-7789 | Black       | non-Hispanic/Latino | 0.229 | 0.760 | 0.005 | 0.006 | AA  |
| TCGA-EJ-7791 | White       | non-Hispanic/Latino | 0.979 | 0.004 | 0.007 | 0.010 | EA  |
| TCGA-EJ-7792 | White       | non-Hispanic/Latino | 0.989 | 0.003 | 0.004 | 0.004 | EA  |
| TCGA-EJ-7793 | White       | non-Hispanic/Latino | 0.975 | 0.004 | 0.010 | 0.011 | EA  |
| TCGA-EJ-7794 | White       | non-Hispanic/Latino | 0.941 | 0.032 | 0.003 | 0.024 | EA  |
| TCGA-EJ-7797 | White       | non-Hispanic/Latino | 0.983 | 0.005 | 0.005 | 0.007 | EA  |
| TCGA-EJ-8468 | White       | Unavailable         | 0.959 | 0.024 | 0.006 | 0.011 | EA  |
| TCGA-EJ-8469 | Black       | Unavailable         | 0.374 | 0.605 | 0.004 | 0.016 | AA  |
| TCGA-EJ-8470 | Black       | Unavailable         | 0.376 | 0.609 | 0.007 | 0.008 | AA  |
| TCGA-EJ-8472 | White       | Unavailable         | 0.981 | 0.003 | 0.007 | 0.008 | EA  |
| TCGA-EJ-8474 | White       | Unavailable         | 0.963 | 0.018 | 0.010 | 0.009 | EA  |
| TCGA-EJ-A46B | White       | non-Hispanic/Latino | 0.980 | 0.002 | 0.008 | 0.011 | EA  |
| TCGA-EJ-A46D | White       | non-Hispanic/Latino | 0.979 | 0.003 | 0.006 | 0.013 | EA  |
| TCGA-EJ-A46E | White       | non-Hispanic/Latino | 0.969 | 0.004 | 0.017 | 0.011 | EA  |
| TCGA-EJ-A46F | White       | non-Hispanic/Latino | 0.963 | 0.009 | 0.010 | 0.018 | EA  |
| TCGA-EJ-A46G | White       | non-Hispanic/Latino | 0.978 | 0.004 | 0.008 | 0.011 | EA  |
| TCGA-EJ-A46H | Black       | non-Hispanic/Latino | 0.157 | 0.819 | 0.012 | 0.012 | AA  |
| TCGA-EJ-A46I | Black       | non-Hispanic/Latino | 0.282 | 0.708 | 0.004 | 0.007 | AA  |
| TCGA-EJ-A65B | White       | Unavailable         | 0.968 | 0.003 | 0.008 | 0.021 | EA  |
| TCGA-EJ-A65D | White       | Unavailable         | 0.977 | 0.004 | 0.005 | 0.014 | EA  |
| TCGA-EJ-A65E | Black       | Unavailable         | 0.150 | 0.821 | 0.011 | 0.019 | AA  |
| TCGA-EJ-A65F | White       | Unavailable         | 0.976 | 0.003 | 0.013 | 0.008 | EA  |
| TCGA-EJ-A65G | White       | Unavailable         | 0.978 | 0.002 | 0.012 | 0.009 | EA  |
| TCGA-EJ-A65J | White       | Unavailable         | 0.993 | 0.002 | 0.002 | 0.003 | EA  |
| TCGA-EJ-A65M | Black       | Unavailable         | 0.266 | 0.717 | 0.004 | 0.014 | AA  |
| TCGA-EJ-A6RA | White       | Unavailable         | 0.985 | 0.002 | 0.003 | 0.009 | EA  |
| TCGA-EJ-A6RC | White       | Unavailable         | 0.986 | 0.003 | 0.004 | 0.007 | EA  |
| TCGA-EJ-A7NF | White       | Unavailable         | 0.989 | 0.002 | 0.005 | 0.005 | EA  |
| TCGA-EJ-A7NG | White       | Unavailable         | 0.982 | 0.004 | 0.005 | 0.009 | EA  |
| TCGA-EJ-A7NH | White       | Unavailable         | 0.972 | 0.009 | 0.003 | 0.016 | EA  |
| TCGA-EJ-A7NJ | White       | Unavailable         | 0.986 | 0.002 | 0.008 | 0.005 | EA  |
| TCGA-EJ-A7NK | White       | Unavailable         | 0.966 | 0.006 | 0.022 | 0.006 | EA  |
| TCGA-EJ-A7NM | White       | Unavailable         | 0.977 | 0.005 | 0.006 | 0.012 | EA  |
| TCGA-EJ-A7NN | White       | Unavailable         | 0.989 | 0.002 | 0.003 | 0.006 | EA  |
| TCGA-EJ-A8FN | White       | Unavailable         | 0.986 | 0.005 | 0.003 | 0.007 | EA  |
| TCGA-EJ-A8FO | Unavailable | Unavailable         | 0.985 | 0.004 | 0.007 | 0.004 | EA  |
| TCGA-EJ-A8FP | White       | Unavailable         | 0.981 | 0.010 | 0.003 | 0.006 | EA  |
| TCGA-EJ-A8FS | White       | Unavailable         | 0.979 | 0.004 | 0.009 | 0.008 | EA  |
| TCGA-EJ-A8FU | White       | Unavailable         | 0.986 | 0.007 | 0.005 | 0.003 | EA  |
| TCGA-EJ-AB20 | Unavailable | Unavailable         | 0.979 | 0.005 | 0.005 | 0.011 | EA  |
| TCGA-EJ-AB27 | White       | Unavailable         | 0.093 | 0.890 | 0.006 | 0.011 | AA  |
| TCGA-FC-7708 | Asian       | non-Hispanic/Latino | 0.009 | 0.006 | 0.018 | 0.967 | EAA |
| TCGA-FC-7961 | White       | non-Hispanic/Latino | 0.987 | 0.002 | 0.007 | 0.005 | EA  |
| TCGA-FC-A4JI | Asian       | non-Hispanic/Latino | 0.023 | 0.013 | 0.002 | 0.962 | EAA |
| TCGA-FC-A5OB | White       | non-Hispanic/Latino | 0.983 | 0.003 | 0.007 | 0.007 | EA  |
| TCGA-FC-A66V | White       | non-Hispanic/Latino | 0.980 | 0.002 | 0.009 | 0.009 | EA  |
| TCGA-FC-A6HD | White       | non-Hispanic/Latino | 0.985 | 0.004 | 0.003 | 0.008 | EA  |
| TCGA-FC-A8O0 | White       | non-Hispanic/Latino | 0.981 | 0.007 | 0.004 | 0.008 | EA  |
| TCGA-G9-6329 | White       | non-Hispanic/Latino | 0.975 | 0.005 | 0.013 | 0.008 | EA  |
| TCGA-G9-6332 | White       | non-Hispanic/Latino | 0.988 | 0.003 | 0.005 | 0.004 | EA  |
| TCGA-G9-6333 | White       | non-Hispanic/Latino | 0.985 | 0.004 | 0.006 | 0.006 | EA  |
| TCGA-G9-6336 | White       | non-Hispanic/Latino | 0.990 | 0.004 | 0.003 | 0.003 | EA  |
| TCGA-G9-6338 | White       | non-Hispanic/Latino | 0.989 | 0.003 | 0.004 | 0.004 | EA  |
| TCGA-G9-6339 | White       | non-Hispanic/Latino | 0.983 | 0.002 | 0.004 | 0.011 | EA  |
| TCGA-G9-6342 | White       | non-Hispanic/Latino | 0.984 | 0.002 | 0.006 | 0.008 | EA  |
| TCGA-G9-6343 | White       | non-Hispanic/Latino | 0.970 | 0.004 | 0.009 | 0.016 | EA  |
| TCGA-G9-6347 | Unavailable | Unavailable         | 0.990 | 0.002 | 0.006 | 0.002 | EA  |
| TCGA-G9-6348 | White       | non-Hispanic/Latino | 0.984 | 0.003 | 0.003 | 0.010 | EA  |
| TCGA-G9-6351 | White       | non-Hispanic/Latino | 0.984 | 0.008 | 0.002 | 0.006 | EA  |

|              |       |                     |       |       |       |       |     |
|--------------|-------|---------------------|-------|-------|-------|-------|-----|
| TCGA-G9-6353 | White | non-Hispanic/Latino | 0.984 | 0.004 | 0.004 | 0.008 | EA  |
| TCGA-G9-6354 | Asian | non-Hispanic/Latino | 0.004 | 0.002 | 0.006 | 0.989 | EAA |
| TCGA-G9-6356 | White | non-Hispanic/Latino | 0.989 | 0.002 | 0.005 | 0.005 | EA  |
| TCGA-G9-6361 | White | non-Hispanic/Latino | 0.989 | 0.003 | 0.003 | 0.005 | EA  |
| TCGA-G9-6362 | White | non-Hispanic/Latino | 0.990 | 0.003 | 0.004 | 0.003 | EA  |
| TCGA-G9-6363 | White | non-Hispanic/Latino | 0.973 | 0.007 | 0.007 | 0.013 | EA  |
| TCGA-G9-6364 | White | non-Hispanic/Latino | 0.990 | 0.003 | 0.003 | 0.005 | EA  |
| TCGA-G9-6365 | White | non-Hispanic/Latino | 0.983 | 0.002 | 0.009 | 0.006 | EA  |
| TCGA-G9-6366 | White | non-Hispanic/Latino | 0.991 | 0.002 | 0.003 | 0.004 | EA  |
| TCGA-G9-6367 | White | non-Hispanic/Latino | 0.989 | 0.001 | 0.005 | 0.005 | EA  |
| TCGA-G9-6369 | White | non-Hispanic/Latino | 0.980 | 0.009 | 0.004 | 0.007 | EA  |
| TCGA-G9-6370 | White | non-Hispanic/Latino | 0.973 | 0.004 | 0.011 | 0.012 | EA  |
| TCGA-G9-6371 | White | non-Hispanic/Latino | 0.983 | 0.003 | 0.003 | 0.011 | EA  |
| TCGA-G9-6373 | White | non-Hispanic/Latino | 0.982 | 0.001 | 0.009 | 0.008 | EA  |
| TCGA-G9-6377 | White | non-Hispanic/Latino | 0.976 | 0.003 | 0.007 | 0.015 | EA  |
| TCGA-G9-6378 | Black | non-Hispanic/Latino | 0.155 | 0.838 | 0.001 | 0.006 | AA  |
| TCGA-G9-6379 | White | non-Hispanic/Latino | 0.988 | 0.003 | 0.003 | 0.006 | EA  |
| TCGA-G9-6384 | White | non-Hispanic/Latino | 0.987 | 0.004 | 0.006 | 0.003 | EA  |
| TCGA-G9-6385 | White | non-Hispanic/Latino | 0.985 | 0.005 | 0.006 | 0.005 | EA  |
| TCGA-G9-6494 | White | non-Hispanic/Latino | 0.983 | 0.003 | 0.003 | 0.011 | EA  |
| TCGA-G9-6496 | White | non-Hispanic/Latino | 0.980 | 0.002 | 0.008 | 0.010 | EA  |
| TCGA-G9-6498 | White | non-Hispanic/Latino | 0.979 | 0.004 | 0.010 | 0.007 | EA  |
| TCGA-G9-6499 | White | non-Hispanic/Latino | 0.991 | 0.002 | 0.004 | 0.003 | EA  |
| TCGA-G9-7509 | Black | non-Hispanic/Latino | 0.003 | 0.985 | 0.006 | 0.006 | AA  |
| TCGA-G9-7510 | White | non-Hispanic/Latino | 0.970 | 0.003 | 0.009 | 0.017 | EA  |
| TCGA-G9-7519 | White | non-Hispanic/Latino | 0.878 | 0.054 | 0.006 | 0.062 | EA  |
| TCGA-G9-7521 | White | non-Hispanic/Latino | 0.986 | 0.004 | 0.004 | 0.006 | EA  |
| TCGA-G9-7522 | White | non-Hispanic/Latino | 0.988 | 0.005 | 0.003 | 0.005 | EA  |
| TCGA-G9-7523 | Black | non-Hispanic/Latino | 0.106 | 0.887 | 0.002 | 0.005 | AA  |
| TCGA-G9-7525 | White | non-Hispanic/Latino | 0.971 | 0.005 | 0.008 | 0.016 | EA  |
| TCGA-G9-A9S0 | White | non-Hispanic/Latino | 0.984 | 0.004 | 0.005 | 0.007 | EA  |
| TCGA-G9-A9S4 | White | non-Hispanic/Latino | 0.985 | 0.003 | 0.007 | 0.006 | EA  |
| TCGA-G9-A9S7 | White | non-Hispanic/Latino | 0.971 | 0.022 | 0.002 | 0.005 | EA  |
| TCGA-H9-7775 | White | non-Hispanic/Latino | 0.987 | 0.005 | 0.006 | 0.003 | EA  |
| TCGA-H9-A6BX | White | non-Hispanic/Latino | 0.979 | 0.002 | 0.013 | 0.006 | EA  |
| TCGA-H9-A6BY | White | non-Hispanic/Latino | 0.985 | 0.002 | 0.005 | 0.007 | EA  |
| TCGA-HC-7075 | White | non-Hispanic/Latino | 0.986 | 0.003 | 0.004 | 0.007 | EA  |
| TCGA-HC-7077 | Black | non-Hispanic/Latino | 0.242 | 0.741 | 0.002 | 0.014 | AA  |
| TCGA-HC-7078 | White | non-Hispanic/Latino | 0.991 | 0.001 | 0.005 | 0.003 | EA  |
| TCGA-HC-7079 | White | non-Hispanic/Latino | 0.979 | 0.002 | 0.009 | 0.010 | EA  |
| TCGA-HC-7080 | White | non-Hispanic/Latino | 0.983 | 0.004 | 0.004 | 0.009 | EA  |
| TCGA-HC-7081 | White | Unavailable         | 0.987 | 0.003 | 0.005 | 0.005 | EA  |
| TCGA-HC-7209 | White | non-Hispanic/Latino | 0.989 | 0.005 | 0.003 | 0.002 | EA  |
| TCGA-HC-7210 | White | non-Hispanic/Latino | 0.988 | 0.002 | 0.006 | 0.005 | EA  |
| TCGA-HC-7211 | White | non-Hispanic/Latino | 0.993 | 0.001 | 0.003 | 0.002 | EA  |
| TCGA-HC-7212 | White | non-Hispanic/Latino | 0.991 | 0.002 | 0.003 | 0.003 | EA  |
| TCGA-HC-7213 | White | non-Hispanic/Latino | 0.984 | 0.004 | 0.006 | 0.006 | EA  |
| TCGA-HC-7230 | White | non-Hispanic/Latino | 0.989 | 0.003 | 0.005 | 0.004 | EA  |
| TCGA-HC-7231 | White | Unavailable         | 0.975 | 0.003 | 0.007 | 0.016 | EA  |
| TCGA-HC-7232 | White | non-Hispanic/Latino | 0.985 | 0.002 | 0.008 | 0.006 | EA  |
| TCGA-HC-7233 | White | Unavailable         | 0.979 | 0.004 | 0.010 | 0.007 | EA  |
| TCGA-HC-7736 | White | non-Hispanic/Latino | 0.948 | 0.028 | 0.011 | 0.013 | EA  |
| TCGA-HC-7737 | Black | Unavailable         | 0.295 | 0.694 | 0.004 | 0.006 | AA  |
| TCGA-HC-7738 | White | non-Hispanic/Latino | 0.865 | 0.067 | 0.011 | 0.057 | EA  |
| TCGA-HC-7740 | White | non-Hispanic/Latino | 0.976 | 0.010 | 0.007 | 0.007 | EA  |
| TCGA-HC-7741 | White | non-Hispanic/Latino | 0.368 | 0.357 | 0.001 | 0.274 | AA  |
| TCGA-HC-7742 | White | non-Hispanic/Latino | 0.988 | 0.002 | 0.003 | 0.007 | EA  |
| TCGA-HC-7744 | White | non-Hispanic/Latino | 0.963 | 0.017 | 0.007 | 0.013 | EA  |
| TCGA-HC-7745 | White | non-Hispanic/Latino | 0.976 | 0.004 | 0.005 | 0.015 | EA  |
| TCGA-HC-7747 | White | non-Hispanic/Latino | 0.980 | 0.010 | 0.004 | 0.007 | EA  |
| TCGA-HC-7748 | White | non-Hispanic/Latino | 0.985 | 0.004 | 0.008 | 0.003 | EA  |
| TCGA-HC-7749 | White | non-Hispanic/Latino | 0.972 | 0.011 | 0.007 | 0.010 | EA  |
| TCGA-HC-7750 | White | non-Hispanic/Latino | 0.901 | 0.040 | 0.012 | 0.047 | EA  |
| TCGA-HC-7752 | White | non-Hispanic/Latino | 0.988 | 0.005 | 0.002 | 0.004 | EA  |
| TCGA-HC-7817 | White | non-Hispanic/Latino | 0.979 | 0.004 | 0.007 | 0.011 | EA  |
| TCGA-HC-7818 | White | non-Hispanic/Latino | 0.977 | 0.004 | 0.008 | 0.011 | EA  |
| TCGA-HC-7819 | White | non-Hispanic/Latino | 0.982 | 0.004 | 0.007 | 0.007 | EA  |
| TCGA-HC-7820 | White | non-Hispanic/Latino | 0.928 | 0.048 | 0.014 | 0.010 | EA  |
| TCGA-HC-7821 | White | non-Hispanic/Latino | 0.974 | 0.002 | 0.012 | 0.013 | EA  |
| TCGA-HC-8212 | White | non-Hispanic/Latino | 0.388 | 0.334 | 0.001 | 0.278 | AA  |
| TCGA-HC-8213 | White | non-Hispanic/Latino | 0.986 | 0.002 | 0.007 | 0.006 | EA  |
| TCGA-HC-8216 | White | non-Hispanic/Latino | 0.979 | 0.004 | 0.013 | 0.003 | EA  |
| TCGA-HC-8256 | Black | non-Hispanic/Latino | 0.992 | 0.003 | 0.003 | 0.003 | EA  |
| TCGA-HC-8257 | Black | non-Hispanic/Latino | 0.150 | 0.829 | 0.009 | 0.011 | AA  |
| TCGA-HC-8258 | Black | non-Hispanic/Latino | 0.062 | 0.912 | 0.009 | 0.017 | AA  |
| TCGA-HC-8259 | Black | non-Hispanic/Latino | 0.185 | 0.796 | 0.011 | 0.007 | AA  |
| TCGA-HC-8260 | Black | non-Hispanic/Latino | 0.077 | 0.905 | 0.007 | 0.012 | AA  |
| TCGA-HC-8261 | Black | non-Hispanic/Latino | 0.030 | 0.949 | 0.008 | 0.013 | AA  |
| TCGA-HC-8262 | White | non-Hispanic/Latino | 0.974 | 0.006 | 0.015 | 0.004 | EA  |
| TCGA-HC-8264 | White | non-Hispanic/Latino | 0.984 | 0.004 | 0.007 | 0.005 | EA  |
| TCGA-HC-8265 | White | non-Hispanic/Latino | 0.954 | 0.032 | 0.006 | 0.009 | EA  |

|              |             |                     |       |       |       |       |     |
|--------------|-------------|---------------------|-------|-------|-------|-------|-----|
| TCGA-HC-8266 | White       | non-Hispanic/Latino | 0.718 | 0.033 | 0.219 | 0.030 | NA  |
| TCGA-HC-A48F | White       | non-Hispanic/Latino | 0.978 | 0.004 | 0.008 | 0.010 | EA  |
| TCGA-HC-A4ZV | Black       | non-Hispanic/Latino | 0.127 | 0.866 | 0.003 | 0.004 | AA  |
| TCGA-HC-A631 | White       | non-Hispanic/Latino | 0.972 | 0.003 | 0.010 | 0.014 | EA  |
| TCGA-HC-A632 | White       | non-Hispanic/Latino | 0.989 | 0.004 | 0.003 | 0.004 | EA  |
| TCGA-HC-A6AL | White       | non-Hispanic/Latino | 0.985 | 0.004 | 0.008 | 0.003 | EA  |
| TCGA-HC-A6AN | White       | non-Hispanic/Latino | 0.964 | 0.004 | 0.019 | 0.013 | EA  |
| TCGA-HC-A6AO | White       | non-Hispanic/Latino | 0.987 | 0.007 | 0.003 | 0.004 | EA  |
| TCGA-HC-A6AP | White       | non-Hispanic/Latino | 0.965 | 0.006 | 0.007 | 0.023 | EA  |
| TCGA-HC-A6AQ | White       | non-Hispanic/Latino | 0.982 | 0.004 | 0.008 | 0.006 | EA  |
| TCGA-HC-A6AS | White       | non-Hispanic/Latino | 0.984 | 0.004 | 0.005 | 0.007 | EA  |
| TCGA-HC-A6HX | White       | non-Hispanic/Latino | 0.983 | 0.007 | 0.004 | 0.006 | EA  |
| TCGA-HC-A6HY | White       | non-Hispanic/Latino | 0.984 | 0.002 | 0.010 | 0.004 | EA  |
| TCGA-HC-A76W | White       | non-Hispanic/Latino | 0.979 | 0.010 | 0.003 | 0.008 | EA  |
| TCGA-HC-A76X | White       | non-Hispanic/Latino | 0.967 | 0.009 | 0.014 | 0.010 | EA  |
| TCGA-HC-A8CY | White       | non-Hispanic/Latino | 0.990 | 0.004 | 0.004 | 0.002 | EA  |
| TCGA-HC-A8D0 | White       | non-Hispanic/Latino | 0.986 | 0.005 | 0.004 | 0.005 | EA  |
| TCGA-HC-A8D1 | White       | non-Hispanic/Latino | 0.973 | 0.005 | 0.014 | 0.008 | EA  |
| TCGA-HC-A9TE | White       | non-Hispanic/Latino | 0.991 | 0.002 | 0.004 | 0.003 | EA  |
| TCGA-HC-A9TH | White       | non-Hispanic/Latino | 0.980 | 0.003 | 0.009 | 0.008 | EA  |
| TCGA-HI-7168 | White       | non-Hispanic/Latino | 0.984 | 0.006 | 0.004 | 0.006 | EA  |
| TCGA-HI-7169 | White       | non-Hispanic/Latino | 0.981 | 0.006 | 0.008 | 0.005 | EA  |
| TCGA-HI-7170 | White       | non-Hispanic/Latino | 0.940 | 0.033 | 0.003 | 0.024 | EA  |
| TCGA-HI-7171 | White       | non-Hispanic/Latino | 0.981 | 0.009 | 0.006 | 0.004 | EA  |
| TCGA-J4-8198 | Black       | non-Hispanic/Latino | 0.005 | 0.989 | 0.002 | 0.004 | AA  |
| TCGA-J4-8200 | Asian       | non-Hispanic/Latino | 0.154 | 0.318 | 0.008 | 0.520 | EAA |
| TCGA-J4-A67K | White       | non-Hispanic/Latino | 0.981 | 0.005 | 0.009 | 0.006 | EA  |
| TCGA-J4-A67L | White       | non-Hispanic/Latino | 0.993 | 0.002 | 0.002 | 0.003 | EA  |
| TCGA-J4-A67M | White       | non-Hispanic/Latino | 0.983 | 0.002 | 0.006 | 0.008 | EA  |
| TCGA-J4-A67N | White       | non-Hispanic/Latino | 0.977 | 0.005 | 0.008 | 0.011 | EA  |
| TCGA-J4-A67O | White       | non-Hispanic/Latino | 0.988 | 0.004 | 0.004 | 0.005 | EA  |
| TCGA-J4-A67Q | White       | non-Hispanic/Latino | 0.990 | 0.002 | 0.004 | 0.004 | EA  |
| TCGA-J4-A67R | White       | non-Hispanic/Latino | 0.988 | 0.004 | 0.005 | 0.004 | EA  |
| TCGA-J4-A67S | White       | non-Hispanic/Latino | 0.986 | 0.003 | 0.007 | 0.004 | EA  |
| TCGA-J4-A67T | White       | non-Hispanic/Latino | 0.981 | 0.005 | 0.005 | 0.009 | EA  |
| TCGA-J4-A6G1 | White       | non-Hispanic/Latino | 0.987 | 0.005 | 0.004 | 0.004 | EA  |
| TCGA-J4-A6G3 | White       | non-Hispanic/Latino | 0.981 | 0.003 | 0.010 | 0.006 | EA  |
| TCGA-J4-A6M7 | White       | non-Hispanic/Latino | 0.985 | 0.002 | 0.005 | 0.007 | EA  |
| TCGA-J4-A83I | White       | non-Hispanic/Latino | 0.985 | 0.003 | 0.007 | 0.006 | EA  |
| TCGA-J4-A83J | White       | non-Hispanic/Latino | 0.979 | 0.006 | 0.005 | 0.010 | EA  |
| TCGA-J4-A83K | White       | non-Hispanic/Latino | 0.977 | 0.002 | 0.009 | 0.012 | EA  |
| TCGA-J4-A83L | White       | non-Hispanic/Latino | 0.977 | 0.003 | 0.011 | 0.009 | EA  |
| TCGA-J4-A83M | White       | non-Hispanic/Latino | 0.966 | 0.026 | 0.004 | 0.004 | EA  |
| TCGA-J4-A83N | White       | non-Hispanic/Latino | 0.987 | 0.002 | 0.006 | 0.005 | EA  |
| TCGA-J4-AATV | White       | non-Hispanic/Latino | 0.993 | 0.002 | 0.003 | 0.002 | EA  |
| TCGA-J4-AATZ | Asian       | non-Hispanic/Latino | 0.245 | 0.138 | 0.115 | 0.502 | EAA |
| TCGA-J4-AAU2 | White       | non-Hispanic/Latino | 0.989 | 0.001 | 0.006 | 0.005 | EA  |
| TCGA-J9-A52B | White       | non-Hispanic/Latino | 0.992 | 0.004 | 0.002 | 0.002 | EA  |
| TCGA-J9-A52C | White       | non-Hispanic/Latino | 0.973 | 0.003 | 0.009 | 0.016 | EA  |
| TCGA-J9-A52E | White       | non-Hispanic/Latino | 0.983 | 0.002 | 0.012 | 0.004 | EA  |
| TCGA-J9-A8CK | White       | non-Hispanic/Latino | 0.937 | 0.049 | 0.002 | 0.012 | EA  |
| TCGA-J9-A8CL | White       | non-Hispanic/Latino | 0.925 | 0.064 | 0.004 | 0.007 | EA  |
| TCGA-J9-A8CM | White       | non-Hispanic/Latino | 0.985 | 0.003 | 0.007 | 0.006 | EA  |
| TCGA-J9-A8CN | White       | non-Hispanic/Latino | 0.984 | 0.002 | 0.009 | 0.005 | EA  |
| TCGA-J9-A8CP | White       | non-Hispanic/Latino | 0.987 | 0.005 | 0.004 | 0.004 | EA  |
| TCGA-KC-A4BL | Black       | non-Hispanic/Latino | 0.004 | 0.989 | 0.003 | 0.004 | AA  |
| TCGA-KC-A4BN | Black       | non-Hispanic/Latino | 0.116 | 0.867 | 0.006 | 0.012 | AA  |
| TCGA-KC-A4BO | Black       | non-Hispanic/Latino | 0.213 | 0.780 | 0.004 | 0.003 | AA  |
| TCGA-KC-A4BR | White       | Unavailable         | 0.943 | 0.043 | 0.002 | 0.012 | EA  |
| TCGA-KC-A4BV | Asian       | non-Hispanic/Latino | 0.700 | 0.067 | 0.031 | 0.202 | OA  |
| TCGA-KC-A7F3 | White       | non-Hispanic/Latino | 0.956 | 0.025 | 0.006 | 0.013 | EA  |
| TCGA-KC-A7F5 | White       | non-Hispanic/Latino | 0.912 | 0.060 | 0.002 | 0.026 | EA  |
| TCGA-KC-A7F6 | White       | non-Hispanic/Latino | 0.985 | 0.002 | 0.006 | 0.007 | EA  |
| TCGA-KC-A7FA | White       | non-Hispanic/Latino | 0.974 | 0.009 | 0.008 | 0.009 | EA  |
| TCGA-KC-A7FD | White       | non-Hispanic/Latino | 0.981 | 0.003 | 0.007 | 0.009 | EA  |
| TCGA-KC-A7FE | White       | non-Hispanic/Latino | 0.945 | 0.025 | 0.007 | 0.023 | EA  |
| TCGA-KK-A59V | White       | Unavailable         | 0.985 | 0.004 | 0.004 | 0.007 | EA  |
| TCGA-KK-A59X | Black       | Unavailable         | 0.103 | 0.874 | 0.005 | 0.018 | AA  |
| TCGA-KK-A59Y | White       | Unavailable         | 0.984 | 0.003 | 0.004 | 0.009 | EA  |
| TCGA-KK-A59Z | Black       | Unavailable         | 0.199 | 0.777 | 0.003 | 0.021 | AA  |
| TCGA-KK-A6DY | Black       | Unavailable         | 0.195 | 0.794 | 0.002 | 0.008 | AA  |
| TCGA-KK-A6E0 | Asian       | Unavailable         | 0.003 | 0.002 | 0.004 | 0.990 | EAA |
| TCGA-KK-A6E1 | White       | Unavailable         | 0.982 | 0.003 | 0.011 | 0.004 | EA  |
| TCGA-KK-A6E2 | Black       | Unavailable         | 0.029 | 0.925 | 0.009 | 0.037 | AA  |
| TCGA-KK-A6E3 | Black       | Unavailable         | 0.249 | 0.741 | 0.003 | 0.007 | AA  |
| TCGA-KK-A6E4 | Black       | Unavailable         | 0.333 | 0.657 | 0.004 | 0.006 | AA  |
| TCGA-KK-A6E5 | Black       | Unavailable         | 0.215 | 0.779 | 0.003 | 0.003 | AA  |
| TCGA-KK-A6E6 | White       | non-Hispanic/Latino | 0.967 | 0.004 | 0.015 | 0.014 | EA  |
| TCGA-KK-A6E7 | Unavailable | Hispanic/Latino     | 0.735 | 0.054 | 0.183 | 0.028 | NA  |
| TCGA-KK-A6E8 | White       | non-Hispanic/Latino | 0.971 | 0.004 | 0.021 | 0.004 | EA  |
| TCGA-KK-A7AP | White       | Unavailable         | 0.796 | 0.182 | 0.004 | 0.019 | EA  |

|              |             |                     |       |       |       |       |     |
|--------------|-------------|---------------------|-------|-------|-------|-------|-----|
| TCGA-KK-A7AQ | White       | Unavailable         | 0.989 | 0.004 | 0.005 | 0.002 | EA  |
| TCGA-KK-A7AU | White       | Unavailable         | 0.989 | 0.001 | 0.006 | 0.005 | EA  |
| TCGA-KK-A7AV | Black       | Unavailable         | 0.501 | 0.481 | 0.005 | 0.014 | AA  |
| TCGA-KK-A7AW | Black       | Unavailable         | 0.068 | 0.913 | 0.008 | 0.011 | AA  |
| TCGA-KK-A7AY | White       | Unavailable         | 0.983 | 0.003 | 0.007 | 0.008 | EA  |
| TCGA-KK-A7AZ | White       | Unavailable         | 0.982 | 0.010 | 0.004 | 0.003 | EA  |
| TCGA-KK-A7B0 | White       | Unavailable         | 0.993 | 0.001 | 0.003 | 0.002 | EA  |
| TCGA-KK-A7B1 | White       | Unavailable         | 0.982 | 0.006 | 0.008 | 0.005 | EA  |
| TCGA-KK-A7B2 | White       | Unavailable         | 0.980 | 0.005 | 0.011 | 0.004 | EA  |
| TCGA-KK-A7B3 | White       | Unavailable         | 0.973 | 0.009 | 0.012 | 0.006 | EA  |
| TCGA-KK-A7B4 | White       | Unavailable         | 0.990 | 0.004 | 0.003 | 0.003 | EA  |
| TCGA-KK-A8I4 | White       | Unavailable         | 0.981 | 0.006 | 0.005 | 0.007 | EA  |
| TCGA-KK-A8I5 | Black       | Unavailable         | 0.120 | 0.859 | 0.010 | 0.011 | AA  |
| TCGA-KK-A8I6 | White       | Unavailable         | 0.978 | 0.006 | 0.009 | 0.007 | EA  |
| TCGA-KK-A8I7 | White       | Unavailable         | 0.976 | 0.005 | 0.012 | 0.007 | EA  |
| TCGA-KK-A8I8 | White       | Unavailable         | 0.992 | 0.002 | 0.002 | 0.004 | EA  |
| TCGA-KK-A8I9 | Unavailable | Unavailable         | 0.611 | 0.075 | 0.277 | 0.038 | NA  |
| TCGA-KK-A8IA | White       | Unavailable         | 0.986 | 0.002 | 0.008 | 0.005 | EA  |
| TCGA-KK-A8IB | White       | Unavailable         | 0.973 | 0.007 | 0.009 | 0.011 | EA  |
| TCGA-KK-A8IC | White       | Unavailable         | 0.982 | 0.006 | 0.008 | 0.004 | EA  |
| TCGA-KK-A8ID | Unavailable | Unavailable         | 0.761 | 0.150 | 0.069 | 0.020 | EA  |
| TCGA-KK-A8IF | Black       | Unavailable         | 0.247 | 0.742 | 0.005 | 0.006 | AA  |
| TCGA-KK-A8IG | White       | Unavailable         | 0.987 | 0.005 | 0.005 | 0.003 | EA  |
| TCGA-KK-A8IH | White       | Unavailable         | 0.882 | 0.004 | 0.082 | 0.032 | EA  |
| TCGA-KK-A8II | White       | Unavailable         | 0.985 | 0.006 | 0.004 | 0.006 | EA  |
| TCGA-KK-A8IJ | White       | Unavailable         | 0.983 | 0.002 | 0.006 | 0.010 | EA  |
| TCGA-KK-A8IK | White       | Unavailable         | 0.986 | 0.005 | 0.004 | 0.005 | EA  |
| TCGA-KK-A8IL | White       | Unavailable         | 0.371 | 0.547 | 0.045 | 0.037 | AA  |
| TCGA-KK-A8IM | White       | Unavailable         | 0.988 | 0.003 | 0.006 | 0.004 | EA  |
| TCGA-M7-A7IY | White       | Unavailable         | 0.978 | 0.003 | 0.012 | 0.008 | EA  |
| TCGA-M7-A7IZ | White       | non-Hispanic/Latino | 0.986 | 0.001 | 0.007 | 0.006 | EA  |
| TCGA-M7-A720 | White       | non-Hispanic/Latino | 0.982 | 0.003 | 0.008 | 0.008 | EA  |
| TCGA-M7-A721 | White       | non-Hispanic/Latino | 0.983 | 0.001 | 0.008 | 0.008 | EA  |
| TCGA-M7-A722 | White       | Unavailable         | 0.985 | 0.002 | 0.005 | 0.009 | EA  |
| TCGA-M7-A723 | White       | non-Hispanic/Latino | 0.984 | 0.006 | 0.005 | 0.005 | EA  |
| TCGA-M7-A724 | White       | non-Hispanic/Latino | 0.989 | 0.002 | 0.005 | 0.004 | EA  |
| TCGA-M7-A725 | White       | Unavailable         | 0.989 | 0.002 | 0.005 | 0.004 | EA  |
| TCGA-MG-AAMC | White       | non-Hispanic/Latino | 0.436 | 0.019 | 0.413 | 0.133 | NA  |
| TCGA-QU-A6IL | Asian       | non-Hispanic/Latino | 0.002 | 0.002 | 0.004 | 0.993 | EAA |
| TCGA-QU-A6IM | White       | non-Hispanic/Latino | 0.969 | 0.015 | 0.007 | 0.008 | EA  |
| TCGA-QU-A6IN | White       | non-Hispanic/Latino | 0.972 | 0.016 | 0.004 | 0.008 | EA  |
| TCGA-QU-A6IO | Black       | non-Hispanic/Latino | 0.243 | 0.745 | 0.006 | 0.007 | AA  |
| TCGA-QU-A6IP | White       | non-Hispanic/Latino | 0.983 | 0.005 | 0.008 | 0.005 | EA  |
| TCGA-SU-A7E7 | White       | non-Hispanic/Latino | 0.971 | 0.007 | 0.008 | 0.015 | EA  |
| TCGA-TK-A8OK | White       | non-Hispanic/Latino | 0.944 | 0.025 | 0.007 | 0.024 | EA  |
| TCGA-TP-A8TT | White       | non-Hispanic/Latino | 0.989 | 0.003 | 0.004 | 0.004 | EA  |
| TCGA-TP-A8TV | White       | non-Hispanic/Latino | 0.975 | 0.008 | 0.004 | 0.014 | EA  |
| TCGA-V1-A8MF | Black       | non-Hispanic/Latino | 0.442 | 0.542 | 0.011 | 0.006 | AA  |
| TCGA-V1-A8MG | Black       | non-Hispanic/Latino | 0.115 | 0.859 | 0.013 | 0.012 | AA  |
| TCGA-V1-A8MJ | Black       | non-Hispanic/Latino | 0.192 | 0.779 | 0.011 | 0.019 | AA  |
| TCGA-V1-A8MK | Black       | non-Hispanic/Latino | 0.268 | 0.718 | 0.003 | 0.011 | AA  |
| TCGA-V1-A8ML | Black       | non-Hispanic/Latino | 0.094 | 0.881 | 0.008 | 0.018 | AA  |
| TCGA-V1-A8MM | Black       | non-Hispanic/Latino | 0.261 | 0.726 | 0.008 | 0.005 | AA  |
| TCGA-V1-A8MU | Black       | non-Hispanic/Latino | 0.330 | 0.662 | 0.005 | 0.003 | AA  |
| TCGA-V1-A8WL | Black       | non-Hispanic/Latino | 0.143 | 0.843 | 0.006 | 0.009 | AA  |
| TCGA-V1-A8WN | Black       | non-Hispanic/Latino | 0.191 | 0.800 | 0.003 | 0.006 | AA  |
| TCGA-V1-A8WS | White       | non-Hispanic/Latino | 0.981 | 0.002 | 0.006 | 0.011 | EA  |
| TCGA-V1-A8WV | White       | non-Hispanic/Latino | 0.055 | 0.026 | 0.011 | 0.909 | EAA |
| TCGA-V1-A8WW | White       | non-Hispanic/Latino | 0.987 | 0.004 | 0.007 | 0.002 | EA  |
| TCGA-V1-A8X3 | White       | non-Hispanic/Latino | 0.970 | 0.006 | 0.011 | 0.013 | EA  |
| TCGA-V1-A9O5 | White       | non-Hispanic/Latino | 0.954 | 0.024 | 0.003 | 0.020 | EA  |
| TCGA-V1-A9O7 | White       | non-Hispanic/Latino | 0.980 | 0.004 | 0.006 | 0.010 | EA  |
| TCGA-V1-A9O9 | White       | non-Hispanic/Latino | 0.978 | 0.002 | 0.014 | 0.005 | EA  |
| TCGA-V1-A9OA | White       | non-Hispanic/Latino | 0.984 | 0.002 | 0.004 | 0.010 | EA  |
| TCGA-V1-A9OF | White       | non-Hispanic/Latino | 0.987 | 0.002 | 0.007 | 0.005 | EA  |
| TCGA-V1-A9OH | White       | non-Hispanic/Latino | 0.989 | 0.002 | 0.005 | 0.005 | EA  |
| TCGA-V1-A9OL | Asian       | non-Hispanic/Latino | 0.004 | 0.003 | 0.009 | 0.984 | EAA |
| TCGA-V1-A9OQ | White       | Hispanic/Latino     | 0.590 | 0.204 | 0.182 | 0.025 | NA  |
| TCGA-V1-A9OT | White       | non-Hispanic/Latino | 0.858 | 0.063 | 0.008 | 0.071 | EA  |
| TCGA-V1-A9OX | White       | non-Hispanic/Latino | 0.978 | 0.005 | 0.011 | 0.005 | EA  |
| TCGA-V1-A9OY | White       | non-Hispanic/Latino | 0.980 | 0.010 | 0.004 | 0.006 | EA  |
| TCGA-V1-A9Z7 | White       | non-Hispanic/Latino | 0.985 | 0.003 | 0.005 | 0.007 | EA  |
| TCGA-V1-A9Z8 | White       | non-Hispanic/Latino | 0.982 | 0.003 | 0.011 | 0.005 | EA  |
| TCGA-V1-A9Z9 | White       | non-Hispanic/Latino | 0.990 | 0.003 | 0.004 | 0.003 | EA  |
| TCGA-V1-A9ZG | White       | non-Hispanic/Latino | 0.012 | 0.007 | 0.004 | 0.977 | EAA |
| TCGA-V1-A9ZI | White       | non-Hispanic/Latino | 0.979 | 0.005 | 0.004 | 0.012 | EA  |
| TCGA-V1-A9ZK | White       | non-Hispanic/Latino | 0.978 | 0.004 | 0.013 | 0.005 | EA  |
| TCGA-V1-A9ZR | White       | non-Hispanic/Latino | 0.990 | 0.004 | 0.003 | 0.004 | EA  |
| TCGA-VN-A88I | White       | non-Hispanic/Latino | 0.969 | 0.023 | 0.003 | 0.005 | EA  |
| TCGA-VN-A88K | White       | non-Hispanic/Latino | 0.985 | 0.003 | 0.005 | 0.008 | EA  |
| TCGA-VN-A88L | White       | non-Hispanic/Latino | 0.958 | 0.023 | 0.004 | 0.015 | EA  |

|              |                            |                     |       |       |       |       |    |
|--------------|----------------------------|---------------------|-------|-------|-------|-------|----|
| TCGA-VN-A88M | Black                      | non-Hispanic/Latino | 0.120 | 0.872 | 0.004 | 0.005 | AA |
| TCGA-VN-A88N | White                      | non-Hispanic/Latino | 0.982 | 0.004 | 0.005 | 0.010 | EA |
| TCGA-VN-A88O | Unavailable                | Hispanic/Latino     | 0.492 | 0.473 | 0.028 | 0.008 | AA |
| TCGA-VN-A88P | White                      | non-Hispanic/Latino | 0.981 | 0.002 | 0.010 | 0.008 | EA |
| TCGA-VN-A88Q | White                      | non-Hispanic/Latino | 0.991 | 0.002 | 0.003 | 0.003 | EA |
| TCGA-VN-A88R | Black                      | non-Hispanic/Latino | 0.152 | 0.825 | 0.007 | 0.017 | AA |
| TCGA-VN-A943 | White                      | non-Hispanic/Latino | 0.967 | 0.021 | 0.003 | 0.010 | EA |
| TCGA-VP-A872 | White                      | Unavailable         | 0.974 | 0.001 | 0.021 | 0.005 | EA |
| TCGA-VP-A875 | Black                      | Unavailable         | 0.124 | 0.865 | 0.006 | 0.005 | AA |
| TCGA-VP-A876 | White                      | Unavailable         | 0.979 | 0.003 | 0.009 | 0.008 | EA |
| TCGA-VP-A878 | White                      | Unavailable         | 0.972 | 0.007 | 0.013 | 0.008 | EA |
| TCGA-VP-A879 | White                      | Unavailable         | 0.983 | 0.003 | 0.004 | 0.010 | EA |
| TCGA-VP-A87B | White                      | Unavailable         | 0.975 | 0.005 | 0.012 | 0.007 | EA |
| TCGA-VP-A87C | Black                      | Unavailable         | 0.164 | 0.819 | 0.004 | 0.014 | AA |
| TCGA-VP-A87D | White                      | Unavailable         | 0.968 | 0.005 | 0.008 | 0.018 | EA |
| TCGA-VP-A87E | Black                      | Unavailable         | 0.203 | 0.789 | 0.005 | 0.004 | AA |
| TCGA-VP-A87H | White                      | Unavailable         | 0.994 | 0.002 | 0.002 | 0.002 | EA |
| TCGA-VP-A87J | Black                      | Unavailable         | 0.213 | 0.775 | 0.002 | 0.011 | AA |
| TCGA-VP-A87K | White                      | Unavailable         | 0.985 | 0.001 | 0.007 | 0.007 | EA |
| TCGA-VP-AA1N | White                      | Unavailable         | 0.992 | 0.002 | 0.002 | 0.004 | EA |
| TCGA-WW-A8ZI | White                      | non-Hispanic/Latino | 0.985 | 0.002 | 0.005 | 0.007 | EA |
| TCGA-X4-A8KQ | White                      | non-Hispanic/Latino | 0.958 | 0.017 | 0.007 | 0.018 | EA |
| TCGA-X4-A8KS | Black                      | non-Hispanic/Latino | 0.270 | 0.718 | 0.004 | 0.008 | AA |
| TCGA-XA-A8JR | Unavailable                | Unavailable         | 0.980 | 0.002 | 0.012 | 0.006 | EA |
| TCGA-XJ-A83F | White                      | non-Hispanic/Latino | 0.988 | 0.002 | 0.004 | 0.006 | EA |
| TCGA-XJ-A83G | Black                      | non-Hispanic/Latino | 0.186 | 0.797 | 0.008 | 0.008 | AA |
| TCGA-XJ-A83H | White                      | non-Hispanic/Latino | 0.978 | 0.006 | 0.005 | 0.012 | EA |
| TCGA-XJ-A9DI | White                      | non-Hispanic/Latino | 0.982 | 0.003 | 0.008 | 0.007 | EA |
| TCGA-XJ-A9DK | White                      | non-Hispanic/Latino | 0.980 | 0.003 | 0.005 | 0.012 | EA |
| TCGA-XJ-A9DQ | White                      | non-Hispanic/Latino | 0.991 | 0.003 | 0.003 | 0.003 | EA |
| TCGA-XJ-A9DX | merican Indian/Alaska Nati | non-Hispanic/Latino | 0.840 | 0.009 | 0.120 | 0.032 | NA |
| TCGA-XK-AAIR | White                      | Unavailable         | 0.989 | 0.002 | 0.005 | 0.004 | EA |
| TCGA-XK-AAIV | White                      | Unavailable         | 0.954 | 0.010 | 0.012 | 0.024 | EA |
| TCGA-XK-AAIW | White                      | non-Hispanic/Latino | 0.982 | 0.007 | 0.005 | 0.007 | EA |
| TCGA-XK-AAJ3 | White                      | Unavailable         | 0.971 | 0.007 | 0.013 | 0.009 | EA |
| TCGA-XK-AAJA | Unavailable                | Hispanic/Latino     | 0.383 | 0.094 | 0.416 | 0.107 | NA |
| TCGA-XK-AAJP | White                      | Unavailable         | 0.985 | 0.002 | 0.005 | 0.008 | EA |
| TCGA-XK-AAJR | White                      | Unavailable         | 0.988 | 0.004 | 0.003 | 0.005 | EA |
| TCGA-XK-AAJT | White                      | Unavailable         | 0.982 | 0.004 | 0.006 | 0.008 | EA |
| TCGA-XK-AAJU | White                      | Unavailable         | 0.939 | 0.026 | 0.008 | 0.028 | EA |
| TCGA-XK-AAK1 | White                      | Unavailable         | 0.986 | 0.004 | 0.007 | 0.003 | EA |
| TCGA-XQ-A8TA | White                      | Hispanic/Latino     | 0.981 | 0.005 | 0.002 | 0.012 | EA |
| TCGA-XQ-A8TB | White                      | Hispanic/Latino     | 0.765 | 0.172 | 0.041 | 0.023 | EA |
| TCGA-Y6-A8TL | Unavailable                | Unavailable         | 0.982 | 0.003 | 0.009 | 0.006 | EA |
| TCGA-Y6-A9XI | Unavailable                | Unavailable         | 0.983 | 0.002 | 0.012 | 0.004 | EA |
| TCGA-YJ-A8SW | Unavailable                | Unavailable         | 0.942 | 0.027 | 0.004 | 0.027 | EA |
| TCGA-YL-A8HJ | White                      | non-Hispanic/Latino | 0.972 | 0.013 | 0.007 | 0.008 | EA |
| TCGA-YL-A8HK | White                      | non-Hispanic/Latino | 0.992 | 0.003 | 0.002 | 0.004 | EA |
| TCGA-YL-A8HL | White                      | non-Hispanic/Latino | 0.991 | 0.003 | 0.003 | 0.003 | EA |
| TCGA-YL-A8HM | White                      | non-Hispanic/Latino | 0.991 | 0.002 | 0.003 | 0.004 | EA |
| TCGA-YL-A8HO | Black                      | non-Hispanic/Latino | 0.073 | 0.903 | 0.007 | 0.017 | AA |
| TCGA-YL-A8S8 | White                      | non-Hispanic/Latino | 0.981 | 0.008 | 0.006 | 0.005 | EA |
| TCGA-YL-A8S9 | White                      | non-Hispanic/Latino | 0.986 | 0.006 | 0.002 | 0.006 | EA |
| TCGA-YL-A8SA | White                      | Hispanic/Latino     | 0.986 | 0.002 | 0.008 | 0.005 | EA |
| TCGA-YL-A8SB | White                      | non-Hispanic/Latino | 0.981 | 0.011 | 0.003 | 0.005 | EA |
| TCGA-YL-A8SC | White                      | non-Hispanic/Latino | 0.978 | 0.004 | 0.010 | 0.008 | EA |
| TCGA-YL-A8SF | White                      | non-Hispanic/Latino | 0.984 | 0.005 | 0.004 | 0.008 | EA |
| TCGA-YL-A8SH | White                      | non-Hispanic/Latino | 0.981 | 0.003 | 0.006 | 0.010 | EA |
| TCGA-YL-A8SI | White                      | non-Hispanic/Latino | 0.989 | 0.003 | 0.004 | 0.004 | EA |
| TCGA-YL-A8SJ | White                      | non-Hispanic/Latino | 0.881 | 0.051 | 0.009 | 0.060 | EA |
| TCGA-YL-A8SK | White                      | non-Hispanic/Latino | 0.992 | 0.001 | 0.003 | 0.003 | EA |
| TCGA-YL-A8SL | White                      | non-Hispanic/Latino | 0.985 | 0.002 | 0.008 | 0.004 | EA |
| TCGA-YL-A8SO | White                      | non-Hispanic/Latino | 0.990 | 0.002 | 0.005 | 0.003 | EA |
| TCGA-YL-A8SP | White                      | non-Hispanic/Latino | 0.982 | 0.004 | 0.008 | 0.006 | EA |
| TCGA-YL-A8SQ | White                      | non-Hispanic/Latino | 0.990 | 0.001 | 0.002 | 0.007 | EA |
| TCGA-YL-A8SR | White                      | non-Hispanic/Latino | 0.986 | 0.005 | 0.004 | 0.005 | EA |
| TCGA-YL-A9WH | White                      | non-Hispanic/Latino | 0.989 | 0.003 | 0.006 | 0.003 | EA |
| TCGA-YL-A9WI | White                      | non-Hispanic/Latino | 0.990 | 0.004 | 0.003 | 0.004 | EA |
| TCGA-YL-A9WJ | White                      | non-Hispanic/Latino | 0.974 | 0.003 | 0.013 | 0.010 | EA |
| TCGA-YL-A9WK | Black                      | non-Hispanic/Latino | 0.079 | 0.907 | 0.008 | 0.006 | AA |
| TCGA-YL-A9WL | White                      | non-Hispanic/Latino | 0.983 | 0.002 | 0.007 | 0.009 | EA |
| TCGA-YL-A9WX | White                      | non-Hispanic/Latino | 0.941 | 0.027 | 0.004 | 0.028 | EA |
| TCGA-YL-A9WY | White                      | non-Hispanic/Latino | 0.939 | 0.040 | 0.009 | 0.012 | EA |
| TCGA-ZG-A8QW | White                      | non-Hispanic/Latino | 0.990 | 0.001 | 0.004 | 0.005 | EA |
| TCGA-ZG-A8QX | White                      | non-Hispanic/Latino | 0.986 | 0.003 | 0.005 | 0.006 | EA |
| TCGA-ZG-A8QY | White                      | non-Hispanic/Latino | 0.981 | 0.004 | 0.008 | 0.007 | EA |
| TCGA-ZG-A8QZ | White                      | non-Hispanic/Latino | 0.987 | 0.002 | 0.005 | 0.006 | EA |
| TCGA-ZG-A9KY | White                      | non-Hispanic/Latino | 0.974 | 0.004 | 0.011 | 0.011 | EA |
| TCGA-ZG-A9L0 | White                      | non-Hispanic/Latino | 0.979 | 0.003 | 0.008 | 0.010 | EA |
| TCGA-ZG-A9L1 | White                      | non-Hispanic/Latino | 0.953 | 0.002 | 0.027 | 0.018 | EA |
| TCGA-ZG-A9L2 | White                      | non-Hispanic/Latino | 0.979 | 0.003 | 0.015 | 0.004 | EA |

|              |       |                     |       |       |       |       |    |
|--------------|-------|---------------------|-------|-------|-------|-------|----|
| TCGA-ZG-A9L4 | White | non-Hispanic/Latino | 0.977 | 0.003 | 0.008 | 0.012 | EA |
| TCGA-ZG-A9L5 | White | non-Hispanic/Latino | 0.987 | 0.003 | 0.006 | 0.005 | EA |
| TCGA-ZG-A9L6 | White | non-Hispanic/Latino | 0.961 | 0.015 | 0.002 | 0.022 | EA |
| TCGA-ZG-A9L9 | White | non-Hispanic/Latino | 0.991 | 0.002 | 0.004 | 0.003 | EA |
| TCGA-ZG-A9LB | White | non-Hispanic/Latino | 0.986 | 0.005 | 0.004 | 0.006 | EA |
| TCGA-ZG-A9LM | White | non-Hispanic/Latino | 0.886 | 0.063 | 0.008 | 0.043 | EA |
| TCGA-ZG-A9LN | White | non-Hispanic/Latino | 0.978 | 0.004 | 0.005 | 0.013 | EA |
| TCGA-ZG-A9LS | White | non-Hispanic/Latino | 0.992 | 0.002 | 0.004 | 0.002 | EA |
| TCGA-ZG-A9LU | White | non-Hispanic/Latino | 0.983 | 0.003 | 0.008 | 0.007 | EA |
| TCGA-ZG-A9LY | White | non-Hispanic/Latino | 0.986 | 0.005 | 0.005 | 0.004 | EA |
| TCGA-ZG-A9LZ | White | non-Hispanic/Latino | 0.990 | 0.002 | 0.005 | 0.004 | EA |
| TCGA-ZG-A9M4 | White | non-Hispanic/Latino | 0.977 | 0.003 | 0.008 | 0.012 | EA |
| TCGA-ZG-A9MC | White | non-Hispanic/Latino | 0.984 | 0.006 | 0.002 | 0.008 | EA |
| TCGA-ZG-A9N3 | White | non-Hispanic/Latino | 0.991 | 0.002 | 0.004 | 0.004 | EA |
| TCGA-ZG-A9ND | White | non-Hispanic/Latino | 0.984 | 0.005 | 0.005 | 0.006 | EA |
| TCGA-ZG-A9NI | White | non-Hispanic/Latino | 0.985 | 0.003 | 0.005 | 0.007 | EA |

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Table S4. Global genetic ancestry annotation of TCGA-PRAD patients estimated by LAMP

| Patient      | TCGA clinical annotation |                           | Proportions of ancestral components for each individual |              |                 |            | EIGENSTRAT assignment |
|--------------|--------------------------|---------------------------|---------------------------------------------------------|--------------|-----------------|------------|-----------------------|
|              | Self-identified race     | Self-identified ethnicity | European                                                | West African | Native American | East Asian |                       |
| TCGA-2A-A8VL | White                    | non-Hispanic/Latino       | 0.701                                                   | 0.191        | 0.091           | 0.016      | NA                    |
| TCGA-2A-A8VO | White                    | non-Hispanic/Latino       | 0.995                                                   | 0.000        | 0.001           | 0.004      | EA                    |
| TCGA-2A-A8VT | Asian                    | non-Hispanic/Latino       | 0.776                                                   | 0.011        | 0.007           | 0.206      | OA                    |
| TCGA-2A-A8VV | Unavailable              | non-Hispanic/Latino       | 0.635                                                   | 0.295        | 0.040           | 0.030      | NA                    |
| TCGA-2A-A8VX | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.001        | 0.004           | 0.005      | EA                    |
| TCGA-2A-A8W1 | Asian                    | non-Hispanic/Latino       | 0.172                                                   | 0.069        | 0.000           | 0.759      | EAA                   |
| TCGA-2A-A8W3 | White                    | non-Hispanic/Latino       | 0.979                                                   | 0.010        | 0.001           | 0.010      | EA                    |
| TCGA-2A-AAFY | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.005        | 0.001           | 0.007      | EA                    |
| TCGA-2A-AAYO | White                    | non-Hispanic/Latino       | 0.969                                                   | 0.005        | 0.003           | 0.023      | EA                    |
| TCGA-2A-AAYU | White                    | non-Hispanic/Latino       | 0.983                                                   | 0.014        | 0.002           | 0.002      | EA                    |
| TCGA-4L-AA1F | White                    | non-Hispanic/Latino       | 0.972                                                   | 0.001        | 0.008           | 0.019      | EA                    |
| TCGA-CH-5737 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.001        | 0.004           | 0.006      | EA                    |
| TCGA-CH-5738 | White                    | non-Hispanic/Latino       | 0.983                                                   | 0.001        | 0.004           | 0.012      | EA                    |
| TCGA-CH-5739 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.002        | 0.003           | 0.006      | EA                    |
| TCGA-CH-5740 | White                    | non-Hispanic/Latino       | 0.993                                                   | 0.001        | 0.000           | 0.006      | EA                    |
| TCGA-CH-5741 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.003        | 0.004           | 0.002      | EA                    |
| TCGA-CH-5743 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.002        | 0.004           | 0.005      | EA                    |
| TCGA-CH-5744 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.000        | 0.005           | 0.004      | EA                    |
| TCGA-CH-5745 | White                    | non-Hispanic/Latino       | 0.993                                                   | 0.000        | 0.002           | 0.005      | EA                    |
| TCGA-CH-5746 | White                    | non-Hispanic/Latino       | 0.983                                                   | 0.002        | 0.004           | 0.011      | EA                    |
| TCGA-CH-5748 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.001        | 0.002           | 0.008      | EA                    |
| TCGA-CH-5750 | White                    | non-Hispanic/Latino       | 0.993                                                   | 0.001        | 0.004           | 0.003      | EA                    |
| TCGA-CH-5751 | White                    | non-Hispanic/Latino       | 0.974                                                   | 0.003        | 0.003           | 0.020      | EA                    |
| TCGA-CH-5752 | White                    | non-Hispanic/Latino       | 0.983                                                   | 0.003        | 0.005           | 0.009      | EA                    |
| TCGA-CH-5753 | White                    | non-Hispanic/Latino       | 0.986                                                   | 0.004        | 0.005           | 0.005      | EA                    |
| TCGA-CH-5754 | White                    | non-Hispanic/Latino       | 0.991                                                   | 0.001        | 0.001           | 0.007      | EA                    |
| TCGA-CH-5761 | White                    | non-Hispanic/Latino       | 0.991                                                   | 0.001        | 0.003           | 0.005      | EA                    |
| TCGA-CH-5762 | White                    | non-Hispanic/Latino       | 0.968                                                   | 0.007        | 0.001           | 0.023      | EA                    |
| TCGA-CH-5763 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.002        | 0.001           | 0.010      | EA                    |
| TCGA-CH-5764 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.003        | 0.002           | 0.006      | EA                    |
| TCGA-CH-5765 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.002        | 0.001           | 0.004      | EA                    |
| TCGA-CH-5766 | White                    | non-Hispanic/Latino       | 0.970                                                   | 0.009        | 0.001           | 0.019      | EA                    |
| TCGA-CH-5767 | White                    | non-Hispanic/Latino       | 0.991                                                   | 0.001        | 0.002           | 0.005      | EA                    |
| TCGA-CH-5768 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.003        | 0.005           | 0.005      | EA                    |
| TCGA-CH-5769 | White                    | non-Hispanic/Latino       | 0.951                                                   | 0.008        | 0.003           | 0.038      | EA                    |
| TCGA-CH-5771 | White                    | non-Hispanic/Latino       | 0.986                                                   | 0.003        | 0.005           | 0.007      | EA                    |
| TCGA-CH-5772 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.000        | 0.002           | 0.006      | EA                    |
| TCGA-CH-5788 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.000        | 0.005           | 0.006      | EA                    |
| TCGA-CH-5789 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.002        | 0.004           | 0.005      | EA                    |
| TCGA-CH-5790 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.003        | 0.002           | 0.007      | EA                    |
| TCGA-CH-5791 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.002        | 0.002           | 0.004      | EA                    |
| TCGA-CH-5792 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.001        | 0.004           | 0.007      | EA                    |
| TCGA-CH-5794 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.001        | 0.002           | 0.005      | EA                    |
| TCGA-EJ-5494 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.006        | 0.002           | 0.005      | EA                    |
| TCGA-EJ-5495 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.007        | 0.003           | 0.003      | EA                    |
| TCGA-EJ-5496 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.003        | 0.002           | 0.007      | EA                    |
| TCGA-EJ-5497 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.001        | 0.005           | 0.004      | EA                    |
| TCGA-EJ-5498 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.001        | 0.003           | 0.007      | EA                    |
| TCGA-EJ-5499 | Asian                    | non-Hispanic/Latino       | 0.984                                                   | 0.005        | 0.002           | 0.009      | EA                    |
| TCGA-EJ-5501 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.003        | 0.005           | 0.004      | EA                    |
| TCGA-EJ-5502 | Unavailable              | Unavailable               | 0.988                                                   | 0.005        | 0.003           | 0.004      | EA                    |
| TCGA-EJ-5503 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.001        | 0.004           | 0.006      | EA                    |
| TCGA-EJ-5504 | White                    | non-Hispanic/Latino       | 0.974                                                   | 0.001        | 0.005           | 0.020      | EA                    |
| TCGA-EJ-5505 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.002        | 0.006           | 0.006      | EA                    |
| TCGA-EJ-5506 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.001        | 0.005           | 0.004      | EA                    |
| TCGA-EJ-5507 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.001        | 0.004           | 0.007      | EA                    |
| TCGA-EJ-5508 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.003        | 0.003           | 0.007      | EA                    |
| TCGA-EJ-5509 | White                    | non-Hispanic/Latino       | 0.995                                                   | 0.001        | 0.002           | 0.002      | EA                    |
| TCGA-EJ-5510 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.002        | 0.003           | 0.003      | EA                    |
| TCGA-EJ-5511 | Black                    | non-Hispanic/Latino       | 0.166                                                   | 0.825        | 0.002           | 0.006      | AA                    |
| TCGA-EJ-5512 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.001        | 0.005           | 0.006      | EA                    |
| TCGA-EJ-5514 | White                    | non-Hispanic/Latino       | 0.989                                                   | 0.000        | 0.005           | 0.005      | EA                    |
| TCGA-EJ-5515 | White                    | non-Hispanic/Latino       | 0.980                                                   | 0.003        | 0.007           | 0.010      | EA                    |
| TCGA-EJ-5516 | White                    | non-Hispanic/Latino       | 0.995                                                   | 0.001        | 0.003           | 0.000      | EA                    |
| TCGA-EJ-5517 | White                    | non-Hispanic/Latino       | 0.993                                                   | 0.000        | 0.002           | 0.004      | EA                    |
| TCGA-EJ-5518 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.003        | 0.003           | 0.005      | EA                    |
| TCGA-EJ-5519 | White                    | non-Hispanic/Latino       | 0.922                                                   | 0.009        | 0.004           | 0.065      | EA                    |
| TCGA-EJ-5521 | White                    | non-Hispanic/Latino       | 0.981                                                   | 0.001        | 0.003           | 0.015      | EA                    |
| TCGA-EJ-5522 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.000        | 0.002           | 0.005      | EA                    |
| TCGA-EJ-5524 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.005        | 0.003           | 0.001      | EA                    |
| TCGA-EJ-5525 | White                    | non-Hispanic/Latino       | 0.991                                                   | 0.002        | 0.004           | 0.004      | EA                    |
| TCGA-EJ-5526 | White                    | non-Hispanic/Latino       | 0.691                                                   | 0.156        | 0.137           | 0.016      | NA                    |
| TCGA-EJ-5527 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.004        | 0.003           | 0.003      | EA                    |
| TCGA-EJ-5530 | White                    | non-Hispanic/Latino       | 0.993                                                   | 0.002        | 0.002           | 0.003      | EA                    |
| TCGA-EJ-5531 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.004        | 0.002           | 0.004      | EA                    |
| TCGA-EJ-5532 | White                    | non-Hispanic/Latino       | 0.974                                                   | 0.006        | 0.002           | 0.017      | EA                    |
| TCGA-EJ-5542 | White                    | non-Hispanic/Latino       | 0.975                                                   | 0.008        | 0.002           | 0.015      | EA                    |
| TCGA-EJ-7115 | White                    | non-Hispanic/Latino       | 0.987                                                   | 0.001        | 0.002           | 0.009      | EA                    |
| TCGA-EJ-7123 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.001        | 0.005           | 0.002      | EA                    |
| TCGA-EJ-7125 | White                    | non-Hispanic/Latino       | 0.983                                                   | 0.012        | 0.002           | 0.003      | EA                    |
| TCGA-EJ-7218 | White                    | non-Hispanic/Latino       | 0.993                                                   | 0.003        | 0.001           | 0.003      | EA                    |
| TCGA-EJ-7312 | White                    | non-Hispanic/Latino       | 0.994                                                   | 0.002        | 0.000           | 0.004      | EA                    |
| TCGA-EJ-7314 | White                    | non-Hispanic/Latino       | 0.991                                                   | 0.002        | 0.003           | 0.004      | EA                    |
| TCGA-EJ-7315 | White                    | non-Hispanic/Latino       | 0.990                                                   | 0.003        | 0.004           | 0.004      | EA                    |
| TCGA-EJ-7317 | White                    | non-Hispanic/Latino       | 0.988                                                   | 0.001        | 0.005           | 0.005      | EA                    |
| TCGA-EJ-7318 | White                    | non-Hispanic/Latino       | 0.992                                                   | 0.000        | 0.003           | 0.004      | EA                    |
| TCGA-EJ-7321 | Black                    | non-Hispanic/Latino       | 0.072                                                   | 0.912        | 0.010           | 0.006      | AA                    |

|              |             |                     |       |       |       |       |     |
|--------------|-------------|---------------------|-------|-------|-------|-------|-----|
| TCGA-EJ-7325 | White       | non-Hispanic/Latino | 0.982 | 0.005 | 0.005 | 0.009 | EA  |
| TCGA-EJ-7327 | White       | non-Hispanic/Latino | 0.987 | 0.001 | 0.005 | 0.006 | EA  |
| TCGA-EJ-7328 | White       | non-Hispanic/Latino | 0.990 | 0.000 | 0.006 | 0.004 | EA  |
| TCGA-EJ-7330 | White       | non-Hispanic/Latino | 0.986 | 0.002 | 0.002 | 0.010 | EA  |
| TCGA-EJ-7331 | White       | non-Hispanic/Latino | 0.980 | 0.004 | 0.006 | 0.010 | EA  |
| TCGA-EJ-7781 | White       | non-Hispanic/Latino | 0.978 | 0.013 | 0.003 | 0.006 | EA  |
| TCGA-EJ-7782 | Black       | non-Hispanic/Latino | 0.310 | 0.680 | 0.002 | 0.007 | AA  |
| TCGA-EJ-7783 | White       | non-Hispanic/Latino | 0.986 | 0.004 | 0.005 | 0.005 | EA  |
| TCGA-EJ-7784 | White       | non-Hispanic/Latino | 0.990 | 0.001 | 0.006 | 0.002 | EA  |
| TCGA-EJ-7785 | White       | non-Hispanic/Latino | 0.988 | 0.003 | 0.004 | 0.006 | EA  |
| TCGA-EJ-7786 | White       | non-Hispanic/Latino | 0.989 | 0.002 | 0.003 | 0.005 | EA  |
| TCGA-EJ-7788 | White       | non-Hispanic/Latino | 0.976 | 0.000 | 0.009 | 0.015 | EA  |
| TCGA-EJ-7789 | Black       | non-Hispanic/Latino | 0.210 | 0.782 | 0.006 | 0.003 | AA  |
| TCGA-EJ-7791 | White       | non-Hispanic/Latino | 0.992 | 0.003 | 0.001 | 0.004 | EA  |
| TCGA-EJ-7792 | White       | non-Hispanic/Latino | 0.991 | 0.001 | 0.004 | 0.004 | EA  |
| TCGA-EJ-7793 | White       | non-Hispanic/Latino | 0.979 | 0.002 | 0.011 | 0.008 | EA  |
| TCGA-EJ-7794 | White       | non-Hispanic/Latino | 0.968 | 0.008 | 0.006 | 0.018 | EA  |
| TCGA-EJ-7797 | White       | non-Hispanic/Latino | 0.985 | 0.002 | 0.001 | 0.012 | EA  |
| TCGA-EJ-8468 | White       | Unavailable         | 0.983 | 0.003 | 0.003 | 0.010 | EA  |
| TCGA-EJ-8469 | Black       | Unavailable         | 0.364 | 0.617 | 0.007 | 0.012 | AA  |
| TCGA-EJ-8470 | Black       | Unavailable         | 0.356 | 0.635 | 0.002 | 0.007 | AA  |
| TCGA-EJ-8472 | White       | Unavailable         | 0.994 | 0.001 | 0.001 | 0.004 | EA  |
| TCGA-EJ-8474 | White       | Unavailable         | 0.982 | 0.005 | 0.004 | 0.009 | EA  |
| TCGA-EJ-A46B | White       | non-Hispanic/Latino | 0.983 | 0.002 | 0.003 | 0.013 | EA  |
| TCGA-EJ-A46D | White       | non-Hispanic/Latino | 0.985 | 0.002 | 0.005 | 0.008 | EA  |
| TCGA-EJ-A46E | White       | non-Hispanic/Latino | 0.982 | 0.000 | 0.007 | 0.011 | EA  |
| TCGA-EJ-A46F | White       | non-Hispanic/Latino | 0.977 | 0.005 | 0.001 | 0.017 | EA  |
| TCGA-EJ-A46G | White       | non-Hispanic/Latino | 0.976 | 0.008 | 0.008 | 0.007 | EA  |
| TCGA-EJ-A46H | Black       | non-Hispanic/Latino | 0.134 | 0.839 | 0.013 | 0.014 | AA  |
| TCGA-EJ-A46I | Black       | non-Hispanic/Latino | 0.245 | 0.735 | 0.011 | 0.009 | AA  |
| TCGA-EJ-A65B | White       | Unavailable         | 0.990 | 0.002 | 0.005 | 0.003 | EA  |
| TCGA-EJ-A65D | White       | Unavailable         | 0.981 | 0.004 | 0.005 | 0.010 | EA  |
| TCGA-EJ-A65E | Black       | Unavailable         | 0.152 | 0.837 | 0.006 | 0.005 | AA  |
| TCGA-EJ-A65F | White       | Unavailable         | 0.988 | 0.001 | 0.003 | 0.009 | EA  |
| TCGA-EJ-A65G | White       | Unavailable         | 0.987 | 0.002 | 0.004 | 0.007 | EA  |
| TCGA-EJ-A65J | White       | Unavailable         | 0.991 | 0.003 | 0.002 | 0.003 | EA  |
| TCGA-EJ-A65M | Black       | Unavailable         | 0.241 | 0.732 | 0.016 | 0.011 | AA  |
| TCGA-EJ-A6RA | White       | Unavailable         | 0.982 | 0.003 | 0.002 | 0.013 | EA  |
| TCGA-EJ-A6RC | White       | Unavailable         | 0.991 | 0.001 | 0.006 | 0.002 | EA  |
| TCGA-EJ-A7NF | White       | Unavailable         | 0.990 | 0.001 | 0.002 | 0.007 | EA  |
| TCGA-EJ-A7NG | White       | Unavailable         | 0.978 | 0.003 | 0.006 | 0.013 | EA  |
| TCGA-EJ-A7NH | White       | Unavailable         | 0.994 | 0.001 | 0.001 | 0.004 | EA  |
| TCGA-EJ-A7NJ | White       | Unavailable         | 0.994 | 0.002 | 0.003 | 0.001 | EA  |
| TCGA-EJ-A7NK | White       | Unavailable         | 0.990 | 0.001 | 0.008 | 0.002 | EA  |
| TCGA-EJ-A7NM | White       | Unavailable         | 0.991 | 0.000 | 0.003 | 0.006 | EA  |
| TCGA-EJ-A7NN | White       | Unavailable         | 0.990 | 0.007 | 0.001 | 0.002 | EA  |
| TCGA-EJ-A8FN | White       | Unavailable         | 0.989 | 0.004 | 0.001 | 0.006 | EA  |
| TCGA-EJ-A8FO | Unavailable | Unavailable         | 0.989 | 0.002 | 0.004 | 0.005 | EA  |
| TCGA-EJ-A8FP | White       | Unavailable         | 0.988 | 0.002 | 0.002 | 0.008 | EA  |
| TCGA-EJ-A8FS | White       | Unavailable         | 0.989 | 0.001 | 0.006 | 0.004 | EA  |
| TCGA-EJ-A8FU | White       | Unavailable         | 0.985 | 0.003 | 0.002 | 0.009 | EA  |
| TCGA-EJ-AB20 | Unavailable | Unavailable         | 0.993 | 0.003 | 0.002 | 0.002 | EA  |
| TCGA-EJ-AB27 | White       | Unavailable         | 0.079 | 0.910 | 0.004 | 0.007 | AA  |
| TCGA-FC-7708 | Asian       | non-Hispanic/Latino | 0.013 | 0.000 | 0.007 | 0.979 | EEA |
| TCGA-FC-7961 | White       | non-Hispanic/Latino | 0.993 | 0.000 | 0.003 | 0.003 | EA  |
| TCGA-FC-A4JI | Asian       | non-Hispanic/Latino | 0.017 | 0.002 | 0.004 | 0.977 | EEA |
| TCGA-FC-A50B | White       | non-Hispanic/Latino | 0.981 | 0.002 | 0.003 | 0.013 | EA  |
| TCGA-FC-A66V | White       | non-Hispanic/Latino | 0.977 | 0.001 | 0.008 | 0.015 | EA  |
| TCGA-FC-A6HD | White       | non-Hispanic/Latino | 0.984 | 0.002 | 0.004 | 0.009 | EA  |
| TCGA-FC-A800 | White       | non-Hispanic/Latino | 0.978 | 0.005 | 0.004 | 0.013 | EA  |
| TCGA-G9-6329 | White       | non-Hispanic/Latino | 0.989 | 0.001 | 0.004 | 0.006 | EA  |
| TCGA-G9-6332 | White       | non-Hispanic/Latino | 0.983 | 0.011 | 0.003 | 0.003 | EA  |
| TCGA-G9-6333 | White       | non-Hispanic/Latino | 0.990 | 0.002 | 0.003 | 0.005 | EA  |
| TCGA-G9-6336 | White       | non-Hispanic/Latino | 0.992 | 0.003 | 0.003 | 0.003 | EA  |
| TCGA-G9-6338 | White       | non-Hispanic/Latino | 0.988 | 0.001 | 0.004 | 0.007 | EA  |
| TCGA-G9-6339 | White       | non-Hispanic/Latino | 0.984 | 0.003 | 0.004 | 0.009 | EA  |
| TCGA-G9-6342 | White       | non-Hispanic/Latino | 0.991 | 0.001 | 0.003 | 0.004 | EA  |
| TCGA-G9-6343 | White       | non-Hispanic/Latino | 0.990 | 0.000 | 0.004 | 0.005 | EA  |
| TCGA-G9-6347 | Unavailable | Unavailable         | 0.996 | 0.000 | 0.003 | 0.001 | EA  |
| TCGA-G9-6348 | White       | non-Hispanic/Latino | 0.994 | 0.002 | 0.003 | 0.001 | EA  |
| TCGA-G9-6351 | White       | non-Hispanic/Latino | 0.984 | 0.005 | 0.001 | 0.010 | EA  |
| TCGA-G9-6353 | White       | non-Hispanic/Latino | 0.986 | 0.003 | 0.003 | 0.007 | EA  |
| TCGA-G9-6354 | Asian       | non-Hispanic/Latino | 0.005 | 0.000 | 0.000 | 0.995 | EEA |
| TCGA-G9-6356 | White       | non-Hispanic/Latino | 0.991 | 0.001 | 0.003 | 0.005 | EA  |
| TCGA-G9-6361 | White       | non-Hispanic/Latino | 0.986 | 0.004 | 0.004 | 0.006 | EA  |
| TCGA-G9-6362 | White       | non-Hispanic/Latino | 0.988 | 0.001 | 0.004 | 0.006 | EA  |
| TCGA-G9-6363 | White       | non-Hispanic/Latino | 0.987 | 0.003 | 0.005 | 0.005 | EA  |
| TCGA-G9-6364 | White       | non-Hispanic/Latino | 0.986 | 0.002 | 0.004 | 0.008 | EA  |
| TCGA-G9-6365 | White       | non-Hispanic/Latino | 0.987 | 0.003 | 0.004 | 0.007 | EA  |
| TCGA-G9-6366 | White       | non-Hispanic/Latino | 0.985 | 0.004 | 0.004 | 0.007 | EA  |
| TCGA-G9-6367 | White       | non-Hispanic/Latino | 0.989 | 0.000 | 0.004 | 0.006 | EA  |
| TCGA-G9-6369 | White       | non-Hispanic/Latino | 0.986 | 0.003 | 0.001 | 0.010 | EA  |
| TCGA-G9-6370 | White       | non-Hispanic/Latino | 0.967 | 0.002 | 0.023 | 0.008 | EA  |
| TCGA-G9-6371 | White       | non-Hispanic/Latino | 0.985 | 0.004 | 0.002 | 0.009 | EA  |
| TCGA-G9-6373 | White       | non-Hispanic/Latino | 0.992 | 0.001 | 0.005 | 0.002 | EA  |
| TCGA-G9-6377 | White       | non-Hispanic/Latino | 0.992 | 0.001 | 0.003 | 0.004 | EA  |
| TCGA-G9-6378 | Black       | non-Hispanic/Latino | 0.122 | 0.864 | 0.002 | 0.011 | AA  |
| TCGA-G9-6379 | White       | non-Hispanic/Latino | 0.990 | 0.001 | 0.007 | 0.002 | EA  |
| TCGA-G9-6384 | White       | non-Hispanic/Latino | 0.996 | 0.001 | 0.002 | 0.001 | EA  |
| TCGA-G9-6385 | White       | non-Hispanic/Latino | 0.993 | 0.000 | 0.006 | 0.001 | EA  |
| TCGA-G9-6494 | White       | non-Hispanic/Latino | 0.991 | 0.002 | 0.002 | 0.006 | EA  |

|              |       |                     |       |       |       |       |     |
|--------------|-------|---------------------|-------|-------|-------|-------|-----|
| TCGA-G9-6496 | White | non-Hispanic/Latino | 0.988 | 0.002 | 0.002 | 0.008 | EA  |
| TCGA-G9-6498 | White | non-Hispanic/Latino | 0.986 | 0.002 | 0.005 | 0.007 | EA  |
| TCGA-G9-6499 | White | non-Hispanic/Latino | 0.994 | 0.001 | 0.003 | 0.002 | EA  |
| TCGA-G9-7509 | Black | non-Hispanic/Latino | 0.000 | 0.999 | 0.000 | 0.001 | AA  |
| TCGA-G9-7510 | White | non-Hispanic/Latino | 0.979 | 0.001 | 0.006 | 0.014 | EA  |
| TCGA-G9-7519 | White | non-Hispanic/Latino | 0.949 | 0.021 | 0.001 | 0.029 | EA  |
| TCGA-G9-7521 | White | non-Hispanic/Latino | 0.990 | 0.001 | 0.002 | 0.007 | EA  |
| TCGA-G9-7522 | White | non-Hispanic/Latino | 0.993 | 0.001 | 0.004 | 0.002 | EA  |
| TCGA-G9-7523 | Black | non-Hispanic/Latino | 0.081 | 0.913 | 0.003 | 0.004 | AA  |
| TCGA-G9-7525 | White | non-Hispanic/Latino | 0.986 | 0.004 | 0.005 | 0.005 | EA  |
| TCGA-G9-A9S0 | White | non-Hispanic/Latino | 0.988 | 0.001 | 0.005 | 0.006 | EA  |
| TCGA-G9-A9S4 | White | non-Hispanic/Latino | 0.989 | 0.002 | 0.005 | 0.004 | EA  |
| TCGA-G9-A9S7 | White | non-Hispanic/Latino | 0.985 | 0.008 | 0.003 | 0.004 | EA  |
| TCGA-H9-7775 | White | non-Hispanic/Latino | 0.991 | 0.003 | 0.003 | 0.003 | EA  |
| TCGA-H9-A6BX | White | non-Hispanic/Latino | 0.982 | 0.007 | 0.006 | 0.005 | EA  |
| TCGA-H9-A6BY | White | non-Hispanic/Latino | 0.992 | 0.002 | 0.003 | 0.003 | EA  |
| TCGA-HC-7075 | White | non-Hispanic/Latino | 0.988 | 0.001 | 0.003 | 0.009 | EA  |
| TCGA-HC-7077 | Black | non-Hispanic/Latino | 0.229 | 0.763 | 0.001 | 0.007 | AA  |
| TCGA-HC-7078 | White | non-Hispanic/Latino | 0.989 | 0.003 | 0.004 | 0.005 | EA  |
| TCGA-HC-7079 | White | non-Hispanic/Latino | 0.987 | 0.002 | 0.004 | 0.007 | EA  |
| TCGA-HC-7080 | White | non-Hispanic/Latino | 0.991 | 0.003 | 0.004 | 0.002 | EA  |
| TCGA-HC-7081 | White | Unavailable         | 0.987 | 0.001 | 0.006 | 0.006 | EA  |
| TCGA-HC-7209 | White | non-Hispanic/Latino | 0.990 | 0.002 | 0.003 | 0.006 | EA  |
| TCGA-HC-7210 | White | non-Hispanic/Latino | 0.989 | 0.007 | 0.004 | 0.001 | EA  |
| TCGA-HC-7211 | White | non-Hispanic/Latino | 0.994 | 0.000 | 0.003 | 0.003 | EA  |
| TCGA-HC-7212 | White | non-Hispanic/Latino | 0.993 | 0.001 | 0.001 | 0.004 | EA  |
| TCGA-HC-7213 | White | non-Hispanic/Latino | 0.990 | 0.002 | 0.003 | 0.005 | EA  |
| TCGA-HC-7230 | White | non-Hispanic/Latino | 0.989 | 0.003 | 0.005 | 0.004 | EA  |
| TCGA-HC-7231 | White | Unavailable         | 0.988 | 0.002 | 0.004 | 0.005 | EA  |
| TCGA-HC-7232 | White | non-Hispanic/Latino | 0.994 | 0.001 | 0.003 | 0.003 | EA  |
| TCGA-HC-7233 | White | Unavailable         | 0.993 | 0.002 | 0.004 | 0.001 | EA  |
| TCGA-HC-7736 | White | non-Hispanic/Latino | 0.980 | 0.013 | 0.001 | 0.007 | EA  |
| TCGA-HC-7737 | Black | Unavailable         | 0.287 | 0.702 | 0.004 | 0.008 | AA  |
| TCGA-HC-7738 | White | non-Hispanic/Latino | 0.917 | 0.046 | 0.000 | 0.037 | EA  |
| TCGA-HC-7740 | White | non-Hispanic/Latino | 0.987 | 0.004 | 0.003 | 0.005 | EA  |
| TCGA-HC-7741 | White | non-Hispanic/Latino | 0.519 | 0.312 | 0.000 | 0.169 | AA  |
| TCGA-HC-7742 | White | non-Hispanic/Latino | 0.992 | 0.004 | 0.004 | 0.001 | EA  |
| TCGA-HC-7744 | White | non-Hispanic/Latino | 0.979 | 0.007 | 0.002 | 0.012 | EA  |
| TCGA-HC-7745 | White | non-Hispanic/Latino | 0.990 | 0.002 | 0.003 | 0.005 | EA  |
| TCGA-HC-7747 | White | non-Hispanic/Latino | 0.978 | 0.017 | 0.003 | 0.003 | EA  |
| TCGA-HC-7748 | White | non-Hispanic/Latino | 0.980 | 0.010 | 0.003 | 0.008 | EA  |
| TCGA-HC-7749 | White | non-Hispanic/Latino | 0.982 | 0.005 | 0.001 | 0.013 | EA  |
| TCGA-HC-7750 | White | non-Hispanic/Latino | 0.946 | 0.024 | 0.000 | 0.029 | EA  |
| TCGA-HC-7752 | White | non-Hispanic/Latino | 0.987 | 0.005 | 0.002 | 0.005 | EA  |
| TCGA-HC-7817 | White | non-Hispanic/Latino | 0.990 | 0.000 | 0.002 | 0.007 | EA  |
| TCGA-HC-7818 | White | non-Hispanic/Latino | 0.992 | 0.002 | 0.002 | 0.005 | EA  |
| TCGA-HC-7819 | White | non-Hispanic/Latino | 0.991 | 0.004 | 0.002 | 0.003 | EA  |
| TCGA-HC-7820 | White | non-Hispanic/Latino | 0.918 | 0.053 | 0.014 | 0.015 | EA  |
| TCGA-HC-7821 | White | non-Hispanic/Latino | 0.982 | 0.007 | 0.005 | 0.006 | EA  |
| TCGA-HC-8212 | White | non-Hispanic/Latino | 0.534 | 0.286 | 0.000 | 0.180 | AA  |
| TCGA-HC-8213 | White | non-Hispanic/Latino | 0.989 | 0.004 | 0.002 | 0.006 | EA  |
| TCGA-HC-8216 | White | non-Hispanic/Latino | 0.989 | 0.003 | 0.004 | 0.004 | EA  |
| TCGA-HC-8256 | Black | non-Hispanic/Latino | 0.990 | 0.003 | 0.001 | 0.005 | EA  |
| TCGA-HC-8257 | Black | non-Hispanic/Latino | 0.143 | 0.840 | 0.001 | 0.017 | AA  |
| TCGA-HC-8258 | Black | non-Hispanic/Latino | 0.059 | 0.920 | 0.007 | 0.014 | AA  |
| TCGA-HC-8259 | Black | non-Hispanic/Latino | 0.170 | 0.818 | 0.008 | 0.005 | AA  |
| TCGA-HC-8260 | Black | non-Hispanic/Latino | 0.062 | 0.917 | 0.004 | 0.016 | AA  |
| TCGA-HC-8261 | Black | non-Hispanic/Latino | 0.040 | 0.958 | 0.000 | 0.001 | AA  |
| TCGA-HC-8262 | White | non-Hispanic/Latino | 0.991 | 0.001 | 0.005 | 0.004 | EA  |
| TCGA-HC-8264 | White | non-Hispanic/Latino | 0.991 | 0.000 | 0.003 | 0.006 | EA  |
| TCGA-HC-8265 | White | non-Hispanic/Latino | 0.968 | 0.015 | 0.004 | 0.013 | EA  |
| TCGA-HC-8266 | White | non-Hispanic/Latino | 0.746 | 0.020 | 0.187 | 0.047 | NA  |
| TCGA-HC-A48F | White | non-Hispanic/Latino | 0.986 | 0.003 | 0.005 | 0.006 | EA  |
| TCGA-HC-A42V | Black | non-Hispanic/Latino | 0.116 | 0.875 | 0.001 | 0.009 | AA  |
| TCGA-HC-A631 | White | non-Hispanic/Latino | 0.991 | 0.002 | 0.005 | 0.002 | EA  |
| TCGA-HC-A632 | White | non-Hispanic/Latino | 0.987 | 0.003 | 0.003 | 0.007 | EA  |
| TCGA-HC-A6AL | White | non-Hispanic/Latino | 0.990 | 0.003 | 0.004 | 0.003 | EA  |
| TCGA-HC-A6AN | White | non-Hispanic/Latino | 0.965 | 0.012 | 0.014 | 0.009 | EA  |
| TCGA-HC-A6AO | White | non-Hispanic/Latino | 0.989 | 0.002 | 0.005 | 0.004 | EA  |
| TCGA-HC-A6AP | White | non-Hispanic/Latino | 0.983 | 0.006 | 0.001 | 0.009 | EA  |
| TCGA-HC-A6AQ | White | non-Hispanic/Latino | 0.992 | 0.002 | 0.002 | 0.005 | EA  |
| TCGA-HC-A6AS | White | non-Hispanic/Latino | 0.987 | 0.002 | 0.004 | 0.007 | EA  |
| TCGA-HC-A6HX | White | non-Hispanic/Latino | 0.981 | 0.003 | 0.010 | 0.006 | EA  |
| TCGA-HC-A6HY | White | non-Hispanic/Latino | 0.989 | 0.001 | 0.008 | 0.003 | EA  |
| TCGA-HC-A76W | White | non-Hispanic/Latino | 0.980 | 0.013 | 0.002 | 0.005 | EA  |
| TCGA-HC-A76X | White | non-Hispanic/Latino | 0.988 | 0.003 | 0.002 | 0.007 | EA  |
| TCGA-HC-A8CY | White | non-Hispanic/Latino | 0.987 | 0.009 | 0.003 | 0.002 | EA  |
| TCGA-HC-A8D0 | White | non-Hispanic/Latino | 0.993 | 0.002 | 0.002 | 0.003 | EA  |
| TCGA-HC-A8D1 | White | non-Hispanic/Latino | 0.983 | 0.002 | 0.006 | 0.008 | EA  |
| TCGA-HC-A9TE | White | non-Hispanic/Latino | 0.994 | 0.000 | 0.004 | 0.002 | EA  |
| TCGA-HC-A9TH | White | non-Hispanic/Latino | 0.978 | 0.006 | 0.009 | 0.007 | EA  |
| TCGA-HI-7168 | White | non-Hispanic/Latino | 0.990 | 0.003 | 0.001 | 0.006 | EA  |
| TCGA-HI-7169 | White | non-Hispanic/Latino | 0.992 | 0.002 | 0.002 | 0.005 | EA  |
| TCGA-HI-7170 | White | non-Hispanic/Latino | 0.970 | 0.010 | 0.003 | 0.017 | EA  |
| TCGA-HI-7171 | White | non-Hispanic/Latino | 0.991 | 0.001 | 0.003 | 0.004 | EA  |
| TCGA-J4-8198 | Black | non-Hispanic/Latino | 0.000 | 0.998 | 0.001 | 0.001 | AA  |
| TCGA-J4-8200 | Asian | non-Hispanic/Latino | 0.149 | 0.351 | 0.003 | 0.497 | EEA |
| TCGA-J4-A67K | White | non-Hispanic/Latino | 0.994 | 0.001 | 0.002 | 0.003 | EA  |
| TCGA-J4-A67L | White | non-Hispanic/Latino | 0.994 | 0.002 | 0.002 | 0.003 | EA  |
| TCGA-J4-A67M | White | non-Hispanic/Latino | 0.981 | 0.009 | 0.006 | 0.004 | EA  |
| TCGA-J4-A67N | White | non-Hispanic/Latino | 0.984 | 0.003 | 0.001 | 0.012 | EA  |

|              |             |                     |       |       |       |       |     |
|--------------|-------------|---------------------|-------|-------|-------|-------|-----|
| TCGA-J4-A67O | White       | non-Hispanic/Latino | 0.990 | 0.001 | 0.006 | 0.003 | EA  |
| TCGA-J4-A67Q | White       | non-Hispanic/Latino | 0.991 | 0.001 | 0.004 | 0.004 | EA  |
| TCGA-J4-A67R | White       | non-Hispanic/Latino | 0.993 | 0.002 | 0.002 | 0.003 | EA  |
| TCGA-J4-A67S | White       | non-Hispanic/Latino | 0.990 | 0.002 | 0.003 | 0.005 | EA  |
| TCGA-J4-A67T | White       | non-Hispanic/Latino | 0.989 | 0.005 | 0.003 | 0.003 | EA  |
| TCGA-J4-A6G1 | White       | non-Hispanic/Latino | 0.988 | 0.001 | 0.002 | 0.009 | EA  |
| TCGA-J4-A6G3 | White       | non-Hispanic/Latino | 0.986 | 0.001 | 0.008 | 0.006 | EA  |
| TCGA-J4-A6M7 | White       | non-Hispanic/Latino | 0.987 | 0.001 | 0.004 | 0.008 | EA  |
| TCGA-J4-A831 | White       | non-Hispanic/Latino | 0.993 | 0.000 | 0.003 | 0.004 | EA  |
| TCGA-J4-A83J | White       | non-Hispanic/Latino | 0.987 | 0.001 | 0.007 | 0.004 | EA  |
| TCGA-J4-A83K | White       | non-Hispanic/Latino | 0.987 | 0.002 | 0.006 | 0.006 | EA  |
| TCGA-J4-A83L | White       | non-Hispanic/Latino | 0.988 | 0.002 | 0.005 | 0.005 | EA  |
| TCGA-J4-A83M | White       | non-Hispanic/Latino | 0.973 | 0.022 | 0.003 | 0.002 | EA  |
| TCGA-J4-A83N | White       | non-Hispanic/Latino | 0.994 | 0.002 | 0.002 | 0.002 | EA  |
| TCGA-J4-AATV | White       | non-Hispanic/Latino | 0.995 | 0.001 | 0.001 | 0.003 | EA  |
| TCGA-J4-AATZ | Asian       | non-Hispanic/Latino | 0.248 | 0.149 | 0.094 | 0.509 | EAA |
| TCGA-J4-AAU2 | White       | non-Hispanic/Latino | 0.993 | 0.001 | 0.003 | 0.003 | EA  |
| TCGA-J9-A52B | White       | non-Hispanic/Latino | 0.988 | 0.003 | 0.002 | 0.007 | EA  |
| TCGA-J9-A52C | White       | non-Hispanic/Latino | 0.985 | 0.004 | 0.006 | 0.005 | EA  |
| TCGA-J9-A52E | White       | non-Hispanic/Latino | 0.993 | 0.002 | 0.002 | 0.003 | EA  |
| TCGA-J9-A8CK | White       | non-Hispanic/Latino | 0.973 | 0.016 | 0.002 | 0.009 | EA  |
| TCGA-J9-A8CL | White       | non-Hispanic/Latino | 0.959 | 0.030 | 0.002 | 0.009 | EA  |
| TCGA-J9-A8CM | White       | non-Hispanic/Latino | 0.991 | 0.004 | 0.002 | 0.002 | EA  |
| TCGA-J9-A8CN | White       | non-Hispanic/Latino | 0.992 | 0.001 | 0.003 | 0.004 | EA  |
| TCGA-J9-A8CP | White       | non-Hispanic/Latino | 0.981 | 0.003 | 0.006 | 0.009 | EA  |
| TCGA-KC-A4BL | Black       | non-Hispanic/Latino | 0.004 | 0.995 | 0.000 | 0.001 | AA  |
| TCGA-KC-A4BN | Black       | non-Hispanic/Latino | 0.103 | 0.893 | 0.002 | 0.002 | AA  |
| TCGA-KC-A4BO | Black       | non-Hispanic/Latino | 0.184 | 0.805 | 0.001 | 0.010 | AA  |
| TCGA-KC-A4BR | White       | Unavailable         | 0.970 | 0.020 | 0.004 | 0.006 | EA  |
| TCGA-KC-A4BV | Asian       | non-Hispanic/Latino | 0.786 | 0.018 | 0.009 | 0.186 | OA  |
| TCGA-KC-A7F3 | White       | non-Hispanic/Latino | 0.966 | 0.008 | 0.006 | 0.020 | EA  |
| TCGA-KC-A7F5 | White       | non-Hispanic/Latino | 0.957 | 0.021 | 0.002 | 0.020 | EA  |
| TCGA-KC-A7F6 | White       | non-Hispanic/Latino | 0.987 | 0.001 | 0.005 | 0.007 | EA  |
| TCGA-KC-A7FA | White       | non-Hispanic/Latino | 0.992 | 0.002 | 0.001 | 0.004 | EA  |
| TCGA-KC-A7FD | White       | non-Hispanic/Latino | 0.986 | 0.000 | 0.003 | 0.011 | EA  |
| TCGA-KC-A7FE | White       | non-Hispanic/Latino | 0.970 | 0.019 | 0.003 | 0.008 | EA  |
| TCGA-KK-A59V | White       | Unavailable         | 0.993 | 0.002 | 0.001 | 0.004 | EA  |
| TCGA-KK-A59X | Black       | Unavailable         | 0.092 | 0.888 | 0.012 | 0.008 | AA  |
| TCGA-KK-A59Y | White       | Unavailable         | 0.990 | 0.001 | 0.006 | 0.003 | EA  |
| TCGA-KK-A59Z | Black       | Unavailable         | 0.168 | 0.818 | 0.001 | 0.013 | AA  |
| TCGA-KK-A6DY | Black       | Unavailable         | 0.184 | 0.809 | 0.002 | 0.005 | AA  |
| TCGA-KK-A6E0 | Asian       | Unavailable         | 0.004 | 0.000 | 0.003 | 0.993 | EAA |
| TCGA-KK-A6E1 | White       | Unavailable         | 0.990 | 0.002 | 0.001 | 0.006 | EA  |
| TCGA-KK-A6E2 | Black       | Unavailable         | 0.025 | 0.942 | 0.009 | 0.023 | AA  |
| TCGA-KK-A6E3 | Black       | Unavailable         | 0.244 | 0.748 | 0.006 | 0.002 | AA  |
| TCGA-KK-A6E4 | Black       | Unavailable         | 0.319 | 0.676 | 0.003 | 0.002 | AA  |
| TCGA-KK-A6E5 | Black       | Unavailable         | 0.200 | 0.794 | 0.003 | 0.002 | AA  |
| TCGA-KK-A6E6 | White       | non-Hispanic/Latino | 0.979 | 0.009 | 0.008 | 0.004 | EA  |
| TCGA-KK-A6E7 | Unavailable | Hispanic/Latino     | 0.764 | 0.039 | 0.157 | 0.039 | NA  |
| TCGA-KK-A6E8 | White       | non-Hispanic/Latino | 0.977 | 0.011 | 0.006 | 0.006 | EA  |
| TCGA-KK-A7AP | White       | Unavailable         | 0.853 | 0.136 | 0.003 | 0.008 | EA  |
| TCGA-KK-A7AQ | White       | Unavailable         | 0.994 | 0.002 | 0.002 | 0.002 | EA  |
| TCGA-KK-A7AU | White       | Unavailable         | 0.992 | 0.001 | 0.003 | 0.004 | EA  |
| TCGA-KK-A7AV | Black       | Unavailable         | 0.499 | 0.493 | 0.003 | 0.005 | AA  |
| TCGA-KK-A7AW | Black       | Unavailable         | 0.055 | 0.924 | 0.007 | 0.015 | AA  |
| TCGA-KK-A7AY | White       | Unavailable         | 0.988 | 0.001 | 0.003 | 0.008 | EA  |
| TCGA-KK-A7AZ | White       | Unavailable         | 0.984 | 0.011 | 0.001 | 0.004 | EA  |
| TCGA-KK-A7B0 | White       | Unavailable         | 0.995 | 0.003 | 0.002 | 0.000 | EA  |
| TCGA-KK-A7B1 | White       | Unavailable         | 0.982 | 0.010 | 0.004 | 0.004 | EA  |
| TCGA-KK-A7B2 | White       | Unavailable         | 0.986 | 0.001 | 0.006 | 0.007 | EA  |
| TCGA-KK-A7B3 | White       | Unavailable         | 0.982 | 0.004 | 0.008 | 0.007 | EA  |
| TCGA-KK-A7B4 | White       | Unavailable         | 0.982 | 0.000 | 0.011 | 0.007 | EA  |
| TCGA-KK-A814 | White       | Unavailable         | 0.986 | 0.008 | 0.004 | 0.002 | EA  |
| TCGA-KK-A815 | Black       | Unavailable         | 0.105 | 0.878 | 0.002 | 0.015 | AA  |
| TCGA-KK-A816 | White       | Unavailable         | 0.968 | 0.017 | 0.006 | 0.010 | EA  |
| TCGA-KK-A817 | White       | Unavailable         | 0.966 | 0.010 | 0.012 | 0.012 | EA  |
| TCGA-KK-A818 | White       | Unavailable         | 0.988 | 0.004 | 0.002 | 0.006 | EA  |
| TCGA-KK-A819 | Unavailable | Unavailable         | 0.631 | 0.047 | 0.273 | 0.049 | NA  |
| TCGA-KK-A81A | White       | Unavailable         | 0.991 | 0.001 | 0.005 | 0.003 | EA  |
| TCGA-KK-A81B | White       | Unavailable         | 0.988 | 0.001 | 0.006 | 0.004 | EA  |
| TCGA-KK-A81C | White       | Unavailable         | 0.983 | 0.008 | 0.004 | 0.006 | EA  |
| TCGA-KK-A81D | Unavailable | Unavailable         | 0.760 | 0.140 | 0.088 | 0.012 | EA  |
| TCGA-KK-A81F | Black       | Unavailable         | 0.237 | 0.760 | 0.001 | 0.002 | AA  |
| TCGA-KK-A81G | White       | Unavailable         | 0.989 | 0.002 | 0.006 | 0.003 | EA  |
| TCGA-KK-A81H | White       | Unavailable         | 0.880 | 0.010 | 0.091 | 0.019 | EA  |
| TCGA-KK-A81I | White       | Unavailable         | 0.990 | 0.002 | 0.004 | 0.003 | EA  |
| TCGA-KK-A81J | White       | Unavailable         | 0.990 | 0.002 | 0.003 | 0.005 | EA  |
| TCGA-KK-A81K | White       | Unavailable         | 0.988 | 0.001 | 0.004 | 0.007 | EA  |
| TCGA-KK-A81L | White       | Unavailable         | 0.366 | 0.552 | 0.067 | 0.015 | AA  |
| TCGA-KK-A81M | White       | Unavailable         | 0.989 | 0.002 | 0.003 | 0.005 | EA  |
| TCGA-M7-A71Y | White       | Unavailable         | 0.986 | 0.002 | 0.004 | 0.008 | EA  |
| TCGA-M7-A71Z | White       | non-Hispanic/Latino | 0.992 | 0.001 | 0.003 | 0.004 | EA  |
| TCGA-M7-A720 | White       | non-Hispanic/Latino | 0.987 | 0.003 | 0.005 | 0.005 | EA  |
| TCGA-M7-A721 | White       | non-Hispanic/Latino | 0.993 | 0.001 | 0.003 | 0.003 | EA  |
| TCGA-M7-A722 | White       | Unavailable         | 0.984 | 0.002 | 0.004 | 0.011 | EA  |
| TCGA-M7-A723 | White       | non-Hispanic/Latino | 0.992 | 0.002 | 0.001 | 0.004 | EA  |
| TCGA-M7-A724 | White       | non-Hispanic/Latino | 0.993 | 0.001 | 0.002 | 0.004 | EA  |
| TCGA-M7-A725 | White       | Unavailable         | 0.994 | 0.000 | 0.002 | 0.004 | EA  |
| TCGA-MG-AAMC | White       | non-Hispanic/Latino | 0.438 | 0.029 | 0.415 | 0.118 | NA  |
| TCGA-QU-A6IL | Asian       | non-Hispanic/Latino | 0.003 | 0.001 | 0.002 | 0.995 | EAA |
| TCGA-QU-A6IM | White       | non-Hispanic/Latino | 0.978 | 0.009 | 0.003 | 0.010 | EA  |

|              |                           |                     |       |       |       |       |     |
|--------------|---------------------------|---------------------|-------|-------|-------|-------|-----|
| TCGA-QU-A6IN | White                     | non-Hispanic/Latino | 0.985 | 0.005 | 0.002 | 0.008 | EA  |
| TCGA-QU-A6IO | Black                     | non-Hispanic/Latino | 0.236 | 0.758 | 0.004 | 0.003 | AA  |
| TCGA-QU-A6IP | White                     | non-Hispanic/Latino | 0.989 | 0.003 | 0.003 | 0.005 | EA  |
| TCGA-SU-A7E7 | White                     | non-Hispanic/Latino | 0.978 | 0.001 | 0.003 | 0.017 | EA  |
| TCGA-TK-A8OK | White                     | non-Hispanic/Latino | 0.983 | 0.004 | 0.004 | 0.008 | EA  |
| TCGA-TP-A8TT | White                     | non-Hispanic/Latino | 0.992 | 0.002 | 0.002 | 0.003 | EA  |
| TCGA-TP-A8TV | White                     | non-Hispanic/Latino | 0.994 | 0.001 | 0.002 | 0.003 | EA  |
| TCGA-V1-A8MF | Black                     | non-Hispanic/Latino | 0.435 | 0.551 | 0.010 | 0.004 | AA  |
| TCGA-V1-A8MG | Black                     | non-Hispanic/Latino | 0.113 | 0.876 | 0.001 | 0.010 | AA  |
| TCGA-V1-A8MJ | Black                     | non-Hispanic/Latino | 0.180 | 0.801 | 0.005 | 0.014 | AA  |
| TCGA-V1-A8MK | Black                     | non-Hispanic/Latino | 0.243 | 0.736 | 0.007 | 0.013 | AA  |
| TCGA-V1-A8ML | Black                     | non-Hispanic/Latino | 0.046 | 0.936 | 0.003 | 0.015 | AA  |
| TCGA-V1-A8MM | Black                     | non-Hispanic/Latino | 0.239 | 0.735 | 0.016 | 0.010 | AA  |
| TCGA-V1-A8MU | Black                     | non-Hispanic/Latino | 0.325 | 0.666 | 0.001 | 0.008 | AA  |
| TCGA-V1-A8WL | Black                     | non-Hispanic/Latino | 0.126 | 0.859 | 0.005 | 0.010 | AA  |
| TCGA-V1-A8WN | Black                     | non-Hispanic/Latino | 0.173 | 0.819 | 0.002 | 0.007 | AA  |
| TCGA-V1-A8WS | White                     | non-Hispanic/Latino | 0.995 | 0.001 | 0.001 | 0.003 | EA  |
| TCGA-V1-A8WV | White                     | non-Hispanic/Latino | 0.025 | 0.003 | 0.000 | 0.971 | EAA |
| TCGA-V1-A8WW | White                     | non-Hispanic/Latino | 0.995 | 0.003 | 0.002 | 0.000 | EA  |
| TCGA-V1-A8X3 | White                     | non-Hispanic/Latino | 0.986 | 0.001 | 0.007 | 0.006 | EA  |
| TCGA-V1-A9O5 | White                     | non-Hispanic/Latino | 0.971 | 0.015 | 0.000 | 0.014 | EA  |
| TCGA-V1-A9O7 | White                     | non-Hispanic/Latino | 0.996 | 0.001 | 0.002 | 0.001 | EA  |
| TCGA-V1-A9O9 | White                     | non-Hispanic/Latino | 0.977 | 0.001 | 0.018 | 0.004 | EA  |
| TCGA-V1-A9OA | White                     | non-Hispanic/Latino | 0.991 | 0.002 | 0.003 | 0.004 | EA  |
| TCGA-V1-A9OF | White                     | non-Hispanic/Latino | 0.987 | 0.003 | 0.004 | 0.005 | EA  |
| TCGA-V1-A9OH | White                     | non-Hispanic/Latino | 0.993 | 0.002 | 0.002 | 0.004 | EA  |
| TCGA-V1-A9OL | Asian                     | non-Hispanic/Latino | 0.002 | 0.003 | 0.002 | 0.993 | EAA |
| TCGA-V1-A9OQ | White                     | Hispanic/Latino     | 0.598 | 0.195 | 0.183 | 0.024 | NA  |
| TCGA-V1-A9OT | White                     | non-Hispanic/Latino | 0.928 | 0.022 | 0.005 | 0.045 | EA  |
| TCGA-V1-A9OX | White                     | non-Hispanic/Latino | 0.986 | 0.003 | 0.003 | 0.008 | EA  |
| TCGA-V1-A9OY | White                     | non-Hispanic/Latino | 0.983 | 0.006 | 0.006 | 0.006 | EA  |
| TCGA-V1-A9Z7 | White                     | non-Hispanic/Latino | 0.980 | 0.001 | 0.007 | 0.012 | EA  |
| TCGA-V1-A9Z8 | White                     | non-Hispanic/Latino | 0.990 | 0.001 | 0.004 | 0.004 | EA  |
| TCGA-V1-A9Z9 | White                     | non-Hispanic/Latino | 0.989 | 0.002 | 0.005 | 0.004 | EA  |
| TCGA-V1-A9ZG | White                     | non-Hispanic/Latino | 0.022 | 0.003 | 0.001 | 0.974 | EAA |
| TCGA-V1-A9ZI | White                     | non-Hispanic/Latino | 0.975 | 0.003 | 0.002 | 0.020 | EA  |
| TCGA-V1-A9ZK | White                     | non-Hispanic/Latino | 0.988 | 0.001 | 0.006 | 0.005 | EA  |
| TCGA-V1-A9ZR | White                     | non-Hispanic/Latino | 0.987 | 0.001 | 0.006 | 0.006 | EA  |
| TCGA-VN-A88I | White                     | non-Hispanic/Latino | 0.983 | 0.008 | 0.001 | 0.007 | EA  |
| TCGA-VN-A88K | White                     | non-Hispanic/Latino | 0.991 | 0.002 | 0.005 | 0.002 | EA  |
| TCGA-VN-A88L | White                     | non-Hispanic/Latino | 0.989 | 0.007 | 0.002 | 0.003 | EA  |
| TCGA-VN-A88M | Black                     | non-Hispanic/Latino | 0.111 | 0.884 | 0.000 | 0.005 | AA  |
| TCGA-VN-A88N | White                     | non-Hispanic/Latino | 0.989 | 0.000 | 0.003 | 0.008 | EA  |
| TCGA-VN-A88O | Unavailable               | Hispanic/Latino     | 0.476 | 0.464 | 0.046 | 0.014 | AA  |
| TCGA-VN-A88P | White                     | non-Hispanic/Latino | 0.992 | 0.001 | 0.004 | 0.004 | EA  |
| TCGA-VN-A88Q | White                     | non-Hispanic/Latino | 0.994 | 0.000 | 0.003 | 0.002 | EA  |
| TCGA-VN-A88R | Black                     | non-Hispanic/Latino | 0.133 | 0.849 | 0.009 | 0.009 | AA  |
| TCGA-VN-A943 | White                     | non-Hispanic/Latino | 0.981 | 0.005 | 0.002 | 0.012 | EA  |
| TCGA-VP-A872 | White                     | Unavailable         | 0.984 | 0.001 | 0.010 | 0.005 | EA  |
| TCGA-VP-A875 | Black                     | Unavailable         | 0.097 | 0.891 | 0.000 | 0.012 | AA  |
| TCGA-VP-A876 | White                     | Unavailable         | 0.983 | 0.004 | 0.005 | 0.008 | EA  |
| TCGA-VP-A878 | White                     | Unavailable         | 0.984 | 0.009 | 0.005 | 0.002 | EA  |
| TCGA-VP-A879 | White                     | Unavailable         | 0.991 | 0.001 | 0.003 | 0.005 | EA  |
| TCGA-VP-A87B | White                     | Unavailable         | 0.985 | 0.002 | 0.002 | 0.010 | EA  |
| TCGA-VP-A87C | Black                     | Unavailable         | 0.138 | 0.844 | 0.007 | 0.011 | AA  |
| TCGA-VP-A87D | White                     | Unavailable         | 0.989 | 0.002 | 0.001 | 0.009 | EA  |
| TCGA-VP-A87E | Black                     | Unavailable         | 0.188 | 0.797 | 0.001 | 0.014 | AA  |
| TCGA-VP-A87H | White                     | Unavailable         | 0.991 | 0.002 | 0.000 | 0.007 | EA  |
| TCGA-VP-A87J | Black                     | Unavailable         | 0.191 | 0.795 | 0.000 | 0.013 | AA  |
| TCGA-VP-A87K | White                     | Unavailable         | 0.984 | 0.002 | 0.003 | 0.010 | EA  |
| TCGA-VP-AA1N | White                     | Unavailable         | 0.991 | 0.002 | 0.002 | 0.005 | EA  |
| TCGA-WW-A8ZI | White                     | non-Hispanic/Latino | 0.993 | 0.000 | 0.005 | 0.001 | EA  |
| TCGA-X4-A8KQ | White                     | non-Hispanic/Latino | 0.984 | 0.006 | 0.002 | 0.007 | EA  |
| TCGA-X4-A8KS | Black                     | non-Hispanic/Latino | 0.237 | 0.750 | 0.005 | 0.008 | AA  |
| TCGA-XA-A8JR | Unavailable               | Unavailable         | 0.980 | 0.001 | 0.007 | 0.012 | EA  |
| TCGA-XJ-A83F | White                     | non-Hispanic/Latino | 0.988 | 0.000 | 0.003 | 0.008 | EA  |
| TCGA-XJ-A83G | Black                     | non-Hispanic/Latino | 0.192 | 0.796 | 0.004 | 0.008 | AA  |
| TCGA-XJ-A83H | White                     | non-Hispanic/Latino | 0.988 | 0.004 | 0.002 | 0.006 | EA  |
| TCGA-XJ-A9DI | White                     | non-Hispanic/Latino | 0.991 | 0.005 | 0.002 | 0.002 | EA  |
| TCGA-XJ-A9DK | White                     | non-Hispanic/Latino | 0.984 | 0.004 | 0.007 | 0.004 | EA  |
| TCGA-XJ-A9DQ | White                     | non-Hispanic/Latino | 0.992 | 0.003 | 0.002 | 0.003 | EA  |
| TCGA-XJ-A9DX | nerican Indian/Alaska Nat | non-Hispanic/Latino | 0.823 | 0.028 | 0.112 | 0.037 | NA  |
| TCGA-XK-AAIR | White                     | Unavailable         | 0.990 | 0.002 | 0.004 | 0.004 | EA  |
| TCGA-XK-AAIV | White                     | Unavailable         | 0.981 | 0.004 | 0.004 | 0.011 | EA  |
| TCGA-XK-AAIW | White                     | non-Hispanic/Latino | 0.991 | 0.000 | 0.004 | 0.004 | EA  |
| TCGA-XK-AAJ3 | White                     | Unavailable         | 0.989 | 0.000 | 0.004 | 0.008 | EA  |
| TCGA-XK-AAJA | Unavailable               | Hispanic/Latino     | 0.394 | 0.087 | 0.405 | 0.114 | NA  |
| TCGA-XK-AAJP | White                     | Unavailable         | 0.981 | 0.002 | 0.007 | 0.010 | EA  |
| TCGA-XK-AAJR | White                     | Unavailable         | 0.987 | 0.003 | 0.003 | 0.007 | EA  |
| TCGA-XK-AAJT | White                     | Unavailable         | 0.992 | 0.001 | 0.003 | 0.003 | EA  |
| TCGA-XK-AAJU | White                     | Unavailable         | 0.973 | 0.006 | 0.003 | 0.018 | EA  |
| TCGA-XK-AAK1 | White                     | Unavailable         | 0.994 | 0.001 | 0.002 | 0.003 | EA  |
| TCGA-XQ-A8TA | White                     | Hispanic/Latino     | 0.988 | 0.005 | 0.002 | 0.006 | EA  |
| TCGA-XQ-A8TB | White                     | Hispanic/Latino     | 0.765 | 0.176 | 0.045 | 0.014 | EA  |
| TCGA-Y6-A8TL | Unavailable               | Unavailable         | 0.987 | 0.002 | 0.006 | 0.006 | EA  |
| TCGA-Y6-A9XI | Unavailable               | Unavailable         | 0.987 | 0.002 | 0.005 | 0.006 | EA  |
| TCGA-YJ-A8SW | Unavailable               | Unavailable         | 0.978 | 0.006 | 0.001 | 0.015 | EA  |
| TCGA-YL-A8HJ | White                     | non-Hispanic/Latino | 0.986 | 0.003 | 0.005 | 0.006 | EA  |
| TCGA-YL-A8HK | White                     | non-Hispanic/Latino | 0.993 | 0.001 | 0.003 | 0.003 | EA  |
| TCGA-YL-A8HL | White                     | non-Hispanic/Latino | 0.991 | 0.000 | 0.002 | 0.006 | EA  |
| TCGA-YL-A8HM | White                     | non-Hispanic/Latino | 0.996 | 0.000 | 0.003 | 0.001 | EA  |

|              |       |                     |       |       |       |       |    |
|--------------|-------|---------------------|-------|-------|-------|-------|----|
| TCGA-YL-A8HO | Black | non-Hispanic/Latino | 0.045 | 0.949 | 0.001 | 0.005 | AA |
| TCGA-YL-A8S8 | White | non-Hispanic/Latino | 0.992 | 0.002 | 0.003 | 0.003 | EA |
| TCGA-YL-A8S9 | White | non-Hispanic/Latino | 0.985 | 0.003 | 0.006 | 0.005 | EA |
| TCGA-YL-A8SA | White | Hispanic/Latino     | 0.995 | 0.001 | 0.002 | 0.002 | EA |
| TCGA-YL-A8SB | White | non-Hispanic/Latino | 0.993 | 0.000 | 0.005 | 0.002 | EA |
| TCGA-YL-A8SC | White | non-Hispanic/Latino | 0.990 | 0.001 | 0.002 | 0.007 | EA |
| TCGA-YL-A8SF | White | non-Hispanic/Latino | 0.987 | 0.003 | 0.006 | 0.004 | EA |
| TCGA-YL-A8SH | White | non-Hispanic/Latino | 0.991 | 0.003 | 0.003 | 0.003 | EA |
| TCGA-YL-A8SI | White | non-Hispanic/Latino | 0.987 | 0.005 | 0.006 | 0.003 | EA |
| TCGA-YL-A8SJ | White | non-Hispanic/Latino | 0.964 | 0.010 | 0.001 | 0.026 | EA |
| TCGA-YL-A8SK | White | non-Hispanic/Latino | 0.985 | 0.001 | 0.004 | 0.010 | EA |
| TCGA-YL-A8SL | White | non-Hispanic/Latino | 0.991 | 0.001 | 0.002 | 0.006 | EA |
| TCGA-YL-A8SO | White | non-Hispanic/Latino | 0.990 | 0.000 | 0.003 | 0.007 | EA |
| TCGA-YL-A8SP | White | non-Hispanic/Latino | 0.980 | 0.002 | 0.007 | 0.011 | EA |
| TCGA-YL-A8SQ | White | non-Hispanic/Latino | 0.993 | 0.002 | 0.002 | 0.003 | EA |
| TCGA-YL-A8SR | White | non-Hispanic/Latino | 0.978 | 0.008 | 0.006 | 0.008 | EA |
| TCGA-YL-A9WH | White | non-Hispanic/Latino | 0.994 | 0.003 | 0.003 | 0.000 | EA |
| TCGA-YL-A9WI | White | non-Hispanic/Latino | 0.993 | 0.000 | 0.002 | 0.005 | EA |
| TCGA-YL-A9WJ | White | non-Hispanic/Latino | 0.979 | 0.003 | 0.009 | 0.008 | EA |
| TCGA-YL-A9WK | Black | non-Hispanic/Latino | 0.069 | 0.930 | 0.000 | 0.001 | AA |
| TCGA-YL-A9WL | White | non-Hispanic/Latino | 0.991 | 0.002 | 0.004 | 0.004 | EA |
| TCGA-YL-A9WX | White | non-Hispanic/Latino | 0.968 | 0.006 | 0.003 | 0.024 | EA |
| TCGA-YL-A9WY | White | non-Hispanic/Latino | 0.951 | 0.039 | 0.004 | 0.006 | EA |
| TCGA-ZG-A8QW | White | non-Hispanic/Latino | 0.991 | 0.002 | 0.002 | 0.004 | EA |
| TCGA-ZG-A8QX | White | non-Hispanic/Latino | 0.985 | 0.000 | 0.004 | 0.011 | EA |
| TCGA-ZG-A8QY | White | non-Hispanic/Latino | 0.983 | 0.002 | 0.006 | 0.008 | EA |
| TCGA-ZG-A8QZ | White | non-Hispanic/Latino | 0.989 | 0.002 | 0.004 | 0.005 | EA |
| TCGA-ZG-A9KY | White | non-Hispanic/Latino | 0.987 | 0.003 | 0.006 | 0.004 | EA |
| TCGA-ZG-A9L0 | White | non-Hispanic/Latino | 0.993 | 0.003 | 0.002 | 0.003 | EA |
| TCGA-ZG-A9L1 | White | non-Hispanic/Latino | 0.964 | 0.002 | 0.008 | 0.026 | EA |
| TCGA-ZG-A9L2 | White | non-Hispanic/Latino | 0.979 | 0.004 | 0.007 | 0.010 | EA |
| TCGA-ZG-A9L4 | White | non-Hispanic/Latino | 0.987 | 0.002 | 0.003 | 0.009 | EA |
| TCGA-ZG-A9L5 | White | non-Hispanic/Latino | 0.993 | 0.001 | 0.001 | 0.005 | EA |
| TCGA-ZG-A9L6 | White | non-Hispanic/Latino | 0.988 | 0.008 | 0.002 | 0.002 | EA |
| TCGA-ZG-A9L9 | White | non-Hispanic/Latino | 0.990 | 0.001 | 0.004 | 0.006 | EA |
| TCGA-ZG-A9LB | White | non-Hispanic/Latino | 0.995 | 0.001 | 0.002 | 0.002 | EA |
| TCGA-ZG-A9LM | White | non-Hispanic/Latino | 0.965 | 0.008 | 0.002 | 0.026 | EA |
| TCGA-ZG-A9LN | White | non-Hispanic/Latino | 0.988 | 0.001 | 0.005 | 0.007 | EA |
| TCGA-ZG-A9LS | White | non-Hispanic/Latino | 0.992 | 0.001 | 0.001 | 0.006 | EA |
| TCGA-ZG-A9LU | White | non-Hispanic/Latino | 0.982 | 0.002 | 0.005 | 0.011 | EA |
| TCGA-ZG-A9LY | White | non-Hispanic/Latino | 0.989 | 0.003 | 0.003 | 0.005 | EA |
| TCGA-ZG-A9LZ | White | non-Hispanic/Latino | 0.991 | 0.001 | 0.003 | 0.005 | EA |
| TCGA-ZG-A9M4 | White | non-Hispanic/Latino | 0.987 | 0.001 | 0.006 | 0.007 | EA |
| TCGA-ZG-A9MC | White | non-Hispanic/Latino | 0.990 | 0.002 | 0.004 | 0.004 | EA |
| TCGA-ZG-A9N3 | White | non-Hispanic/Latino | 0.996 | 0.001 | 0.001 | 0.003 | EA |
| TCGA-ZG-A9ND | White | non-Hispanic/Latino | 0.989 | 0.000 | 0.009 | 0.002 | EA |
| TCGA-ZG-A9NI | White | non-Hispanic/Latino | 0.987 | 0.002 | 0.002 | 0.009 | EA |

**Table S5. Clinical characteristics of TCGA-PRAD patients**

| <b>Characteristic</b>               | <b>EA</b> | <b>AA</b> | <b>p value</b>  |
|-------------------------------------|-----------|-----------|-----------------|
| <b>Age at diagnosis</b>             |           |           | <b>2.00E-05</b> |
| <b>Mean(95% CI)</b>                 | 62(61-62) | 57(56-59) |                 |
| <b>Gleason score</b>                |           |           | <b>1.40E-06</b> |
| <=6                                 | 30        | 12        |                 |
| 7(3+4)                              | 117       | 29        |                 |
| 7(4+3)                              | 86        | 12        |                 |
| >=8                                 | 181       | 8         |                 |
| <b>Tumor T stage</b>                |           |           | <b>0.11</b>     |
| T1                                  | 140       | 29        |                 |
| T2                                  | 140       | 22        |                 |
| T3                                  | 49        | 3         |                 |
| <b>Zone of origin</b>               |           |           | <b>0.0068</b>   |
| <b>Overlapping / Multiple Zones</b> | 114       | 8         |                 |
| <b>Peripheral Zone</b>              | 104       | 23        |                 |
| <b>Vital status</b>                 |           |           | <b>1</b>        |
| Alive                               | 407       | 60        |                 |
| Dead                                | 7         | 1         |                 |
| <b>Tumor status</b>                 |           |           | <b>0.71</b>     |
| Tumor free                          | 267       | 38        |                 |
| With tumor                          | 78        | 9         |                 |

**Table S6. Differential contributions of mutational signatures among AA and EA patients**

| <b>Mutational signature*</b> | <b>Average contribution (overall)</b> | <b>Regression coefficient</b> | <b>Regression p-value</b> |
|------------------------------|---------------------------------------|-------------------------------|---------------------------|
| Signature.1                  | 0.356                                 | -0.028                        | 0.475                     |
| Signature.5                  | 0.523                                 | -0.019                        | 0.605                     |
| Signature.6                  | 0.116                                 | 0.045                         | 0.148                     |

\*Mutational signatures with insufficient (less than 5%) contribution to TCGA prostate cohort were excluded for analysis.

**Table S7. Differences in mutation frequency between AA and EA patients for 21 prostate cancer-related genes**

| Gene Symbol   | Alteration Proportion<br>(Overall) | Differentially Altered (adjusting for age and Gleason score) |         |       |
|---------------|------------------------------------|--------------------------------------------------------------|---------|-------|
|               |                                    | z value                                                      | p value | FDR   |
| <i>TP53</i>   | 0.118                              | -0.390                                                       | 0.697   | 0.995 |
| <i>SPOP</i>   | 0.112                              | 2.772                                                        | 0.006   | 0.117 |
| <i>KMT2D</i>  | 0.057                              | 0.153                                                        | 0.879   | 0.995 |
| <i>FOXA1</i>  | 0.057                              | 1.384                                                        | 0.166   | 0.699 |
| <i>KMT2C</i>  | 0.051                              | 1.658                                                        | 0.097   | 0.617 |
| <i>ATM</i>    | 0.041                              | 1.565                                                        | 0.118   | 0.617 |
| <i>PTEN</i>   | 0.037                              | -0.012                                                       | 0.991   | 0.995 |
| <i>CTNNB1</i> | 0.022                              | -0.170                                                       | 0.865   | 0.995 |
| <i>APC</i>    | 0.022                              | 0.125                                                        | 0.901   | 0.995 |
| <i>PIK3CA</i> | 0.022                              | -0.012                                                       | 0.991   | 0.995 |
| <i>ZMYM3</i>  | 0.020                              | 0.430                                                        | 0.667   | 0.995 |
| <i>BRCA2</i>  | 0.016                              | 1.166                                                        | 0.244   | 0.731 |
| <i>BRAF</i>   | 0.014                              | 1.211                                                        | 0.226   | 0.731 |
| <i>MED12</i>  | 0.012                              | 0.103                                                        | 0.918   | 0.995 |
| <i>NCOR1</i>  | 0.012                              | 1.039                                                        | 0.299   | 0.784 |
| <i>CHD1</i>   | 0.012                              | -0.007                                                       | 0.994   | 0.995 |
| <i>ERF</i>    | 0.012                              | -0.007                                                       | 0.994   | 0.995 |
| <i>CDKN1B</i> | 0.012                              | 0.790                                                        | 0.429   | 0.995 |
| <i>RNF43</i>  | 0.010                              | 1.631                                                        | 0.103   | 0.617 |
| <i>IDH1</i>   | 0.010                              | 0.484                                                        | 0.628   | 0.995 |
| <i>NCOR2</i>  | 0.010                              | -0.006                                                       | 0.995   | 0.995 |

**Table S8. Differences in fusion event frequency between AA and EA patients**

| Fusion               | Alteration Proportion<br>(Overall) | Differentially Altered (adjusting for age and Gleason score) |         |       |
|----------------------|------------------------------------|--------------------------------------------------------------|---------|-------|
|                      |                                    | z value                                                      | p value | FDR   |
| <i>ERG--TMPRSS2</i>  | 0.384                              | -2.016                                                       | 0.044   | 0.175 |
| <i>ERG--SLC45A3</i>  | 0.024                              | -0.340                                                       | 0.734   | 0.978 |
| <i>ETV4--TMPRSS2</i> | 0.016                              | 0.374                                                        | 0.709   | 0.978 |
| <i>ETV1--SLC45A3</i> | 0.014                              | -0.011                                                       | 0.991   | 0.991 |

Table S9. Differences in SCNA frequency between AA and EA patients

| GISTIC Peak               | Cytoband | SCNA Type     | GISTIC Q value | Alteration Proportion<br>(Copy Number Change>0.25, Overall) | Differentially Altered (adjusting for age and Gleason score) |         |       |
|---------------------------|----------|---------------|----------------|-------------------------------------------------------------|--------------------------------------------------------------|---------|-------|
|                           |          |               |                |                                                             | z value                                                      | p value | FDR   |
| chr21:39764212-40155078   | 21q22.2  | Deletion      | 1.12E-42       | 0.206                                                       | -3.024                                                       | 0.002   | 0.100 |
| chr10:89617402-90019300   | 10q23.31 | Deletion      | 6.31E-98       | 0.283                                                       | -2.923                                                       | 0.003   | 0.100 |
| chr16:72312198-73049829   | 16q22.2  | Deletion      | 3.83E-31       | 0.328                                                       | 2.660                                                        | 0.008   | 0.151 |
| chr8:128010769-128657530  | 8q24.21  | Amplification | 1.43E-06       | 0.255                                                       | 2.475                                                        | 0.013   | 0.193 |
| chr21:42837264-42883170   | 21q22.3  | Deletion      | 1.35E-71       | 0.261                                                       | -2.381                                                       | 0.017   | 0.201 |
| chr1:225937619-236515525  | 1q42.2   | Deletion      | 1.21E-04       | 0.083                                                       | 2.075                                                        | 0.038   | 0.313 |
| chr2:132585114-140123922  | 2q22.1   | Deletion      | 1.96E-21       | 0.160                                                       | 2.046                                                        | 0.041   | 0.313 |
| chr11:43664517-48238721   | 11p11.2  | Deletion      | 2.66E-03       | 0.059                                                       | 2.022                                                        | 0.043   | 0.313 |
| chr3:72328171-72554527    | 3p13     | Deletion      | 1.77E-21       | 0.150                                                       | -1.936                                                       | 0.053   | 0.323 |
| chr6:87855194-87954989    | 6q14.3   | Deletion      | 4.12E-73       | 0.330                                                       | 1.914                                                        | 0.056   | 0.323 |
| chr3:127875022-128352516  | 3q21.3   | Amplification | 1.18E-04       | 0.091                                                       | 1.680                                                        | 0.093   | 0.468 |
| chr12:88617538-111117100  | 12q23.1  | Amplification | 2.00E-02       | 0.065                                                       | -1.660                                                       | 0.097   | 0.468 |
| chr8:37058175-38852435    | 8p11.23  | Amplification | 9.80E-04       | 0.101                                                       | 1.557                                                        | 0.119   | 0.505 |
| chr16:46638910-47387972   | 16q11.2  | Amplification | 3.90E-03       | 0.043                                                       | 1.546                                                        | 0.122   | 0.505 |
| chr16:84175771-86610922   | 16q24.1  | Deletion      | 4.71E-39       | 0.364                                                       | 1.403                                                        | 0.161   | 0.614 |
| chr17:42102307-42554213   | 17q21.31 | Deletion      | 5.39E-15       | 0.162                                                       | -1.353                                                       | 0.176   | 0.614 |
| chr19:42754638-42807808   | 19q13.2  | Deletion      | 1.67E-03       | 0.075                                                       | -1.289                                                       | 0.197   | 0.614 |
| chr22:46365895-46511644   | 22q13.31 | Deletion      | 2.53E-01       | 0.083                                                       | -1.283                                                       | 0.200   | 0.614 |
| chr2:146952193-149838131  | 2q22.3   | Deletion      | 1.49E-13       | 0.140                                                       | 1.273                                                        | 0.203   | 0.614 |
| chr5:98166650-98270263    | 5q21.1   | Deletion      | 3.59E-36       | 0.194                                                       | 1.231                                                        | 0.218   | 0.614 |
| chr20:41749332-63025520   | 20q13.2  | Amplification | 8.00E-02       | 0.057                                                       | -1.220                                                       | 0.222   | 0.614 |
| chr11:113654900-114384940 | 11q23.2  | Deletion      | 1.27E-08       | 0.099                                                       | -1.068                                                       | 0.286   | 0.753 |
| chr2:37041440-45880121    | 2p21     | Deletion      | 4.00E-02       | 0.071                                                       | 0.979                                                        | 0.328   | 0.762 |
| chr4:124240099-132462112  | 4q28.2   | Deletion      | 3.99E-04       | 0.077                                                       | 0.841                                                        | 0.401   | 0.762 |
| chr17:7535461-7591760     | 17p13.1  | Deletion      | 1.73E-34       | 0.304                                                       | -0.833                                                       | 0.405   | 0.762 |
| chr13:44806478-48516844   | 13q14.13 | Deletion      | 3.96E-73       | 0.391                                                       | 0.792                                                        | 0.428   | 0.762 |
| chr1:64730845-65133664    | 1p31.3   | Deletion      | 4.89E-04       | 0.097                                                       | -0.770                                                       | 0.442   | 0.762 |
| chr9:129243127-131298973  | 9q33.3   | Amplification | 6.57E-02       | 0.077                                                       | 0.753                                                        | 0.452   | 0.762 |
| chr13:20795889-21489860   | 13q12.11 | Amplification | 5.73E-02       | 0.032                                                       | -0.752                                                       | 0.452   | 0.762 |
| chr1:90405191-103229484   | 1p21.3   | Deletion      | 2.14E-02       | 0.099                                                       | 0.748                                                        | 0.455   | 0.762 |
| chr7:124566685-127286817  | 7q31.33  | Deletion      | 1.56E-01       | 0.051                                                       | -0.742                                                       | 0.458   | 0.762 |
| chr7:29664554-34461996    | 7p14.3   | Amplification | 6.57E-02       | 0.138                                                       | 0.739                                                        | 0.460   | 0.762 |
| chr12:128117131-131113732 | 12q24.32 | Deletion      | 1.05E-02       | 0.071                                                       | 0.728                                                        | 0.467   | 0.762 |
| chr7:90757987-99646715    | 7q22.1   | Amplification | 1.23E-02       | 0.138                                                       | 0.724                                                        | 0.469   | 0.762 |
| chr19:56441313-57696355   | 19q13.43 | Amplification | 2.00E-01       | 0.022                                                       | -0.706                                                       | 0.480   | 0.762 |
| chr18:56014977-56437740   | 18q21.31 | Amplification | 2.26E-01       | 0.016                                                       | -0.696                                                       | 0.486   | 0.762 |
| chr17:18860536-19264731   | 17p11.2  | Amplification | 2.20E-01       | 0.026                                                       | -0.670                                                       | 0.503   | 0.762 |
| chr15:23853275-25989775   | 15q11.2  | Amplification | 1.91E-02       | 0.026                                                       | -0.658                                                       | 0.511   | 0.762 |
| chrX:66936213-67123618    | Xq12     | Amplification | 2.43E-02       | 0.012                                                       | -0.643                                                       | 0.520   | 0.762 |
| chr4:73976456-74219241    | 4q13.3   | Amplification | 6.50E-03       | 0.030                                                       | -0.635                                                       | 0.526   | 0.762 |
| chr5:125494684-180915260  | 5q35.3   | Amplification | 1.87E-01       | 0.036                                                       | 0.610                                                        | 0.542   | 0.766 |
| chrX:16848119-17061700    | Xp22.2   | Amplification | 4.18E-04       | 0.028                                                       | -0.567                                                       | 0.571   | 0.785 |
| chr17:59788818-60294245   | 17q23.2  | Amplification | 7.13E-03       | 0.038                                                       | -0.550                                                       | 0.582   | 0.785 |
| chr14:38008682-38049106   | 14q21.1  | Amplification | 5.23E-04       | 0.053                                                       | -0.499                                                       | 0.618   | 0.815 |
| chr11:67038613-67775127   | 11q13.2  | Amplification | 1.36E-05       | 0.069                                                       | -0.436                                                       | 0.663   | 0.839 |
| chr1:155131615-155287521  | 1q22     | Amplification | 1.16E-03       | 0.069                                                       | -0.428                                                       | 0.668   | 0.839 |
| chr4:1-1940977            | 4p16.3   | Amplification | 1.80E-01       | 0.026                                                       | -0.412                                                       | 0.681   | 0.839 |
| chr9:7937249-10619051     | 9p23     | Deletion      | 1.66E-05       | 0.071                                                       | -0.380                                                       | 0.704   | 0.839 |
| chr5:68740022-70749744    | 5q13.2   | Deletion      | 2.81E-26       | 0.176                                                       | 0.374                                                        | 0.709   | 0.839 |
| chr6:5259170-7728427      | 6p25.1   | Deletion      | 5.94E-02       | 0.073                                                       | -0.264                                                       | 0.792   | 0.911 |
| chr18:56584400-78077248   | 18q22.1  | Deletion      | 7.07E-06       | 0.227                                                       | 0.252                                                        | 0.801   | 0.911 |
| chr8:20226648-24160552    | 8p21.3   | Deletion      | 1.39E-28       | 0.536                                                       | 0.205                                                        | 0.838   | 0.935 |
| chr3:169633760-169870859  | 3q26.2   | Amplification | 1.13E-05       | 0.107                                                       | -0.161                                                       | 0.872   | 0.954 |
| chr5:54708557-57789060    | 5q11.2   | Deletion      | 1.74E-28       | 0.184                                                       | -0.122                                                       | 0.903   | 0.969 |

|                          |         |          |          |       |        |       |       |
|--------------------------|---------|----------|----------|-------|--------|-------|-------|
| chr13:71495625-76104669  | 13q22.1 | Deletion | 9.92E-38 | 0.314 | -0.083 | 0.934 | 0.969 |
| chr12:12844234-12941883  | 12p13.1 | Deletion | 5.08E-22 | 0.231 | -0.081 | 0.935 | 0.969 |
| chr3:195806806-197431398 | 3q29    | Deletion | 1.71E-01 | 0.055 | -0.043 | 0.966 | 0.982 |
| chr15:56928548-57541057  | 15q21.3 | Deletion | 2.74E-02 | 0.087 | 0.012  | 0.991 | 0.991 |

Table S10. Genes differentially expressed between AA and EA patients identified by DESeq2 analysis adjusting for clinical factors

| Gene ID (GENCODE v22) | Gene symbol    | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000001561.6     | ENPP4          | Protein    | -0.33                       | 1.14E-03 | 1.87E-02    | -0.34                           | 4.29E-04 | 1.32E-02    |  |
| ENSG00000002079.11    | MYH16          | Pseudogene | 0.62                        | 4.22E-06 | 2.59E-04    | 0.48                            | 2.89E-04 | 9.96E-03    |  |
| ENSG00000003436.13    | TFPI           | Protein    | -0.65                       | 1.99E-04 | 5.36E-03    | -0.55                           | 7.37E-04 | 1.91E-02    |  |
| ENSG00000003756.15    | RBM5           | Protein    | 0.16                        | 1.28E-02 | 9.13E-02    | 0.12                            | 4.60E-02 | 2.42E-01    |  |
| ENSG00000004487.14    | KDM1A          | Protein    | -0.13                       | 8.93E-03 | 7.24E-02    | -0.11                           | 1.95E-02 | 1.51E-01    |  |
| ENSG00000004534.13    | RBM6           | Protein    | 0.25                        | 2.75E-03 | 3.38E-02    | 0.17                            | 3.16E-02 | 1.97E-01    |  |
| ENSG00000004660.13    | CAMKK1         | Protein    | 0.25                        | 1.43E-02 | 9.80E-02    | 0.16                            | 9.73E-02 | 3.57E-01    |  |
| ENSG00000004777.17    | ARHGAP33       | Protein    | 0.31                        | 3.97E-03 | 4.33E-02    | 0.09                            | 3.83E-01 | 6.78E-01    |  |
| ENSG00000004809.12    | SLC22A16       | Protein    | 0.56                        | 8.09E-03 | 6.82E-02    | 0.58                            | 4.67E-03 | 6.55E-02    |  |
| ENSG00000004848.6     | ARX            | Protein    | 0.57                        | 5.59E-03 | 5.40E-02    | 0.49                            | 1.37E-02 | 1.23E-01    |  |
| ENSG00000004939.12    | SLC4A1         | Protein    | 0.60                        | 1.92E-03 | 2.66E-02    | 0.42                            | 2.45E-02 | 1.71E-01    |  |
| ENSG00000005108.14    | THSD7A         | Protein    | 0.71                        | 1.19E-04 | 3.62E-03    | 0.18                            | 3.10E-01 | 6.19E-01    |  |
| ENSG00000005206.15    | SPPL2B         | Protein    | 0.21                        | 1.38E-02 | 9.58E-02    | 0.16                            | 4.09E-02 | 2.28E-01    |  |
| ENSG00000005379.14    | BZRAP1         | Protein    | 0.28                        | 2.90E-03 | 3.50E-02    | 0.21                            | 1.95E-02 | 1.51E-01    |  |
| ENSG00000005513.9     | SOX8           | Protein    | 0.35                        | 8.78E-03 | 7.16E-02    | 0.15                            | 2.52E-01 | 5.63E-01    |  |
| ENSG00000005884.16    | ITGA3          | Protein    | -0.27                       | 6.13E-03 | 5.73E-02    | -0.24                           | 1.19E-02 | 1.14E-01    |  |
| ENSG00000005893.14    | LAMP2          | Protein    | -0.28                       | 9.80E-05 | 3.10E-03    | -0.22                           | 1.64E-03 | 3.27E-02    |  |
| ENSG00000006071.10    | ABCC8          | Protein    | -0.43                       | 1.30E-02 | 9.22E-02    | -0.31                           | 6.19E-02 | 2.85E-01    |  |
| ENSG00000006468.12    | ETV1           | Protein    | -0.61                       | 9.25E-03 | 7.41E-02    | -1.64                           | 9.12E-15 | 5.56E-12    |  |
| ENSG00000006652.12    | IFRD1          | Protein    | -0.20                       | 1.44E-02 | 9.84E-02    | 0.09                            | 2.55E-01 | 5.66E-01    |  |
| ENSG00000006756.14    | ARSD           | Protein    | 0.24                        | 1.21E-03 | 1.94E-02    | -0.08                           | 2.50E-01 | 5.61E-01    |  |
| ENSG00000006837.10    | CDKL3          | Protein    | 0.21                        | 3.69E-03 | 4.12E-02    | 0.15                            | 3.35E-02 | 2.03E-01    |  |
| ENSG00000007038.9     | PRSS21         | Protein    | -0.93                       | 1.56E-05 | 7.52E-04    | -0.87                           | 3.19E-05 | 1.87E-03    |  |
| ENSG00000007202.13    | KIAA0100       | Protein    | -0.21                       | 1.25E-02 | 8.98E-02    | -0.19                           | 1.67E-02 | 1.39E-01    |  |
| ENSG00000007384.14    | RHBDF1         | Protein    | 0.17                        | 3.24E-03 | 3.80E-02    | 0.12                            | 2.22E-02 | 1.62E-01    |  |
| ENSG00000007952.16    | NOX1           | Protein    | 0.42                        | 2.82E-03 | 3.44E-02    | -0.14                           | 2.97E-01 | 6.07E-01    |  |
| ENSG00000008086.9     | CDKL5          | Protein    | -0.30                       | 9.99E-03 | 7.77E-02    | -0.16                           | 1.74E-01 | 4.71E-01    |  |
| ENSG00000008196.11    | TFAP2B         | Protein    | 0.57                        | 1.38E-02 | 9.61E-02    | 0.44                            | 5.01E-02 | 2.55E-01    |  |
| ENSG00000008323.14    | PLEKHG6        | Protein    | 0.43                        | 6.50E-05 | 2.28E-03    | 0.28                            | 7.72E-03 | 8.79E-02    |  |
| ENSG00000008438.4     | PGLYRP1        | Protein    | 0.40                        | 1.41E-02 | 9.74E-02    | 0.33                            | 3.42E-02 | 2.05E-01    |  |
| ENSG00000008441.15    | NFIX           | Protein    | -0.19                       | 7.00E-03 | 6.21E-02    | -0.15                           | 2.34E-02 | 1.67E-01    |  |
| ENSG00000008952.15    | SEC62          | Protein    | -0.22                       | 8.23E-04 | 1.48E-02    | -0.18                           | 6.20E-03 | 7.75E-02    |  |
| ENSG00000009694.12    | TENM1          | Protein    | 1.23                        | 2.23E-09 | 3.70E-07    | 1.13                            | 1.29E-08 | 2.78E-06    |  |
| ENSG00000010318.18    | PHF7           | Protein    | 0.24                        | 5.18E-05 | 1.93E-03    | 0.19                            | 1.08E-03 | 2.47E-02    |  |
| ENSG00000011114.13    | BTBD7          | Protein    | -0.16                       | 1.38E-02 | 9.58E-02    | -0.12                           | 5.21E-02 | 2.60E-01    |  |
| ENSG00000011243.16    | AKAP8L         | Protein    | 0.18                        | 7.38E-03 | 6.41E-02    | 0.14                            | 3.43E-02 | 2.06E-01    |  |
| ENSG00000011275.17    | RNF216         | Protein    | -0.12                       | 4.00E-03 | 4.35E-02    | -0.13                           | 1.68E-03 | 3.31E-02    |  |
| ENSG00000011590.12    | ZBTB32         | Protein    | 0.66                        | 2.15E-07 | 2.14E-05    | 0.53                            | 1.76E-05 | 1.18E-03    |  |
| ENSG00000011677.11    | GABRA3         | Protein    | 1.96                        | 9.71E-18 | 5.51E-15    | 1.92                            | 5.24E-18 | 4.42E-15    |  |
| ENSG00000012223.11    | LTF            | Protein    | -0.95                       | 6.57E-05 | 2.30E-03    | -0.89                           | 1.22E-04 | 5.30E-03    |  |
| ENSG00000012504.12    | NR1H4          | Protein    | 0.64                        | 6.40E-03 | 5.90E-02    | 0.25                            | 2.67E-01 | 5.78E-01    |  |
| ENSG00000013441.14    | CLK1           | Protein    | 0.31                        | 1.08E-04 | 3.38E-03    | 0.24                            | 2.33E-03 | 4.15E-02    |  |
| ENSG00000013503.8     | POLR3B         | Protein    | -0.16                       | 1.07E-02 | 8.13E-02    | -0.11                           | 5.92E-02 | 2.78E-01    |  |
| ENSG00000013563.12    | DNASE1L1       | Protein    | 0.15                        | 6.77E-03 | 6.07E-02    | 0.10                            | 6.69E-02 | 2.96E-01    |  |
| ENSG00000013725.13    | CD6            | Protein    | 0.40                        | 8.65E-03 | 7.11E-02    | 0.26                            | 7.93E-02 | 3.23E-01    |  |
| ENSG00000014123.9     | UFL1           | Protein    | -0.27                       | 1.63E-03 | 2.38E-02    | -0.14                           | 9.54E-02 | 3.54E-01    |  |
| ENSG00000014216.14    | CAPN1          | Protein    | -0.13                       | 8.03E-03 | 6.78E-02    | -0.12                           | 1.43E-02 | 1.27E-01    |  |
| ENSG00000014641.16    | MDH1           | Protein    | -0.15                       | 8.78E-04 | 1.55E-02    | -0.09                           | 3.45E-02 | 2.06E-01    |  |
| ENSG00000015171.17    | ZMYND11        | Protein    | -0.15                       | 6.46E-03 | 5.92E-02    | -0.09                           | 1.10E-01 | 3.80E-01    |  |
| ENSG00000015413.8     | DPEP1          | Protein    | -0.79                       | 3.60E-04 | 8.34E-03    | -1.21                           | 4.45E-09 | 1.02E-06    |  |
| ENSG00000015532.8     | XYLT2          | Protein    | -0.12                       | 1.05E-02 | 8.01E-02    | -0.07                           | 1.60E-01 | 4.54E-01    |  |
| ENSG00000016402.11    | IL20RA         | Protein    | -0.53                       | 3.87E-07 | 3.48E-05    | -0.42                           | 3.33E-05 | 1.93E-03    |  |
| ENSG00000016602.9     | CLCA4          | Protein    | 0.89                        | 1.73E-04 | 4.83E-03    | 0.19                            | 3.91E-01 | 6.85E-01    |  |
| ENSG00000018869.15    | ZNF582         | Protein    | 0.19                        | 2.13E-03 | 2.85E-02    | 0.17                            | 3.56E-03 | 5.54E-02    |  |
| ENSG00000019169.10    | MARCO          | Protein    | -0.97                       | 5.37E-07 | 4.62E-05    | -0.99                           | 1.06E-07 | 1.78E-05    |  |
| ENSG00000019186.8     | CYP24A1        | Protein    | 0.63                        | 5.29E-03 | 5.20E-02    | 0.49                            | 2.55E-02 | 1.75E-01    |  |
| ENSG00000019505.6     | SYT13          | Protein    | -1.04                       | 7.10E-07 | 5.82E-05    | -0.89                           | 1.11E-05 | 8.20E-04    |  |
| ENSG00000021488.11    | SLC7A9         | Protein    | 0.55                        | 9.98E-05 | 3.14E-03    | 0.42                            | 2.33E-03 | 4.15E-02    |  |
| ENSG00000021776.9     | AQR            | Protein    | -0.18                       | 6.39E-03 | 5.89E-02    | -0.12                           | 6.05E-02 | 2.81E-01    |  |
| ENSG00000021826.13    | CPS1           | Protein    | -1.26                       | 1.74E-07 | 1.77E-05    | -1.31                           | 1.24E-09 | 3.31E-07    |  |
| ENSG00000022976.14    | ZNF839         | Protein    | 0.18                        | 1.37E-03 | 2.11E-02    | 0.14                            | 9.28E-03 | 9.82E-02    |  |
| ENSG00000023228.12    | NDUFS1         | Protein    | -0.22                       | 2.04E-04 | 5.44E-03    | -0.16                           | 3.18E-03 | 5.14E-02    |  |
| ENSG00000023318.7     | ERP44          | Protein    | -0.16                       | 5.97E-03 | 5.63E-02    | -0.14                           | 9.28E-03 | 9.81E-02    |  |
| ENSG00000023839.9     | ABCC2          | Protein    | 0.45                        | 1.08E-04 | 3.36E-03    | 0.34                            | 2.43E-03 | 4.28E-02    |  |
| ENSG00000023892.10    | DEF6           | Protein    | 0.29                        | 2.27E-03 | 2.97E-02    | 0.33                            | 2.53E-04 | 9.14E-03    |  |
| ENSG00000025796.12    | SEC63          | Protein    | -0.18                       | 2.13E-03 | 2.85E-02    | -0.07                           | 2.29E-01 | 5.40E-01    |  |
| ENSG00000025800.12    | KPNA6          | Protein    | -0.16                       | 1.72E-03 | 2.47E-02    | -0.14                           | 4.79E-03 | 6.65E-02    |  |
| ENSG00000026036.19    | RTEL1-TNFRSF66 | Protein    | 0.32                        | 5.42E-03 | 5.29E-02    | 0.16                            | 1.46E-01 | 4.35E-01    |  |
| ENSG00000026950.15    | BTN3A1         | Protein    | 0.31                        | 4.65E-04 | 1.01E-02    | 0.28                            | 1.01E-03 | 2.35E-02    |  |
| ENSG00000027697.11    | IFNGR1         | Protein    | -0.21                       | 2.53E-03 | 3.21E-02    | -0.15                           | 2.02E-02 | 1.54E-01    |  |
| ENSG00000029364.10    | SLC39A9        | Protein    | -0.18                       | 2.88E-03 | 3.49E-02    | -0.14                           | 1.44E-02 | 1.27E-01    |  |
| ENSG00000030304.11    | MUSK           | Protein    | 0.64                        | 4.07E-03 | 4.40E-02    | 0.29                            | 1.74E-01 | 4.72E-01    |  |
| ENSG00000032742.16    | HFT88          | Protein    | 0.16                        | 3.64E-03 | 4.08E-02    | 0.11                            | 3.78E-02 | 2.17E-01    |  |
| ENSG00000034533.10    | ASTE1          | Protein    | 0.18                        | 2.21E-05 | 9.99E-04    | 0.13                            | 1.01E-03 | 2.35E-02    |  |
| ENSG00000035403.15    | VCL            | Protein    | -0.32                       | 6.61E-03 | 5.99E-02    | -0.18                           | 1.20E-01 | 3.97E-01    |  |
| ENSG00000035687.9     | ADSS           | Protein    | -0.17                       | 6.40E-03 | 5.90E-02    | -0.14                           | 2.00E-02 | 1.53E-01    |  |
| ENSG00000037577.12    | MRI1           | Protein    | 0.26                        | 7.12E-05 | 2.44E-03    | 0.22                            | 6.07E-04 | 1.68E-02    |  |
| ENSG00000038002.7     | AGA            | Protein    | -0.34                       | 1.58E-06 | 1.15E-04    | -0.21                           | 2.04E-03 | 3.78E-02    |  |
| ENSG00000038532.13    | CLEC16A        | Protein    | -0.13                       | 2.39E-03 | 3.08E-02    | -0.11                           | 5.24E-03 | 7.01E-02    |  |
| ENSG00000039068.17    | CDH1           | Protein    | -0.32                       | 4.19E-04 | 9.30E-03    | -0.17                           | 5.29E-02 | 2.62E-01    |  |
| ENSG00000039537.12    | C6             | Protein    | -1.00                       | 9.05E-06 | 4.81E-04    | -0.58                           | 4.01E-03 | 5.99E-02    |  |
| ENSG00000039600.9     | SOX30          | Protein    | 0.43                        | 5.66E-03 | 5.44E-02    | 0.56                            | 2.14E-04 | 8.10E-03    |  |
| ENSG00000040531.13    | CTNS           | Protein    | 0.26                        | 1.96E-05 | 9.16E-04    | 0.29                            | 6.24E-07 | 8.00E-05    |  |
| ENSG00000042062.10    | FAM65C         | Protein    | 0.43                        | 3.02E-04 | 7.35E-03    | 0.44                            | 9.42E-05 | 4.31E-03    |  |
| ENSG00000042832.10    | TG             | Protein    | -0.66                       | 5.43E-03 | 5.30E-02    | -0.90                           | 9.88E-06 | 7.51E-04    |  |
| ENSG00000043093.12    | DCUN1D1        | Protein    | -0.20                       | 2.68E-03 | 3.33E-02    | -0.21                           | 7.19E-04 | 1.88E-02    |  |
| ENSG00000044604.11    | DSG2           | Protein    | -0.29                       | 7.60E-03 | 6.54E-02    | -0.21                           | 4.17E-02 | 2.30E-01    |  |
| ENSG00000044651.13    | OFD1           | Protein    | 0.19                        | 5.74E-04 | 1.15E-02    | 0.17                            | 1.07E-03 | 2.47E-02    |  |
| ENSG00000044653.13    | GPM6B          | Protein    | 0.35                        | 1.94E-03 | 2.69E-02    | 0.42                            | 1.26E-04 | 5.42E-03    |  |
| ENSG00000047056.13    | WDR37          | Protein    | -0.27                       | 3.14E-05 | 1.30E-03    | -0.19                           | 2.32E-03 | 4.14E-02    |  |
| ENSG00000047634.13    | SCML1          | Protein    | 0.44                        | 1.15E-05 | 5.85E-04    | 0.29                            | 3.15E-03 | 5.10E-02    |  |
| ENSG00000048052.20    | HDAC9          | Protein    | -0.61                       | 4.53E-04 | 9.85E-03    | -0.70                           | 2.80E-05 | 1.69E-03    |  |
| ENSG00000048649.12    | RSF1           | Protein    | -0.17                       | 1.16E-02 | 8.56E-02    | -0.15                           | 2.45E-02 | 1.71E-01    |  |
| ENSG00000048707.12    | VPS13D         | Protein    | -0.17                       | 1.05E-02 | 8.04E-02    | -0.12                           | 5.39E-02 | 2.65E-01    |  |
| ENSG00000048991.15    | R3HDM1         | Protein    | -0.16                       | 8.14E-03 | 6.85E-02    | -0.16                           | 6.58E-03 | 8.03E-02    |  |
| ENSG00000049239.11    | H6PD           | Protein    | -0.20                       | 2.46E-03 | 3.15E-02    | -0.18                           | 4.73E-03 | 6.60E-02    |  |
| ENSG00000049245.11    | VAMP3          | Protein    | -0.12                       | 5.63E-03 | 5.42E-02    | -0.09                           | 3.32E-02 | 2.02E-01    |  |
| ENSG00000049247.12    | UTS2           | Protein    | 0.77                        | 4.11E-04 | 9.17E-03    | 0.86                            | 3.78E-05 | 2.14E-03    |  |
| ENSG00000049449.7     | RCN1           | Protein    | -0.17                       | 1.12E-02 | 8.36E-02    | -0.09                           | 1.60E-01 | 4.54E-01    |  |
| ENSG00000050030.12    | KIAA2022       | Protein    | -0.32                       | 1.76E-03 | 2.50E-02    | -0.22                           | 2.57E-02 | 1.76E-01    |  |
| ENSG00000050628.19    | PTGER3         | Protein    | -0.45                       | 2.67E-03 | 3.32E-02    | -0.35                           | 1.54E-02 | 1.32E-01    |  |
| ENSG00000051009.9     | FAM160A2       | Protein    | 0.14                        | 4.56E-03 | 4.74E-02    | 0.11                            | 2.18E-02 | 1.61E-01    |  |
| ENSG00000053371.11    | AKR7A2         | Protein    | -0.18                       | 6.10E-03 | 5.71E-02    | -0.14                           | 2.91E-02 | 1.88E-01    |  |
| ENSG00000053438.8     | NNAT           | Protein    | -0.82                       | 5.18E-05 | 1.93E-03    | -0.11                           | 4.33E-01 | 7.15E-01    |  |
| ENSG00000053900.9     | ANAPC4         | Protein    | 0.14                        | 7.58E-03 | 6.53E-02    | 0.14                            | 6.34E-03 | 7.85E-02    |  |

| Gene ID (GENCODE v22) | Gene symbol    | Gene type | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------|-----------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                |           | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000054179.10    | ENTPD2         | Protein   | -0.38                       | 1.21E-03 | 1.94E-02    | -0.35                           | 2.23E-03 | 4.02E-02    |  |
| ENSG00000054356.12    | PTPRN          | Protein   | -0.47                       | 1.43E-02 | 9.79E-02    | -0.56                           | 2.50E-03 | 4.38E-02    |  |
| ENSG00000054392.11    | HHAT           | Protein   | -0.26                       | 1.20E-02 | 8.76E-02    | -0.05                           | 6.51E-01 | 8.50E-01    |  |
| ENSG00000054793.12    | ATP9A          | Protein   | -0.19                       | 1.35E-02 | 9.45E-02    | -0.18                           | 1.33E-02 | 1.22E-01    |  |
| ENSG00000054965.9     | FAM168A        | Protein   | -0.17                       | 8.02E-03 | 6.77E-02    | -0.17                           | 6.12E-03 | 7.69E-02    |  |
| ENSG00000055163.17    | CYFIP2         | Protein   | -0.21                       | 7.37E-03 | 6.41E-02    | -0.25                           | 1.11E-03 | 2.52E-02    |  |
| ENSG00000055211.11    | GINM1          | Protein   | -0.13                       | 4.42E-03 | 4.64E-02    | -0.08                           | 5.91E-02 | 2.78E-01    |  |
| ENSG00000056558.9     | TRAF1          | Protein   | 0.28                        | 4.64E-03 | 4.78E-02    | 0.20                            | 3.66E-02 | 2.13E-01    |  |
| ENSG00000057019.14    | DCBLD2         | Protein   | -0.32                       | 4.37E-05 | 1.71E-03    | -0.19                           | 1.20E-02 | 1.15E-01    |  |
| ENSG00000057252.11    | SOAT1          | Protein   | -0.21                       | 1.26E-02 | 9.01E-02    | -0.11                           | 1.68E-01 | 4.64E-01    |  |
| ENSG00000057294.12    | PKP2           | Protein   | -0.31                       | 2.19E-04 | 5.76E-03    | -0.22                           | 5.81E-03 | 7.47E-02    |  |
| ENSG00000057657.13    | PRDM1          | Protein   | 0.43                        | 2.02E-03 | 2.76E-02    | 0.41                            | 2.15E-03 | 3.92E-02    |  |
| ENSG00000057663.11    | ATG5           | Protein   | -0.16                       | 4.59E-03 | 4.76E-02    | -0.05                           | 3.44E-01 | 6.46E-01    |  |
| ENSG00000058063.14    | ATP11B         | Protein   | -0.33                       | 8.76E-04 | 1.55E-02    | -0.28                           | 2.87E-03 | 4.81E-02    |  |
| ENSG00000058085.13    | LAMC2          | Protein   | -0.53                       | 1.33E-03 | 2.06E-02    | -0.39                           | 1.49E-02 | 1.30E-01    |  |
| ENSG00000058729.9     | RIOK2          | Protein   | -0.15                       | 2.04E-03 | 2.77E-02    | -0.12                           | 1.26E-02 | 1.18E-01    |  |
| ENSG00000059378.11    | PARP12         | Protein   | 0.25                        | 1.86E-03 | 2.60E-02    | 0.20                            | 8.82E-03 | 9.51E-02    |  |
| ENSG00000059758.6     | CDK17          | Protein   | -0.25                       | 6.43E-03 | 5.91E-02    | -0.32                           | 2.10E-04 | 7.97E-03    |  |
| ENSG00000060558.3     | GNAI5          | Protein   | 0.41                        | 3.43E-03 | 3.93E-02    | 0.39                            | 3.87E-03 | 5.83E-02    |  |
| ENSG00000060688.11    | SNRNP40        | Protein   | -0.20                       | 2.51E-03 | 3.19E-02    | -0.20                           | 1.69E-03 | 3.33E-02    |  |
| ENSG00000061918.11    | GUCY1B3        | Protein   | -0.33                       | 1.63E-03 | 2.38E-02    | -0.33                           | 1.16E-03 | 2.60E-02    |  |
| ENSG00000061938.15    | TNK2           | Protein   | 0.25                        | 1.87E-03 | 2.61E-02    | 0.18                            | 1.97E-02 | 1.52E-01    |  |
| ENSG00000062598.16    | ELMO2          | Protein   | -0.17                       | 7.32E-03 | 6.38E-02    | -0.07                           | 2.68E-01 | 5.79E-01    |  |
| ENSG00000062725.8     | APPBP2         | Protein   | -0.17                       | 5.01E-03 | 5.02E-02    | -0.11                           | 5.91E-02 | 2.78E-01    |  |
| ENSG00000063176.14    | SPHK2          | Protein   | 0.20                        | 2.76E-03 | 3.39E-02    | 0.19                            | 2.60E-03 | 4.49E-02    |  |
| ENSG00000064201.14    | TSPAN32        | Protein   | 0.37                        | 3.02E-03 | 3.60E-02    | 0.28                            | 1.99E-02 | 1.52E-01    |  |
| ENSG00000064205.9     | WISP2          | Protein   | -0.60                       | 4.97E-03 | 4.99E-02    | -0.53                           | 1.06E-02 | 1.07E-01    |  |
| ENSG00000064225.11    | ST3GAL6        | Protein   | -0.57                       | 1.58E-07 | 1.64E-05    | -0.44                           | 2.93E-05 | 1.75E-03    |  |
| ENSG00000064270.11    | ATP2C2         | Protein   | -0.33                       | 4.68E-03 | 4.81E-02    | -0.28                           | 1.28E-02 | 1.19E-01    |  |
| ENSG00000064489.20    | MEF2B-NB-MEF2B | Protein   | 0.19                        | 9.88E-03 | 7.71E-02    | 0.17                            | 1.29E-02 | 1.19E-01    |  |
| ENSG00000064651.12    | SLC12A2        | Protein   | -0.41                       | 4.12E-04 | 9.18E-03    | -0.28                           | 1.34E-02 | 1.22E-01    |  |
| ENSG00000064886.12    | CH3L2          | Protein   | -0.75                       | 7.92E-04 | 1.45E-02    | -0.27                           | 1.85E-01 | 4.88E-01    |  |
| ENSG00000064932.14    | SBNQ2          | Protein   | 0.29                        | 8.90E-04 | 1.56E-02    | 0.20                            | 2.05E-02 | 1.55E-01    |  |
| ENSG00000065000.14    | AP3D1          | Protein   | -0.12                       | 9.42E-03 | 7.48E-02    | -0.12                           | 7.97E-03 | 8.96E-02    |  |
| ENSG00000065029.13    | ZNF76          | Protein   | 0.12                        | 4.98E-03 | 5.00E-02    | 0.09                            | 3.63E-02 | 2.12E-01    |  |
| ENSG00000065491.8     | TBC1D22B       | Protein   | -0.25                       | 1.76E-04 | 4.89E-03    | -0.28                           | 8.23E-06 | 6.51E-04    |  |
| ENSG00000065833.8     | ME1            | Protein   | -0.36                       | 5.74E-03 | 5.48E-02    | -0.27                           | 2.93E-02 | 1.89E-01    |  |
| ENSG00000066135.11    | KDM4A          | Protein   | -0.16                       | 2.37E-03 | 3.06E-02    | -0.10                           | 5.44E-02 | 2.66E-01    |  |
| ENSG00000066923.16    | STAG3          | Protein   | 0.27                        | 1.13E-02 | 8.42E-02    | 0.16                            | 1.31E-01 | 4.14E-01    |  |
| ENSG00000066926.9     | FECH           | Protein   | 0.45                        | 9.92E-05 | 3.13E-03    | 0.39                            | 4.01E-04 | 1.25E-02    |  |
| ENSG00000067057.15    | PFKP           | Protein   | -0.23                       | 5.23E-03 | 5.16E-02    | -0.20                           | 8.84E-03 | 9.52E-02    |  |
| ENSG00000067141.15    | NEO1           | Protein   | -0.23                       | 1.05E-02 | 8.04E-02    | -0.06                           | 5.25E-01 | 7.77E-01    |  |
| ENSG00000067560.9     | RHOA           | Protein   | -0.12                       | 7.08E-04 | 1.34E-02    | -0.13                           | 2.00E-04 | 7.68E-03    |  |
| ENSG00000068024.15    | HDAC4          | Protein   | -0.22                       | 1.38E-03 | 2.11E-02    | -0.18                           | 6.28E-03 | 7.79E-02    |  |
| ENSG00000068078.16    | FGFR3          | Protein   | 0.49                        | 1.29E-04 | 3.83E-03    | 0.45                            | 2.52E-04 | 9.12E-03    |  |
| ENSG00000068615.15    | REEP1          | Protein   | -0.45                       | 5.50E-04 | 1.12E-02    | -0.39                           | 1.84E-03 | 3.52E-02    |  |
| ENSG00000068654.14    | POLR1A         | Protein   | -0.34                       | 1.88E-07 | 1.90E-05    | -0.35                           | 1.35E-08 | 2.88E-06    |  |
| ENSG00000068697.6     | LAPTM4A        | Protein   | -0.10                       | 7.89E-03 | 6.71E-02    | -0.09                           | 2.05E-02 | 1.55E-01    |  |
| ENSG00000068781.19    | STON1-GTF2AIL  | Protein   | -1.02                       | 4.29E-08 | 5.12E-06    | -0.92                           | 2.67E-07 | 3.94E-05    |  |
| ENSG00000068885.13    | IFT80          | Protein   | 0.19                        | 1.67E-03 | 2.42E-02    | 0.13                            | 3.34E-02 | 2.03E-01    |  |
| ENSG00000068912.12    | ERLEC1         | Protein   | -0.17                       | 1.13E-02 | 8.44E-02    | -0.08                           | 2.29E-01 | 5.40E-01    |  |
| ENSG00000069248.11    | NUP133         | Protein   | -0.13                       | 1.28E-02 | 9.11E-02    | -0.12                           | 1.26E-02 | 1.18E-01    |  |
| ENSG00000069493.13    | CLEC2D         | Protein   | 0.34                        | 4.71E-03 | 4.83E-02    | 0.21                            | 6.42E-02 | 2.90E-01    |  |
| ENSG00000069535.13    | MAOB           | Protein   | -0.53                       | 3.43E-03 | 3.93E-02    | -0.49                           | 4.57E-03 | 6.47E-02    |  |
| ENSG00000069764.8     | PLA2G10        | Protein   | 0.45                        | 1.45E-03 | 2.20E-02    | 0.42                            | 1.86E-03 | 3.53E-02    |  |
| ENSG00000069956.10    | MAPK6          | Protein   | -0.27                       | 5.24E-03 | 5.16E-02    | -0.23                           | 1.39E-02 | 1.25E-01    |  |
| ENSG00000070214.14    | SLC44A1        | Protein   | -0.24                       | 1.59E-03 | 2.35E-02    | -0.27                           | 1.45E-04 | 6.05E-03    |  |
| ENSG00000070388.10    | FGF22          | Protein   | 0.45                        | 1.82E-03 | 2.56E-02    | 0.29                            | 4.10E-02 | 2.28E-01    |  |
| ENSG00000070495.13    | JMJD6          | Protein   | 0.22                        | 1.88E-03 | 2.63E-02    | 0.20                            | 3.81E-03 | 5.80E-02    |  |
| ENSG00000070748.16    | CHAT           | Protein   | -0.73                       | 4.11E-03 | 4.42E-02    | -0.40                           | 1.08E-01 | 3.77E-01    |  |
| ENSG00000070756.12    | PABPC1         | Protein   | 0.29                        | 9.61E-04 | 1.65E-02    | 0.15                            | 8.88E-02 | 3.41E-01    |  |
| ENSG00000071889.15    | FAM3A          | Protein   | 0.35                        | 5.19E-06 | 3.05E-04    | 0.34                            | 3.06E-06 | 2.91E-04    |  |
| ENSG00000071909.17    | MYO3B          | Protein   | 0.58                        | 5.43E-04 | 1.11E-02    | -0.16                           | 3.04E-01 | 6.14E-01    |  |
| ENSG00000072062.12    | PRKACA         | Protein   | -0.14                       | 1.82E-03 | 2.56E-02    | -0.13                           | 2.38E-03 | 4.21E-02    |  |
| ENSG00000072163.17    | LIMS2          | Protein   | -0.43                       | 2.45E-03 | 3.14E-02    | -0.27                           | 5.09E-02 | 2.57E-01    |  |
| ENSG00000072182.11    | ASIC4          | Protein   | 0.47                        | 6.44E-03 | 5.91E-02    | 0.18                            | 2.82E-01 | 5.93E-01    |  |
| ENSG00000072415.7     | MPP5           | Protein   | -0.24                       | 2.46E-03 | 3.15E-02    | -0.11                           | 1.48E-01 | 4.38E-01    |  |
| ENSG00000072694.17    | FCGR2B         | Protein   | 0.37                        | 8.75E-03 | 7.16E-02    | 0.23                            | 1.04E-01 | 3.70E-01    |  |
| ENSG00000072818.10    | ACAP1          | Protein   | 0.37                        | 2.23E-04 | 5.86E-03    | 0.31                            | 1.22E-03 | 2.68E-02    |  |
| ENSG00000073146.14    | MOV10L1        | Protein   | 0.48                        | 9.18E-03 | 7.37E-02    | 0.35                            | 4.80E-02 | 2.49E-01    |  |
| ENSG00000073169.12    | SELO           | Protein   | 0.23                        | 1.15E-02 | 8.50E-02    | 0.22                            | 9.72E-03 | 1.01E-01    |  |
| ENSG00000073756.10    | PTGS2          | Protein   | -0.51                       | 7.51E-03 | 6.49E-02    | -0.45                           | 1.35E-02 | 1.22E-01    |  |
| ENSG00000073849.13    | ST6GAL1        | Protein   | -0.84                       | 1.16E-07 | 1.26E-05    | -0.56                           | 3.28E-04 | 1.08E-02    |  |
| ENSG00000074054.16    | CLASP1         | Protein   | -0.16                       | 1.38E-02 | 9.59E-02    | -0.10                           | 1.04E-01 | 3.71E-01    |  |
| ENSG00000074317.9     | SNCB           | Protein   | 0.72                        | 1.05E-03 | 1.76E-02    | -0.05                           | 7.98E-01 | 9.22E-01    |  |
| ENSG00000074582.11    | BCS1L          | Protein   | 0.17                        | 6.42E-03 | 5.90E-02    | 0.13                            | 3.61E-02 | 2.12E-01    |  |
| ENSG00000074621.12    | SLC24A1        | Protein   | -0.24                       | 3.54E-04 | 8.25E-03    | -0.18                           | 5.05E-03 | 6.86E-02    |  |
| ENSG00000074660.14    | SCARF1         | Protein   | 0.25                        | 4.99E-03 | 5.01E-02    | 0.10                            | 2.44E-01 | 5.55E-01    |  |
| ENSG00000074695.5     | LMAN1          | Protein   | -0.32                       | 1.24E-04 | 3.72E-03    | -0.23                           | 5.21E-03 | 6.99E-02    |  |
| ENSG00000074803.16    | SLC12A1        | Protein   | -0.78                       | 5.26E-04 | 1.09E-02    | -1.06                           | 1.27E-06 | 1.43E-04    |  |
| ENSG00000074966.9     | TXK            | Protein   | 0.33                        | 5.18E-03 | 5.13E-02    | 0.28                            | 1.16E-02 | 1.12E-01    |  |
| ENSG00000075234.15    | TTC38          | Protein   | 0.42                        | 1.92E-08 | 2.57E-06    | 0.49                            | 1.87E-11 | 7.20E-09    |  |
| ENSG00000075240.15    | GRAMD4         | Protein   | 0.82                        | 5.46E-08 | 6.40E-06    | -0.14                           | 3.08E-01 | 6.17E-01    |  |
| ENSG00000075340.21    | ADD2           | Protein   | -0.84                       | 7.89E-06 | 4.32E-04    | -0.92                           | 4.99E-07 | 6.59E-05    |  |
| ENSG00000075415.11    | SLC25A3        | Protein   | -0.13                       | 9.40E-03 | 7.47E-02    | -0.14                           | 3.68E-03 | 5.67E-02    |  |
| ENSG00000075420.11    | FNDC3B         | Protein   | -0.28                       | 1.02E-03 | 1.73E-02    | -0.22                           | 6.34E-03 | 7.85E-02    |  |
| ENSG00000075568.15    | TMEM131        | Protein   | -0.25                       | 2.07E-04 | 5.52E-03    | -0.18                           | 5.86E-03 | 7.51E-02    |  |
| ENSG00000075624.12    | ACTB           | Protein   | -0.22                       | 1.76E-03 | 2.50E-02    | -0.18                           | 5.56E-03 | 7.24E-02    |  |
| ENSG00000075643.5     | MOCOS          | Protein   | -0.24                       | 1.04E-02 | 7.96E-02    | -0.20                           | 2.74E-02 | 1.83E-01    |  |
| ENSG00000075673.10    | ATP12A         | Protein   | -1.19                       | 1.59E-06 | 1.15E-04    | -1.13                           | 9.04E-07 | 1.08E-04    |  |
| ENSG00000075711.19    | DLG1           | Protein   | -0.15                       | 9.65E-03 | 7.59E-02    | -0.14                           | 1.26E-02 | 1.18E-01    |  |
| ENSG00000075826.15    | SEC31B         | Protein   | 0.40                        | 2.98E-03 | 3.56E-02    | 0.26                            | 4.79E-02 | 2.48E-01    |  |
| ENSG00000075886.10    | TUBA3D         | Protein   | -1.01                       | 2.11E-08 | 2.76E-06    | -0.74                           | 2.80E-05 | 1.69E-03    |  |
| ENSG00000076258.8     | FMO4           | Protein   | 0.39                        | 3.80E-05 | 1.53E-03    | 0.45                            | 6.43E-07 | 8.16E-05    |  |
| ENSG00000076716.8     | GPC4           | Protein   | -0.41                       | 5.73E-04 | 1.15E-02    | -0.35                           | 2.28E-03 | 4.08E-02    |  |
| ENSG00000076928.16    | ARHGEF1        | Protein   | 0.15                        | 1.12E-02 | 8.38E-02    | 0.10                            | 9.16E-02 | 3.47E-01    |  |
| ENSG00000077097.12    | TOP2B          | Protein   | -0.18                       | 2.46E-03 | 3.15E-02    | -0.18                           | 1.51E-03 | 3.10E-02    |  |
| ENSG00000077232.15    | DNAJC10        | Protein   | -0.22                       | 1.13E-02 | 8.42E-02    | -0.12                           | 1.65E-01 | 4.60E-01    |  |
| ENSG00000077684.14    | JADE1          | Protein   | -0.34                       | 3.05E-04 | 7.39E-03    | -0.25                           | 5.38E-03 | 7.12E-02    |  |
| ENSG00000077713.17    | SLC25A43       | Protein   | -0.26                       | 1.40E-02 | 9.67E-02    | -0.27                           | 8.35E-03 | 9.22E-02    |  |
| ENSG00000077984.5     | CSF7           | Protein   | 0.43                        | 3.37E-03 | 3.89E-02    | 0.34                            | 1.44E-02 | 1.27E-01    |  |
| ENSG00000078124.10    | ACER3          | Protein   | -0.87                       | 3.03E-11 | 7.49E-09    | -0.91                           | 5.39E-13 | 2.63E-10    |  |
| ENSG00000078369.16    | GNB1           | Protein   | -0.12                       | 3.50E-03 | 3.98E-02    | -0.09                           | 2.28E-02 | 1.65E-01    |  |
| ENSG00000078898.6     | BPIFB2         | Protein   | -0.86                       | 2.37E-05 | 1.05E-03    | -0.68                           | 5.58E-04 | 1.59E-02    |  |
| ENSG00000079246.14    | XRCC5          | Protein   | -0.12                       | 5.42E-03 | 5.29E-02    | -0.11                           | 1.13E-02 | 1.11E-01    |  |
| ENSG00000079277.18    | MKNK1          | Protein   | 0.25                        | 3.66E-06 | 2.30E-04    | 0.22                            | 1.69E-05 | 1.14E-03    |  |
| ENSG00000079385       |                |           |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol      | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                  |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000079482.12    | <i>OPHN1</i>     | Protein    | 0.34                        | 1.57E-03 | 2.33E-02    | 0.43                            | 3.46E-05 | 1.99E-03    |  |
| ENSG00000079739.14    | <i>PGM1</i>      | Protein    | -0.18                       | 9.51E-03 | 7.51E-02    | -0.12                           | 8.45E-02 | 3.33E-01    |  |
| ENSG00000079785.13    | <i>DDX1</i>      | Protein    | -0.15                       | 7.07E-05 | 2.43E-03    | -0.14                           | 1.01E-04 | 4.58E-03    |  |
| ENSG00000080031.8     | <i>PTPRH</i>     | Protein    | 0.56                        | 2.01E-03 | 2.76E-02    | -0.33                           | 4.69E-02 | 2.45E-01    |  |
| ENSG00000080371.5     | <i>RAB21</i>     | Protein    | -0.13                       | 7.11E-03 | 6.26E-02    | -0.14                           | 1.83E-03 | 3.49E-02    |  |
| ENSG00000080573.6     | <i>COL5A3</i>    | Protein    | 0.35                        | 5.67E-03 | 5.44E-02    | 0.19                            | 1.18E-01 | 3.94E-01    |  |
| ENSG00000080823.20    | <i>MOK</i>       | Protein    | 0.20                        | 8.31E-03 | 6.93E-02    | 0.10                            | 1.61E-01 | 4.55E-01    |  |
| ENSG00000080854.13    | <i>IGSF9B</i>    | Protein    | -0.30                       | 7.48E-03 | 6.47E-02    | -0.23                           | 3.87E-02 | 2.20E-01    |  |
| ENSG00000080947.13    | <i>CROCCP3</i>   | Pseudogene | 0.33                        | 1.45E-03 | 2.19E-02    | 0.21                            | 3.29E-02 | 2.01E-01    |  |
| ENSG00000081041.8     | <i>CXCL2</i>     | Protein    | -0.71                       | 1.28E-03 | 2.01E-02    | -0.54                           | 1.13E-02 | 1.11E-01    |  |
| ENSG00000081051.6     | <i>AFP</i>       | Protein    | 0.91                        | 1.62E-04 | 4.57E-03    | 0.86                            | 2.67E-04 | 9.44E-03    |  |
| ENSG00000081148.11    | <i>IMP2</i>      | Protein    | 0.38                        | 4.83E-03 | 4.90E-02    | 0.43                            | 1.02E-03 | 2.38E-02    |  |
| ENSG00000081665.12    | <i>ZNF506</i>    | Protein    | -0.12                       | 8.61E-03 | 7.09E-02    | -0.10                           | 2.49E-02 | 1.73E-01    |  |
| ENSG00000081760.15    | <i>AACS</i>      | Protein    | -0.17                       | 1.12E-02 | 8.36E-02    | -0.14                           | 3.07E-02 | 1.94E-01    |  |
| ENSG00000081913.12    | <i>PHLPP1</i>    | Protein    | -0.17                       | 1.17E-02 | 8.59E-02    | -0.10                           | 1.32E-01 | 4.16E-01    |  |
| ENSG00000081923.9     | <i>ATP8B1</i>    | Protein    | -0.29                       | 1.70E-03 | 2.45E-02    | -0.11                           | 2.20E-01 | 5.30E-01    |  |
| ENSG00000082126.16    | <i>MPP4</i>      | Protein    | 0.37                        | 8.85E-03 | 7.20E-02    | 0.15                            | 2.91E-01 | 6.02E-01    |  |
| ENSG00000082482.12    | <i>KCNK2</i>     | Protein    | -0.50                       | 8.01E-03 | 6.77E-02    | -0.66                           | 2.72E-04 | 9.59E-03    |  |
| ENSG00000082641.14    | <i>NFE2L1</i>    | Protein    | -0.13                       | 1.22E-02 | 8.82E-02    | -0.05                           | 3.29E-01 | 6.34E-01    |  |
| ENSG00000082929.7     | <i>LINC01587</i> | LncRNA     | 0.87                        | 3.55E-05 | 1.44E-03    | 0.72                            | 4.43E-04 | 1.35E-02    |  |
| ENSG00000083454.20    | <i>P2RX5</i>     | Protein    | 0.60                        | 8.09E-05 | 2.70E-03    | 0.49                            | 7.82E-04 | 1.99E-02    |  |
| ENSG00000083750.11    | <i>RRAGB</i>     | Protein    | 0.21                        | 2.09E-03 | 2.82E-02    | 0.18                            | 6.98E-03 | 8.29E-02    |  |
| ENSG00000083828.14    | <i>ZNF586</i>    | Protein    | 0.29                        | 1.51E-09 | 2.58E-07    | 0.25                            | 6.17E-08 | 1.11E-05    |  |
| ENSG00000083838.14    | <i>ZNF446</i>    | Protein    | 0.23                        | 2.88E-04 | 7.08E-03    | 0.20                            | 5.48E-04 | 1.57E-02    |  |
| ENSG00000083844.9     | <i>ZNF264</i>    | Protein    | -0.15                       | 4.82E-03 | 4.90E-02    | -0.13                           | 1.29E-02 | 1.19E-01    |  |
| ENSG00000084453.15    | <i>SLCO1A2</i>   | Protein    | 0.95                        | 3.05E-05 | 1.28E-03    | 0.54                            | 1.68E-02 | 1.40E-01    |  |
| ENSG00000084734.7     | <i>GCKR</i>      | Protein    | 0.62                        | 3.57E-04 | 8.32E-03    | 0.45                            | 8.45E-03 | 9.29E-02    |  |
| ENSG00000085063.13    | <i>CD59</i>      | Protein    | -0.18                       | 7.26E-03 | 6.35E-02    | -0.12                           | 5.50E-02 | 2.67E-01    |  |
| ENSG00000085265.9     | <i>FCN1</i>      | Protein    | -0.53                       | 2.12E-03 | 2.84E-02    | -0.53                           | 1.66E-03 | 3.28E-02    |  |
| ENSG00000085377.12    | <i>PREP</i>      | Protein    | -0.19                       | 1.10E-02 | 8.27E-02    | -0.08                           | 2.70E-01 | 5.80E-01    |  |
| ENSG00000085449.13    | <i>WDFY1</i>     | Protein    | -0.20                       | 7.19E-03 | 6.31E-02    | -0.15                           | 3.52E-02 | 2.09E-01    |  |
| ENSG00000085514.14    | <i>PILRA</i>     | Protein    | 0.33                        | 7.50E-04 | 1.39E-02    | 0.18                            | 7.40E-02 | 3.12E-01    |  |
| ENSG00000086200.15    | <i>IPO11</i>     | Protein    | -0.16                       | 1.44E-02 | 9.84E-02    | -0.10                           | 1.12E-01 | 3.84E-01    |  |
| ENSG00000086289.10    | <i>EPDR1</i>     | Protein    | -0.25                       | 8.52E-03 | 7.04E-02    | -0.14                           | 1.20E-01 | 3.97E-01    |  |
| ENSG00000086598.9     | <i>TMED2</i>     | Protein    | -0.17                       | 4.27E-03 | 4.53E-02    | -0.14                           | 1.68E-02 | 1.40E-01    |  |
| ENSG00000086717.17    | <i>PPEF1</i>     | Protein    | 0.40                        | 1.14E-02 | 8.46E-02    | 0.32                            | 3.19E-02 | 1.98E-01    |  |
| ENSG00000086758.14    | <i>HUWE1</i>     | Protein    | -0.21                       | 2.17E-03 | 2.89E-02    | -0.16                           | 1.22E-02 | 1.16E-01    |  |
| ENSG00000087053.17    | <i>MTMR2</i>     | Protein    | -0.42                       | 1.63E-08 | 2.23E-06    | -0.34                           | 1.34E-06 | 1.49E-04    |  |
| ENSG00000087111.19    | <i>PIGS</i>      | Protein    | -0.18                       | 2.56E-03 | 3.24E-02    | -0.12                           | 4.01E-02 | 2.25E-01    |  |
| ENSG00000087206.15    | <i>UIMC1</i>     | Protein    | 0.10                        | 9.83E-03 | 7.68E-02    | 0.03                            | 3.99E-01 | 6.91E-01    |  |
| ENSG00000087237.9     | <i>CETP</i>      | Protein    | 0.41                        | 4.79E-03 | 4.87E-02    | 0.34                            | 1.48E-02 | 1.29E-01    |  |
| ENSG00000087253.10    | <i>LPCAT2</i>    | Protein    | -0.28                       | 1.16E-02 | 8.54E-02    | -0.29                           | 5.50E-03 | 7.20E-02    |  |
| ENSG00000087263.15    | <i>OGFOD1</i>    | Protein    | -0.12                       | 1.29E-02 | 9.18E-02    | -0.07                           | 1.43E-01 | 4.32E-01    |  |
| ENSG00000087365.13    | <i>SF3B2</i>     | Protein    | -0.09                       | 1.14E-02 | 8.46E-02    | -0.12                           | 2.59E-04 | 9.21E-03    |  |
| ENSG00000088053.10    | <i>GP6</i>       | Protein    | 0.44                        | 7.45E-04 | 1.39E-02    | 0.51                            | 4.79E-05 | 2.57E-03    |  |
| ENSG00000088280.17    | <i>ASAP3</i>     | Protein    | -0.32                       | 4.74E-05 | 1.80E-03    | -0.31                           | 3.60E-05 | 2.06E-03    |  |
| ENSG00000088305.17    | <i>DNMT3B</i>    | Protein    | 0.41                        | 6.44E-04 | 1.25E-02    | 0.12                            | 3.29E-01 | 6.34E-01    |  |
| ENSG00000088340.14    | <i>FER1L4</i>    | Pseudogene | 0.59                        | 1.27E-04 | 3.78E-03    | 0.10                            | 5.11E-01 | 7.67E-01    |  |
| ENSG00000088386.14    | <i>SLC15A1</i>   | Protein    | -0.56                       | 6.59E-03 | 5.98E-02    | -0.16                           | 4.20E-01 | 7.06E-01    |  |
| ENSG00000088812.16    | <i>ATRN</i>      | Protein    | -0.16                       | 1.39E-02 | 9.63E-02    | -0.12                           | 6.92E-02 | 3.01E-01    |  |
| ENSG00000088832.13    | <i>FKBP1A</i>    | Protein    | -0.27                       | 1.64E-03 | 2.39E-02    | -0.29                           | 3.60E-04 | 1.16E-02    |  |
| ENSG00000089091.15    | <i>DZANK1</i>    | Protein    | 0.22                        | 4.67E-03 | 4.81E-02    | 0.18                            | 1.77E-02 | 1.44E-01    |  |
| ENSG00000089116.3     | <i>LHX5</i>      | Protein    | -0.80                       | 1.71E-03 | 2.45E-02    | -0.64                           | 9.22E-03 | 9.77E-02    |  |
| ENSG00000089154.9     | <i>GCN1L1</i>    | Protein    | -0.16                       | 1.15E-02 | 8.52E-02    | -0.16                           | 5.92E-03 | 7.55E-02    |  |
| ENSG00000089159.14    | <i>PXN</i>       | Protein    | -0.17                       | 1.43E-02 | 9.82E-02    | -0.06                           | 3.38E-01 | 6.42E-01    |  |
| ENSG00000089234.14    | <i>BRAP</i>      | Protein    | -0.09                       | 9.36E-03 | 7.46E-02    | -0.06                           | 1.11E-01 | 3.82E-01    |  |
| ENSG00000089250.17    | <i>NOS1</i>      | Protein    | -0.56                       | 2.57E-03 | 3.25E-02    | -0.42                           | 1.92E-02 | 1.50E-01    |  |
| ENSG00000089486.15    | <i>CDIP1</i>     | Protein    | -0.25                       | 8.74E-03 | 7.15E-02    | -0.19                           | 3.75E-02 | 2.16E-01    |  |
| ENSG00000089597.15    | <i>GANAB</i>     | Protein    | -0.23                       | 4.38E-05 | 1.71E-03    | -0.15                           | 6.79E-03 | 8.15E-02    |  |
| ENSG00000089723.8     | <i>OTUB2</i>     | Protein    | -0.26                       | 4.56E-03 | 4.74E-02    | -0.19                           | 2.67E-02 | 1.80E-01    |  |
| ENSG00000089820.14    | <i>ARHGAP4</i>   | Protein    | 0.32                        | 3.57E-03 | 4.03E-02    | 0.17                            | 1.12E-01 | 3.83E-01    |  |
| ENSG00000090104.10    | <i>RGS1</i>      | Protein    | 0.40                        | 6.48E-03 | 5.92E-02    | 0.21                            | 1.45E-01 | 4.34E-01    |  |
| ENSG00000090659.16    | <i>CD209</i>     | Protein    | -0.39                       | 7.76E-03 | 6.63E-02    | -0.47                           | 8.12E-04 | 2.03E-02    |  |
| ENSG00000090661.10    | <i>CERS4</i>     | Protein    | 0.24                        | 7.81E-03 | 6.66E-02    | 0.17                            | 4.46E-02 | 2.39E-01    |  |
| ENSG00000090686.14    | <i>USP48</i>     | Protein    | -0.11                       | 3.47E-03 | 3.96E-02    | -0.10                           | 5.15E-03 | 6.93E-02    |  |
| ENSG00000090863.10    | <i>GLG1</i>      | Protein    | -0.25                       | 2.71E-05 | 1.16E-03    | -0.16                           | 7.06E-03 | 8.36E-02    |  |
| ENSG00000091138.11    | <i>SLC26A3</i>   | Protein    | 1.46                        | 4.04E-10 | 7.91E-08    | 0.63                            | 5.31E-03 | 7.06E-02    |  |
| ENSG00000091436.15    | <i>pk</i>        | Protein    | -0.30                       | 1.01E-02 | 7.84E-02    | -0.15                           | 1.88E-01 | 4.91E-01    |  |
| ENSG00000091490.9     | <i>SEL1L3</i>    | Protein    | -0.30                       | 5.02E-03 | 5.03E-02    | -0.16                           | 1.23E-01 | 4.02E-01    |  |
| ENSG00000091542.8     | <i>ALKBH5</i>    | Protein    | -0.12                       | 3.64E-03 | 4.08E-02    | -0.08                           | 4.05E-02 | 2.26E-01    |  |
| ENSG00000091844.6     | <i>RGS17</i>     | Protein    | -0.53                       | 9.97E-04 | 1.70E-02    | -0.48                           | 2.22E-03 | 4.00E-02    |  |
| ENSG00000092200.11    | <i>RPGRIPI</i>   | Protein    | 0.59                        | 1.89E-07 | 1.90E-05    | 0.52                            | 2.01E-06 | 2.10E-04    |  |
| ENSG00000092758.14    | <i>COL9A3</i>    | Protein    | 0.62                        | 5.17E-05 | 1.93E-03    | 0.51                            | 6.01E-04 | 1.67E-02    |  |
| ENSG00000092847.9     | <i>AGO1</i>      | Protein    | -0.19                       | 6.28E-05 | 2.22E-03    | -0.13                           | 4.21E-03 | 6.19E-02    |  |
| ENSG00000092931.10    | <i>MFSD11</i>    | Protein    | -0.15                       | 1.37E-03 | 2.10E-02    | -0.14                           | 2.64E-03 | 4.53E-02    |  |
| ENSG00000093217.8     | <i>XYLB</i>      | Protein    | -0.22                       | 1.25E-02 | 8.98E-02    | -0.28                           | 8.08E-04 | 2.03E-02    |  |
| ENSG00000094916.12    | <i>CBX5</i>      | Protein    | -0.15                       | 9.59E-03 | 7.56E-02    | -0.10                           | 8.93E-02 | 3.42E-01    |  |
| ENSG00000095110.6     | <i>NXPE1</i>     | Protein    | -0.54                       | 1.15E-02 | 8.52E-02    | -0.51                           | 1.12E-02 | 1.10E-01    |  |
| ENSG00000095464.9     | <i>PDE6C</i>     | Protein    | 0.42                        | 1.14E-03 | 1.87E-02    | 0.34                            | 6.60E-03 | 8.04E-02    |  |
| ENSG00000095970.15    | <i>TREM2</i>     | Protein    | 0.37                        | 5.76E-03 | 5.49E-02    | 0.10                            | 4.55E-01 | 7.31E-01    |  |
| ENSG00000095981.9     | <i>KCNK16</i>    | Protein    | 0.84                        | 9.19E-04 | 1.60E-02    | -0.64                           | 9.18E-03 | 9.76E-02    |  |
| ENSG00000096093.13    | <i>EFHC1</i>     | Protein    | 0.21                        | 8.62E-03 | 7.09E-02    | 0.15                            | 5.61E-02 | 2.70E-01    |  |
| ENSG00000096384.18    | <i>HSP90AB1</i>  | Protein    | -0.15                       | 3.48E-03 | 3.96E-02    | -0.15                           | 1.70E-03 | 3.34E-02    |  |
| ENSG00000097046.11    | <i>CDC7</i>      | Protein    | 0.36                        | 8.35E-04 | 1.50E-02    | 0.18                            | 9.59E-02 | 3.55E-01    |  |
| ENSG00000099250.16    | <i>NRP1</i>      | Protein    | -0.45                       | 4.88E-04 | 1.04E-02    | -0.59                           | 2.28E-06 | 2.32E-04    |  |
| ENSG00000099326.7     | <i>MZF1</i>      | Protein    | 0.20                        | 9.87E-03 | 7.71E-02    | 0.15                            | 4.22E-02 | 2.32E-01    |  |
| ENSG00000099377.12    | <i>HSD3B7</i>    | Protein    | 0.73                        | 1.37E-10 | 2.92E-08    | 0.73                            | 1.72E-11 | 6.81E-09    |  |
| ENSG00000099617.3     | <i>EFNA2</i>     | Protein    | 0.88                        | 2.30E-05 | 1.02E-03    | 0.49                            | 1.92E-02 | 1.50E-01    |  |
| ENSG00000099769.5     | <i>IGFALS</i>    | Protein    | 0.48                        | 4.33E-04 | 9.51E-03    | 0.34                            | 1.00E-02 | 1.03E-01    |  |
| ENSG00000099840.12    | <i>IZUMO4</i>    | Protein    | 0.49                        | 2.69E-04 | 6.75E-03    | 0.42                            | 9.95E-04 | 2.33E-02    |  |
| ENSG00000099849.13    | <i>RASSF7</i>    | Protein    | 0.36                        | 2.56E-03 | 3.24E-02    | 0.34                            | 2.63E-03 | 4.52E-02    |  |
| ENSG00000099866.13    | <i>MADCAM1</i>   | Protein    | 0.61                        | 5.85E-05 | 2.12E-03    | 0.45                            | 2.39E-03 | 4.23E-02    |  |
| ENSG00000099875.13    | <i>MKNK2</i>     | Protein    | -0.19                       | 5.39E-04 | 1.11E-02    | -0.16                           | 1.58E-03 | 3.18E-02    |  |
| ENSG00000099949.17    | <i>LZTR1</i>     | Protein    | 0.15                        | 3.67E-03 | 4.10E-02    | 0.12                            | 1.76E-02 | 1.43E-01    |  |
| ENSG00000099968.16    | <i>BCL2L13</i>   | Protein    | -0.12                       | 1.19E-02 | 8.69E-02    | -0.07                           | 1.10E-01 | 3.81E-01    |  |
| ENSG00000099974.7     | <i>DDTL</i>      | Protein    | 0.52                        | 6.49E-07 | 5.42E-05    | 0.48                            | 2.00E-06 | 2.10E-04    |  |
| ENSG00000099977.12    | <i>DDT</i>       | Protein    | 0.27                        | 7.39E-03 | 6.42E-02    | 0.25                            | 8.25E-03 | 9.16E-02    |  |
| ENSG00000099995.17    | <i>SF3A1</i>     | Protein    | -0.18                       | 3.44E-04 | 8.10E-03    | -0.12                           | 1.38E-02 | 1.24E-01    |  |
| ENSG00000099999.13    | <i>RNF215</i>    | Protein    | 0.20                        | 8.06E-03 | 6.80E-02    | 0.14                            | 4.92E-02 | 2.52E-01    |  |
| ENSG00000100024.13    | <i>UPB1</i>      | Protein    | 0.54                        | 4.62E-06 | 2.79E-04    | 0.48                            | 2.18E-05 | 1.40E-03    |  |
| ENSG00000100058.11    | <i>CRYBB2P1</i>  | Pseudogene | 0.90                        | 4.27E-23 | 4.30E-20    | 0.91                            | 2.73E-25 | 4.51E-22    |  |
| ENSG00000100083.17    | <i>GGAI</i>      | Protein    | 0.13                        | 1.39E-02 | 9.64E-02    | 0.13                            | 1.25E-02 | 1.17E-01    |  |
| ENSG00000100092.19    | <i>SH3BP1</i>    | Protein    | 0.28                        | 1.07E-02 | 8.12E-02    | 0.21                            | 4.88E-02 | 2.51E-01    |  |
| ENSG0000010           |                  |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000100170.8     | <i>SLC5A1</i>        | Protein    | -0.50                       | 6.89E-03 | 6.15E-02    | -0.48                           | 7.97E-03 | 8.96E-02    |  |
| ENSG00000100196.9     | <i>KDELR3</i>        | Protein    | -0.37                       | 1.20E-03 | 1.93E-02    | -0.31                           | 5.06E-03 | 6.86E-02    |  |
| ENSG00000100197.19    | <i>CYP2D6</i>        | Protein    | 0.50                        | 6.89E-05 | 2.38E-03    | 0.38                            | 1.77E-03 | 3.43E-02    |  |
| ENSG00000100201.17    | <i>DDX17</i>         | Protein    | 0.14                        | 1.00E-02 | 7.77E-02    | 0.09                            | 8.67E-02 | 3.37E-01    |  |
| ENSG00000100253.11    | <i>MIOX</i>          | Protein    | 0.58                        | 1.17E-03 | 1.89E-02    | 0.45                            | 8.23E-03 | 9.15E-02    |  |
| ENSG00000100266.16    | <i>PACSIN2</i>       | Protein    | -0.15                       | 7.35E-04 | 1.37E-02    | -0.05                           | 2.54E-01 | 5.65E-01    |  |
| ENSG00000100280.15    | <i>APIB1</i>         | Protein    | -0.23                       | 9.37E-04 | 1.63E-02    | -0.16                           | 1.85E-02 | 1.47E-01    |  |
| ENSG00000100285.9     | <i>NEFH</i>          | Protein    | -0.87                       | 6.85E-05 | 2.37E-03    | -0.55                           | 9.48E-03 | 9.94E-02    |  |
| ENSG00000100288.18    | <i>CHKB</i>          | Protein    | 0.38                        | 1.97E-03 | 2.71E-02    | 0.34                            | 4.34E-03 | 6.30E-02    |  |
| ENSG00000100300.16    | <i>TSP0</i>          | Protein    | 0.38                        | 1.41E-04 | 4.13E-03    | 0.36                            | 1.41E-04 | 5.92E-03    |  |
| ENSG00000100347.13    | <i>SAMM50</i>        | Protein    | -0.17                       | 2.79E-03 | 3.42E-02    | -0.15                           | 7.19E-03 | 8.43E-02    |  |
| ENSG00000100354.19    | <i>TNRC6B</i>        | Protein    | -0.23                       | 3.79E-04 | 8.65E-03    | -0.18                           | 4.62E-03 | 6.51E-02    |  |
| ENSG00000100373.8     | <i>UPK3A</i>         | Protein    | 0.61                        | 2.71E-04 | 6.78E-03    | 0.58                            | 3.05E-04 | 1.03E-02    |  |
| ENSG00000100380.11    | <i>ST13</i>          | Protein    | -0.17                       | 9.30E-05 | 2.99E-03    | -0.12                           | 4.56E-03 | 6.47E-02    |  |
| ENSG00000100403.11    | <i>ZC3H7B</i>        | Protein    | -0.16                       | 9.09E-03 | 7.33E-02    | -0.14                           | 1.54E-02 | 1.32E-01    |  |
| ENSG00000100473.14    | <i>COCH</i>          | Protein    | -0.53                       | 9.25E-04 | 1.61E-02    | -0.34                           | 2.87E-02 | 1.87E-01    |  |
| ENSG00000100528.10    | <i>CNIH1</i>         | Protein    | -0.13                       | 6.43E-03 | 5.91E-02    | -0.11                           | 1.17E-02 | 1.13E-01    |  |
| ENSG00000100626.15    | <i>GALNT16</i>       | Protein    | 0.37                        | 4.90E-04 | 1.04E-02    | 0.27                            | 8.96E-03 | 9.61E-02    |  |
| ENSG00000100650.14    | <i>SRSF5</i>         | Protein    | 0.22                        | 6.13E-04 | 1.21E-02    | 0.19                            | 2.38E-03 | 4.22E-02    |  |
| ENSG00000100652.4     | <i>SLC10A1</i>       | Protein    | 0.73                        | 9.80E-06 | 5.13E-04    | 0.61                            | 1.21E-04 | 5.27E-03    |  |
| ENSG00000100665.10    | <i>SERPINA4</i>      | Protein    | 1.13                        | 8.20E-06 | 4.44E-04    | 0.12                            | 6.27E-01 | 8.38E-01    |  |
| ENSG00000100714.14    | <i>MTHFD1</i>        | Protein    | -0.20                       | 1.43E-03 | 2.17E-02    | -0.19                           | 9.59E-04 | 2.27E-02    |  |
| ENSG00000100918.11    | <i>REC8</i>          | Protein    | 0.30                        | 1.39E-02 | 9.63E-02    | 0.30                            | 1.14E-02 | 1.12E-01    |  |
| ENSG00000100941.7     | <i>PNN</i>           | Protein    | 0.15                        | 1.10E-02 | 8.27E-02    | 0.09                            | 1.05E-01 | 3.72E-01    |  |
| ENSG00000101040.18    | <i>ZMYND8</i>        | Protein    | -0.20                       | 1.27E-02 | 9.08E-02    | -0.22                           | 4.85E-03 | 6.70E-02    |  |
| ENSG00000101082.12    | <i>SL42</i>          | Protein    | 0.31                        | 9.19E-03 | 7.38E-02    | 0.17                            | 1.42E-01 | 4.30E-01    |  |
| ENSG00000101104.11    | <i>PABPC1L</i>       | Protein    | 0.37                        | 1.22E-02 | 8.82E-02    | 0.20                            | 1.59E-01 | 4.52E-01    |  |
| ENSG00000101181.16    | <i>MTG2</i>          | Protein    | 0.13                        | 4.22E-03 | 4.50E-02    | 0.09                            | 3.94E-02 | 2.22E-01    |  |
| ENSG00000101194.16    | <i>SLC17A9</i>       | Protein    | 0.33                        | 1.14E-02 | 8.46E-02    | 0.17                            | 1.76E-01 | 4.76E-01    |  |
| ENSG00000101204.14    | <i>CHRNA4</i>        | Protein    | 0.61                        | 4.18E-03 | 4.47E-02    | 0.68                            | 9.84E-04 | 2.31E-02    |  |
| ENSG00000101224.16    | <i>CDC25B</i>        | Protein    | 0.41                        | 4.93E-06 | 2.94E-04    | 0.26                            | 3.33E-03 | 5.29E-02    |  |
| ENSG00000101278.6     | <i>RPS10L</i>        | Pseudogene | 0.67                        | 1.39E-09 | 2.40E-07    | 0.66                            | 5.67E-10 | 1.62E-07    |  |
| ENSG00000101290.12    | <i>CDS2</i>          | Protein    | -0.14                       | 5.08E-03 | 5.06E-02    | -0.11                           | 1.74E-02 | 1.43E-01    |  |
| ENSG00000101323.4     | <i>HAO1</i>          | Protein    | 1.38                        | 1.78E-08 | 2.40E-06    | 0.81                            | 6.17E-04 | 1.70E-02    |  |
| ENSG00000101335.8     | <i>MYL9</i>          | Protein    | -0.41                       | 1.00E-02 | 7.77E-02    | -0.19                           | 2.31E-01 | 5.42E-01    |  |
| ENSG00000101337.14    | <i>TM9SF4</i>        | Protein    | -0.14                       | 6.49E-03 | 5.93E-02    | -0.08                           | 7.95E-02 | 3.23E-01    |  |
| ENSG00000101425.11    | <i>BPI</i>           | Protein    | -0.44                       | 4.73E-03 | 4.84E-02    | -0.31                           | 3.94E-02 | 2.22E-01    |  |
| ENSG00000101440.8     | <i>ASIP</i>          | Protein    | 0.76                        | 2.69E-06 | 1.80E-04    | 0.83                            | 1.25E-07 | 2.03E-05    |  |
| ENSG00000101842.12    | <i>VSIG1</i>         | Protein    | 0.49                        | 3.86E-03 | 4.25E-02    | -0.20                           | 1.99E-01 | 5.05E-01    |  |
| ENSG00000101843.17    | <i>PSMD10</i>        | Protein    | -0.16                       | 4.58E-04 | 9.93E-03    | -0.16                           | 2.33E-04 | 8.64E-03    |  |
| ENSG00000101856.9     | <i>PGRMC1</i>        | Protein    | -0.20                       | 2.81E-03 | 3.43E-02    | -0.12                           | 7.05E-02 | 3.04E-01    |  |
| ENSG00000101871.13    | <i>MID1</i>          | Protein    | -0.35                       | 3.46E-03 | 3.95E-02    | -0.39                           | 7.05E-04 | 1.85E-02    |  |
| ENSG00000101935.8     | <i>AMMECR1</i>       | Protein    | -0.29                       | 1.93E-03 | 2.68E-02    | -0.28                           | 1.75E-03 | 3.41E-02    |  |
| ENSG00000102048.14    | <i>ASB9</i>          | Protein    | -0.53                       | 4.11E-03 | 4.42E-02    | -0.92                           | 2.52E-07 | 3.75E-05    |  |
| ENSG00000102172.14    | <i>SMS</i>           | Protein    | 0.41                        | 1.41E-02 | 9.71E-02    | 0.37                            | 2.23E-02 | 1.63E-01    |  |
| ENSG00000102181.18    | <i>CD99L2</i>        | Protein    | -0.16                       | 1.13E-02 | 8.41E-02    | -0.10                           | 8.89E-02 | 3.41E-01    |  |
| ENSG00000102226.8     | <i>USP11</i>         | Protein    | -0.18                       | 2.07E-03 | 2.80E-02    | -0.16                           | 4.10E-03 | 6.07E-02    |  |
| ENSG00000102230.12    | <i>PCYT1B</i>        | Protein    | -0.50                       | 1.92E-03 | 2.67E-02    | -0.19                           | 2.33E-01 | 5.43E-01    |  |
| ENSG00000102241.10    | <i>HTATSF1</i>       | Protein    | -0.13                       | 1.30E-03 | 2.03E-02    | -0.10                           | 6.99E-03 | 8.31E-02    |  |
| ENSG00000102245.6     | <i>CD40LG</i>        | Protein    | 0.50                        | 4.06E-03 | 4.39E-02    | 0.44                            | 9.36E-03 | 9.86E-02    |  |
| ENSG00000102287.15    | <i>GABRE</i>         | Protein    | 0.63                        | 6.69E-04 | 1.29E-02    | 0.53                            | 2.79E-03 | 4.71E-02    |  |
| ENSG00000102383.12    | <i>ZDHHC15</i>       | Protein    | -0.34                       | 1.07E-02 | 8.13E-02    | -0.23                           | 7.13E-02 | 3.06E-01    |  |
| ENSG00000102387.14    | <i>TAF7L</i>         | Protein    | 0.42                        | 5.96E-03 | 5.62E-02    | 0.43                            | 3.10E-03 | 5.05E-02    |  |
| ENSG00000102531.15    | <i>FNDCA3</i>        | Protein    | -0.25                       | 6.08E-03 | 5.70E-02    | -0.13                           | 1.25E-01 | 4.06E-01    |  |
| ENSG00000102543.13    | <i>CDADC1</i>        | Protein    | -0.22                       | 2.18E-04 | 5.75E-03    | -0.14                           | 1.29E-02 | 1.19E-01    |  |
| ENSG00000102580.13    | <i>DNAJC3</i>        | Protein    | -0.29                       | 7.47E-04 | 1.39E-02    | -0.13                           | 1.13E-01 | 3.85E-01    |  |
| ENSG00000102743.13    | <i>SLC25A15</i>      | Protein    | -0.25                       | 1.42E-02 | 9.78E-02    | -0.13                           | 1.80E-01 | 4.81E-01    |  |
| ENSG00000102753.8     | <i>KPNA3</i>         | Protein    | -0.23                       | 1.89E-03 | 2.64E-02    | -0.16                           | 2.38E-02 | 1.69E-01    |  |
| ENSG00000102763.14    | <i>VWA8</i>          | Protein    | -0.26                       | 1.79E-03 | 2.53E-02    | -0.15                           | 7.08E-02 | 3.05E-01    |  |
| ENSG00000102805.12    | <i>CLN5</i>          | Protein    | -0.18                       | 3.92E-03 | 4.29E-02    | -0.06                           | 2.89E-01 | 6.00E-01    |  |
| ENSG00000102970.9     | <i>CCL17</i>         | Protein    | 0.70                        | 2.20E-04 | 5.78E-03    | 0.62                            | 8.29E-04 | 2.07E-02    |  |
| ENSG00000102978.11    | <i>POLR2C</i>        | Protein    | -0.12                       | 7.44E-03 | 6.45E-02    | -0.07                           | 9.15E-02 | 3.46E-01    |  |
| ENSG00000103018.15    | <i>CYBBB</i>         | Protein    | -0.17                       | 9.72E-04 | 1.67E-02    | -0.09                           | 7.67E-02 | 3.18E-01    |  |
| ENSG00000103021.8     | <i>CCDC113</i>       | Protein    | -0.26                       | 6.21E-03 | 5.78E-02    | -0.26                           | 5.69E-03 | 7.37E-02    |  |
| ENSG00000103047.6     | <i>TANGO6</i>        | Protein    | -0.20                       | 9.24E-04 | 1.61E-02    | -0.13                           | 2.01E-02 | 1.54E-01    |  |
| ENSG00000103051.17    | <i>COG4</i>          | Protein    | -0.22                       | 7.38E-04 | 1.38E-02    | -0.20                           | 1.45E-03 | 3.00E-02    |  |
| ENSG00000103194.14    | <i>USP10</i>         | Protein    | -0.14                       | 1.29E-02 | 9.17E-02    | -0.07                           | 1.73E-01 | 4.71E-01    |  |
| ENSG00000103200.6     | <i>RP11-723C11.2</i> | Pseudogene | 0.94                        | 1.39E-05 | 6.78E-04    | 0.71                            | 9.75E-04 | 2.31E-02    |  |
| ENSG00000103202.11    | <i>NME4</i>          | Protein    | -0.27                       | 7.07E-04 | 1.34E-02    | -0.21                           | 8.02E-03 | 8.99E-02    |  |
| ENSG00000103226.16    | <i>NOMO3</i>         | Protein    | -0.73                       | 7.94E-06 | 4.34E-04    | -0.60                           | 1.19E-04 | 5.21E-03    |  |
| ENSG00000103227.17    | <i>LMF1</i>          | Protein    | 0.23                        | 3.26E-03 | 3.81E-02    | 0.21                            | 5.75E-03 | 7.42E-02    |  |
| ENSG00000103351.11    | <i>CLUAP1</i>        | Protein    | -0.13                       | 6.31E-03 | 5.85E-02    | -0.12                           | 1.05E-02 | 1.06E-01    |  |
| ENSG00000103460.15    | <i>TOX3</i>          | Protein    | -0.45                       | 2.57E-03 | 3.25E-02    | -0.38                           | 8.44E-03 | 9.29E-02    |  |
| ENSG00000103512.13    | <i>NOMO1</i>         | Protein    | -0.16                       | 1.47E-02 | 9.96E-02    | -0.07                           | 2.43E-01 | 5.54E-01    |  |
| ENSG00000103534.15    | <i>TMCS5</i>         | Protein    | -0.40                       | 3.05E-03 | 3.62E-02    | -0.31                           | 1.75E-02 | 1.43E-01    |  |
| ENSG00000103723.11    | <i>AP3B2</i>         | Protein    | -0.47                       | 1.81E-04 | 4.99E-03    | -0.46                           | 1.31E-04 | 5.57E-03    |  |
| ENSG00000103832.10    | <i>GOLGA8UP</i>      | Pseudogene | 0.67                        | 3.99E-03 | 4.34E-02    | 0.57                            | 1.19E-02 | 1.14E-01    |  |
| ENSG00000103942.11    | <i>HOMER2</i>        | Protein    | -0.22                       | 1.16E-02 | 8.53E-02    | -0.15                           | 6.48E-02 | 2.91E-01    |  |
| ENSG00000103978.14    | <i>TMEM87A</i>       | Protein    | -0.20                       | 8.85E-03 | 7.20E-02    | -0.14                           | 5.51E-02 | 2.68E-01    |  |
| ENSG00000104154.6     | <i>SLC30A4</i>       | Protein    | -0.31                       | 8.65E-03 | 7.11E-02    | -0.18                           | 1.21E-01 | 3.99E-01    |  |
| ENSG00000104164.9     | <i>BLOC1S6</i>       | Protein    | -0.23                       | 4.17E-04 | 9.26E-03    | -0.15                           | 1.51E-02 | 1.31E-01    |  |
| ENSG00000104218.12    | <i>CSPP1</i>         | Protein    | 0.26                        | 4.21E-04 | 9.31E-03    | 0.15                            | 4.63E-02 | 2.43E-01    |  |
| ENSG00000104219.11    | <i>ZDHHC2</i>        | Protein    | -0.26                       | 3.50E-03 | 3.98E-02    | -0.15                           | 7.11E-02 | 3.06E-01    |  |
| ENSG00000104290.9     | <i>FZD3</i>          | Protein    | -0.33                       | 1.07E-03 | 1.78E-02    | -0.22                           | 2.75E-02 | 1.83E-01    |  |
| ENSG00000104313.16    | <i>EYA1</i>          | Protein    | -0.42                       | 6.90E-03 | 6.16E-02    | -0.26                           | 8.44E-02 | 3.33E-01    |  |
| ENSG00000104321.9     | <i>TRPA1</i>         | Protein    | 1.71                        | 1.95E-14 | 7.65E-12    | -0.25                           | 2.10E-01 | 5.18E-01    |  |
| ENSG00000104356.9     | <i>POP1</i>          | Protein    | 0.17                        | 1.21E-02 | 8.79E-02    | 0.09                            | 1.83E-01 | 4.85E-01    |  |
| ENSG00000104368.16    | <i>PLAT</i>          | Protein    | 0.62                        | 1.08E-03 | 1.80E-02    | -0.41                           | 2.06E-02 | 1.56E-01    |  |
| ENSG00000104415.12    | <i>WISP1</i>         | Protein    | 0.43                        | 1.16E-03 | 1.89E-02    | 0.43                            | 7.58E-04 | 1.94E-02    |  |
| ENSG00000104435.12    | <i>STMN2</i>         | Protein    | -0.54                       | 1.39E-02 | 9.64E-02    | -0.83                           | 1.31E-04 | 5.57E-03    |  |
| ENSG00000104490.16    | <i>NCALD</i>         | Protein    | -0.39                       | 1.15E-02 | 8.52E-02    | -0.34                           | 2.19E-02 | 1.61E-01    |  |
| ENSG00000104537.15    | <i>ANXA13</i>        | Protein    | -0.60                       | 4.27E-03 | 4.54E-02    | -0.45                           | 1.24E-02 | 1.17E-01    |  |
| ENSG00000104714.12    | <i>ERICH1</i>        | Protein    | 0.16                        | 9.13E-03 | 7.35E-02    | 0.12                            | 3.78E-02 | 2.17E-01    |  |
| ENSG00000104760.15    | <i>FGL1</i>          | Protein    | -0.67                       | 3.68E-03 | 4.11E-02    | -0.43                           | 5.29E-02 | 2.62E-01    |  |
| ENSG00000104765.13    | <i>BNIP3L</i>        | Protein    | -0.18                       | 1.17E-02 | 8.61E-02    | -0.04                           | 5.68E-01 | 8.04E-01    |  |
| ENSG00000104774.11    | <i>MAN2B1</i>        | Protein    | -0.20                       | 2.61E-03 | 3.28E-02    | -0.16                           | 1.32E-02 | 1.21E-01    |  |
| ENSG00000104783.10    | <i>KCNN4</i>         | Protein    | -0.75                       | 1.51E-04 | 4.32E-03    | -0.48                           | 1.32E-02 | 1.21E-01    |  |
| ENSG00000104814.11    | <i>MAP4K1</i>        | Protein    | 0.34                        | 1.18E-02 | 8.66E-02    | 0.22                            | 9.64E-02 | 3.55E-01    |  |
| ENSG00000104826.10    | <i>LHB</i>           | Protein    | 0.66                        | 5.64E-04 | 1.14E-02    | 0.49                            | 8.79E-03 | 9.49E-02    |  |
| ENSG00000104863.10    | <i>LIN7B</i>         | Protein    | 0.31                        | 3.65E-03 | 4.09E-02    | 0.24                            | 1.93E-02 | 1.50E-01    |  |
| ENSG00000104907.11    | <i>TRMT1</i>         | Protein    | 0.21                        | 1.42E-02 | 9.74E-02    | 0.15                            | 6.72E-02 | 2.97E-01    |  |
| ENSG00000104918.6     | <i>RETN</i>          | Protein    | 0.72                        | 8.90E-04 | 1.56E-02    | 0.71                            | 6.25E-04 | 1.71E-02    |  |
| ENSG00000104953.17    | <i>TLE6</i>          | Protein    | 0.30                        | 1.26E-02 | 9.03E-02    | 0.21                            | 6.69E-0  |             |  |

| Gene ID (GENCODE v22) | Gene symbol         | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                     |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000105298.12    | <i>CACTIN</i>       | Protein    | 0.17                        | 5.13E-04 | 1.07E-02    | 0.16                            | 6.13E-04 | 1.69E-02    |  |
| ENSG00000105323.15    | <i>HNRNPU1</i>      | Protein    | -0.15                       | 1.13E-03 | 1.86E-02    | -0.15                           | 6.09E-04 | 1.69E-02    |  |
| ENSG00000105374.8     | <i>NKG7</i>         | Protein    | 0.42                        | 5.45E-03 | 5.31E-02    | 0.32                            | 2.66E-02 | 1.80E-01    |  |
| ENSG00000105383.13    | <i>CD33</i>         | Protein    | 0.37                        | 8.11E-04 | 1.47E-02    | 0.26                            | 1.58E-02 | 1.35E-01    |  |
| ENSG00000105388.13    | <i>CEACAM5</i>      | Protein    | -0.88                       | 2.33E-04 | 6.06E-03    | -0.53                           | 1.84E-02 | 1.46E-01    |  |
| ENSG00000105426.13    | <i>PTPRS</i>        | Protein    | -0.24                       | 5.30E-05 | 1.96E-03    | -0.16                           | 5.84E-03 | 7.49E-02    |  |
| ENSG00000105464.3     | <i>GRIN2D</i>       | Protein    | -0.40                       | 6.19E-03 | 5.76E-02    | -0.45                           | 1.39E-03 | 2.92E-02    |  |
| ENSG00000105695.13    | <i>MAG</i>          | Protein    | -0.79                       | 5.32E-04 | 1.10E-02    | -0.77                           | 5.40E-04 | 1.56E-02    |  |
| ENSG00000105699.15    | <i>LSR</i>          | Protein    | -0.19                       | 4.53E-03 | 4.72E-02    | -0.16                           | 1.69E-02 | 1.40E-01    |  |
| ENSG00000105767.2     | <i>CADM4</i>        | Protein    | -0.22                       | 1.07E-03 | 1.78E-02    | -0.12                           | 6.20E-02 | 2.85E-01    |  |
| ENSG00000105808.16    | <i>RASA4</i>        | Protein    | 0.44                        | 1.94E-04 | 5.26E-03    | 0.39                            | 4.58E-04 | 1.38E-02    |  |
| ENSG00000105821.13    | <i>DNAJC2</i>       | Protein    | 0.15                        | 6.26E-03 | 5.81E-02    | 0.08                            | 1.25E-01 | 4.05E-01    |  |
| ENSG00000105825.10    | <i>TFPI2</i>        | Protein    | -0.71                       | 4.19E-04 | 9.29E-03    | -0.70                           | 2.99E-04 | 1.02E-02    |  |
| ENSG00000105894.10    | <i>PTN</i>          | Protein    | 0.45                        | 1.22E-02 | 8.84E-02    | 0.22                            | 2.11E-01 | 5.19E-01    |  |
| ENSG00000105953.13    | <i>OGDH</i>         | Protein    | -0.20                       | 3.20E-05 | 1.32E-03    | -0.15                           | 1.32E-03 | 2.83E-02    |  |
| ENSG00000105983.18    | <i>LMBR1</i>        | Protein    | -0.19                       | 3.70E-03 | 4.13E-02    | -0.20                           | 1.49E-03 | 3.06E-02    |  |
| ENSG00000105988.6     | <i>NHP2P1</i>       | Pseudogene | 0.47                        | 3.60E-03 | 4.06E-02    | 0.03                            | 8.30E-01 | 9.37E-01    |  |
| ENSG00000106080.9     | <i>FKBP14</i>       | Protein    | 0.14                        | 1.40E-02 | 9.69E-02    | 0.10                            | 6.72E-02 | 2.97E-01    |  |
| ENSG00000106089.10    | <i>STX1A</i>        | Protein    | 0.24                        | 6.60E-03 | 5.98E-02    | 0.06                            | 4.99E-01 | 7.60E-01    |  |
| ENSG00000106100.9     | <i>NOD1</i>         | Protein    | 0.24                        | 3.01E-03 | 3.59E-02    | 0.10                            | 1.86E-01 | 4.89E-01    |  |
| ENSG00000106125.14    | <i>FAM188B</i>      | Protein    | 0.27                        | 1.18E-02 | 8.65E-02    | 0.20                            | 6.01E-02 | 2.81E-01    |  |
| ENSG00000106128.17    | <i>GHRHR</i>        | Protein    | 1.04                        | 2.10E-07 | 2.10E-05    | 0.09                            | 6.25E-01 | 8.36E-01    |  |
| ENSG00000106133.16    | <i>NSUN5P2</i>      | Pseudogene | 0.34                        | 8.74E-03 | 7.15E-02    | 0.23                            | 6.36E-02 | 2.89E-01    |  |
| ENSG00000106178.5     | <i>CCL24</i>        | Protein    | -1.24                       | 4.41E-08 | 5.23E-06    | -1.08                           | 2.81E-07 | 4.07E-05    |  |
| ENSG00000106258.12    | <i>CYP3A5</i>       | Protein    | 0.51                        | 7.80E-03 | 6.65E-02    | 0.80                            | 1.91E-05 | 1.25E-03    |  |
| ENSG00000106261.15    | <i>ZKSCAN1</i>      | Protein    | -0.22                       | 4.21E-03 | 4.49E-02    | -0.14                           | 5.69E-02 | 2.72E-01    |  |
| ENSG00000106278.10    | <i>PTPRZ1</i>       | Protein    | 0.69                        | 1.24E-03 | 1.97E-02    | 0.72                            | 3.30E-04 | 1.09E-02    |  |
| ENSG00000106328.9     | <i>FSCN3</i>        | Protein    | 0.41                        | 6.64E-03 | 6.01E-02    | 0.24                            | 1.02E-01 | 3.66E-01    |  |
| ENSG00000106366.8     | <i>SERPINE1</i>     | Protein    | 0.49                        | 1.04E-02 | 7.99E-02    | 0.38                            | 4.03E-02 | 2.25E-01    |  |
| ENSG00000106384.9     | <i>MOGAT3</i>       | Protein    | 0.58                        | 1.31E-02 | 9.28E-02    | 0.46                            | 4.36E-02 | 2.36E-01    |  |
| ENSG00000106397.10    | <i>PLOD3</i>        | Protein    | -0.21                       | 4.78E-04 | 1.02E-02    | -0.23                           | 5.99E-05 | 3.05E-03    |  |
| ENSG00000106404.12    | <i>CLDN15</i>       | Protein    | 0.33                        | 1.16E-04 | 3.56E-03    | 0.15                            | 7.49E-02 | 3.14E-01    |  |
| ENSG00000106460.17    | <i>TMEM106B</i>     | Protein    | -0.26                       | 1.72E-03 | 2.47E-02    | -0.19                           | 1.36E-02 | 1.23E-01    |  |
| ENSG00000106526.9     | <i>ACTR3C</i>       | Protein    | -0.24                       | 1.38E-03 | 2.11E-02    | -0.20                           | 5.06E-03 | 6.86E-02    |  |
| ENSG00000106609.15    | <i>TMEM248</i>      | Protein    | -0.13                       | 1.15E-03 | 1.87E-02    | -0.11                           | 4.44E-03 | 6.36E-02    |  |
| ENSG00000106686.15    | <i>SPATA6L</i>      | Protein    | 0.46                        | 2.30E-04 | 6.00E-03    | 0.45                            | 1.58E-04 | 6.39E-03    |  |
| ENSG00000106733.19    | <i>NMRK1</i>        | Protein    | 0.29                        | 2.18E-04 | 5.75E-03    | 0.28                            | 1.19E-04 | 5.21E-03    |  |
| ENSG00000106772.16    | <i>PRUNE2</i>       | Protein    | -0.35                       | 7.42E-03 | 6.44E-02    | -0.20                           | 1.11E-01 | 3.83E-01    |  |
| ENSG00000106829.17    | <i>TLE4</i>         | Protein    | 0.34                        | 3.11E-03 | 3.67E-02    | 0.25                            | 2.59E-02 | 1.77E-01    |  |
| ENSG00000106927.10    | <i>AMBP</i>         | Protein    | 0.50                        | 8.40E-03 | 6.98E-02    | -0.01                           | 9.60E-01 | 9.87E-01    |  |
| ENSG00000106952.6     | <i>TNFSF8</i>       | Protein    | 0.37                        | 1.44E-02 | 9.83E-02    | 0.27                            | 7.04E-02 | 3.04E-01    |  |
| ENSG00000106976.17    | <i>DNM1</i>         | Protein    | 0.55                        | 5.34E-07 | 4.61E-05    | 0.43                            | 4.93E-05 | 2.63E-03    |  |
| ENSG00000107014.8     | <i>RLN2</i>         | Protein    | 1.58                        | 7.42E-12 | 2.11E-09    | 0.46                            | 3.21E-02 | 1.99E-01    |  |
| ENSG00000107018.7     | <i>RLN1</i>         | Protein    | 0.67                        | 6.72E-03 | 6.05E-02    | 0.68                            | 4.70E-03 | 6.58E-02    |  |
| ENSG00000107130.8     | <i>NCSI</i>         | Protein    | -0.29                       | 6.94E-03 | 6.18E-02    | -0.20                           | 5.22E-02 | 2.61E-01    |  |
| ENSG00000107669.16    | <i>ATE1</i>         | Protein    | -0.21                       | 8.52E-04 | 1.52E-02    | -0.11                           | 8.25E-02 | 3.30E-01    |  |
| ENSG00000107742.11    | <i>SPOCK2</i>       | Protein    | -0.63                       | 1.03E-03 | 1.74E-02    | -0.40                           | 5.28E-03 | 7.03E-02    |  |
| ENSG00000107745.15    | <i>MICU1</i>        | Protein    | 0.11                        | 1.47E-02 | 9.96E-02    | 0.10                            | 2.49E-02 | 1.73E-01    |  |
| ENSG00000107779.10    | <i>BMPRIA</i>       | Protein    | -0.18                       | 7.21E-03 | 6.32E-02    | -0.15                           | 1.94E-02 | 1.51E-01    |  |
| ENSG00000107929.13    | <i>LARP4B</i>       | Protein    | -0.19                       | 7.69E-05 | 2.60E-03    | -0.11                           | 1.46E-02 | 1.28E-01    |  |
| ENSG00000107938.16    | <i>EDRF1</i>        | Protein    | 0.23                        | 1.35E-02 | 9.46E-02    | 0.16                            | 6.80E-02 | 2.99E-01    |  |
| ENSG00000107951.11    | <i>MTPAP</i>        | Protein    | -0.18                       | 1.32E-04 | 3.92E-03    | -0.18                           | 1.39E-04 | 5.86E-03    |  |
| ENSG00000107984.8     | <i>DKK1</i>         | Protein    | 0.64                        | 1.39E-03 | 2.13E-02    | 0.20                            | 2.89E-01 | 6.00E-01    |  |
| ENSG00000108091.10    | <i>CCDC6</i>        | Protein    | -0.27                       | 5.87E-04 | 1.17E-02    | -0.25                           | 8.43E-04 | 2.09E-02    |  |
| ENSG00000108094.13    | <i>CUL2</i>         | Protein    | -0.14                       | 1.76E-03 | 2.50E-02    | -0.12                           | 4.37E-03 | 6.32E-02    |  |
| ENSG00000108100.16    | <i>CCNY</i>         | Protein    | -0.22                       | 3.59E-07 | 3.28E-05    | -0.22                           | 1.44E-07 | 2.29E-05    |  |
| ENSG00000108231.10    | <i>LG11</i>         | Protein    | 0.98                        | 5.04E-05 | 1.89E-03    | 0.63                            | 6.38E-03 | 7.88E-02    |  |
| ENSG00000108306.10    | <i>FBXL20</i>       | Protein    | -0.13                       | 1.13E-02 | 8.43E-02    | -0.08                           | 8.02E-02 | 3.25E-01    |  |
| ENSG00000108439.8     | <i>PNPO</i>         | Protein    | -0.26                       | 5.13E-04 | 1.08E-02    | -0.22                           | 1.90E-03 | 3.58E-02    |  |
| ENSG00000108474.15    | <i>PIGL</i>         | Protein    | 0.26                        | 1.95E-03 | 2.70E-02    | 0.18                            | 2.07E-02 | 1.56E-01    |  |
| ENSG00000108576.8     | <i>SLC6A4</i>       | Protein    | -0.48                       | 1.45E-02 | 9.88E-02    | -0.49                           | 3.89E-03 | 5.86E-02    |  |
| ENSG00000108582.10    | <i>CPD</i>          | Protein    | -0.36                       | 5.11E-05 | 1.91E-03    | -0.25                           | 3.29E-03 | 5.25E-02    |  |
| ENSG00000108587.13    | <i>GOSR1</i>        | Protein    | -0.16                       | 8.89E-04 | 1.56E-02    | -0.11                           | 2.30E-02 | 1.66E-01    |  |
| ENSG00000108588.12    | <i>CCDC47</i>       | Protein    | -0.20                       | 5.23E-04 | 1.09E-02    | -0.16                           | 4.04E-03 | 6.02E-02    |  |
| ENSG00000108604.14    | <i>SMARCD2</i>      | Protein    | -0.19                       | 1.29E-04 | 3.83E-03    | -0.15                           | 1.39E-03 | 2.92E-02    |  |
| ENSG00000108654.10    | <i>DDX5</i>         | Protein    | 0.28                        | 2.04E-06 | 1.42E-04    | 0.24                            | 2.91E-05 | 1.75E-03    |  |
| ENSG00000108759.3     | <i>KRT32</i>        | Protein    | -0.58                       | 1.04E-02 | 8.00E-02    | -0.32                           | 1.40E-01 | 4.27E-01    |  |
| ENSG00000108773.9     | <i>KAT2A</i>        | Protein    | 0.29                        | 1.19E-03 | 1.92E-02    | 0.21                            | 1.37E-02 | 1.23E-01    |  |
| ENSG00000108825.16    | <i>PTGES3L-AARS</i> | Protein    | 0.37                        | 6.13E-04 | 1.21E-02    | 0.38                            | 1.91E-04 | 7.43E-03    |  |
| ENSG00000108839.10    | <i>ALOX12</i>       | Protein    | 0.25                        | 4.73E-03 | 4.84E-02    | 0.17                            | 4.45E-02 | 2.39E-01    |  |
| ENSG00000108848.14    | <i>LUC7L3</i>       | Protein    | 0.16                        | 1.05E-02 | 8.05E-02    | 0.09                            | 1.36E-01 | 4.21E-01    |  |
| ENSG00000108849.6     | <i>PPY</i>          | Protein    | 1.20                        | 1.49E-06 | 1.10E-04    | -0.38                           | 1.20E-01 | 3.97E-01    |  |
| ENSG00000108932.10    | <i>SLC16A6</i>      | Protein    | 0.38                        | 8.61E-03 | 7.09E-02    | 0.25                            | 8.43E-02 | 3.33E-01    |  |
| ENSG00000108947.4     | <i>EFNB3</i>        | Protein    | -0.37                       | 1.27E-02 | 9.07E-02    | -0.39                           | 5.66E-03 | 7.34E-02    |  |
| ENSG00000109046.13    | <i>WSB1</i>         | Protein    | 0.29                        | 1.28E-03 | 2.02E-02    | 0.17                            | 4.89E-02 | 2.51E-01    |  |
| ENSG00000109072.12    | <i>VTN</i>          | Protein    | -0.79                       | 4.21E-04 | 9.31E-03    | -0.43                           | 3.28E-02 | 2.01E-01    |  |
| ENSG00000109103.10    | <i>UNC119</i>       | Protein    | 0.13                        | 1.01E-02 | 7.79E-02    | 0.07                            | 1.55E-01 | 4.48E-01    |  |
| ENSG00000109133.11    | <i>TMEM33</i>       | Protein    | -0.21                       | 1.07E-03 | 1.78E-02    | -0.15                           | 1.51E-02 | 1.31E-01    |  |
| ENSG00000109181.10    | <i>UGT2B10</i>      | Protein    | -0.64                       | 1.23E-02 | 8.88E-02    | -0.44                           | 7.70E-02 | 3.18E-01    |  |
| ENSG00000109193.9     | <i>SULT1E1</i>      | Protein    | -0.57                       | 7.95E-03 | 6.73E-02    | -0.78                           | 2.30E-04 | 8.59E-03    |  |
| ENSG00000109321.9     | <i>AREG</i>         | Protein    | 0.68                        | 5.82E-04 | 1.17E-02    | 0.63                            | 9.18E-04 | 2.21E-02    |  |
| ENSG00000109471.4     | <i>IL2</i>          | Protein    | 0.70                        | 4.03E-04 | 9.06E-03    | 0.59                            | 1.83E-03 | 3.49E-02    |  |
| ENSG00000109610.5     | <i>SOD3</i>         | Protein    | -0.39                       | 3.57E-03 | 4.03E-02    | -0.31                           | 1.78E-02 | 1.44E-01    |  |
| ENSG00000109625.17    | <i>CPZ</i>          | Protein    | 0.39                        | 1.14E-02 | 8.46E-02    | 0.19                            | 2.03E-01 | 5.10E-01    |  |
| ENSG00000109684.13    | <i>CLNK</i>         | Protein    | 0.54                        | 9.51E-03 | 7.51E-02    | -0.20                           | 3.08E-01 | 6.17E-01    |  |
| ENSG00000109705.7     | <i>NKX3-2</i>       | Protein    | 0.60                        | 3.90E-03 | 4.28E-02    | -0.15                           | 4.21E-01 | 7.07E-01    |  |
| ENSG00000109738.9     | <i>GLRB</i>         | Protein    | -0.40                       | 3.13E-03 | 3.69E-02    | -0.32                           | 1.49E-02 | 1.30E-01    |  |
| ENSG00000109758.7     | <i>HGFAC</i>        | Protein    | 0.50                        | 9.88E-03 | 7.71E-02    | 0.22                            | 2.49E-01 | 5.60E-01    |  |
| ENSG00000109775.9     | <i>UFSP2</i>        | Protein    | -0.13                       | 3.38E-03 | 3.89E-02    | -0.09                           | 4.23E-02 | 2.32E-01    |  |
| ENSG00000109794.12    | <i>FAM149A</i>      | Protein    | -0.47                       | 4.02E-05 | 1.60E-03    | -0.42                           | 1.32E-04 | 5.62E-03    |  |
| ENSG00000109832.11    | <i>DDX25</i>        | Protein    | -0.48                       | 9.30E-03 | 7.43E-02    | -0.40                           | 1.25E-02 | 1.17E-01    |  |
| ENSG00000109854.12    | <i>HTATIP2</i>      | Protein    | -0.25                       | 7.89E-03 | 6.71E-02    | -0.16                           | 8.48E-02 | 3.33E-01    |  |
| ENSG00000109911.16    | <i>ELP4</i>         | Protein    | -0.12                       | 9.32E-03 | 7.44E-02    | -0.08                           | 4.66E-02 | 2.44E-01    |  |
| ENSG00000109919.8     | <i>MTCH2</i>        | Protein    | -0.14                       | 1.20E-02 | 8.75E-02    | -0.13                           | 1.87E-02 | 1.48E-01    |  |
| ENSG00000109920.11    | <i>FNBP4</i>        | Protein    | 0.19                        | 3.35E-03 | 3.87E-02    | 0.14                            | 2.09E-02 | 1.57E-01    |  |
| ENSG00000110013.11    | <i>SIAE</i>         | Protein    | -0.26                       | 1.63E-03 | 2.38E-02    | -0.13                           | 1.07E-01 | 3.75E-01    |  |
| ENSG00000110090.11    | <i>CPT1A</i>        | Protein    | -0.26                       | 5.31E-03 | 5.21E-02    | -0.31                           | 4.54E-04 | 1.38E-02    |  |
| ENSG00000110244.6     | <i>APOA4</i>        | Protein    | 0.68                        | 1.11E-03 | 1.83E-02    | -0.03                           | 8.94E-01 | NA          |  |
| ENSG00000110274.13    | <i>CEP164</i>       | Protein    | 0.18                        | 1.35E-03 | 2.09E-02    | 0.11                            | 4.24E-02 | 2.32E-01    |  |
| ENSG00000110315.5     | <i>RNF141</i>       | Protein    | -0.21                       | 1.91E-03 | 2.66E-02    | -0.14                           | 3.15E-02 | 1.97E-01    |  |
| ENSG00000110324.8     | <i>IL10RA</i>       | Protein    | 0.32                        | 1.46E-02 | 9.95E-02    | 0.20                            | 1.08E-01 | 3.77E-01    |  |
| ENSG00000110367.10    | <i>DDX6</i>         | Protein    | -0.14                       | 7.49E-03 | 6.48E-02    | -0.12                           | 1.70E-02 | 1.41E-01    |  |
| ENSG00000110375.2     | <i>UPK2</i>         | Protein    | 0.76                        | 1.25E-05 | 6.24E-04    | 0.04                            | 8.02E-01 | 9.24E-01    |  |
|                       |                     |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol         | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                     |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000110665.10    | <i>C11orf21</i>     | Protein    | 0.69                        | 7.02E-06 | 3.93E-04    | 0.58                            | 1.05E-04 | 4.73E-03    |  |
| ENSG00000110881.10    | <i>ASIC1</i>        | Protein    | -0.23                       | 1.05E-02 | 8.03E-02    | -0.17                           | 5.44E-02 | 2.66E-01    |  |
| ENSG00000110888.16    | <i>CAPRIN2</i>      | Protein    | 0.18                        | 4.67E-03 | 4.81E-02    | 0.13                            | 4.56E-02 | 2.42E-01    |  |
| ENSG00000110906.11    | <i>KCTD10</i>       | Protein    | -0.18                       | 6.94E-03 | 6.18E-02    | -0.20                           | 1.35E-03 | 2.87E-02    |  |
| ENSG00000110917.6     | <i>MLEC</i>         | Protein    | -0.16                       | 1.36E-02 | 9.48E-02    | -0.13                           | 4.27E-02 | 2.33E-01    |  |
| ENSG00000110975.7     | <i>SYT10</i>        | Protein    | -0.60                       | 3.04E-03 | 3.62E-02    | -0.26                           | 1.86E-01 | 4.89E-01    |  |
| ENSG00000110987.7     | <i>BCL7A</i>        | Protein    | -0.18                       | 1.37E-02 | 9.53E-02    | -0.22                           | 1.09E-03 | 2.49E-02    |  |
| ENSG00000111142.12    | <i>METAP2</i>       | Protein    | -0.18                       | 9.32E-04 | 1.62E-02    | -0.18                           | 3.78E-04 | 1.20E-02    |  |
| ENSG00000111144.8     | <i>LTA4H</i>        | Protein    | -0.17                       | 9.62E-04 | 1.66E-02    | -0.17                           | 5.03E-04 | 1.48E-02    |  |
| ENSG00000111254.6     | <i>AKAP3</i>        | Protein    | -0.39                       | 9.82E-04 | 1.68E-02    | -0.35                           | 2.13E-03 | 3.90E-02    |  |
| ENSG00000111261.12    | <i>MANSC1</i>       | Protein    | -0.20                       | 1.47E-02 | 9.99E-02    | -0.10                           | 2.10E-01 | 5.18E-01    |  |
| ENSG00000111319.11    | <i>SCNN1A</i>       | Protein    | -0.43                       | 5.58E-03 | 5.40E-02    | -0.43                           | 3.84E-03 | 5.81E-02    |  |
| ENSG00000111490.11    | <i>TBC1D30</i>      | Protein    | 0.21                        | 1.10E-02 | 8.26E-02    | 0.22                            | 7.44E-03 | 8.60E-02    |  |
| ENSG00000111671.8     | <i>SPSB2</i>        | Protein    | 0.37                        | 1.06E-04 | 3.30E-03    | 0.31                            | 7.01E-04 | 1.85E-02    |  |
| ENSG00000111700.11    | <i>SLCO1B3</i>      | Protein    | -0.81                       | 1.26E-03 | 1.99E-02    | -0.76                           | 1.73E-03 | 3.38E-02    |  |
| ENSG00000111707.10    | <i>SUDS3</i>        | Protein    | -0.14                       | 4.72E-03 | 4.83E-02    | -0.13                           | 6.30E-03 | 7.82E-02    |  |
| ENSG00000111713.2     | <i>GLYS2</i>        | Protein    | 1.65                        | 1.83E-15 | 8.31E-13    | 0.13                            | 5.02E-01 | 7.62E-01    |  |
| ENSG00000111729.11    | <i>CLEC4A</i>       | Protein    | 0.35                        | 7.79E-04 | 1.43E-02    | 0.23                            | 2.00E-02 | 1.53E-01    |  |
| ENSG00000111788.10    | <i>RP11-22B23.1</i> | Pseudogene | 0.49                        | 1.11E-04 | 3.43E-03    | 0.33                            | 6.87E-03 | 8.22E-02    |  |
| ENSG00000111816.7     | <i>FRK</i>          | Protein    | -0.49                       | 5.39E-04 | 1.11E-02    | -0.28                           | 4.04E-02 | 2.26E-01    |  |
| ENSG00000111837.10    | <i>MAK</i>          | Protein    | 0.84                        | 8.36E-09 | 1.23E-06    | 0.60                            | 2.93E-05 | 1.75E-03    |  |
| ENSG00000111863.11    | <i>ADTRP</i>        | Protein    | 0.68                        | 1.62E-04 | 4.58E-03    | 0.61                            | 5.05E-04 | 1.48E-02    |  |
| ENSG00000111886.10    | <i>GABRR2</i>       | Protein    | 0.41                        | 7.53E-03 | 6.50E-02    | 0.40                            | 7.48E-03 | 8.63E-02    |  |
| ENSG00000111897.6     | <i>SERINC1</i>      | Protein    | -0.18                       | 1.10E-02 | 8.27E-02    | -0.12                           | 8.40E-02 | 3.32E-01    |  |
| ENSG00000111913.14    | <i>FAM65B</i>       | Protein    | -0.54                       | 4.02E-03 | 4.37E-02    | -0.51                           | 3.45E-03 | 5.43E-02    |  |
| ENSG00000112031.14    | <i>MTRF1L</i>       | Protein    | -0.16                       | 7.29E-04 | 1.37E-02    | -0.11                           | 1.10E-02 | 1.09E-01    |  |
| ENSG00000112144.14    | <i>ICK</i>          | Protein    | -0.21                       | 1.15E-02 | 8.51E-02    | -0.18                           | 2.20E-02 | 1.61E-01    |  |
| ENSG00000112212.10    | <i>TSP02</i>        | Protein    | 0.54                        | 3.43E-03 | 3.93E-02    | 0.48                            | 6.80E-03 | 8.16E-02    |  |
| ENSG00000112218.8     | <i>GPR63</i>        | Protein    | -0.36                       | 6.27E-04 | 1.23E-02    | -0.24                           | 2.11E-02 | 1.58E-01    |  |
| ENSG00000112232.8     | <i>KHDRBS2</i>      | Protein    | 0.67                        | 3.68E-04 | 8.49E-03    | 0.54                            | 3.44E-03 | 5.42E-02    |  |
| ENSG00000112234.7     | <i>FBXL4</i>        | Protein    | -0.20                       | 8.15E-03 | 6.85E-02    | -0.09                           | 2.07E-01 | 5.14E-01    |  |
| ENSG00000112237.11    | <i>CCNC</i>         | Protein    | -0.22                       | 3.08E-03 | 3.65E-02    | -0.12                           | 7.90E-02 | 3.22E-01    |  |
| ENSG00000112249.12    | <i>ASCC3</i>        | Protein    | -0.36                       | 5.78E-05 | 2.10E-03    | -0.29                           | 6.00E-04 | 1.67E-02    |  |
| ENSG00000112305.13    | <i>SMAP1</i>        | Protein    | -0.22                       | 4.07E-04 | 9.12E-03    | -0.16                           | 7.60E-03 | 8.72E-02    |  |
| ENSG00000112320.10    | <i>SOBP</i>         | Protein    | -0.40                       | 9.71E-04 | 1.67E-02    | -0.38                           | 1.24E-03 | 2.72E-02    |  |
| ENSG00000112333.10    | <i>NR2E1</i>        | Protein    | -1.46                       | 4.24E-09 | 6.78E-07    | -1.34                           | 1.19E-08 | 2.58E-06    |  |
| ENSG00000112335.13    | <i>SNX3</i>         | Protein    | -0.23                       | 3.30E-04 | 7.87E-03    | -0.22                           | 2.85E-04 | 9.83E-03    |  |
| ENSG00000112339.13    | <i>HBS1L</i>        | Protein    | -0.12                       | 4.84E-03 | 4.91E-02    | -0.09                           | 1.89E-02 | 1.49E-01    |  |
| ENSG00000112425.12    | <i>EPM2A</i>        | Protein    | -0.23                       | 2.10E-03 | 2.82E-02    | -0.13                           | 6.92E-02 | 3.01E-01    |  |
| ENSG00000112499.11    | <i>SLC22A2</i>      | Protein    | -0.50                       | 3.34E-03 | 3.86E-02    | -0.47                           | 4.29E-03 | 6.26E-02    |  |
| ENSG00000112561.16    | <i>TFEB</i>         | Protein    | -0.30                       | 4.51E-03 | 4.71E-02    | -0.18                           | 7.78E-02 | 3.20E-01    |  |
| ENSG00000112619.7     | <i>PRPH2</i>        | Protein    | -0.36                       | 1.40E-02 | 9.65E-02    | -0.22                           | 1.24E-01 | 4.03E-01    |  |
| ENSG00000112697.14    | <i>TMEM30A</i>      | Protein    | -0.30                       | 2.86E-06 | 1.89E-04    | -0.20                           | 1.73E-03 | 3.38E-02    |  |
| ENSG00000112763.14    | <i>BTN2A1</i>       | Protein    | 0.16                        | 4.73E-03 | 4.83E-02    | 0.14                            | 6.35E-03 | 7.85E-02    |  |
| ENSG00000112799.7     | <i>LY86</i>         | Protein    | 0.34                        | 5.68E-03 | 5.45E-02    | 0.18                            | 1.50E-01 | 4.40E-01    |  |
| ENSG00000112874.8     | <i>NUDT12</i>       | Protein    | -0.28                       | 4.70E-03 | 4.83E-02    | -0.13                           | 1.77E-01 | 4.77E-01    |  |
| ENSG00000112877.7     | <i>CEP72</i>        | Protein    | 0.31                        | 1.27E-05 | 6.28E-04    | 0.18                            | 7.64E-03 | 8.74E-02    |  |
| ENSG00000112893.8     | <i>MAN2A1</i>       | Protein    | -0.40                       | 2.25E-05 | 1.01E-03    | -0.29                           | 1.71E-03 | 3.36E-02    |  |
| ENSG00000112964.12    | <i>GHR</i>          | Protein    | -0.46                       | 3.53E-03 | 4.00E-02    | -0.28                           | 6.52E-02 | 2.92E-01    |  |
| ENSG00000112981.4     | <i>NME5</i>         | Protein    | 0.37                        | 4.93E-04 | 1.05E-02    | 0.34                            | 7.14E-04 | 1.87E-02    |  |
| ENSG00000112992.15    | <i>NNT</i>          | Protein    | -0.36                       | 6.30E-05 | 2.23E-03    | -0.22                           | 1.27E-02 | 1.19E-01    |  |
| ENSG00000112996.8     | <i>MRPS30</i>       | Protein    | -0.12                       | 4.75E-03 | 4.85E-02    | -0.10                           | 1.83E-02 | 1.46E-01    |  |
| ENSG00000113073.13    | <i>SLC4A9</i>       | Protein    | 0.85                        | 6.38E-06 | 3.63E-04    | 0.77                            | 2.15E-05 | 1.39E-03    |  |
| ENSG00000113088.5     | <i>GZMK</i>         | Protein    | 0.46                        | 5.77E-03 | 5.49E-02    | 0.36                            | 2.67E-02 | 1.80E-01    |  |
| ENSG00000113108.16    | <i>APBB3</i>        | Protein    | 0.30                        | 4.77E-04 | 1.02E-02    | 0.20                            | 1.49E-02 | 1.30E-01    |  |
| ENSG00000113212.6     | <i>PCDHB7</i>       | Protein    | -0.49                       | 1.23E-03 | 1.96E-02    | -0.55                           | 1.37E-04 | 5.79E-03    |  |
| ENSG00000113240.11    | <i>CLK4</i>         | Protein    | 0.24                        | 3.00E-04 | 7.30E-03    | 0.20                            | 1.62E-03 | 3.22E-02    |  |
| ENSG00000113263.11    | <i>ITK</i>          | Protein    | 0.54                        | 1.13E-03 | 1.86E-02    | 0.43                            | 7.80E-03 | 8.86E-02    |  |
| ENSG00000113273.14    | <i>ARSB</i>         | Protein    | -0.32                       | 9.39E-05 | 3.01E-03    | -0.23                           | 3.02E-03 | 4.96E-02    |  |
| ENSG00000113391.15    | <i>FAM172A</i>      | Protein    | -0.27                       | 8.08E-05 | 2.70E-03    | -0.20                           | 2.70E-03 | 4.59E-02    |  |
| ENSG00000113441.14    | <i>LNPEP</i>        | Protein    | -0.30                       | 2.10E-05 | 9.61E-04    | -0.23                           | 8.39E-04 | 2.09E-02    |  |
| ENSG00000113580.13    | <i>NR3C1</i>        | Protein    | -0.27                       | 6.11E-03 | 5.72E-02    | -0.22                           | 2.14E-02 | 1.59E-01    |  |
| ENSG00000113649.10    | <i>TCERG1</i>       | Protein    | 0.17                        | 4.99E-03 | 5.01E-02    | 0.11                            | 5.63E-02 | 2.71E-01    |  |
| ENSG00000113734.16    | <i>BNIP1</i>        | Protein    | 0.20                        | 3.96E-03 | 4.33E-02    | 0.19                            | 4.29E-03 | 6.25E-02    |  |
| ENSG00000113812.12    | <i>ACTR8</i>        | Protein    | -0.15                       | 6.06E-03 | 5.68E-02    | -0.13                           | 1.41E-02 | 1.26E-01    |  |
| ENSG00000113971.17    | <i>NPHP3</i>        | Protein    | 0.26                        | 2.79E-03 | 3.42E-02    | 0.18                            | 2.83E-02 | 1.86E-01    |  |
| ENSG00000114026.20    | <i>OGG1</i>         | Protein    | 0.19                        | 1.04E-04 | 3.27E-03    | 0.16                            | 7.14E-04 | 1.87E-02    |  |
| ENSG00000114124.2     | <i>GRK7</i>         | Protein    | 0.60                        | 2.42E-04 | 6.21E-03    | 0.47                            | 2.63E-03 | 4.52E-02    |  |
| ENSG00000114248.8     | <i>LRRC31</i>       | Protein    | -1.22                       | 2.66E-08 | 3.38E-06    | -1.39                           | 7.96E-11 | 2.67E-08    |  |
| ENSG00000114302.14    | <i>PRKAR2A</i>      | Protein    | -0.23                       | 6.43E-04 | 1.25E-02    | -0.14                           | 2.55E-02 | 1.75E-01    |  |
| ENSG00000114316.11    | <i>USP4</i>         | Protein    | -0.15                       | 1.23E-03 | 1.96E-02    | -0.12                           | 4.81E-03 | 6.66E-02    |  |
| ENSG00000114480.11    | <i>GBE1</i>         | Protein    | -0.24                       | 1.35E-03 | 2.09E-02    | -0.20                           | 5.82E-03 | 7.47E-02    |  |
| ENSG00000114626.16    | <i>ABTB1</i>        | Protein    | 0.22                        | 1.24E-02 | 8.95E-02    | 0.15                            | 6.83E-02 | 2.99E-01    |  |
| ENSG00000114638.6     | <i>UPK1B</i>        | Protein    | 1.69                        | 2.09E-11 | 5.21E-09    | 0.65                            | 5.46E-03 | 7.18E-02    |  |
| ENSG00000114670.12    | <i>NEK11</i>        | Protein    | 0.25                        | 9.23E-04 | 1.61E-02    | 0.13                            | 7.80E-02 | 3.20E-01    |  |
| ENSG00000114735.8     | <i>HEMK1</i>        | Protein    | 0.22                        | 9.89E-04 | 1.69E-02    | 0.16                            | 1.19E-02 | 1.14E-01    |  |
| ENSG00000114742.12    | <i>WDR48</i>        | Protein    | -0.10                       | 4.15E-03 | 4.45E-02    | -0.08                           | 1.93E-02 | 1.50E-01    |  |
| ENSG00000114745.12    | <i>GORASP1</i>      | Protein    | -0.09                       | 6.60E-03 | 5.98E-02    | -0.08                           | 1.14E-02 | 1.11E-01    |  |
| ENSG00000114757.17    | <i>PEX5L</i>        | Protein    | 0.37                        | 9.74E-03 | 7.63E-02    | 0.25                            | 7.54E-02 | 3.15E-01    |  |
| ENSG00000114770.15    | <i>ABCC5</i>        | Protein    | 0.32                        | 3.53E-04 | 8.24E-03    | 0.10                            | 2.84E-01 | 5.95E-01    |  |
| ENSG00000114786.14    | <i>ABHD14A-ACY1</i> | Protein    | 0.35                        | 1.23E-03 | 1.96E-02    | 0.23                            | 2.57E-02 | 1.76E-01    |  |
| ENSG00000114841.16    | <i>DNAH1</i>        | Protein    | 0.27                        | 5.92E-03 | 5.59E-02    | 0.21                            | 2.58E-02 | 1.76E-01    |  |
| ENSG00000114861.17    | <i>FOXP1</i>        | Protein    | -0.23                       | 7.70E-05 | 2.60E-03    | -0.20                           | 5.36E-04 | 1.55E-02    |  |
| ENSG00000114978.16    | <i>MOB1A</i>        | Protein    | -0.15                       | 6.17E-03 | 5.75E-02    | -0.12                           | 1.71E-02 | 1.41E-01    |  |
| ENSG00000114988.10    | <i>LMAN2L</i>       | Protein    | -0.13                       | 7.03E-03 | 6.22E-02    | -0.06                           | 1.85E-01 | 4.88E-01    |  |
| ENSG00000115020.15    | <i>PIKFYVE</i>      | Protein    | -0.30                       | 2.95E-03 | 3.54E-02    | -0.22                           | 2.67E-02 | 1.80E-01    |  |
| ENSG00000115084.11    | <i>SLC35F5</i>      | Protein    | -0.25                       | 2.70E-03 | 3.35E-02    | -0.22                           | 7.25E-03 | 8.48E-02    |  |
| ENSG00000115085.12    | <i>ZAP70</i>        | Protein    | 0.46                        | 3.96E-03 | 4.32E-02    | 0.29                            | 6.25E-02 | 2.86E-01    |  |
| ENSG00000115091.10    | <i>ACTR3</i>        | Protein    | -0.16                       | 3.27E-03 | 3.82E-02    | -0.15                           | 4.10E-03 | 6.07E-02    |  |
| ENSG00000115138.9     | <i>POMC</i>         | Protein    | 0.52                        | 3.07E-03 | 3.64E-02    | 0.55                            | 1.33E-03 | 2.84E-02    |  |
| ENSG00000115170.12    | <i>ACYR1</i>        | Protein    | -0.18                       | 7.74E-03 | 6.63E-02    | -0.19                           | 2.80E-03 | 4.71E-02    |  |
| ENSG00000115257.14    | <i>PCSK4</i>        | Protein    | 0.31                        | 5.74E-03 | 5.48E-02    | 0.18                            | 1.00E-01 | 3.63E-01    |  |
| ENSG00000115263.13    | <i>GCG</i>          | Protein    | 0.67                        | 3.43E-03 | 3.93E-02    | 0.51                            | 2.20E-02 | 1.62E-01    |  |
| ENSG00000115365.10    | <i>LANCL1</i>       | Protein    | -0.16                       | 1.14E-02 | 8.47E-02    | -0.13                           | 3.39E-02 | 2.04E-01    |  |
| ENSG00000115425.12    | <i>PECR</i>         | Protein    | -0.23                       | 1.00E-02 | 7.77E-02    | -0.14                           | 1.08E-01 | 3.76E-01    |  |
| ENSG00000115457.8     | <i>IGFBP2</i>       | Protein    | 0.30                        | 1.44E-02 | 9.84E-02    | 0.29                            | 1.25E-02 | 1.17E-01    |  |
| ENSG00000115484.13    | <i>CCT4</i>         | Protein    | -0.14                       | 8.52E-03 | 7.04E-02    | -0.14                           | 8.71E-03 | 9.44E-02    |  |
| ENSG00000115561.13    | <i>CHMP3</i>        | Protein    | -0.12                       | 4.32E-03 | 4.57E-02    | -0.07                           | 8.22E-02 | 3.29E-01    |  |
| ENSG00000115648.12    | <i>MLPH</i>         | Protein    | 0.34                        | 2.43E-04 | 6.22E-03    | 0.37                            | 3.13E-05 | 1.84E-03    |  |
| ENSG00000115718.16    | <i>PROC</i>         | Protein    | 0.62                        | 7.78E-03 | 6.64E-02    | 0.33                            | 1.26E-01 | 4.08E-01    |  |
| ENSG00000115758.11    | <i>ODC1</i>         | Protein    | 0.36                        | 4.06E-03 | 4.39E-02    | 0.38                            | 1.53E-03 | 3.13E-02    |  |
| ENSG00000115762.15    | <i>PLEKHB2</i>      | Protein    | -0.35                       | 1.17E-05 | 5.93E-04    | -0.21                           | 9.39E-03 | 9.87E-02    |  |
| ENSG00000115808.10    | <i>STRN</i>         | Protein    | -0.25                       | 4.25E-03 | 4.52E-02    | -0.22                           | 9.02E-03 | 9.65E-02    |  |

| Gene ID (GENCODE v22) | Gene symbol         | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                     |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000116157.5     | <i>GPX7</i>         | Protein    | -0.44                       | 1.06E-03 | 1.77E-02    | -0.35                           | 7.35E-03 | 8.54E-02    |  |
| ENSG00000116176.6     | <i>TPSG1</i>        | Protein    | -0.39                       | 9.36E-03 | 7.46E-02    | -0.33                           | 1.97E-02 | 1.52E-01    |  |
| ENSG00000116209.10    | <i>TMEM59</i>       | Protein    | -0.15                       | 1.25E-02 | 8.98E-02    | -0.05                           | 3.95E-01 | 6.88E-01    |  |
| ENSG00000116237.14    | <i>ICMT</i>         | Protein    | -0.11                       | 7.22E-03 | 6.33E-02    | -0.07                           | 8.66E-02 | 3.37E-01    |  |
| ENSG00000116299.15    | <i>KIAA1324</i>     | Protein    | -0.45                       | 7.84E-04 | 1.44E-02    | -0.21                           | 1.16E-01 | 3.90E-01    |  |
| ENSG00000116473.13    | <i>RAP1A</i>        | Protein    | -0.14                       | 1.14E-02 | 8.47E-02    | -0.10                           | 4.68E-02 | 2.45E-01    |  |
| ENSG00000116560.9     | <i>SFPQ</i>         | Protein    | 0.11                        | 1.46E-02 | 9.90E-02    | 0.08                            | 6.22E-02 | 2.86E-01    |  |
| ENSG00000116574.5     | <i>RHOU</i>         | Protein    | 0.51                        | 2.60E-04 | 6.56E-03    | 0.07                            | 5.79E-01 | 8.11E-01    |  |
| ENSG00000116652.6     | <i>DLEU2L</i>       | LncRNA     | 0.39                        | 5.18E-03 | 5.13E-02    | 0.35                            | 9.53E-03 | 9.98E-02    |  |
| ENSG00000116667.11    | <i>C1orf21</i>      | Protein    | 0.32                        | 1.51E-04 | 4.32E-03    | 0.31                            | 8.27E-05 | 3.91E-03    |  |
| ENSG00000116670.13    | <i>MAD2L2</i>       | Protein    | 0.23                        | 1.31E-02 | 9.25E-02    | 0.09                            | 2.88E-01 | 5.99E-01    |  |
| ENSG00000116688.15    | <i>MFN2</i>         | Protein    | -0.16                       | 5.02E-04 | 1.06E-02    | -0.10                           | 2.79E-02 | 1.84E-01    |  |
| ENSG00000116703.13    | <i>PDC</i>          | Protein    | 0.91                        | 1.23E-06 | 9.29E-05    | 0.83                            | 5.21E-06 | 4.49E-04    |  |
| ENSG00000116729.12    | <i>WLS</i>          | Protein    | -0.25                       | 4.97E-03 | 5.00E-02    | -0.14                           | 9.94E-02 | 3.61E-01    |  |
| ENSG00000116747.11    | <i>TROVE2</i>       | Protein    | -0.25                       | 2.21E-03 | 2.93E-02    | -0.23                           | 3.77E-03 | 5.76E-02    |  |
| ENSG00000116791.12    | <i>CRYZ</i>         | Protein    | -0.22                       | 7.16E-03 | 6.29E-02    | -0.10                           | 1.84E-01 | 4.87E-01    |  |
| ENSG00000116882.13    | <i>HAO2</i>         | Protein    | 0.49                        | 9.45E-03 | 7.49E-02    | 0.38                            | 3.64E-02 | 2.13E-01    |  |
| ENSG00000116906.10    | <i>GNPAT</i>        | Protein    | -0.12                       | 1.07E-02 | 8.14E-02    | -0.07                           | 1.01E-01 | 3.64E-01    |  |
| ENSG00000116977.17    | <i>LGALS8</i>       | Protein    | -0.33                       | 8.43E-05 | 2.78E-03    | -0.34                           | 2.28E-05 | 1.46E-03    |  |
| ENSG00000116983.11    | <i>HPCAL4</i>       | Protein    | 0.63                        | 1.14E-03 | 1.87E-02    | 0.65                            | 4.54E-04 | 1.38E-02    |  |
| ENSG00000117139.15    | <i>KDM5B</i>        | Protein    | -0.17                       | 8.88E-03 | 7.22E-02    | -0.17                           | 7.89E-03 | 8.92E-02    |  |
| ENSG00000117222.12    | <i>RBBP5</i>        | Protein    | -0.12                       | 1.32E-02 | 9.29E-02    | -0.10                           | 3.61E-02 | 2.12E-01    |  |
| ENSG00000117308.13    | <i>GALE</i>         | Protein    | 0.33                        | 3.09E-04 | 7.48E-03    | 0.25                            | 4.73E-03 | 6.60E-02    |  |
| ENSG00000117335.17    | <i>CD46</i>         | Protein    | -0.21                       | 4.26E-03 | 4.53E-02    | -0.08                           | 2.39E-01 | 5.49E-01    |  |
| ENSG00000117410.12    | <i>ATP6V0B</i>      | Protein    | 0.25                        | 2.63E-03 | 3.29E-02    | 0.21                            | 8.67E-03 | 9.41E-02    |  |
| ENSG00000117425.12    | <i>PTCH2</i>        | Protein    | 0.30                        | 2.70E-03 | 3.35E-02    | 0.15                            | 1.35E-01 | 4.20E-01    |  |
| ENSG00000117500.11    | <i>TMED5</i>        | Protein    | -0.26                       | 1.48E-03 | 2.22E-02    | -0.17                           | 3.19E-02 | 1.98E-01    |  |
| ENSG00000117525.12    | <i>F3</i>           | Protein    | -0.65                       | 4.30E-04 | 9.47E-03    | -0.49                           | 5.69E-03 | 7.36E-02    |  |
| ENSG00000117594.8     | <i>HSD11B1</i>      | Protein    | 0.39                        | 9.74E-03 | 7.63E-02    | 0.48                            | 9.58E-04 | 2.27E-02    |  |
| ENSG00000117595.9     | <i>IRF6</i>         | Protein    | -0.19                       | 1.25E-02 | 8.99E-02    | -0.18                           | 1.30E-02 | 1.20E-01    |  |
| ENSG00000117600.11    | <i>LPPR4</i>        | Protein    | 0.39                        | 1.44E-02 | 9.84E-02    | 0.17                            | 2.71E-01 | 5.81E-01    |  |
| ENSG00000117616.16    | <i>RSRP1</i>        | Protein    | 0.38                        | 2.94E-03 | 3.53E-02    | 0.27                            | 2.44E-02 | 1.71E-01    |  |
| ENSG00000117620.11    | <i>SLC35A3</i>      | Protein    | -0.26                       | 3.57E-03 | 4.03E-02    | -0.20                           | 1.57E-02 | 1.34E-01    |  |
| ENSG00000117682.15    | <i>DHDDS</i>        | Protein    | -0.13                       | 2.13E-03 | 2.85E-02    | -0.09                           | 1.60E-02 | 1.35E-01    |  |
| ENSG00000117697.13    | <i>NSL1</i>         | Protein    | -0.12                       | 4.13E-03 | 4.44E-02    | -0.10                           | 1.90E-02 | 1.49E-01    |  |
| ENSG00000117899.9     | <i>MESDC2</i>       | Protein    | -0.14                       | 3.64E-03 | 4.08E-02    | -0.03                           | 4.73E-01 | 7.43E-01    |  |
| ENSG00000117983.16    | <i>MUC5B</i>        | Protein    | -1.18                       | 1.28E-07 | 1.37E-05    | -1.07                           | 5.90E-07 | 7.66E-05    |  |
| ENSG00000118004.16    | <i>COLEC11</i>      | Protein    | 0.44                        | 4.87E-03 | 4.93E-02    | 0.37                            | 1.31E-02 | 1.21E-01    |  |
| ENSG00000118137.8     | <i>APOA1</i>        | Protein    | 0.97                        | 3.31E-05 | 1.37E-03    | -0.66                           | 1.16E-03 | 2.59E-02    |  |
| ENSG00000118217.5     | <i>ATF6</i>         | Protein    | -0.17                       | 4.88E-03 | 4.94E-02    | -0.11                           | 7.02E-02 | 3.04E-01    |  |
| ENSG00000118308.13    | <i>LRMP</i>         | Protein    | 0.38                        | 6.13E-03 | 5.73E-02    | 0.26                            | 5.21E-02 | 2.60E-01    |  |
| ENSG00000118369.11    | <i>USP35</i>        | Protein    | 0.16                        | 6.12E-03 | 5.72E-02    | 0.05                            | 3.63E-01 | 6.62E-01    |  |
| ENSG00000118492.15    | <i>ADGB</i>         | Protein    | -0.72                       | 3.78E-03 | 4.19E-02    | -0.55                           | 1.92E-02 | 1.50E-01    |  |
| ENSG00000118557.14    | <i>PMFBP1</i>       | Protein    | 0.57                        | 1.20E-04 | 3.64E-03    | 0.06                            | 6.35E-01 | 8.42E-01    |  |
| ENSG00000118689.13    | <i>FOXO3</i>        | Protein    | -0.26                       | 1.32E-03 | 2.05E-02    | -0.17                           | 2.77E-02 | 1.84E-01    |  |
| ENSG00000118705.15    | <i>RPN2</i>         | Protein    | -0.18                       | 1.42E-02 | 9.76E-02    | -0.06                           | 4.23E-01 | 7.08E-01    |  |
| ENSG00000118804.8     | <i>FAM47E-STBD1</i> | Protein    | 0.44                        | 1.72E-06 | 1.22E-04    | 0.33                            | 2.24E-04 | 8.43E-03    |  |
| ENSG00000118971.6     | <i>CCND2</i>        | Protein    | -0.37                       | 6.90E-03 | 6.15E-02    | -0.32                           | 1.56E-02 | 1.33E-01    |  |
| ENSG00000118972.1     | <i>FGF23</i>        | Protein    | 1.05                        | 4.07E-05 | 1.61E-03    | 0.04                            | 8.82E-01 | 9.58E-01    |  |
| ENSG00000118997.12    | <i>DNAH7</i>        | Protein    | -0.30                       | 9.76E-03 | 7.65E-02    | -0.19                           | 8.79E-02 | 3.39E-01    |  |
| ENSG00000119004.13    | <i>CYP20A1</i>      | Protein    | -0.14                       | 4.32E-03 | 4.57E-02    | -0.08                           | 6.74E-02 | 2.98E-01    |  |
| ENSG00000119042.15    | <i>SATB2</i>        | Protein    | -0.34                       | 2.83E-04 | 6.99E-03    | -0.25                           | 4.99E-03 | 6.81E-02    |  |
| ENSG00000119125.15    | <i>GDA</i>          | Protein    | -1.05                       | 3.10E-05 | 1.29E-03    | -1.03                           | 2.64E-05 | 1.62E-03    |  |
| ENSG00000119514.6     | <i>GALNT12</i>      | Protein    | -0.53                       | 4.90E-03 | 4.95E-02    | -0.55                           | 2.74E-03 | 4.65E-02    |  |
| ENSG00000119541.8     | <i>VPS4B</i>        | Protein    | -0.16                       | 8.51E-03 | 7.04E-02    | -0.08                           | 1.56E-01 | 4.48E-01    |  |
| ENSG00000119661.13    | <i>DNAL1</i>        | Protein    | 0.21                        | 6.72E-04 | 1.29E-02    | 0.04                            | 4.52E-01 | 7.29E-01    |  |
| ENSG00000119787.12    | <i>ATL2</i>         | Protein    | -0.20                       | 2.59E-03 | 3.26E-02    | -0.19                           | 3.23E-03 | 5.18E-02    |  |
| ENSG00000119812.17    | <i>FAM98A</i>       | Protein    | -0.16                       | 8.11E-04 | 1.47E-02    | -0.12                           | 1.12E-02 | 1.10E-01    |  |
| ENSG00000119820.9     | <i>YIPF4</i>        | Protein    | -0.11                       | 9.61E-03 | 7.57E-02    | -0.07                           | 1.05E-01 | 3.71E-01    |  |
| ENSG00000119878.5     | <i>CRIPT</i>        | Protein    | -0.16                       | 1.36E-03 | 2.09E-02    | -0.15                           | 2.00E-03 | 3.74E-02    |  |
| ENSG00000119888.9     | <i>EPCAM</i>        | Protein    | -0.29                       | 2.39E-03 | 3.08E-02    | -0.25                           | 6.38E-03 | 7.88E-02    |  |
| ENSG00000119912.14    | <i>IDE</i>          | Protein    | -0.17                       | 1.27E-02 | 9.06E-02    | -0.07                           | 2.96E-01 | 6.07E-01    |  |
| ENSG00000119943.9     | <i>PYROXD2</i>      | Protein    | 0.30                        | 8.68E-03 | 7.13E-02    | 0.35                            | 1.62E-03 | 3.23E-02    |  |
| ENSG00000120093.10    | <i>HOXB3</i>        | Protein    | 0.42                        | 6.18E-03 | 5.75E-02    | 0.20                            | 1.88E-01 | 4.91E-01    |  |
| ENSG00000120210.6     | <i>INSL6</i>        | Protein    | 0.92                        | 3.31E-04 | 7.87E-03    | -0.34                           | 1.54E-01 | 4.46E-01    |  |
| ENSG00000120211.4     | <i>INSL4</i>        | Protein    | 0.77                        | 2.71E-03 | 3.35E-02    | 0.69                            | 5.22E-03 | 7.00E-02    |  |
| ENSG00000120256.8     | <i>LRP11</i>        | Protein    | -0.24                       | 1.76E-03 | 2.50E-02    | -0.20                           | 6.91E-03 | 8.25E-02    |  |
| ENSG00000120324.6     | <i>PCDHB10</i>      | Protein    | -0.47                       | 3.31E-03 | 3.85E-02    | -0.57                           | 2.20E-04 | 8.30E-03    |  |
| ENSG00000120327.6     | <i>PCDHB14</i>      | Protein    | -0.28                       | 5.29E-03 | 5.20E-02    | -0.26                           | 6.34E-03 | 7.85E-02    |  |
| ENSG00000120332.14    | <i>TNN</i>          | Protein    | -0.68                       | 6.96E-04 | 1.32E-02    | -0.68                           | 4.69E-04 | 1.40E-02    |  |
| ENSG00000120341.17    | <i>SEC16B</i>       | Protein    | 0.35                        | 1.45E-02 | 9.87E-02    | 0.27                            | 5.21E-02 | 2.60E-01    |  |
| ENSG00000120451.9     | <i>SNX19</i>        | Protein    | -0.14                       | 9.45E-03 | 7.49E-02    | -0.11                           | 4.45E-02 | 2.39E-01    |  |
| ENSG00000120458.8     | <i>MSANTD2</i>      | Protein    | 0.25                        | 1.32E-03 | 2.05E-02    | 0.14                            | 6.31E-02 | 2.88E-01    |  |
| ENSG00000120519.13    | <i>SLC10A7</i>      | Protein    | -0.50                       | 1.12E-03 | 1.84E-02    | -0.47                           | 1.32E-03 | 2.84E-02    |  |
| ENSG00000120669.14    | <i>SOHLH2</i>       | Protein    | -0.65                       | 4.71E-03 | 4.83E-02    | -0.52                           | 1.99E-02 | 1.53E-01    |  |
| ENSG00000120696.8     | <i>KBTBD7</i>       | Protein    | -0.37                       | 1.39E-05 | 6.78E-04    | -0.22                           | 7.95E-03 | 8.96E-02    |  |
| ENSG00000120756.11    | <i>PLS1</i>         | Protein    | -0.31                       | 1.44E-02 | 9.86E-02    | -0.24                           | 5.38E-02 | 2.64E-01    |  |
| ENSG00000120805.12    | <i>ARL1</i>         | Protein    | -0.18                       | 1.03E-03 | 1.74E-02    | -0.14                           | 9.22E-03 | 9.77E-02    |  |
| ENSG00000120832.8     | <i>MTERF2</i>       | Protein    | 0.16                        | 8.70E-03 | 7.14E-02    | 0.09                            | 1.27E-01 | 4.09E-01    |  |
| ENSG00000121022.12    | <i>COPS5</i>        | Protein    | 0.15                        | 1.27E-02 | 9.08E-02    | 0.06                            | 3.19E-01 | 6.26E-01    |  |
| ENSG00000121067.16    | <i>SPOP</i>         | Protein    | -0.14                       | 5.19E-04 | 1.08E-02    | -0.05                           | 2.34E-01 | 5.44E-01    |  |
| ENSG00000121089.4     | <i>NACA3P</i>       | Pseudogene | 0.44                        | 3.76E-03 | 4.17E-02    | 0.41                            | 5.15E-03 | 6.93E-02    |  |
| ENSG00000121318.2     | <i>TAS2R10</i>      | Protein    | 0.45                        | 1.08E-02 | 8.18E-02    | 0.48                            | 4.69E-03 | 6.56E-02    |  |
| ENSG00000121380.11    | <i>BCL2L14</i>      | Protein    | 0.47                        | 9.05E-04 | 1.58E-02    | 0.55                            | 6.24E-05 | 3.14E-03    |  |
| ENSG00000121486.10    | <i>TRMT1L</i>       | Protein    | -0.24                       | 1.05E-05 | 5.41E-04    | -0.19                           | 2.11E-04 | 8.00E-03    |  |
| ENSG00000121594.10    | <i>CD80</i>         | Protein    | 0.57                        | 6.41E-04 | 1.25E-02    | 0.33                            | 4.06E-02 | 2.26E-01    |  |
| ENSG00000121644.17    | <i>DES12</i>        | Protein    | -0.24                       | 1.20E-04 | 3.64E-03    | -0.28                           | 4.51E-06 | 3.96E-04    |  |
| ENSG00000121691.4     | <i>CAT</i>          | Protein    | -0.21                       | 3.08E-03 | 3.65E-02    | -0.12                           | 8.38E-02 | 3.32E-01    |  |
| ENSG00000121769.6     | <i>FABP3</i>        | Protein    | -0.41                       | 7.32E-03 | 6.38E-02    | -0.23                           | 1.29E-01 | 4.12E-01    |  |
| ENSG00000121853.3     | <i>GHSR</i>         | Protein    | 1.22                        | 8.11E-07 | 6.52E-05    | -0.01                           | 9.59E-01 | NA          |  |
| ENSG00000121871.3     | <i>SLITRK3</i>      | Protein    | -0.60                       | 4.10E-03 | 4.41E-02    | -0.41                           | 4.48E-02 | 2.39E-01    |  |
| ENSG00000121966.6     | <i>CXCR4</i>        | Protein    | 0.37                        | 1.02E-02 | 7.87E-02    | 0.26                            | 5.51E-02 | 2.68E-01    |  |
| ENSG00000121988.16    | <i>ZRANB3</i>       | Protein    | -0.19                       | 4.77E-03 | 4.86E-02    | -0.12                           | 5.89E-02 | 2.77E-01    |  |
| ENSG00000122042.9     | <i>UBL3</i>         | Protein    | -0.17                       | 9.15E-03 | 7.36E-02    | -0.11                           | 7.81E-02 | 3.20E-01    |  |
| ENSG00000122176.10    | <i>FMOD</i>         | Protein    | -0.53                       | 9.57E-04 | 1.65E-02    | -0.20                           | 2.03E-01 | 5.10E-01    |  |
| ENSG00000122218.13    | <i>COPA</i>         | Protein    | -0.21                       | 1.92E-03 | 2.66E-02    | -0.16                           | 1.73E-02 | 1.42E-01    |  |
| ENSG00000122417.14    | <i>ODF2L</i>        | Protein    | 0.24                        | 7.01E-03 | 6.21E-02    | 0.14                            | 1.04E-01 | 3.71E-01    |  |
| ENSG00000122420.8     | <i>PTGFR</i>        | Protein    | 0.78                        | 2.34E-04 | 6.07E-03    | 0.48                            | 2.06E-02 | 1.56E-01    |  |
| ENSG00000122432.15    | <i>SPATA1</i>       | Pseudogene | 0.34                        | 2.50E-03 | 3.19E-02    | 0.23                            | 3.06E-02 | 1.94E-01    |  |
| ENSG00000122512.13    | <i>PMS2</i>         | Protein    | -0.23                       | 1.16E-02 | 8.54E-02    | -0.23                           | 6.36E-03 | 7.87E-02    |  |
| ENSG00000122543.9     | <i>OCM</i>          | Protein    | 0.52                        | 1.42E-03 | 2.16E-02    | 0.48                            | 2.21E-03 | 3.98E-02    |  |
| ENSG00000122548.5     | <i>KIAA0087</i>     | LncRNA     | -0.59                       | 1.24E-02 | 8.92E-02    | -0.44                           | 5.33E-02 | 2.63E-01    |  |
| ENSG00000122642.9     | <i>FKBP9</i>        | Protein    | -0.27                       | 2.85E-05 | 1.20E-03    | -0.24                           | 1.07E-04 | 4.77E-03    |  |
| ENSG000001            |                     |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol      | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                  |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000122787.13    | <i>AKR1D1</i>    | Protein    | 0.98                        | 2.34E-05 | 1.04E-03    | 0.18                            | 4.21E-01 | 7.07E-01    |  |
| ENSG00000122863.5     | <i>CHST3</i>     | Protein    | -0.31                       | 8.85E-03 | 7.21E-02    | -0.25                           | 3.27E-02 | 2.01E-01    |  |
| ENSG00000123095.5     | <i>BHLHE41</i>   | Protein    | -0.32                       | 1.45E-02 | 9.87E-02    | -0.43                           | 8.75E-04 | 2.14E-02    |  |
| ENSG00000123106.9     | <i>CCDC91</i>    | Protein    | -0.16                       | 7.02E-03 | 6.21E-02    | -0.11                           | 4.37E-02 | 2.36E-01    |  |
| ENSG00000123130.15    | <i>ACOT9</i>     | Protein    | -0.12                       | 1.39E-02 | 9.63E-02    | -0.12                           | 9.27E-03 | 9.81E-02    |  |
| ENSG00000123136.13    | <i>DDX39A</i>    | Protein    | 0.21                        | 6.43E-03 | 5.91E-02    | 0.09                            | 2.31E-01 | 5.41E-01    |  |
| ENSG00000123200.15    | <i>ZC3H13</i>    | Protein    | -0.22                       | 6.53E-03 | 5.96E-02    | -0.11                           | 1.50E-01 | 4.40E-01    |  |
| ENSG00000123201.13    | <i>GUCY1B2</i>   | Pseudogene | -1.67                       | 7.97E-12 | 2.22E-09    | -1.54                           | 4.06E-11 | 1.42E-08    |  |
| ENSG00000123342.14    | <i>MMP19</i>     | Protein    | 0.40                        | 6.74E-03 | 6.06E-02    | 0.26                            | 7.25E-02 | 3.08E-01    |  |
| ENSG00000123364.4     | <i>HOXC13</i>    | Protein    | 1.28                        | 5.94E-08 | 6.93E-06    | 1.06                            | 5.29E-06 | 4.53E-04    |  |
| ENSG00000123384.12    | <i>LRP1</i>      | Protein    | -0.32                       | 4.47E-03 | 4.68E-02    | -0.28                           | 8.81E-03 | 9.50E-02    |  |
| ENSG00000123388.4     | <i>HOXC11</i>    | Protein    | 1.13                        | 1.52E-06 | 1.11E-04    | 1.03                            | 7.59E-06 | 6.06E-04    |  |
| ENSG00000123407.3     | <i>HOXC12</i>    | Protein    | 1.14                        | 8.38E-06 | 4.51E-04    | 1.01                            | 4.28E-05 | 2.35E-03    |  |
| ENSG00000123496.6     | <i>IL13RA2</i>   | Protein    | -0.54                       | 1.93E-03 | 2.68E-02    | -0.71                           | 2.70E-05 | 1.65E-03    |  |
| ENSG00000123561.13    | <i>SERPINA7</i>  | Protein    | 0.96                        | 1.61E-05 | 7.76E-04    | 0.37                            | 8.45E-02 | 3.33E-01    |  |
| ENSG00000123643.11    | <i>SLC36A1</i>   | Protein    | 0.37                        | 1.41E-02 | 9.72E-02    | 0.32                            | 2.11E-02 | 1.58E-01    |  |
| ENSG00000123684.11    | <i>LPGAT1</i>    | Protein    | -0.40                       | 2.50E-04 | 6.35E-03    | -0.42                           | 6.18E-05 | 3.12E-03    |  |
| ENSG00000123737.11    | <i>EXOSC9</i>    | Protein    | 0.16                        | 5.83E-04 | 1.17E-02    | 0.15                            | 1.41E-03 | 2.95E-02    |  |
| ENSG00000123843.11    | <i>C4BPB</i>     | Protein    | 0.61                        | 2.62E-03 | 3.28E-02    | 0.59                            | 2.82E-03 | 4.74E-02    |  |
| ENSG00000123999.4     | <i>INHA</i>      | Protein    | 0.43                        | 4.04E-03 | 4.38E-02    | 0.26                            | 7.58E-02 | 3.16E-01    |  |
| ENSG00000124102.4     | <i>PI3</i>       | Protein    | -0.68                       | 1.72E-03 | 2.47E-02    | -0.61                           | 3.66E-03 | 5.64E-02    |  |
| ENSG00000124134.7     | <i>KCNS1</i>     | Protein    | -0.54                       | 1.09E-02 | 8.22E-02    | -0.29                           | 1.59E-01 | 4.52E-01    |  |
| ENSG00000124155.15    | <i>PIGT</i>      | Protein    | -0.25                       | 8.61E-05 | 2.82E-03    | -0.18                           | 4.31E-03 | 6.28E-02    |  |
| ENSG00000124164.14    | <i>VAPB</i>      | Protein    | -0.11                       | 6.58E-03 | 5.98E-02    | -0.09                           | 1.72E-02 | 1.42E-01    |  |
| ENSG00000124215.15    | <i>CDH26</i>     | Protein    | 0.38                        | 1.33E-02 | 9.34E-02    | 0.38                            | 1.02E-02 | 1.04E-01    |  |
| ENSG00000124237.5     | <i>C20orf85</i>  | Protein    | -1.02                       | 5.91E-05 | 2.12E-03    | -0.90                           | 1.84E-04 | 7.26E-03    |  |
| ENSG00000124356.14    | <i>STAMBP</i>    | Protein    | -0.16                       | 2.76E-04 | 6.88E-03    | -0.06                           | 1.60E-01 | 4.54E-01    |  |
| ENSG00000124479.8     | <i>NDP</i>       | Protein    | -0.50                       | 4.43E-03 | 4.65E-02    | -0.30                           | 8.42E-02 | 3.33E-01    |  |
| ENSG00000124486.11    | <i>USP9X</i>     | Protein    | -0.18                       | 1.12E-02 | 8.36E-02    | -0.17                           | 1.25E-02 | 1.18E-01    |  |
| ENSG00000124490.12    | <i>CRISP2</i>    | Protein    | 0.62                        | 6.98E-03 | 6.20E-02    | 0.62                            | 4.88E-03 | 6.73E-02    |  |
| ENSG00000124507.9     | <i>PACSL1</i>    | Protein    | 0.62                        | 2.61E-07 | 2.52E-05    | 0.44                            | 2.67E-04 | 9.44E-03    |  |
| ENSG00000124508.15    | <i>BTN2A2</i>    | Protein    | 0.22                        | 8.36E-03 | 6.96E-02    | 0.17                            | 2.87E-02 | 1.87E-01    |  |
| ENSG00000124523.13    | <i>SIRT5</i>     | Protein    | 0.11                        | 6.76E-03 | 6.07E-02    | 0.09                            | 2.11E-02 | 1.58E-01    |  |
| ENSG00000124602.8     | <i>UNC5CL</i>    | Protein    | 0.55                        | 2.66E-06 | 1.78E-04    | 0.40                            | 5.10E-04 | 1.49E-02    |  |
| ENSG00000124614.12    | <i>RPS10</i>     | Protein    | 0.30                        | 2.85E-03 | 3.46E-02    | 0.24                            | 1.00E-02 | 1.03E-01    |  |
| ENSG00000124713.5     | <i>GNMT</i>      | Protein    | 0.56                        | 3.86E-03 | 4.25E-02    | 0.50                            | 8.13E-03 | 9.07E-02    |  |
| ENSG00000124743.5     | <i>KLHL31</i>    | Protein    | 0.41                        | 1.62E-03 | 2.37E-02    | 0.42                            | 7.76E-04 | 1.98E-02    |  |
| ENSG00000124767.6     | <i>GLO1</i>      | Protein    | -0.37                       | 1.04E-03 | 1.74E-02    | -0.50                           | 5.74E-06 | 4.83E-04    |  |
| ENSG00000124783.11    | <i>SSR1</i>      | Protein    | -0.17                       | 5.69E-03 | 5.45E-02    | -0.09                           | 1.32E-01 | 4.15E-01    |  |
| ENSG00000124831.17    | <i>LRRFIP1</i>   | Protein    | -0.26                       | 4.38E-05 | 1.71E-03    | -0.18                           | 3.08E-03 | 5.02E-02    |  |
| ENSG00000124920.12    | <i>MYRF</i>      | Protein    | 0.35                        | 2.79E-03 | 3.42E-02    | 0.20                            | 7.97E-02 | 3.23E-01    |  |
| ENSG00000124935.3     | <i>SCGB1D2</i>   | Protein    | 0.88                        | 5.74E-05 | 2.09E-03    | 0.29                            | 1.64E-01 | 4.59E-01    |  |
| ENSG00000125170.9     | <i>DOK4</i>      | Protein    | -0.26                       | 1.09E-02 | 8.23E-02    | -0.20                           | 4.42E-02 | 2.38E-01    |  |
| ENSG00000125207.6     | <i>PIWIL1</i>    | Protein    | -0.77                       | 1.43E-03 | 2.16E-02    | 0.03                            | 8.82E-01 | 9.58E-01    |  |
| ENSG00000125246.14    | <i>CLYBL</i>     | Protein    | 0.29                        | 3.94E-04 | 8.91E-03    | 0.34                            | 1.63E-05 | 1.11E-03    |  |
| ENSG00000125337.15    | <i>KIF25</i>     | Protein    | -0.57                       | 2.91E-03 | 3.51E-02    | -0.61                           | 1.02E-03 | 2.38E-02    |  |
| ENSG00000125375.13    | <i>ATP5S</i>     | Protein    | 0.11                        | 2.02E-03 | 2.76E-02    | 0.12                            | 3.29E-04 | 1.08E-02    |  |
| ENSG00000125388.18    | <i>GRK4</i>      | Protein    | 0.23                        | 9.63E-04 | 1.66E-02    | 0.16                            | 1.55E-02 | 1.33E-01    |  |
| ENSG00000125450.9     | <i>NUP85</i>     | Protein    | 0.20                        | 6.59E-05 | 2.30E-03    | 0.12                            | 1.56E-02 | 1.33E-01    |  |
| ENSG00000125462.15    | <i>Clorf61</i>   | Protein    | 0.48                        | 1.01E-02 | 7.79E-02    | 0.37                            | 4.12E-02 | 2.29E-01    |  |
| ENSG00000125508.3     | <i>SRMS</i>      | Protein    | -0.45                       | 9.28E-03 | 7.42E-02    | -0.47                           | 5.14E-03 | 6.93E-02    |  |
| ENSG00000125551.17    | <i>PLGLB2</i>    | Protein    | 0.71                        | 1.45E-04 | 4.22E-03    | 0.72                            | 5.75E-05 | 2.96E-03    |  |
| ENSG00000125629.13    | <i>INSIG2</i>    | Protein    | -0.24                       | 3.74E-04 | 8.58E-03    | -0.24                           | 3.42E-04 | 1.11E-02    |  |
| ENSG00000125650.4     | <i>PSPN</i>      | Protein    | -0.18                       | 1.09E-02 | 8.24E-02    | -0.20                           | 3.53E-03 | 5.51E-02    |  |
| ENSG00000125651.12    | <i>GTF2F1</i>    | Protein    | -0.19                       | 1.19E-04 | 3.62E-03    | -0.17                           | 1.76E-04 | 6.95E-03    |  |
| ENSG00000125818.16    | <i>PSMF1</i>     | Protein    | -0.13                       | 5.14E-04 | 1.08E-02    | -0.12                           | 5.84E-04 | 1.64E-02    |  |
| ENSG00000125821.10    | <i>DTD1</i>      | Protein    | 0.15                        | 9.13E-03 | 7.35E-02    | 0.09                            | 1.32E-01 | 4.15E-01    |  |
| ENSG00000125823.11    | <i>CSTL1</i>     | Protein    | 0.69                        | 1.66E-03 | 2.41E-02    | 0.65                            | 2.21E-03 | 3.99E-02    |  |
| ENSG00000125868.14    | <i>DSTN</i>      | Protein    | -0.18                       | 4.82E-03 | 4.90E-02    | -0.11                           | 6.84E-02 | 3.00E-01    |  |
| ENSG00000125869.8     | <i>LAMP5</i>     | Protein    | -0.54                       | 4.45E-03 | 4.67E-02    | -0.84                           | 6.96E-06 | 5.67E-04    |  |
| ENSG00000125879.4     | <i>OTOR</i>      | Protein    | -0.70                       | 6.68E-03 | 6.03E-02    | -0.75                           | 2.55E-03 | 4.44E-02    |  |
| ENSG00000125903.4     | <i>DEFB129</i>   | Protein    | -0.78                       | 2.39E-03 | 3.08E-02    | -0.70                           | 4.67E-03 | 6.55E-02    |  |
| ENSG00000125966.9     | <i>MMP24</i>     | Protein    | -0.42                       | 7.97E-04 | 1.45E-02    | -0.43                           | 7.18E-05 | 3.52E-03    |  |
| ENSG00000126016.12    | <i>AMOT</i>      | Protein    | -0.52                       | 4.25E-05 | 1.66E-03    | -0.37                           | 2.58E-03 | 4.47E-02    |  |
| ENSG00000126231.12    | <i>PROZ</i>      | Protein    | 0.43                        | 1.12E-02 | 8.39E-02    | 0.21                            | 2.05E-01 | 5.12E-01    |  |
| ENSG00000126467.9     | <i>TSKS</i>      | Protein    | 0.45                        | 8.15E-03 | 6.85E-02    | 0.46                            | 4.69E-03 | 6.56E-02    |  |
| ENSG00000126581.11    | <i>BECN1</i>     | Protein    | -0.20                       | 1.87E-03 | 2.61E-02    | -0.15                           | 1.22E-02 | 1.15E-01    |  |
| ENSG00000126778.8     | <i>SIX1</i>      | Protein    | -0.31                       | 8.88E-04 | 1.56E-02    | -0.32                           | 2.74E-04 | 9.61E-03    |  |
| ENSG00000126870.14    | <i>WDR60</i>     | Protein    | 0.16                        | 1.57E-03 | 2.33E-02    | 0.11                            | 3.54E-02 | 2.09E-01    |  |
| ENSG00000126950.7     | <i>TMEM35</i>    | Protein    | -0.43                       | 1.12E-02 | 8.37E-02    | -0.16                           | 3.41E-01 | 6.44E-01    |  |
| ENSG00000127084.16    | <i>FGD3</i>      | Protein    | 0.31                        | 1.48E-02 | 9.99E-02    | 0.16                            | 1.95E-01 | 5.00E-01    |  |
| ENSG00000127124.12    | <i>HIVEP3</i>    | Protein    | -0.28                       | 3.41E-03 | 3.91E-02    | -0.18                           | 4.94E-02 | 2.53E-01    |  |
| ENSG00000127412.5     | <i>TRPV5</i>     | Protein    | 0.53                        | 7.49E-04 | 1.39E-02    | 0.56                            | 2.02E-04 | 7.75E-03    |  |
| ENSG00000127463.12    | <i>EMC1</i>      | Protein    | -0.32                       | 6.61E-08 | 7.63E-06    | -0.21                           | 4.45E-04 | 1.36E-02    |  |
| ENSG00000127530.2     | <i>OR7C1</i>     | Protein    | -0.75                       | 2.26E-04 | 5.93E-03    | -0.40                           | 4.33E-02 | 2.35E-01    |  |
| ENSG00000127561.13    | <i>SYNGR3</i>    | Protein    | -0.49                       | 7.29E-03 | 6.37E-02    | -0.66                           | 1.15E-04 | 5.09E-03    |  |
| ENSG00000127578.6     | <i>WFIKKN1</i>   | Protein    | 0.53                        | 4.27E-04 | 9.41E-03    | 0.33                            | 2.55E-02 | 1.75E-01    |  |
| ENSG00000127586.15    | <i>CHTF18</i>    | Protein    | 0.30                        | 5.14E-03 | 5.11E-02    | 0.08                            | 4.47E-01 | 7.25E-01    |  |
| ENSG00000127588.4     | <i>GNG13</i>     | Protein    | 0.59                        | 4.79E-03 | 4.87E-02    | 0.45                            | 2.48E-02 | 1.73E-01    |  |
| ENSG00000127824.12    | <i>TUBA4A</i>    | Protein    | -0.53                       | 2.72E-05 | 1.16E-03    | -0.38                           | 1.51E-03 | 3.10E-02    |  |
| ENSG00000128159.10    | <i>TUBGCP6</i>   | Protein    | 0.26                        | 1.41E-04 | 4.12E-03    | 0.21                            | 1.22E-03 | 2.68E-02    |  |
| ENSG00000128165.8     | <i>ADM2</i>      | Protein    | 0.29                        | 1.44E-02 | 9.85E-02    | 0.26                            | 2.26E-02 | 1.64E-01    |  |
| ENSG00000128250.5     | <i>RFP11</i>     | Protein    | -0.87                       | 1.24E-05 | 6.19E-04    | -0.84                           | 1.17E-05 | 8.56E-04    |  |
| ENSG00000128254.12    | <i>C22orf24</i>  | LncRNA     | 0.55                        | 3.45E-04 | 8.11E-03    | 0.52                            | 4.60E-04 | 1.39E-02    |  |
| ENSG00000128262.7     | <i>POM121L9P</i> | Pseudogene | 0.55                        | 2.50E-05 | 1.09E-03    | 0.40                            | 1.70E-03 | 3.35E-02    |  |
| ENSG00000128266.8     | <i>GNAZ</i>      | Protein    | -0.34                       | 7.08E-03 | 6.24E-02    | -0.19                           | 1.27E-01 | 4.08E-01    |  |
| ENSG00000128271.18    | <i>ADORA2A</i>   | Protein    | 0.34                        | 1.07E-02 | 8.12E-02    | 0.23                            | 6.93E-02 | 3.01E-01    |  |
| ENSG00000128294.14    | <i>TPST2</i>     | Protein    | -0.25                       | 6.45E-03 | 5.91E-02    | -0.17                           | 5.33E-02 | 2.63E-01    |  |
| ENSG00000128534.6     | <i>LSM8</i>      | Protein    | 0.17                        | 5.11E-03 | 5.08E-02    | 0.10                            | 7.61E-02 | 3.17E-01    |  |
| ENSG00000128645.12    | <i>HOXD1</i>     | Protein    | -0.81                       | 6.79E-04 | 1.30E-02    | -0.42                           | 5.24E-02 | 2.61E-01    |  |
| ENSG00000128699.12    | <i>ORMDL1</i>    | Protein    | 0.21                        | 1.20E-05 | 6.03E-04    | 0.19                            | 3.46E-05 | 1.99E-03    |  |
| ENSG00000128833.11    | <i>MYOSC</i>     | Protein    | -0.24                       | 3.89E-03 | 4.27E-02    | -0.13                           | 1.17E-01 | 3.92E-01    |  |
| ENSG00000129048.6     | <i>ACKR4</i>     | Protein    | 0.57                        | 1.01E-05 | 5.26E-04    | 0.37                            | 3.82E-03 | 5.80E-02    |  |
| ENSG00000129103.16    | <i>SUMF2</i>     | Protein    | -0.27                       | 1.83E-05 | 8.60E-04    | -0.17                           | 6.48E-03 | 7.95E-02    |  |
| ENSG00000129151.7     | <i>BBOX1</i>     | Protein    | -0.67                       | 5.49E-04 | 1.12E-02    | -0.82                           | 1.21E-05 | 8.72E-04    |  |
| ENSG00000129167.8     | <i>TPH1</i>      | Protein    | -0.72                       | 8.87E-05 | 2.89E-03    | -0.61                           | 2.57E-04 | 9.20E-03    |  |
| ENSG00000129437.8     | <i>KLK14</i>     | Protein    | 1.41                        | 4.55E-10 | 8.82E-08    | -0.33                           | 1.13E-01 | 3.85E-01    |  |
| ENSG00000129455.14    | <i>KLK8</i>      | Protein    | 0.93                        | 1.92E-04 | 5.23E-03    | -0.23                           | 3.32E-01 | 6.36E-01    |  |
| ENSG00000129535.11    | <i>NRL</i>       | Protein    | 0.19                        | 9.98E-03 | 7.76E-02    | 0.19                            | 7.41E-03 | 8.58E-02    |  |
| ENSG00000129646.12    | <i>QRICH2</i>    | Protein    | 0.27                        | 6.57E-03 | 5.97E-02    | 0.28                            | 4.06E-03 | 6.04E-02    |  |
| ENSG00000129925.9     | <i>TMEM8A</i>    | Protein    | -0.21                       | 7.82E-03 | 6.67E-02    | -0.12                           | 1.03E-01 | 3.68E-01    |  |
| ENSG00000129991.11    | <i>TNNI3</i>     | Protein    | 1.10                        | 6.54E-06 | 3.71E-04    | 0.30                            | 2.06E-01 | 5.14E-01    |  |
| ENSG00000130005.10    | <i>GAMT</i>      | Protein    | 0.34                        | 7.22E-03 | 6.33E-02    | 0.33                            | 6.45E-03 | 7.93E-02    |  |

| Gene ID (GENCODE v22) | Gene symbol      | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                  |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000130208.8     | <i>APOC1</i>     | Protein    | 0.50                        | 3.53E-03 | 4.00E-02    | 0.35                            | 3.61E-02 | 2.12E-01    |
| ENSG00000130270.15    | <i>ATP8B3</i>    | Protein    | 0.31                        | 3.04E-03 | 3.62E-02    | 0.17                            | 9.70E-02 | 3.56E-01    |
| ENSG00000130287.12    | <i>NCAN</i>      | Protein    | 0.76                        | 9.60E-04 | 1.65E-02    | -0.05                           | 8.30E-01 | 9.37E-01    |
| ENSG00000130338.11    | <i>TULP4</i>     | Protein    | -0.18                       | 6.55E-03 | 5.96E-02    | -0.21                           | 1.21E-03 | 2.67E-02    |
| ENSG00000130340.13    | <i>SNX9</i>      | Protein    | -0.13                       | 6.56E-03 | 5.97E-02    | -0.11                           | 2.35E-02 | 1.67E-01    |
| ENSG00000130402.10    | <i>ACTN4</i>     | Protein    | -0.15                       | 1.04E-02 | 8.00E-02    | -0.15                           | 4.93E-03 | 6.76E-02    |
| ENSG00000130508.9     | <i>PXDN</i>      | Protein    | -0.28                       | 8.62E-03 | 7.09E-02    | -0.14                           | 1.83E-01 | 4.85E-01    |
| ENSG00000130513.6     | <i>GDF15</i>     | Protein    | 0.56                        | 7.22E-04 | 1.36E-02    | 0.55                            | 5.47E-04 | 1.57E-02    |
| ENSG00000130703.14    | <i>OSBPL2</i>    | Protein    | -0.11                       | 5.58E-04 | 1.13E-02    | -0.07                           | 1.94E-02 | 1.51E-01    |
| ENSG00000130720.11    | <i>FIBCD1</i>    | Protein    | -0.76                       | 9.92E-05 | 3.13E-03    | -0.84                           | 2.50E-06 | 2.50E-04    |
| ENSG00000130749.8     | <i>ZC3H4</i>     | Protein    | -0.13                       | 2.86E-03 | 3.47E-02    | -0.10                           | 2.28E-02 | 1.65E-01    |
| ENSG00000130775.14    | <i>THEMIS2</i>   | Protein    | 0.49                        | 7.37E-05 | 2.51E-03    | 0.35                            | 3.86E-03 | 5.82E-02    |
| ENSG00000130812.9     | <i>ANGPTL6</i>   | Protein    | 0.36                        | 1.16E-03 | 1.89E-02    | 0.26                            | 1.35E-02 | 1.22E-01    |
| ENSG00000130813.16    | <i>C19orf66</i>  | Protein    | 0.18                        | 1.04E-02 | 7.99E-02    | 0.12                            | 9.15E-02 | 3.47E-01    |
| ENSG00000130876.10    | <i>SLC7A10</i>   | Protein    | -0.53                       | 5.52E-03 | 5.36E-02    | -0.42                           | 1.84E-02 | 1.46E-01    |
| ENSG00000130939.17    | <i>UBE4B</i>     | Protein    | -0.21                       | 2.79E-05 | 1.18E-03    | -0.17                           | 7.24E-04 | 1.89E-02    |
| ENSG00000130943.6     | <i>PKDREJ</i>    | Protein    | -0.47                       | 3.47E-05 | 1.42E-03    | -0.36                           | 9.86E-04 | 2.31E-02    |
| ENSG00000130948.8     | <i>HSD17B3</i>   | Protein    | 0.80                        | 2.75E-06 | 1.83E-04    | 0.62                            | 1.82E-04 | 7.16E-03    |
| ENSG00000130950.12    | <i>NUTM2F</i>    | Protein    | 1.01                        | 6.34E-08 | 7.34E-06    | 0.83                            | 5.48E-06 | 4.69E-04    |
| ENSG00000130997.15    | <i>POLN</i>      | Protein    | 0.42                        | 5.20E-05 | 1.93E-03    | 0.43                            | 1.16E-05 | 8.51E-04    |
| ENSG00000131015.4     | <i>ULBP2</i>     | Protein    | -1.25                       | 3.35E-10 | 6.68E-08    | -1.28                           | 2.27E-11 | 8.58E-09    |
| ENSG00000131016.15    | <i>AKAP12</i>    | Protein    | 0.40                        | 2.90E-03 | 3.50E-02    | 0.26                            | 4.54E-02 | 2.41E-01    |
| ENSG00000131042.12    | <i>LILRB2</i>    | Protein    | 0.36                        | 3.41E-03 | 3.91E-02    | 0.23                            | 5.95E-02 | 2.79E-01    |
| ENSG00000131050.9     | <i>BPIFA2</i>    | Protein    | 1.35                        | 1.30E-07 | 1.38E-05    | -0.05                           | 8.53E-01 | 9.47E-01    |
| ENSG00000131051.19    | <i>RBM39</i>     | Protein    | 0.16                        | 4.67E-04 | 1.01E-02    | 0.12                            | 8.44E-03 | 9.29E-02    |
| ENSG00000131089.12    | <i>ARHGEF9</i>   | Protein    | -0.19                       | 1.06E-03 | 1.78E-02    | -0.10                           | 8.30E-02 | 3.30E-01    |
| ENSG00000131094.3     | <i>C1QL1</i>     | Protein    | 0.70                        | 5.87E-04 | 1.17E-02    | 1.13                            | 1.75E-09 | 4.57E-07    |
| ENSG00000131126.17    | <i>TEX101</i>    | Protein    | -0.84                       | 1.55E-04 | 4.42E-03    | -0.56                           | 5.41E-03 | 7.14E-02    |
| ENSG00000131142.12    | <i>CCL25</i>     | Protein    | 0.52                        | 8.95E-03 | 7.25E-02    | 0.36                            | 5.33E-02 | 2.63E-01    |
| ENSG00000131269.14    | <i>ABCB7</i>     | Protein    | -0.12                       | 7.95E-03 | 6.73E-02    | -0.15                           | 1.16E-03 | 2.59E-02    |
| ENSG00000131374.13    | <i>TBC1D5</i>    | Protein    | -0.17                       | 5.75E-03 | 5.48E-02    | -0.13                           | 3.23E-02 | 2.00E-01    |
| ENSG00000131381.11    | <i>RBSN</i>      | Protein    | -0.11                       | 1.48E-02 | 1.00E-01    | -0.10                           | 2.08E-02 | 1.56E-01    |
| ENSG00000131409.11    | <i>LRRC4B</i>    | Protein    | -1.28                       | 4.47E-09 | 7.06E-07    | -0.67                           | 1.54E-04 | 6.29E-03    |
| ENSG00000131471.5     | <i>AOC3</i>      | Protein    | -0.31                       | 1.41E-02 | 9.74E-02    | -0.18                           | 1.44E-01 | 4.32E-01    |
| ENSG00000131482.8     | <i>G6PC</i>      | Protein    | -0.63                       | 1.35E-02 | 9.47E-02    | -0.59                           | 1.60E-02 | 1.36E-01    |
| ENSG00000131503.19    | <i>ANKHD1</i>    | Protein    | 0.17                        | 6.55E-03 | 5.96E-02    | 0.11                            | 5.60E-02 | 2.70E-01    |
| ENSG00000131653.11    | <i>TRAF7</i>     | Protein    | -0.16                       | 7.89E-03 | 6.71E-02    | -0.20                           | 5.05E-04 | 1.48E-02    |
| ENSG00000131711.13    | <i>MAP1B</i>     | Protein    | -0.46                       | 6.25E-04 | 1.23E-02    | -0.44                           | 6.88E-04 | 1.83E-02    |
| ENSG00000131737.5     | <i>KRT34</i>     | Protein    | 0.93                        | 2.54E-04 | 6.43E-03    | 0.21                            | 3.96E-01 | 6.89E-01    |
| ENSG00000131845.13    | <i>ZNF304</i>    | Protein    | -0.22                       | 3.78E-03 | 4.19E-02    | -0.18                           | 1.07E-02 | 1.08E-01    |
| ENSG00000131931.7     | <i>THAP1</i>     | Protein    | -0.15                       | 4.72E-03 | 4.83E-02    | -0.14                           | 3.75E-03 | 5.74E-02    |
| ENSG00000131943.16    | <i>C19orf12</i>  | Protein    | 0.11                        | 1.17E-02 | 8.59E-02    | 0.10                            | 8.54E-03 | 9.34E-02    |
| ENSG00000132164.8     | <i>SLC6A11</i>   | Protein    | 0.47                        | 3.74E-03 | 4.16E-02    | 0.33                            | 3.87E-02 | 2.20E-01    |
| ENSG00000132196.12    | <i>HSD17B7</i>   | Protein    | 0.28                        | 1.82E-05 | 8.59E-04    | 0.27                            | 1.08E-05 | 8.01E-04    |
| ENSG00000132204.12    | <i>LINC00470</i> | LncRNA     | 0.61                        | 1.12E-02 | 8.39E-02    | 0.21                            | 3.75E-01 | 6.72E-01    |
| ENSG00000132294.12    | <i>EFR3A</i>     | Protein    | -0.21                       | 1.46E-02 | 9.91E-02    | -0.11                           | 1.97E-01 | 5.02E-01    |
| ENSG00000132305.19    | <i>IMMT</i>      | Protein    | -0.14                       | 2.08E-03 | 2.81E-02    | -0.16                           | 4.98E-04 | 1.47E-02    |
| ENSG00000132313.13    | <i>MRPL35</i>    | Protein    | -0.22                       | 9.90E-08 | 1.10E-05    | -0.18                           | 3.80E-06 | 3.48E-04    |
| ENSG00000132329.9     | <i>RAMP1</i>     | Protein    | 0.47                        | 2.62E-03 | 3.28E-02    | 0.51                            | 8.24E-04 | 2.06E-02    |
| ENSG00000132330.15    | <i>SCLY</i>      | Protein    | 0.32                        | 1.56E-04 | 4.43E-03    | 0.32                            | 1.10E-04 | 4.89E-03    |
| ENSG00000132383.10    | <i>RPA1</i>      | Protein    | -0.12                       | 4.20E-03 | 4.49E-02    | -0.08                           | 5.19E-02 | 2.60E-01    |
| ENSG00000132394.9     | <i>EEFSEC</i>    | Protein    | 0.18                        | 6.78E-03 | 6.08E-02    | 0.14                            | 2.56E-02 | 1.76E-01    |
| ENSG00000132465.9     | <i>IGJ</i>       | Protein    | 0.52                        | 1.42E-02 | 9.74E-02    | 0.50                            | 1.62E-02 | 1.37E-01    |
| ENSG00000132485.11    | <i>ZRANB2</i>    | Protein    | 0.15                        | 3.66E-03 | 4.10E-02    | 0.09                            | 8.06E-02 | 3.26E-01    |
| ENSG00000132522.14    | <i>GPS2</i>      | Protein    | 0.34                        | 7.05E-04 | 1.34E-02    | 0.26                            | 6.42E-03 | 7.91E-02    |
| ENSG00000132623.14    | <i>ANKEF1</i>    | Protein    | -0.17                       | 1.32E-02 | 9.29E-02    | -0.13                           | 3.70E-02 | 2.15E-01    |
| ENSG00000132635.15    | <i>PCED1A</i>    | Protein    | 0.35                        | 2.03E-05 | 9.37E-04    | 0.28                            | 5.61E-04 | 1.60E-02    |
| ENSG00000132680.9     | <i>KIAA0907</i>  | Protein    | 0.25                        | 4.23E-03 | 4.51E-02    | 0.11                            | 2.04E-01 | 5.11E-01    |
| ENSG00000132681.15    | <i>ATPIA4</i>    | Protein    | -0.52                       | 4.51E-03 | 4.71E-02    | -0.47                           | 8.00E-03 | 8.98E-02    |
| ENSG00000132793.10    | <i>LPIN3</i>     | Protein    | 0.37                        | 3.99E-04 | 8.99E-03    | 0.20                            | 5.74E-02 | 2.73E-01    |
| ENSG00000132824.12    | <i>SERINC3</i>   | Protein    | -0.12                       | 2.95E-03 | 3.54E-02    | -0.09                           | 2.24E-02 | 1.63E-01    |
| ENSG00000132840.8     | <i>BHMT2</i>     | Protein    | -0.33                       | 1.38E-02 | 9.59E-02    | -0.21                           | 1.13E-01 | 3.85E-01    |
| ENSG00000132842.12    | <i>AP3B1</i>     | Protein    | -0.17                       | 8.72E-03 | 7.14E-02    | -0.07                           | 2.76E-01 | 5.86E-01    |
| ENSG00000132855.4     | <i>ANGPTL3</i>   | Protein    | 0.94                        | 9.01E-05 | 2.92E-03    | -0.44                           | 4.71E-02 | 2.46E-01    |
| ENSG00000132872.10    | <i>SYT4</i>      | Protein    | -0.75                       | 1.72E-03 | 2.47E-02    | -1.44                           | 3.97E-11 | 1.42E-08    |
| ENSG00000132881.10    | <i>RSG1</i>      | Protein    | -0.16                       | 1.37E-02 | 9.52E-02    | -0.12                           | 4.42E-02 | 2.38E-01    |
| ENSG00000132958.16    | <i>TPTE2</i>     | Protein    | 0.68                        | 6.17E-04 | 1.21E-02    | 0.64                            | 8.50E-04 | 2.10E-02    |
| ENSG00000132967.9     | <i>HMGBlP5</i>   | Pseudogene | 0.60                        | 3.85E-18 | 2.39E-15    | 0.56                            | 1.19E-17 | 9.21E-15    |
| ENSG00000132975.7     | <i>GPR12</i>     | Protein    | 0.70                        | 5.92E-04 | 1.18E-02    | -0.23                           | 2.44E-01 | 5.55E-01    |
| ENSG00000133019.10    | <i>CHRM3</i>     | Protein    | -1.15                       | 3.71E-08 | 4.54E-06    | -0.85                           | 2.65E-05 | 1.62E-03    |
| ENSG00000133059.15    | <i>DSTYK</i>     | Protein    | -0.14                       | 6.66E-03 | 6.01E-02    | -0.14                           | 4.37E-03 | 6.32E-02    |
| ENSG00000133083.13    | <i>DCLK1</i>     | Protein    | -0.48                       | 3.83E-03 | 4.23E-02    | -0.51                           | 1.54E-03 | 3.13E-02    |
| ENSG00000133112.15    | <i>TPT1</i>      | Protein    | -0.25                       | 2.78E-03 | 3.41E-02    | -0.12                           | 1.33E-01 | 4.17E-01    |
| ENSG00000133115.10    | <i>STOML3</i>    | Protein    | -0.84                       | 1.78E-04 | 4.93E-03    | -0.73                           | 6.75E-04 | 1.80E-02    |
| ENSG00000133121.19    | <i>STARD13</i>   | Protein    | -0.24                       | 1.44E-02 | 9.84E-02    | -0.23                           | 1.61E-02 | 1.36E-01    |
| ENSG00000133134.10    | <i>BEX2</i>      | Protein    | -0.29                       | 7.00E-03 | 6.21E-02    | -0.34                           | 1.01E-03 | 2.35E-02    |
| ENSG00000133246.10    | <i>PRAM1</i>     | Protein    | 0.43                        | 1.99E-04 | 5.36E-03    | 0.39                            | 3.59E-04 | 1.16E-02    |
| ENSG00000133392.15    | <i>MYH11</i>     | Protein    | -0.41                       | 9.31E-03 | 7.43E-02    | -0.17                           | 2.67E-01 | 5.78E-01    |
| ENSG00000133401.14    | <i>PDZD2</i>     | Protein    | 0.39                        | 1.64E-03 | 2.39E-02    | 0.27                            | 2.77E-02 | 1.83E-01    |
| ENSG00000133433.9     | <i>GSTT2B</i>    | Protein    | 0.90                        | 4.30E-06 | 2.63E-04    | 1.00                            | 1.35E-07 | 2.17E-05    |
| ENSG00000133466.12    | <i>CIQTNF6</i>   | Protein    | 0.35                        | 9.37E-04 | 1.63E-02    | 0.19                            | 6.38E-02 | 2.89E-01    |
| ENSG00000133624.12    | <i>ZNF767P</i>   | Pseudogene | 0.23                        | 1.30E-02 | 9.23E-02    | 0.09                            | 3.23E-01 | 6.29E-01    |
| ENSG00000133636.9     | <i>NTS</i>       | Protein    | 0.64                        | 4.43E-03 | 4.65E-02    | -0.16                           | 4.45E-01 | 7.24E-01    |
| ENSG00000133665.11    | <i>DYDC2</i>     | Protein    | -1.10                       | 4.87E-06 | 2.91E-04    | -0.78                           | 5.27E-04 | 1.52E-02    |
| ENSG00000133742.12    | <i>CA1</i>       | Protein    | -0.92                       | 2.87E-04 | 7.08E-03    | -0.93                           | 1.25E-04 | 5.40E-03    |
| ENSG00000133805.14    | <i>AMPD3</i>     | Protein    | -0.51                       | 8.57E-05 | 2.82E-03    | -0.36                           | 4.58E-03 | 6.47E-02    |
| ENSG00000133884.8     | <i>DPF2</i>      | Protein    | -0.11                       | 1.17E-03 | 1.89E-02    | -0.12                           | 1.31E-04 | 5.57E-03    |
| ENSG00000133980.4     | <i>VRTN</i>      | Protein    | 0.58                        | 1.42E-02 | 9.75E-02    | -0.02                           | 9.21E-01 | 9.72E-01    |
| ENSG00000133983.13    | <i>COX16</i>     | Protein    | -0.19                       | 1.47E-02 | 9.95E-02    | -0.10                           | 1.69E-01 | 4.66E-01    |
| ENSG00000134020.7     | <i>PEBP4</i>     | Protein    | 0.55                        | 5.03E-03 | 5.03E-02    | 0.80                            | 3.02E-05 | 1.78E-03    |
| ENSG00000134030.12    | <i>CTIF</i>      | Protein    | -0.26                       | 1.77E-04 | 4.91E-03    | -0.20                           | 2.18E-03 | 3.96E-02    |
| ENSG00000134115.11    | <i>CNTN6</i>     | Protein    | 1.15                        | 9.24E-09 | 1.35E-06    | 0.30                            | 1.11E-01 | 3.82E-01    |
| ENSG00000134202.9     | <i>GSTM3</i>     | Protein    | 0.37                        | 2.82E-03 | 3.44E-02    | 0.49                            | 4.03E-05 | 2.25E-03    |
| ENSG00000134243.10    | <i>SORT1</i>     | Protein    | -0.21                       | 2.11E-03 | 2.84E-02    | -0.13                           | 5.50E-02 | 2.67E-01    |
| ENSG00000134247.9     | <i>PTGFRN</i>    | Protein    | -0.28                       | 1.39E-05 | 6.77E-04    | -0.26                           | 2.48E-05 | 1.55E-03    |
| ENSG00000134259.3     | <i>NGF</i>       | Protein    | 0.42                        | 2.95E-03 | 3.54E-02    | 0.18                            | 1.81E-01 | 4.83E-01    |
| ENSG00000134287.8     | <i>ARF3</i>      | Protein    | -0.15                       | 6.42E-04 | 1.25E-02    | -0.15                           | 5.38E-04 | 1.55E-02    |
| ENSG00000134339.7     | <i>SA42</i>      | Protein    | -0.94                       | 1.23E-04 | 3.72E-03    | -0.98                           | 2.03E-05 | 1.33E-03    |
| ENSG00000134343.11    | <i>ANO3</i>      | Protein    | 1.47                        | 4.21E-11 | 1.01E-08    | -0.83                           | 7.80E-05 | 3.76E-03    |
| ENSG00000134363.10    | <i>FST</i>       | Protein    | -0.51                       | 1.15E-03 | 1.87E-02    | -0.33                           | 3.07E-02 | 1.94E-01    |
| ENSG00000134369.14    | <i>NAV1</i>      | Protein    | 0.44                        | 1.05E-04 | 3.29E-03    | 0.33                            | 3.00E-03 | 4.94E-02    |
| ENSG00000134371.9     | <i>CDC73</i>     | Protein    | -0.23                       | 1.56E-03 | 2.31E-02    | -0.17                           | 1.27E-02 | 1.19E-01    |
| ENSG00000134461.14    | <i>ANKRD16</i>   | Protein    | 0.25                        | 1.25E-03 | 1.97E-02    | 0.18                            | 1.72E-02 | 1.42E-01    |
| ENSG00000134480.12    | <i>CCNH</i>      | Protein    | 0.27                        | 2.65E-03 | 3.31E-02    | 0.25                            | 3.60E-03 | 5.57E-02    |
| ENSG00000134551.11    | <i>PRH2</i>      | Protein    | -0.54                       | 6.68E-03 | 6.03E-02    | -0.14                           | 3.95E-01 | 6.88E-01    |
| ENSG00000134597.12    | <i>RBMX2</i>     | Protein    | -0.15                       | 1.35E-02 | 9.45E-02    | -0.19                           | 1.25E-03 | 2.72E-02    |
| ENSG00000134627.10    | <i>PIWIL4</i>    | Protein    | 0.25                        | 2.91E-03 | 3.51E-02    |                                 |          |             |

| Gene ID (GENCODE v22) | Gene symbol | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |             |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000134644.14    | PUM1        | Protein    | -0.18                       | 2.06E-03 | 2.80E-02    | -0.13                           | 1.86E-02 | 1.47E-01    |  |
| ENSG00000134765.8     | DSC1        | Protein    | 0.39                        | 1.26E-02 | 9.04E-02    | -0.17                           | 2.34E-01 | 5.45E-01    |  |
| ENSG00000134815.17    | DHX34       | Protein    | 0.25                        | 6.44E-05 | 2.26E-03    | 0.20                            | 9.84E-04 | 2.31E-02    |  |
| ENSG00000134827.6     | TCN1        | Protein    | -0.73                       | 2.30E-03 | 3.00E-02    | -0.48                           | 3.43E-02 | 2.05E-01    |  |
| ENSG00000134852.13    | CLOCK       | Protein    | -0.18                       | 1.04E-02 | 7.99E-02    | -0.12                           | 8.54E-02 | 3.35E-01    |  |
| ENSG00000134853.10    | PDGFRA      | Protein    | 0.61                        | 2.74E-05 | 1.16E-03    | 0.04                            | 7.65E-01 | 9.07E-01    |  |
| ENSG00000134864.9     | GGACTION    | Protein    | 0.31                        | 3.25E-04 | 7.78E-03    | 0.34                            | 3.99E-05 | 2.24E-03    |  |
| ENSG00000134884.12    | ARGLU1      | Protein    | 0.30                        | 1.02E-03 | 1.72E-02    | 0.21                            | 1.99E-02 | 1.52E-01    |  |
| ENSG00000134955.10    | SLC37A2     | Protein    | 0.48                        | 8.42E-04 | 1.51E-02    | 0.33                            | 1.66E-02 | 1.39E-01    |  |
| ENSG00000135052.15    | GOLM1       | Protein    | -0.39                       | 1.97E-03 | 2.72E-02    | -0.18                           | 1.37E-01 | 4.22E-01    |  |
| ENSG00000135077.7     | HAVCR2      | Protein    | 0.28                        | 1.30E-02 | 9.19E-02    | 0.12                            | 2.80E-01 | 5.90E-01    |  |
| ENSG00000135083.13    | CCNJL       | Protein    | -0.40                       | 3.26E-03 | 3.81E-02    | -0.33                           | 1.14E-02 | 1.12E-01    |  |
| ENSG00000135097.5     | MSI1        | Protein    | 0.32                        | 8.03E-04 | 1.46E-02    | 0.22                            | 1.86E-02 | 1.47E-01    |  |
| ENSG00000135108.13    | FBXO21      | Protein    | -0.15                       | 1.02E-02 | 7.88E-02    | -0.10                           | 6.41E-02 | 2.90E-01    |  |
| ENSG00000135164.17    | DMTF1       | Protein    | 0.28                        | 2.81E-05 | 1.19E-03    | 0.18                            | 4.88E-03 | 6.72E-02    |  |
| ENSG00000135226.15    | UGT2B28     | Protein    | 0.90                        | 1.84E-04 | 5.06E-03    | -0.17                           | 4.46E-01 | 7.25E-01    |  |
| ENSG00000135245.9     | HILPDA      | Protein    | 0.26                        | 2.47E-03 | 3.16E-02    | 0.01                            | 8.98E-01 | 9.64E-01    |  |
| ENSG00000135248.14    | FAM71F1     | Protein    | 0.75                        | 1.26E-04 | 3.75E-03    | 0.55                            | 3.83E-03 | 5.80E-02    |  |
| ENSG00000135253.12    | KCP         | Protein    | 0.75                        | 7.39E-08 | 8.39E-06    | 0.55                            | 5.48E-05 | 2.87E-03    |  |
| ENSG00000135269.16    | TES         | Protein    | -0.22                       | 6.42E-03 | 5.90E-02    | -0.13                           | 9.79E-02 | 3.58E-01    |  |
| ENSG00000135298.12    | BAI3        | Protein    | 0.42                        | 1.03E-02 | 7.93E-02    | 0.46                            | 3.11E-03 | 5.06E-02    |  |
| ENSG00000135316.16    | SYNCRIP     | Protein    | -0.17                       | 8.54E-03 | 7.06E-02    | -0.11                           | 7.13E-02 | 3.06E-01    |  |
| ENSG00000135333.12    | EPHA7       | Protein    | -0.39                       | 5.01E-03 | 5.02E-02    | -0.24                           | 6.98E-02 | 3.03E-01    |  |
| ENSG00000135334.8     | AKIRIN2     | Protein    | -0.15                       | 8.81E-03 | 7.18E-02    | -0.14                           | 1.04E-02 | 1.05E-01    |  |
| ENSG00000135365.14    | PHF21A      | Protein    | -0.13                       | 6.16E-03 | 5.75E-02    | -0.12                           | 5.96E-03 | 7.57E-02    |  |
| ENSG00000135387.18    | CAPRIN1     | Protein    | -0.18                       | 4.64E-03 | 4.78E-02    | -0.16                           | 7.42E-03 | 8.59E-02    |  |
| ENSG00000135407.9     | AVIL        | Protein    | 0.39                        | 6.35E-05 | 2.24E-03    | 0.23                            | 1.98E-02 | 1.52E-01    |  |
| ENSG00000135437.8     | RDH5        | Protein    | 0.35                        | 5.12E-03 | 5.09E-02    | 0.39                            | 1.11E-03 | 2.52E-02    |  |
| ENSG00000135439.10    | AGAP2       | Protein    | 0.30                        | 5.55E-03 | 5.37E-02    | 0.15                            | 1.47E-01 | 4.36E-01    |  |
| ENSG00000135502.15    | SLC26A10    | Protein    | 0.37                        | 1.45E-02 | 9.88E-02    | 0.27                            | 6.14E-02 | 2.84E-01    |  |
| ENSG00000135506.14    | OS9         | Protein    | -0.19                       | 5.28E-04 | 1.10E-02    | -0.09                           | 1.12E-01 | 3.84E-01    |  |
| ENSG00000135525.17    | MAP7        | Protein    | -0.27                       | 2.24E-03 | 2.95E-02    | -0.19                           | 2.73E-02 | 1.82E-01    |  |
| ENSG00000135537.15    | LACE1       | Protein    | -0.27                       | 1.03E-04 | 3.24E-03    | -0.20                           | 2.55E-03 | 4.44E-02    |  |
| ENSG00000135540.10    | NHSL1       | Protein    | 0.39                        | 4.49E-03 | 4.69E-02    | -0.28                           | 7.09E-03 | 8.38E-02    |  |
| ENSG00000135541.19    | AHI1        | Protein    | 0.15                        | 9.31E-03 | 7.43E-02    | 0.16                            | 2.11E-03 | 3.88E-02    |  |
| ENSG00000135596.16    | MICAL1      | Protein    | 0.61                        | 1.60E-08 | 2.20E-06    | 0.59                            | 1.19E-08 | 2.58E-06    |  |
| ENSG00000135723.12    | FHOD1       | Protein    | 0.42                        | 1.60E-08 | 2.20E-06    | 0.36                            | 2.83E-07 | 4.07E-05    |  |
| ENSG00000135740.15    | SLC9A5      | Protein    | 0.60                        | 3.46E-07 | 3.17E-05    | 0.49                            | 1.64E-05 | 1.11E-03    |  |
| ENSG00000135744.7     | AGT         | Protein    | -0.72                       | 2.02E-03 | 2.76E-02    | -1.17                           | 2.86E-08 | 5.50E-06    |  |
| ENSG00000135750.13    | KCNK1       | Protein    | -0.41                       | 8.23E-04 | 1.48E-02    | -0.43                           | 2.57E-04 | 9.20E-03    |  |
| ENSG00000135775.12    | COG2        | Protein    | -0.13                       | 6.71E-03 | 6.05E-02    | -0.08                           | 6.68E-02 | 2.96E-01    |  |
| ENSG00000135776.4     | ABCB10      | Protein    | -0.22                       | 7.87E-04 | 1.44E-02    | -0.19                           | 1.98E-03 | 3.70E-02    |  |
| ENSG00000135823.12    | STX6        | Protein    | -0.14                       | 1.05E-02 | 8.01E-02    | -0.17                           | 2.04E-03 | 3.79E-02    |  |
| ENSG00000135828.10    | RNASEL      | Protein    | -0.20                       | 3.88E-03 | 4.26E-02    | -0.14                           | 3.44E-02 | 2.06E-01    |  |
| ENSG00000135829.15    | DHX9        | Protein    | -0.13                       | 8.56E-03 | 7.07E-02    | -0.13                           | 7.34E-03 | 8.54E-02    |  |
| ENSG00000135862.5     | LAMC1       | Protein    | -0.36                       | 1.95E-04 | 5.28E-03    | -0.34                           | 1.68E-04 | 6.73E-03    |  |
| ENSG00000135870.10    | RC3H1       | Protein    | -0.23                       | 1.25E-04 | 3.75E-03    | -0.20                           | 6.92E-04 | 1.83E-02    |  |
| ENSG00000135917.12    | SLC19A3     | Protein    | -0.67                       | 1.25E-03 | 1.98E-02    | -0.50                           | 6.77E-03 | 8.13E-02    |  |
| ENSG00000135931.16    | ARMC9       | Protein    | 0.16                        | 1.13E-03 | 1.85E-02    | 0.12                            | 1.55E-02 | 1.33E-01    |  |
| ENSG00000135932.9     | CAB39       | Protein    | -0.17                       | 9.71E-03 | 7.62E-02    | -0.14                           | 2.48E-02 | 1.72E-01    |  |
| ENSG00000135953.9     | MFSN9       | Protein    | -0.19                       | 1.07E-02 | 8.13E-02    | -0.11                           | 1.28E-01 | 4.09E-01    |  |
| ENSG00000135956.7     | TMEM127     | Protein    | -0.13                       | 2.03E-04 | 5.43E-03    | -0.12                           | 2.76E-04 | 9.65E-03    |  |
| ENSG00000135966.11    | TGFBRRAP1   | Protein    | -0.16                       | 9.14E-03 | 7.35E-02    | -0.06                           | 3.30E-01 | 6.34E-01    |  |
| ENSG00000135976.15    | ANKRD36     | Protein    | 0.29                        | 1.27E-02 | 9.09E-02    | 0.25                            | 2.45E-02 | 1.71E-01    |  |
| ENSG00000136002.15    | ARHGEF4     | Protein    | -0.24                       | 1.44E-02 | 9.83E-02    | -0.09                           | 3.70E-01 | 6.68E-01    |  |
| ENSG00000136110.11    | LECT1       | Protein    | -0.70                       | 1.22E-03 | 1.95E-02    | -0.49                           | 1.76E-02 | 1.43E-01    |  |
| ENSG00000136141.13    | LRCH1       | Protein    | -0.25                       | 1.46E-03 | 2.20E-02    | -0.20                           | 9.06E-03 | 9.68E-02    |  |
| ENSG00000136143.12    | SUCLA2      | Protein    | -0.18                       | 8.01E-03 | 6.77E-02    | -0.09                           | 1.75E-01 | 4.75E-01    |  |
| ENSG00000136156.11    | ITM2B       | Protein    | -0.21                       | 2.07E-03 | 2.80E-02    | -0.12                           | 5.52E-02 | 2.68E-01    |  |
| ENSG00000136243.15    | NUPL2       | Protein    | 0.13                        | 1.07E-02 | 8.13E-02    | 0.03                            | 6.06E-01 | 8.26E-01    |  |
| ENSG00000136267.12    | DGKB        | Protein    | 1.09                        | 4.32E-07 | 3.83E-05    | 0.23                            | 2.06E-01 | 5.13E-01    |  |
| ENSG00000136448.10    | NMT1        | Protein    | -0.13                       | 1.64E-03 | 2.39E-02    | -0.09                           | 2.24E-02 | 1.63E-01    |  |
| ENSG00000136485.13    | DCAF7       | Protein    | -0.17                       | 9.86E-03 | 7.71E-02    | -0.13                           | 4.05E-02 | 2.26E-01    |  |
| ENSG00000136531.12    | SCN2A       | Protein    | -0.54                       | 3.27E-03 | 3.81E-02    | -0.56                           | 1.56E-03 | 3.16E-02    |  |
| ENSG00000136628.16    | EPRS        | Protein    | -0.21                       | 1.46E-03 | 2.20E-02    | -0.21                           | 7.39E-04 | 1.91E-02    |  |
| ENSG00000136709.10    | WDR33       | Protein    | -0.10                       | 7.97E-03 | 6.74E-02    | -0.07                           | 5.43E-02 | 2.66E-01    |  |
| ENSG00000136715.16    | SAPI30      | Protein    | -0.15                       | 5.28E-03 | 5.20E-02    | -0.11                           | 2.96E-02 | 1.90E-01    |  |
| ENSG00000136731.11    | UGGT1       | Protein    | -0.42                       | 2.48E-07 | 2.42E-05    | -0.25                           | 1.38E-03 | 2.91E-02    |  |
| ENSG00000136738.13    | STAM        | Protein    | -0.21                       | 2.69E-04 | 6.74E-03    | -0.13                           | 1.44E-02 | 1.27E-01    |  |
| ENSG00000136854.16    | STXBP1      | Protein    | -0.26                       | 8.77E-03 | 7.16E-02    | -0.24                           | 1.19E-02 | 1.14E-01    |  |
| ENSG00000136883.11    | KIF12       | Protein    | 0.79                        | 1.04E-05 | 5.41E-04    | 0.81                            | 2.60E-06 | 2.59E-04    |  |
| ENSG00000136908.16    | DPM2        | Protein    | 0.21                        | 1.14E-02 | 8.44E-02    | 0.17                            | 2.75E-02 | 1.83E-01    |  |
| ENSG00000136918.6     | WDR38       | Protein    | -0.78                       | 1.39E-03 | 2.13E-02    | -0.48                           | 3.61E-02 | 2.12E-01    |  |
| ENSG00000136932.12    | C9orf156    | Protein    | 0.17                        | 1.80E-04 | 4.97E-03    | 0.15                            | 6.41E-04 | 1.75E-02    |  |
| ENSG00000137076.17    | TLN1        | Protein    | -0.25                       | 9.03E-04 | 1.58E-02    | -0.19                           | 9.20E-03 | 9.76E-02    |  |
| ENSG00000137101.11    | CD72        | Protein    | 0.37                        | 6.33E-03 | 5.86E-02    | 0.26                            | 5.02E-02 | 2.55E-01    |  |
| ENSG00000137124.6     | ALDH1B1     | Protein    | -0.21                       | 6.40E-03 | 5.90E-02    | -0.21                           | 3.95E-03 | 5.92E-02    |  |
| ENSG00000137285.9     | TUBB2B      | Protein    | -0.66                       | 1.45E-06 | 1.08E-04    | -0.69                           | 1.73E-07 | 2.69E-05    |  |
| ENSG00000137288.8     | UQC22       | Protein    | 0.25                        | 5.96E-03 | 5.62E-02    | 0.24                            | 5.49E-03 | 7.19E-02    |  |
| ENSG00000137338.5     | PGBD1       | Protein    | 0.14                        | 8.94E-03 | 7.24E-02    | 0.16                            | 2.76E-03 | 4.67E-02    |  |
| ENSG00000137343.16    | ATAT1       | Protein    | 0.23                        | 1.35E-03 | 2.08E-02    | 0.18                            | 1.21E-02 | 1.15E-01    |  |
| ENSG00000137393.9     | RNF144B     | Protein    | -0.33                       | 2.26E-03 | 2.97E-02    | -0.26                           | 1.40E-02 | 1.25E-01    |  |
| ENSG00000137460.7     | FHDC1       | Protein    | 0.57                        | 4.72E-06 | 2.83E-04    | 0.56                            | 3.48E-06 | 3.22E-04    |  |
| ENSG00000137504.12    | CREBZF      | Protein    | 0.19                        | 4.84E-03 | 4.91E-02    | 0.11                            | 8.34E-02 | 3.31E-01    |  |
| ENSG00000137509.9     | PRCP        | Protein    | -0.12                       | 1.11E-02 | 8.33E-02    | -0.08                           | 7.89E-02 | 3.22E-01    |  |
| ENSG00000137513.8     | NARS2       | Protein    | -0.26                       | 1.74E-05 | 8.28E-04    | -0.26                           | 1.13E-05 | 8.33E-04    |  |
| ENSG00000137547.7     | MRPL15      | Protein    | 0.20                        | 8.81E-03 | 7.18E-02    | 0.12                            | 1.14E-01 | 3.87E-01    |  |
| ENSG00000137558.6     | PII5        | Protein    | 0.57                        | 6.55E-03 | 5.97E-02    | -0.17                           | 3.90E-01 | 6.84E-01    |  |
| ENSG00000137634.8     | NXPE4       | Protein    | -0.84                       | 5.62E-04 | 1.14E-02    | -0.60                           | 9.62E-03 | 1.00E-01    |  |
| ENSG00000137642.11    | SORL1       | Protein    | -0.31                       | 8.62E-03 | 7.09E-02    | -0.25                           | 2.83E-02 | 1.86E-01    |  |
| ENSG00000137691.11    | C11orf70    | Protein    | -0.34                       | 1.40E-02 | 9.69E-02    | -0.27                           | 4.35E-02 | 2.35E-01    |  |
| ENSG00000137767.12    | SQRDL       | Protein    | -0.26                       | 7.44E-03 | 6.44E-02    | -0.15                           | 1.12E-01 | 3.83E-01    |  |
| ENSG00000137806.7     | NDUFAF1     | Protein    | -0.14                       | 1.39E-02 | 9.63E-02    | -0.11                           | 3.20E-02 | 1.99E-01    |  |
| ENSG00000137841.10    | PLCB2       | Protein    | 0.39                        | 2.43E-04 | 6.22E-03    | 0.24                            | 1.87E-02 | 1.48E-01    |  |
| ENSG00000137845.13    | ADAM10      | Protein    | -0.21                       | 1.03E-02 | 7.94E-02    | -0.15                           | 5.53E-02 | 2.68E-01    |  |
| ENSG00000137875.4     | BCL2L10     | Protein    | -0.43                       | 7.28E-03 | 6.36E-02    | -0.26                           | 9.38E-02 | 3.50E-01    |  |
| ENSG00000137948.17    | BRDT        | Protein    | 1.08                        | 3.16E-06 | 2.04E-04    | -0.14                           | 5.28E-01 | 7.79E-01    |  |
| ENSG00000137968.15    | SLC44A5     | Protein    | -0.71                       | 1.71E-03 | 2.45E-02    | -1.16                           | 1.23E-07 | 2.02E-05    |  |
| ENSG00000137970.7     | RPL7P9      | Pseudogene | 0.38                        | 3.84E-03 | 4.23E-02    | 0.32                            | 1.16E-02 | 1.13E-01    |  |
| ENSG00000137975.7     | CLCA2       | Protein    | 0.95                        | 3.59E-05 | 1.46E-03    | 0.44                            | 4.82E-02 | 2.49E-01    |  |
| ENSG00000137976.7     | DNASE2B     | Protein    | -0.53                       | 2.91E-03 | 3.51E-02    | -0.41                           | 1.69E-02 | 1.40E-01    |  |
| ENSG00000138032.19    | PPM1B       | Protein    | -0.20                       | 1.20E-02 | 8.74E-02    | -0.17                           | 3.03E-02 | 1.93E-01    |  |
| ENSG00000138071.12    | ACTR2       | Protein    | -0.16                       | 1.43E-02 | 9.82E-02    | -0.14                           | 1.94E-02 | 1.51E-01    |  |
| ENSG00000138101.17    | DTNB        | Protein    | 0.19                        | 8.36E-03 | 6.96E-02    | 0.19                            | 5.27E-03 | 7.02E-02    |  |
| ENSG00000138111.13    | TMEM180     | Protein    | -0.27                       | 9.90E-03 | 7.72E-02    | -0.26                           | 8.48E-03 | 9.30E-02    |  |
| ENSG00000138152.8     | BTBD16      | Protein    | 1.13                        | 6.67E-10 | 1.21E-07    | 1.09                            | 5.55E-10 | 1.60E-07    |  |
| ENSG00000138303.16    | ASCC1       | Protein    | -0.22                       | 5.25E-04 | 1.09E-02</  |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol     | Gene type | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------|-----------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                 |           | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000138378.16    | <i>STAT4</i>    | Protein   | 0.32                        | 1.32E-02 | 9.29E-02    | 0.20                            | 1.17E-01 | 3.91E-01    |  |
| ENSG00000138379.4     | <i>MSTN</i>     | Protein   | 0.60                        | 1.70E-04 | 4.75E-03    | 0.54                            | 4.70E-04 | 1.41E-02    |  |
| ENSG00000138381.8     | <i>ASNSD1</i>   | Protein   | -0.13                       | 2.55E-04 | 6.44E-03    | -0.11                           | 8.44E-04 | 2.09E-02    |  |
| ENSG00000138386.15    | <i>NAB1</i>     | Protein   | 0.19                        | 1.24E-02 | 8.94E-02    | 0.13                            | 6.96E-02 | 3.02E-01    |  |
| ENSG00000138413.12    | <i>IDH1</i>     | Protein   | -0.31                       | 8.74E-04 | 1.55E-02    | -0.24                           | 8.81E-03 | 9.51E-02    |  |
| ENSG00000138459.7     | <i>SLC35A5</i>  | Protein   | -0.18                       | 3.69E-03 | 4.12E-02    | -0.14                           | 1.93E-02 | 1.50E-01    |  |
| ENSG00000138468.14    | <i>SENP7</i>    | Protein   | 0.21                        | 3.61E-03 | 4.07E-02    | 0.19                            | 3.82E-03 | 5.80E-02    |  |
| ENSG00000138587.5     | <i>MNS1</i>     | Protein   | 0.43                        | 1.07E-05 | 5.50E-04    | 0.32                            | 8.66E-04 | 2.13E-02    |  |
| ENSG00000138615.5     | <i>CILP</i>     | Protein   | 0.38                        | 1.18E-02 | 8.67E-02    | 0.05                            | 7.01E-01 | 8.74E-01    |  |
| ENSG00000138622.3     | <i>HCN4</i>     | Protein   | -0.54                       | 2.70E-03 | 3.35E-02    | -0.35                           | 4.54E-02 | 2.41E-01    |  |
| ENSG00000138669.8     | <i>PRKG2</i>    | Protein   | -0.77                       | 2.16E-05 | 9.82E-04    | -0.63                           | 3.15E-04 | 1.05E-02    |  |
| ENSG00000138674.15    | <i>SEC31A</i>   | Protein   | -0.17                       | 5.05E-03 | 5.04E-02    | -0.13                           | 2.55E-02 | 1.75E-01    |  |
| ENSG00000138686.8     | <i>BBS7</i>     | Protein   | -0.14                       | 1.02E-02 | 7.87E-02    | -0.12                           | 2.47E-02 | 1.72E-01    |  |
| ENSG00000138698.13    | <i>RAP1GDS1</i> | Protein   | -0.17                       | 2.35E-04 | 6.09E-03    | -0.17                           | 1.44E-04 | 6.02E-03    |  |
| ENSG00000138735.14    | <i>PDE5A</i>    | Protein   | -0.36                       | 1.28E-02 | 9.13E-02    | -0.25                           | 6.65E-02 | 2.95E-01    |  |
| ENSG00000138760.7     | <i>SCARB2</i>   | Protein   | -0.19                       | 3.53E-03 | 4.00E-02    | -0.10                           | 1.22E-01 | 4.00E-01    |  |
| ENSG00000138834.11    | <i>MAPK8IP3</i> | Protein   | 0.35                        | 1.16E-03 | 1.88E-02    | 0.18                            | 7.42E-02 | 3.12E-01    |  |
| ENSG00000138892.10    | <i>TTL8</i>     | Protein   | 0.67                        | 3.56E-03 | 4.02E-02    | 0.50                            | 2.32E-02 | 1.66E-01    |  |
| ENSG00000138964.15    | <i>PARVG</i>    | Protein   | 0.39                        | 1.60E-03 | 2.35E-02    | 0.24                            | 4.65E-02 | 2.44E-01    |  |
| ENSG00000139116.16    | <i>KIF21A</i>   | Protein   | -0.30                       | 6.00E-03 | 5.64E-02    | -0.28                           | 7.63E-03 | 8.73E-02    |  |
| ENSG00000139173.8     | <i>TMEM117</i>  | Protein   | -0.24                       | 3.42E-04 | 8.08E-03    | -0.19                           | 3.29E-03 | 5.25E-02    |  |
| ENSG00000139174.9     | <i>PRICKLE1</i> | Protein   | -0.30                       | 8.47E-03 | 7.02E-02    | -0.34                           | 2.39E-03 | 4.23E-02    |  |
| ENSG00000139190.15    | <i>VAMP1</i>    | Protein   | 0.31                        | 1.31E-03 | 2.04E-02    | 0.28                            | 2.17E-03 | 3.94E-02    |  |
| ENSG00000139200.12    | <i>PIANP</i>    | Protein   | -0.64                       | 4.10E-06 | 2.52E-04    | -0.66                           | 8.96E-07 | 1.08E-04    |  |
| ENSG00000139209.14    | <i>SLC38A4</i>  | Protein   | 0.74                        | 6.26E-04 | 1.23E-02    | 0.30                            | 1.57E-01 | 4.50E-01    |  |
| ENSG00000139219.16    | <i>COL2A1</i>   | Protein   | -0.87                       | 4.98E-04 | 1.05E-02    | -0.85                           | 4.48E-04 | 1.36E-02    |  |
| ENSG00000139684.12    | <i>ESD</i>      | Protein   | -0.18                       | 4.14E-03 | 4.44E-02    | -0.13                           | 3.82E-02 | 2.19E-01    |  |
| ENSG00000139687.12    | <i>RB1</i>      | Protein   | -0.31                       | 1.52E-04 | 4.34E-03    | -0.25                           | 2.14E-03 | 3.91E-02    |  |
| ENSG00000139697.10    | <i>SBN01</i>    | Protein   | -0.25                       | 9.09E-05 | 2.94E-03    | -0.22                           | 2.58E-04 | 9.21E-03    |  |
| ENSG00000139767.7     | <i>SRRM4</i>    | Protein   | 0.70                        | 1.19E-03 | 1.92E-02    | -0.16                           | 4.39E-01 | 7.20E-01    |  |
| ENSG00000139793.17    | <i>MBNL2</i>    | Protein   | -0.30                       | 3.63E-03 | 4.08E-02    | -0.17                           | 8.63E-02 | 3.36E-01    |  |
| ENSG00000139835.12    | <i>GTRP1</i>    | Protein   | 0.39                        | 1.53E-08 | 2.14E-06    | 0.36                            | 5.36E-08 | 9.78E-06    |  |
| ENSG00000139874.5     | <i>SSTR1</i>    | Protein   | -0.52                       | 8.92E-03 | 7.23E-02    | -1.13                           | 3.44E-09 | 8.17E-07    |  |
| ENSG00000139908.13    | <i>TSSK4</i>    | Protein   | 0.30                        | 8.38E-03 | 6.98E-02    | 0.32                            | 3.39E-03 | 5.36E-02    |  |
| ENSG00000139910.18    | <i>NOVA1</i>    | Protein   | -0.39                       | 4.60E-03 | 4.76E-02    | -0.36                           | 5.91E-03 | 7.55E-02    |  |
| ENSG00000139915.17    | <i>MDGA2</i>    | Protein   | 0.99                        | 5.09E-05 | 1.90E-03    | 0.36                            | 1.31E-01 | 4.14E-01    |  |
| ENSG00000139921.11    | <i>TMX1</i>     | Protein   | -0.21                       | 6.11E-04 | 1.21E-02    | -0.17                           | 4.35E-03 | 6.30E-02    |  |
| ENSG00000139985.6     | <i>ADAM21</i>   | Protein   | -0.60                       | 1.21E-03 | 1.94E-02    | -0.43                           | 1.80E-02 | 1.45E-01    |  |
| ENSG00000139990.16    | <i>DCAF5</i>    | Protein   | -0.13                       | 1.02E-02 | 7.85E-02    | -0.09                           | 5.16E-02 | 2.59E-01    |  |
| ENSG00000140104.12    | <i>C14orf79</i> | Protein   | 0.40                        | 1.39E-07 | 1.47E-05    | 0.36                            | 6.87E-07 | 8.64E-05    |  |
| ENSG00000140107.10    | <i>SLC25A47</i> | Protein   | 0.73                        | 2.91E-04 | 7.15E-03    | 0.36                            | 6.34E-02 | 2.88E-01    |  |
| ENSG00000140263.12    | <i>SORD</i>     | Protein   | -0.55                       | 3.16E-07 | 2.96E-05    | -0.47                           | 5.86E-06 | 4.90E-04    |  |
| ENSG00000140274.12    | <i>DUOX2</i>    | Protein   | 0.84                        | 1.77E-04 | 4.91E-03    | 0.42                            | 5.14E-02 | 2.59E-01    |  |
| ENSG00000140279.11    | <i>DUOX2</i>    | Protein   | 0.74                        | 4.22E-04 | 9.33E-03    | 0.34                            | 8.29E-02 | 3.30E-01    |  |
| ENSG00000140368.11    | <i>PSTPIP1</i>  | Protein   | 0.35                        | 1.20E-02 | 8.76E-02    | 0.20                            | 1.34E-01 | 4.18E-01    |  |
| ENSG00000140400.13    | <i>MAN2C1</i>   | Protein   | 0.17                        | 8.29E-03 | 6.92E-02    | 0.14                            | 2.91E-02 | 1.88E-01    |  |
| ENSG00000140416.18    | <i>TPM1</i>     | Protein   | -0.29                       | 7.09E-03 | 6.25E-02    | -0.11                           | 2.86E-01 | 5.96E-01    |  |
| ENSG00000140443.12    | <i>IGF1R</i>    | Protein   | -0.28                       | 1.48E-02 | 1.00E-01    | -0.17                           | 1.19E-01 | 3.95E-01    |  |
| ENSG00000140479.15    | <i>PCSK6</i>    | Protein   | -0.39                       | 1.96E-03 | 2.70E-02    | -0.34                           | 4.63E-03 | 6.51E-02    |  |
| ENSG00000140488.13    | <i>CELF6</i>    | Protein   | 0.53                        | 7.89E-03 | 6.71E-02    | 0.52                            | 6.91E-03 | 8.25E-02    |  |
| ENSG00000140505.6     | <i>CYP1A2</i>   | Protein   | 0.59                        | 1.29E-02 | 9.17E-02    | -0.07                           | 7.53E-01 | 9.01E-01    |  |
| ENSG00000140527.13    | <i>WDR93</i>    | Protein   | 0.80                        | 1.31E-07 | 1.38E-05    | 0.74                            | 3.10E-07 | 4.46E-05    |  |
| ENSG00000140598.12    | <i>EFTUD1</i>   | Protein   | -0.23                       | 1.20E-03 | 1.93E-02    | -0.20                           | 2.57E-03 | 4.45E-02    |  |
| ENSG00000140675.11    | <i>SLC5A2</i>   | Protein   | -0.44                       | 4.78E-04 | 1.02E-02    | -0.44                           | 2.74E-04 | 9.61E-03    |  |
| ENSG00000140678.15    | <i>ITGAX</i>    | Protein   | 0.31                        | 1.38E-02 | 9.58E-02    | 0.16                            | 2.01E-01 | 5.08E-01    |  |
| ENSG00000140836.13    | <i>ZFHX3</i>    | Protein   | -0.28                       | 1.06E-03 | 1.78E-02    | -0.13                           | 1.16E-01 | 3.91E-01    |  |
| ENSG00000140848.15    | <i>CPNE2</i>    | Protein   | -0.35                       | 8.90E-04 | 1.56E-02    | -0.24                           | 1.91E-02 | 1.49E-01    |  |
| ENSG00000140853.14    | <i>NLRCS</i>    | Protein   | 0.51                        | 5.88E-05 | 2.12E-03    | 0.39                            | 1.47E-03 | 3.04E-02    |  |
| ENSG00000140943.15    | <i>MBTPS1</i>   | Protein   | -0.22                       | 3.44E-05 | 1.41E-03    | -0.13                           | 1.04E-02 | 1.06E-01    |  |
| ENSG00000140945.14    | <i>CDH13</i>    | Protein   | -0.41                       | 1.15E-04 | 3.53E-03    | -0.45                           | 1.45E-05 | 1.01E-03    |  |
| ENSG00000140961.11    | <i>OSGIN1</i>   | Protein   | 0.34                        | 1.26E-02 | 9.01E-02    | 0.40                            | 1.81E-03 | 3.47E-02    |  |
| ENSG00000141040.13    | <i>ZNF287</i>   | Protein   | -0.15                       | 2.81E-03 | 3.43E-02    | -0.11                           | 2.39E-02 | 1.69E-01    |  |
| ENSG00000141052.16    | <i>MYOCD</i>    | Protein   | -0.51                       | 1.38E-03 | 2.12E-02    | -0.23                           | 1.44E-01 | 4.33E-01    |  |
| ENSG00000141084.9     | <i>RANBP10</i>  | Protein   | -0.18                       | 6.85E-03 | 6.12E-02    | -0.13                           | 4.41E-02 | 2.37E-01    |  |
| ENSG00000141086.16    | <i>CTRL</i>     | Protein   | 0.58                        | 1.82E-03 | 2.56E-02    | 0.51                            | 4.34E-03 | 6.30E-02    |  |
| ENSG00000141252.18    | <i>VP53</i>     | Protein   | -0.22                       | 1.84E-04 | 5.06E-03    | -0.16                           | 4.22E-03 | 6.19E-02    |  |
| ENSG00000141258.11    | <i>SGSM2</i>    | Protein   | 0.23                        | 1.62E-03 | 2.37E-02    | 0.21                            | 3.51E-03 | 5.48E-02    |  |
| ENSG00000141367.10    | <i>CLTC</i>     | Protein   | -0.23                       | 1.08E-03 | 1.80E-02    | -0.19                           | 4.55E-03 | 6.46E-02    |  |
| ENSG00000141376.19    | <i>BCAS3</i>    | Protein   | -0.23                       | 2.80E-05 | 1.18E-03    | -0.12                           | 2.22E-02 | 1.62E-01    |  |
| ENSG00000141429.12    | <i>GALNT1</i>   | Protein   | -0.27                       | 9.71E-05 | 3.09E-03    | -0.22                           | 9.46E-04 | 2.26E-02    |  |
| ENSG00000141485.14    | <i>SLC13A5</i>  | Protein   | 0.55                        | 4.89E-04 | 1.04E-02    | 0.53                            | 5.19E-04 | 1.51E-02    |  |
| ENSG00000141497.12    | <i>ZMYND15</i>  | Protein   | 0.32                        | 6.23E-04 | 1.22E-02    | 0.18                            | 4.84E-02 | 2.50E-01    |  |
| ENSG00000141505.10    | <i>ASGR1</i>    | Protein   | 0.78                        | 1.49E-07 | 1.54E-05    | 0.24                            | 7.68E-02 | 3.18E-01    |  |
| ENSG00000141506.12    | <i>PIK3R5</i>   | Protein   | 0.35                        | 3.09E-03 | 3.65E-02    | 0.25                            | 2.64E-02 | 1.79E-01    |  |
| ENSG00000141519.13    | <i>CCDC40</i>   | Protein   | 0.28                        | 1.34E-03 | 2.07E-02    | 0.20                            | 2.24E-02 | 1.63E-01    |  |
| ENSG00000141527.15    | <i>CARD14</i>   | Protein   | 0.28                        | 1.35E-03 | 2.08E-02    | 0.20                            | 1.94E-02 | 1.51E-01    |  |
| ENSG00000141564.12    | <i>RPTOR</i>    | Protein   | -0.16                       | 1.42E-03 | 2.16E-02    | -0.11                           | 2.65E-02 | 1.79E-01    |  |
| ENSG00000141627.12    | <i>DYM</i>      | Protein   | -0.12                       | 1.15E-02 | 8.50E-02    | -0.07                           | 1.23E-01 | 4.02E-01    |  |
| ENSG00000141639.10    | <i>MAPK4</i>    | Protein   | 0.45                        | 4.61E-03 | 4.76E-02    | 0.35                            | 2.01E-02 | 1.54E-01    |  |
| ENSG00000141664.8     | <i>ZCCHC2</i>   | Protein   | 0.19                        | 1.37E-02 | 9.54E-02    | 0.16                            | 3.15E-02 | 1.97E-01    |  |
| ENSG00000141744.3     | <i>PNMT</i>     | Protein   | 0.56                        | 7.84E-03 | 6.68E-02    | 0.64                            | 1.54E-03 | 3.13E-02    |  |
| ENSG00000141750.6     | <i>STAC2</i>    | Protein   | -0.78                       | 8.09E-05 | 2.70E-03    | -0.72                           | 1.53E-04 | 6.29E-03    |  |
| ENSG00000141905.16    | <i>NFIC</i>     | Protein   | -0.33                       | 7.86E-09 | 1.17E-06    | -0.28                           | 3.57E-07 | 5.02E-05    |  |
| ENSG00000141934.8     | <i>PPAP2C</i>   | Protein   | -0.41                       | 5.21E-03 | 5.15E-02    | -0.43                           | 2.77E-03 | 4.69E-02    |  |
| ENSG00000141977.8     | <i>CIB3</i>     | Protein   | 0.67                        | 1.35E-03 | 2.08E-02    | 0.17                            | 3.90E-01 | 6.84E-01    |  |
| ENSG00000142102.14    | <i>ATHL1</i>    | Protein   | 0.34                        | 1.29E-02 | 9.15E-02    | 0.15                            | 2.73E-01 | 5.84E-01    |  |
| ENSG00000142149.7     | <i>HUNK</i>     | Protein   | -0.40                       | 9.05E-03 | 7.30E-02    | -0.59                           | 5.80E-05 | 2.97E-03    |  |
| ENSG00000142188.15    | <i>TMEM50B</i>  | Protein   | -0.14                       | 8.87E-03 | 7.21E-02    | -0.14                           | 7.58E-03 | 8.71E-02    |  |
| ENSG00000142192.19    | <i>APP</i>      | Protein   | -0.26                       | 9.17E-03 | 7.37E-02    | -0.08                           | 4.24E-01 | 7.09E-01    |  |
| ENSG00000142207.6     | <i>URB1</i>     | Protein   | -0.22                       | 5.69E-03 | 5.45E-02    | -0.16                           | 2.84E-02 | 1.86E-01    |  |
| ENSG00000142233.10    | <i>NTNS</i>     | Protein   | 0.48                        | 1.25E-03 | 1.97E-02    | 0.39                            | 7.00E-03 | 8.31E-02    |  |
| ENSG00000142319.17    | <i>SLC6A3</i>   | Protein   | 1.03                        | 1.46E-06 | 1.08E-04    | 1.02                            | 1.01E-06 | 1.19E-04    |  |
| ENSG00000142396.9     | <i>ERVK3-1</i>  | LncRNA    | 0.20                        | 3.30E-04 | 7.87E-03    | 0.16                            | 3.07E-03 | 5.01E-02    |  |
| ENSG00000142599.16    | <i>RERE</i>     | Protein   | -0.20                       | 5.07E-03 | 5.05E-02    | -0.18                           | 7.29E-03 | 8.50E-02    |  |
| ENSG00000142619.4     | <i>PADI3</i>    | Protein   | 0.76                        | 2.17E-03 | 2.89E-02    | 0.03                            | 9.08E-01 | 9.67E-01    |  |
| ENSG00000142627.12    | <i>EPHA2</i>    | Protein   | 0.40                        | 1.20E-02 | 8.75E-02    | -0.12                           | 4.24E-01 | 7.09E-01    |  |
| ENSG00000142784.14    | <i>WDTC1</i>    | Protein   | -0.15                       | 1.03E-03 | 1.74E-02    | -0.10                           | 1.45E-02 | 1.28E-01    |  |
| ENSG00000142920.15    | <i>AZIN2</i>    | Protein   | 0.28                        | 2.52E-04 | 6.39E-03    | 0.20                            | 7.34E-03 | 8.54E-02    |  |
| ENSG00000143013.11    | <i>LMO4</i>     | Protein   | -0.27                       | 1.29E-03 | 2.02E-02    | -0.19                           | 1.87E-02 | 1.48E-01    |  |
| ENSG00000143147.13    | <i>GPRI61</i>   | Protein   | -0.29                       | 1.25E-02 | 8.99E-02    | -0.06                           | 5.93E-01 | 8.19E-01    |  |
| ENSG00000143149.11    | <i>ALDH9A1</i>  | Protein   | -0.18                       | 4.58E-03 | 4.76E-02    | -0.06                           | 3.08E-01 | 6.17E-01    |  |
| ENSG00000143190.20    | <i>POU2F1</i>   | Protein   | -0.19                       | 1.60E-03 | 2.35E-02    | -0.17                           | 3.61E-03 | 5.59E-02    |  |
| ENSG00000143194.11    | <i>MAEL</i>     | Protein   | 1.96                        | 1.33E-24 | 1.54E-21    | -0.48                           | 1.11E-03 | 2.52E       |  |

| Gene ID (GENCODE v22) | Gene symbol       | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                   |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000143373.16    | <i>ZNF687</i>     | Protein    | -0.14                       | 1.09E-02 | 8.20E-02    | -0.16                           | 2.01E-03 | 3.75E-02    |  |
| ENSG00000143376.11    | <i>SNX27</i>      | Protein    | -0.20                       | 1.82E-04 | 5.03E-03    | -0.19                           | 3.38E-04 | 1.11E-02    |  |
| ENSG00000143437.19    | <i>ARNT</i>       | Protein    | -0.13                       | 1.10E-02 | 8.27E-02    | -0.15                           | 2.68E-03 | 4.58E-02    |  |
| ENSG00000143457.9     | <i>GOLPH3L</i>    | Protein    | -0.24                       | 1.36E-04 | 4.01E-03    | -0.22                           | 2.57E-04 | 9.20E-03    |  |
| ENSG00000143493.11    | <i>INTS7</i>      | Protein    | -0.20                       | 5.85E-04 | 1.17E-02    | -0.17                           | 2.71E-03 | 4.60E-02    |  |
| ENSG00000143512.11    | <i>HHIPL2</i>     | Protein    | 0.46                        | 1.26E-02 | 9.03E-02    | 0.64                            | 3.34E-04 | 1.10E-02    |  |
| ENSG00000143614.7     | <i>GATAD2B</i>    | Protein    | -0.21                       | 1.25E-04 | 3.74E-03    | -0.22                           | 1.20E-05 | 8.70E-04    |  |
| ENSG00000143631.10    | <i>FLG</i>        | Protein    | 0.47                        | 1.20E-02 | 8.74E-02    | 0.42                            | 2.03E-02 | 1.54E-01    |  |
| ENSG00000143641.9     | <i>GALNT2</i>     | Protein    | -0.21                       | 7.07E-04 | 1.34E-02    | -0.21                           | 6.00E-04 | 1.67E-02    |  |
| ENSG00000143742.11    | <i>SRP9</i>       | Protein    | -0.14                       | 9.76E-03 | 7.64E-02    | -0.12                           | 1.66E-02 | 1.39E-01    |  |
| ENSG00000143753.11    | <i>DEGS1</i>      | Protein    | 0.35                        | 2.75E-03 | 3.38E-02    | 0.22                            | 5.45E-02 | 2.66E-01    |  |
| ENSG00000143771.10    | <i>CNIH4</i>      | Protein    | -0.14                       | 1.18E-02 | 8.67E-02    | -0.19                           | 4.67E-04 | 1.40E-02    |  |
| ENSG00000143772.8     | <i>ITPKB</i>      | Protein    | -0.24                       | 6.95E-05 | 2.40E-03    | -0.14                           | 1.74E-02 | 1.43E-01    |  |
| ENSG00000143799.11    | <i>PARP1</i>      | Protein    | -0.16                       | 7.70E-03 | 6.61E-02    | -0.15                           | 6.02E-03 | 7.60E-02    |  |
| ENSG00000143839.13    | <i>REN</i>        | Protein    | 1.74                        | 3.25E-18 | 2.05E-15    | -0.08                           | 6.57E-01 | 8.53E-01    |  |
| ENSG00000143842.13    | <i>SOX13</i>      | Protein    | -0.17                       | 9.38E-03 | 7.46E-02    | -0.13                           | 3.78E-02 | 2.17E-01    |  |
| ENSG00000143869.6     | <i>GDF7</i>       | Protein    | -0.56                       | 4.37E-04 | 9.56E-03    | -0.40                           | 5.35E-03 | 7.10E-02    |  |
| ENSG00000143891.15    | <i>GALM</i>       | Protein    | 0.36                        | 8.70E-03 | 7.14E-02    | 0.39                            | 2.91E-03 | 4.85E-02    |  |
| ENSG00000143924.17    | <i>EML4</i>       | Protein    | -0.29                       | 3.68E-04 | 8.48E-03    | -0.22                           | 4.41E-03 | 6.34E-02    |  |
| ENSG00000144028.13    | <i>SNRNP200</i>   | Protein    | -0.15                       | 5.83E-03 | 5.54E-02    | -0.11                           | 2.96E-02 | 1.90E-01    |  |
| ENSG00000144048.9     | <i>DUSP11</i>     | Protein    | -0.14                       | 1.25E-03 | 1.98E-02    | -0.10                           | 1.30E-02 | 1.20E-01    |  |
| ENSG00000144061.11    | <i>NPHP1</i>      | Protein    | 0.15                        | 1.43E-02 | 9.82E-02    | 0.10                            | 8.54E-02 | 3.35E-01    |  |
| ENSG00000144136.9     | <i>SLC20A1</i>    | Protein    | 0.17                        | 9.98E-03 | 7.76E-02    | 0.06                            | 3.38E-01 | 6.42E-01    |  |
| ENSG00000144228.7     | <i>SPOPL</i>      | Protein    | -0.28                       | 3.07E-03 | 3.64E-02    | -0.23                           | 8.62E-03 | 9.39E-02    |  |
| ENSG00000144231.9     | <i>POLR2D</i>     | Protein    | -0.18                       | 4.84E-04 | 1.03E-02    | -0.12                           | 1.39E-02 | 1.24E-01    |  |
| ENSG00000144339.10    | <i>TMEFF2</i>     | Protein    | 0.58                        | 4.24E-03 | 4.52E-02    | 0.61                            | 1.88E-03 | 3.56E-02    |  |
| ENSG00000144354.12    | <i>CDC47</i>      | Protein    | -0.60                       | 5.39E-05 | 1.99E-03    | -0.65                           | 5.19E-06 | 4.49E-04    |  |
| ENSG00000144357.15    | <i>UBR3</i>       | Protein    | -0.27                       | 4.66E-04 | 1.01E-02    | -0.16                           | 3.36E-02 | 2.03E-01    |  |
| ENSG00000144369.11    | <i>FAM171B</i>    | Protein    | -0.60                       | 8.31E-05 | 2.75E-03    | -0.77                           | 1.53E-07 | 2.41E-05    |  |
| ENSG00000144406.17    | <i>UNC80</i>      | Protein    | 0.66                        | 1.10E-04 | 3.40E-03    | 0.60                            | 2.19E-04 | 8.26E-03    |  |
| ENSG00000144468.15    | <i>RHBDD1</i>     | Protein    | -0.17                       | 8.81E-05 | 2.88E-03    | -0.09                           | 4.04E-02 | 2.26E-01    |  |
| ENSG00000144485.9     | <i>HES6</i>       | Protein    | 0.75                        | 2.50E-06 | 1.69E-04    | 0.37                            | 1.76E-02 | 1.43E-01    |  |
| ENSG00000144504.14    | <i>ANKMY1</i>     | Protein    | 0.17                        | 2.37E-03 | 3.07E-02    | 0.10                            | 6.73E-02 | 2.97E-01    |  |
| ENSG00000144535.18    | <i>DIS3L2</i>     | Protein    | 0.18                        | 3.54E-05 | 1.44E-03    | 0.15                            | 2.91E-04 | 1.00E-02    |  |
| ENSG00000144596.10    | <i>GRIP2</i>      | Protein    | 0.51                        | 1.46E-03 | 2.20E-02    | 0.44                            | 4.22E-03 | 6.19E-02    |  |
| ENSG00000144730.15    | <i>IL17RD</i>     | Protein    | -0.33                       | 2.07E-03 | 2.80E-02    | -0.33                           | 1.31E-03 | 2.82E-02    |  |
| ENSG00000144746.6     | <i>ARL6IP5</i>    | Protein    | -0.21                       | 1.15E-03 | 1.88E-02    | -0.15                           | 1.62E-02 | 1.37E-01    |  |
| ENSG00000144820.6     | <i>GPR128</i>     | Protein    | -0.63                       | 6.47E-03 | 5.92E-02    | 0.42                            | 8.42E-02 | 3.32E-01    |  |
| ENSG00000144821.8     | <i>MYH15</i>      | Protein    | 0.58                        | 5.06E-04 | 1.07E-02    | 0.43                            | 8.70E-03 | 9.44E-02    |  |
| ENSG00000144824.18    | <i>PHLDB2</i>     | Protein    | -0.54                       | 2.26E-05 | 1.01E-03    | -0.53                           | 1.49E-05 | 1.03E-03    |  |
| ENSG00000145012.11    | <i>LPP</i>        | Protein    | -0.27                       | 3.38E-03 | 3.89E-02    | -0.16                           | 6.39E-02 | 2.89E-01    |  |
| ENSG00000145113.20    | <i>MUC4</i>       | Protein    | 0.57                        | 8.33E-03 | 6.94E-02    | 0.15                            | 4.76E-01 | 7.45E-01    |  |
| ENSG00000145198.13    | <i>VWASB2</i>     | Protein    | 0.42                        | 5.64E-03 | 5.43E-02    | 0.11                            | 4.72E-01 | 7.42E-01    |  |
| ENSG00000145217.12    | <i>SLC26A1</i>    | Protein    | 0.25                        | 1.45E-02 | 9.87E-02    | 0.11                            | 2.58E-01 | 5.69E-01    |  |
| ENSG00000145242.12    | <i>EPHA5</i>      | Protein    | -0.61                       | 2.05E-03 | 2.79E-02    | -0.13                           | 5.00E-01 | 7.61E-01    |  |
| ENSG00000145309.5     | <i>CARS1</i>      | Protein    | -0.65                       | 1.08E-02 | 8.20E-02    | -0.62                           | 1.22E-02 | 1.16E-01    |  |
| ENSG00000145348.15    | <i>TBCK</i>       | Protein    | -0.17                       | 5.51E-03 | 5.36E-02    | -0.09                           | 1.30E-01 | 4.12E-01    |  |
| ENSG00000145375.7     | <i>SPATA5</i>     | Protein    | -0.16                       | 1.13E-02 | 8.43E-02    | -0.11                           | 5.46E-02 | 2.66E-01    |  |
| ENSG00000145388.13    | <i>METTL14</i>    | Protein    | -0.12                       | 1.04E-02 | 8.01E-02    | -0.08                           | 7.69E-02 | 3.18E-01    |  |
| ENSG00000145391.12    | <i>SETD7</i>      | Protein    | -0.24                       | 3.72E-03 | 4.14E-02    | -0.17                           | 3.73E-02 | 2.16E-01    |  |
| ENSG00000145451.11    | <i>GLRA3</i>      | Protein    | 2.22                        | 5.16E-18 | 3.11E-15    | -0.76                           | 2.08E-03 | 3.84E-02    |  |
| ENSG00000145491.10    | <i>ROPN1L</i>     | Protein    | -0.52                       | 1.39E-02 | 9.64E-02    | -0.48                           | 1.53E-02 | 1.32E-01    |  |
| ENSG00000145536.14    | <i>ADAMTS16</i>   | Protein    | 0.59                        | 3.41E-04 | 8.05E-03    | 0.19                            | 2.51E-01 | 5.62E-01    |  |
| ENSG00000145642.10    | <i>FAM159B</i>    | Protein    | 1.85                        | 1.67E-16 | 8.40E-14    | -0.23                           | 2.51E-01 | 5.62E-01    |  |
| ENSG00000145649.7     | <i>GZMA</i>       | Protein    | 0.44                        | 4.02E-03 | 4.37E-02    | 0.27                            | 7.18E-02 | 3.07E-01    |  |
| ENSG00000145687.14    | <i>SSBP2</i>      | Protein    | -0.21                       | 3.34E-03 | 3.87E-02    | -0.18                           | 1.07E-02 | 1.07E-01    |  |
| ENSG00000145730.19    | <i>PAM</i>        | Protein    | -0.27                       | 5.01E-03 | 5.02E-02    | -0.25                           | 5.56E-03 | 7.24E-02    |  |
| ENSG00000145740.17    | <i>SLC30A5</i>    | Protein    | -0.18                       | 8.02E-03 | 6.77E-02    | -0.13                           | 4.48E-02 | 2.39E-01    |  |
| ENSG00000145757.14    | <i>SPATA9</i>     | Protein    | 0.31                        | 3.48E-03 | 3.97E-02    | 0.28                            | 5.94E-03 | 7.56E-02    |  |
| ENSG00000145782.11    | <i>ATG12</i>      | Protein    | 0.12                        | 3.53E-03 | 4.00E-02    | 0.12                            | 1.56E-03 | 3.15E-02    |  |
| ENSG00000145819.14    | <i>ABRHGAP26</i>  | Protein    | -0.28                       | 4.03E-03 | 4.37E-02    | -0.22                           | 1.68E-02 | 1.40E-01    |  |
| ENSG00000145863.9     | <i>GABRA6</i>     | Protein    | 1.59                        | 6.46E-12 | 1.85E-09    | 0.03                            | 9.08E-01 | NA          |  |
| ENSG00000145908.11    | <i>ZNF300</i>     | Protein    | 0.35                        | 7.28E-04 | 1.37E-02    | 0.29                            | 3.52E-03 | 5.50E-02    |  |
| ENSG00000145911.5     | <i>N4BP3</i>      | Protein    | -0.26                       | 7.30E-03 | 6.37E-02    | -0.29                           | 1.60E-03 | 3.20E-02    |  |
| ENSG00000146005.3     | <i>PSD2</i>       | Protein    | 0.40                        | 6.71E-03 | 6.04E-02    | 0.51                            | 2.26E-05 | 1.45E-03    |  |
| ENSG00000146006.7     | <i>LRRTM2</i>     | Protein    | 0.49                        | 3.46E-04 | 8.11E-03    | 0.37                            | 5.10E-03 | 6.89E-02    |  |
| ENSG00000146063.17    | <i>TRIM41</i>     | Protein    | 0.12                        | 3.79E-03 | 4.19E-02    | 0.08                            | 5.58E-02 | 2.69E-01    |  |
| ENSG00000146070.15    | <i>PLA2G7</i>     | Protein    | -0.41                       | 1.42E-02 | 9.77E-02    | -0.26                           | 1.07E-01 | 3.75E-01    |  |
| ENSG00000146090.14    | <i>RASGEF1C</i>   | Protein    | 0.43                        | 6.90E-03 | 6.16E-02    | 0.37                            | 1.56E-02 | 1.33E-01    |  |
| ENSG00000146143.16    | <i>PRIM2</i>      | Protein    | 0.61                        | 4.90E-04 | 1.04E-02    | 0.71                            | 2.84E-05 | 1.71E-03    |  |
| ENSG00000146166.15    | <i>LGSN</i>       | Protein    | -1.25                       | 3.80E-07 | 3.44E-05    | -1.11                           | 2.60E-06 | 2.59E-04    |  |
| ENSG00000146197.8     | <i>SCUBE3</i>     | Protein    | -0.46                       | 6.17E-04 | 1.22E-02    | -0.31                           | 1.83E-02 | 1.46E-01    |  |
| ENSG00000146267.11    | <i>FAXC</i>       | Protein    | -0.23                       | 8.58E-04 | 1.53E-02    | -0.13                           | 4.96E-02 | 2.53E-01    |  |
| ENSG00000146278.10    | <i>PNRC1</i>      | Protein    | -0.19                       | 5.60E-03 | 5.40E-02    | -0.17                           | 1.07E-02 | 1.07E-01    |  |
| ENSG00000146373.15    | <i>RNF217</i>     | Protein    | -0.19                       | 8.96E-03 | 7.25E-02    | -0.19                           | 5.07E-03 | 6.87E-02    |  |
| ENSG00000146374.12    | <i>RSP03</i>      | Protein    | -0.43                       | 8.60E-03 | 7.09E-02    | -0.31                           | 5.30E-02 | 2.62E-01    |  |
| ENSG00000146433.8     | <i>TMEM181</i>    | Protein    | -0.26                       | 5.71E-05 | 2.08E-03    | -0.15                           | 2.35E-02 | 1.67E-01    |  |
| ENSG00000146453.11    | <i>PNLDC1</i>     | Protein    | 1.71                        | 1.25E-18 | 8.15E-16    | 0.78                            | 3.27E-06 | 3.07E-04    |  |
| ENSG00000146463.10    | <i>ZMYM4</i>      | Protein    | -0.19                       | 6.12E-04 | 1.21E-02    | -0.14                           | 8.75E-03 | 9.47E-02    |  |
| ENSG00000146469.11    | <i>VIP</i>        | Protein    | -0.93                       | 1.44E-04 | 4.18E-03    | -0.32                           | 1.39E-01 | 4.27E-01    |  |
| ENSG00000146476.9     | <i>C6orf211</i>   | Protein    | -0.14                       | 1.26E-02 | 9.03E-02    | -0.11                           | 4.06E-02 | 2.26E-01    |  |
| ENSG00000146530.10    | <i>VWDE</i>       | Protein    | -0.64                       | 4.81E-04 | 1.03E-02    | -0.62                           | 3.98E-04 | 1.24E-02    |  |
| ENSG00000146556.13    | <i>WASH2P</i>     | Pseudogene | 0.40                        | 1.20E-04 | 3.64E-03    | 0.39                            | 9.55E-05 | 4.36E-03    |  |
| ENSG00000146839.17    | <i>ZAN</i>        | Protein    | 0.65                        | 7.38E-03 | 6.41E-02    | -0.30                           | 1.89E-01 | 4.92E-01    |  |
| ENSG00000147044.19    | <i>CASK</i>       | Protein    | -0.14                       | 1.35E-02 | 9.46E-02    | -0.12                           | 2.46E-02 | 1.72E-01    |  |
| ENSG00000147082.16    | <i>CCNB3</i>      | Protein    | 0.57                        | 7.07E-06 | 3.94E-04    | 0.50                            | 4.49E-05 | 2.45E-03    |  |
| ENSG00000147127.7     | <i>RAB41</i>      | Protein    | 0.21                        | 5.15E-03 | 5.11E-02    | 0.22                            | 1.88E-03 | 3.56E-02    |  |
| ENSG00000147140.14    | <i>NONO</i>       | Protein    | -0.12                       | 9.46E-03 | 7.49E-02    | -0.12                           | 5.94E-03 | 7.56E-02    |  |
| ENSG00000147162.12    | <i>OGT</i>        | Protein    | 0.27                        | 4.13E-03 | 4.44E-02    | 0.16                            | 6.97E-02 | 3.02E-01    |  |
| ENSG00000147164.10    | <i>SNX12</i>      | Protein    | -0.14                       | 1.28E-05 | 6.36E-04    | -0.13                           | 1.41E-05 | 9.88E-04    |  |
| ENSG00000147202.16    | <i>DIAPH2</i>     | Protein    | -0.25                       | 1.66E-03 | 2.41E-02    | -0.21                           | 5.66E-03 | 7.34E-02    |  |
| ENSG00000147394.17    | <i>ZNF185</i>     | Protein    | -0.40                       | 1.97E-03 | 2.72E-02    | -0.23                           | 7.48E-02 | 3.13E-01    |  |
| ENSG00000147408.13    | <i>CSGALNACT1</i> | Protein    | -0.52                       | 1.09E-04 | 3.38E-03    | -0.33                           | 1.29E-02 | 1.19E-01    |  |
| ENSG00000147471.10    | <i>PROSC</i>      | Protein    | -0.18                       | 6.82E-03 | 6.11E-02    | -0.19                           | 2.74E-03 | 4.65E-02    |  |
| ENSG00000147488.10    | <i>ST18</i>       | Protein    | 0.54                        | 9.60E-03 | 7.57E-02    | 0.45                            | 1.78E-02 | 1.44E-01    |  |
| ENSG00000147576.14    | <i>ADHFE1</i>     | Protein    | 0.55                        | 5.07E-06 | 3.01E-04    | 0.49                            | 2.34E-05 | 1.48E-03    |  |
| ENSG00000147606.7     | <i>SLC26A7</i>    | Protein    | 0.45                        | 5.59E-03 | 5.40E-02    | 0.31                            | 5.21E-02 | 2.60E-01    |  |
| ENSG00000147655.9     | <i>RSP02</i>      | Protein    | -0.48                       | 9.18E-03 | 7.37E-02    | -0.30                           | 9.71E-02 | 3.57E-01    |  |
| ENSG00000147789.14    | <i>ZNF7</i>       | Protein    | 0.25                        | 5.46E-05 | 2.01E-03    | 0.13                            | 2.90E-02 | 1.88E-01    |  |
| ENSG00000147862.13    | <i>NFIB</i>       | Protein    | -0.25                       | 8.07E-04 | 1.46E-02    | -0.17                           | 1.49E-02 | 1.30E-01    |  |
| ENSG00000147996.15    | <i>CBWD5</i>      | Protein    | 0.23                        | 3.72E-03 | 4.14E-02    | 0.13                            | 9.14E-02 | 3.46E-01    |  |
| ENSG00000148156.7     | <i>ACTL7B</i>     | Protein    | 0.67                        | 2.86E-03 | 3.47E-02    | 0.59                            | 6.86E-03 | 8.21E-02    |  |
| ENSG00000148187.16    | <i>MRRF</i>       | Protein    | 0.25                        | 7.80E-05 | 2.63E-03    | 0.14                            | 2.89E-02 |             |  |

| Gene ID (GENCODE v22) | Gene symbol   | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |               |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000148341.16    | SH3GLB2       | Protein    | 0.35                        | 6.09E-05 | 2.17E-03    | 0.25                            | 3.39E-03 | 5.36E-02    |  |
| ENSG00000148343.17    | FAM73B        | Protein    | 0.19                        | 2.03E-03 | 2.77E-02    | 0.11                            | 5.54E-02 | 2.68E-01    |  |
| ENSG00000148384.11    | INPP5E        | Protein    | 0.18                        | 4.93E-03 | 4.97E-02    | 0.05                            | 4.67E-01 | 7.39E-01    |  |
| ENSG00000148411.6     | NACC2         | Protein    | -0.31                       | 9.21E-05 | 2.96E-03    | -0.24                           | 1.75E-03 | 3.41E-02    |  |
| ENSG00000148429.13    | USP6NL        | Protein    | -0.26                       | 1.20E-04 | 3.64E-03    | -0.20                           | 1.95E-03 | 3.67E-02    |  |
| ENSG00000148468.15    | FAM171A1      | Protein    | -0.37                       | 2.30E-05 | 1.02E-03    | -0.27                           | 1.17E-03 | 2.61E-02    |  |
| ENSG00000148484.16    | RSU1          | Protein    | -0.17                       | 7.62E-03 | 6.55E-02    | -0.13                           | 3.91E-02 | 2.22E-01    |  |
| ENSG00000148680.14    | HTR7          | Protein    | 0.36                        | 7.45E-03 | 6.45E-02    | 0.26                            | 4.45E-02 | 2.39E-01    |  |
| ENSG00000148690.11    | FRA10AC1      | Protein    | 0.21                        | 2.53E-03 | 3.21E-02    | 0.23                            | 7.86E-04 | 1.99E-02    |  |
| ENSG00000148702.13    | HABP2         | Protein    | -0.95                       | 3.41E-05 | 1.40E-03    | -1.04                           | 2.64E-06 | 2.62E-04    |  |
| ENSG00000148704.11    | VAX1          | Protein    | 0.69                        | 6.52E-03 | 5.95E-02    | 0.02                            | 9.23E-01 | 9.73E-01    |  |
| ENSG00000148730.6     | EIF4EBP2      | Protein    | -0.15                       | 3.23E-03 | 3.79E-02    | -0.14                           | 5.75E-03 | 7.42E-02    |  |
| ENSG00000148798.8     | INA           | Protein    | -0.56                       | 1.05E-02 | 8.01E-02    | -0.35                           | 7.13E-02 | 3.06E-01    |  |
| ENSG00000148840.9     | PPRC1         | Protein    | 0.18                        | 4.73E-03 | 4.83E-02    | 0.16                            | 1.03E-02 | 1.05E-01    |  |
| ENSG00000148943.10    | LIN7C         | Protein    | -0.14                       | 7.71E-03 | 6.61E-02    | -0.11                           | 4.16E-02 | 2.30E-01    |  |
| ENSG00000149043.15    | SYT8          | Protein    | 0.55                        | 8.78E-03 | 7.16E-02    | -0.01                           | 9.58E-01 | 9.86E-01    |  |
| ENSG00000149084.10    | HSD17B12      | Protein    | -0.36                       | 1.83E-06 | 1.29E-04    | -0.38                           | 9.09E-08 | 1.56E-05    |  |
| ENSG00000149089.11    | APIP          | Protein    | -0.24                       | 7.32E-05 | 2.50E-03    | -0.22                           | 1.50E-04 | 6.19E-03    |  |
| ENSG00000149136.6     | SSRP1         | Protein    | -0.13                       | 1.47E-03 | 2.21E-02    | -0.14                           | 1.71E-04 | 6.81E-03    |  |
| ENSG00000149177.11    | PTPRJ         | Protein    | -0.25                       | 1.98E-03 | 2.72E-02    | -0.19                           | 1.66E-02 | 1.39E-01    |  |
| ENSG00000149187.16    | CELF1         | Protein    | -0.13                       | 3.35E-03 | 3.87E-02    | -0.13                           | 1.97E-03 | 3.69E-02    |  |
| ENSG00000149292.15    | TTC12         | Protein    | 0.28                        | 2.44E-04 | 6.23E-03    | 0.33                            | 9.08E-06 | 7.07E-04    |  |
| ENSG00000149428.17    | HYOU1         | Protein    | -0.23                       | 1.48E-02 | 9.99E-02    | -0.11                           | 2.37E-01 | 5.48E-01    |  |
| ENSG00000149488.12    | TMC2          | Protein    | 0.44                        | 6.14E-03 | 5.74E-02    | 0.21                            | 1.87E-01 | 4.90E-01    |  |
| ENSG00000149596.6     | JPH2          | Protein    | -0.40                       | 1.01E-02 | 7.84E-02    | -0.19                           | 2.14E-01 | 5.22E-01    |  |
| ENSG00000149716.11    | ORAOV1        | Protein    | 0.16                        | 6.00E-03 | 5.64E-02    | 0.05                            | 3.87E-01 | 6.81E-01    |  |
| ENSG00000149742.8     | SLC22A9       | Protein    | 0.77                        | 1.99E-03 | 2.74E-02    | 0.64                            | 8.36E-03 | 9.24E-02    |  |
| ENSG00000149781.11    | FERMT3        | Protein    | 0.30                        | 7.62E-03 | 6.55E-02    | 0.15                            | 1.72E-01 | 4.69E-01    |  |
| ENSG00000150048.9     | CLEC1A        | Protein    | 0.30                        | 1.07E-02 | 8.13E-02    | 0.27                            | 1.75E-02 | 1.43E-01    |  |
| ENSG00000150201.13    | FXYD4         | Protein    | 0.88                        | 3.43E-06 | 2.17E-04    | -0.15                           | 4.06E-01 | 6.96E-01    |  |
| ENSG00000150433.8     | TMEM218       | Protein    | 0.12                        | 1.06E-02 | 8.11E-02    | 0.09                            | 4.12E-02 | 2.29E-01    |  |
| ENSG00000150510.14    | FAM124A       | Protein    | -0.34                       | 8.54E-03 | 7.06E-02    | -0.11                           | 3.93E-01 | 6.87E-01    |  |
| ENSG00000150625.15    | GPM6A         | Protein    | 1.41                        | 4.76E-15 | 2.04E-12    | 0.33                            | 4.52E-02 | 2.40E-01    |  |
| ENSG00000150630.3     | VEGFC         | Protein    | 0.36                        | 1.49E-03 | 2.23E-02    | 0.29                            | 7.58E-03 | 8.71E-02    |  |
| ENSG00000150753.10    | CCT5          | Protein    | -0.19                       | 1.73E-03 | 2.48E-02    | -0.19                           | 1.05E-03 | 2.43E-02    |  |
| ENSG00000150783.8     | TEX12         | Protein    | 0.49                        | 1.81E-03 | 2.55E-02    | 0.28                            | 6.06E-02 | 2.82E-01    |  |
| ENSG00000150961.13    | SEC24D        | Protein    | -0.31                       | 2.19E-03 | 2.90E-02    | -0.27                           | 5.11E-03 | 6.90E-02    |  |
| ENSG00000150977.10    | RILPL2        | Protein    | -0.22                       | 6.46E-03 | 5.91E-02    | -0.18                           | 1.95E-02 | 1.51E-01    |  |
| ENSG00000150995.16    | ITPR1         | Protein    | -0.47                       | 1.16E-03 | 1.89E-02    | -0.26                           | 6.33E-02 | 2.88E-01    |  |
| ENSG00000151006.7     | PRSS53        | Protein    | 0.33                        | 1.08E-02 | 8.16E-02    | 0.08                            | 5.54E-01 | 7.95E-01    |  |
| ENSG00000151023.15    | ENKUR         | Protein    | -0.59                       | 5.60E-03 | 5.40E-02    | -0.43                           | 2.77E-02 | 1.84E-01    |  |
| ENSG00000151033.8     | LYZL2         | Protein    | -0.66                       | 1.04E-02 | 7.99E-02    | -0.68                           | 6.55E-03 | 8.00E-02    |  |
| ENSG00000151224.11    | MAT1A         | Protein    | -0.61                       | 4.44E-03 | 4.66E-02    | -0.55                           | 5.79E-03 | 7.45E-02    |  |
| ENSG00000151239.12    | TWF1          | Protein    | -0.19                       | 9.91E-03 | 7.73E-02    | -0.17                           | 1.33E-02 | 1.22E-01    |  |
| ENSG00000151303.11    | RP11-96C23.13 | LncRNA     | 0.60                        | 2.08E-05 | 9.56E-04    | 0.63                            | 3.06E-06 | 2.91E-04    |  |
| ENSG00000151348.12    | EXT2          | Protein    | -0.22                       | 5.56E-06 | 3.22E-04    | -0.16                           | 5.68E-04 | 1.61E-02    |  |
| ENSG00000151532.12    | VTJ1A         | Protein    | -0.11                       | 8.72E-03 | 7.14E-02    | -0.10                           | 1.73E-02 | 1.42E-01    |  |
| ENSG00000151552.10    | QDPR          | Protein    | -0.30                       | 1.52E-03 | 2.27E-02    | -0.15                           | 1.03E-01 | 3.69E-01    |  |
| ENSG00000151612.14    | ZNF827        | Protein    | -0.26                       | 1.05E-02 | 8.04E-02    | -0.12                           | 2.45E-01 | 5.56E-01    |  |
| ENSG00000151650.7     | VENTX         | Protein    | 0.36                        | 7.34E-03 | 6.40E-02    | 0.22                            | 8.48E-02 | 3.33E-01    |  |
| ENSG00000151687.13    | ANKA8         | Protein    | 0.19                        | 2.64E-03 | 3.30E-02    | 0.20                            | 6.46E-04 | 1.76E-02    |  |
| ENSG00000151690.13    | MFSD6         | Protein    | -0.24                       | 9.79E-03 | 7.66E-02    | -0.22                           | 1.39E-02 | 1.25E-01    |  |
| ENSG00000151773.11    | CCDC122       | Protein    | -0.28                       | 2.18E-03 | 2.90E-02    | -0.17                           | 5.40E-02 | 2.65E-01    |  |
| ENSG00000151779.11    | NBAS          | Protein    | -0.17                       | 1.16E-03 | 1.88E-02    | -0.12                           | 1.34E-02 | 1.22E-01    |  |
| ENSG00000151790.7     | TD02          | Protein    | -2.18                       | 6.57E-18 | 3.84E-15    | -2.13                           | 7.31E-19 | 6.90E-16    |  |
| ENSG00000151806.12    | GUF1          | Protein    | -0.15                       | 5.69E-03 | 5.45E-02    | -0.09                           | 9.74E-02 | 3.57E-01    |  |
| ENSG00000151812.13    | SLC35F4       | Protein    | -0.36                       | 1.17E-02 | 8.59E-02    | -0.31                           | 2.50E-02 | 1.73E-01    |  |
| ENSG00000151948.10    | GLT1D1        | Protein    | -0.54                       | 4.92E-03 | 4.96E-02    | -0.47                           | 1.16E-02 | 1.13E-01    |  |
| ENSG00000151963.4     | RP11-775A3.1  | Pseudogene | 0.66                        | 4.46E-05 | 1.72E-03    | 0.67                            | 1.37E-05 | 9.65E-04    |  |
| ENSG00000152076.17    | CCDC74B       | Protein    | 0.49                        | 1.72E-03 | 2.47E-02    | 0.47                            | 1.45E-03 | 3.00E-02    |  |
| ENSG00000152078.8     | TMEM56        | Protein    | -0.30                       | 8.26E-03 | 6.91E-02    | -0.30                           | 5.64E-03 | 7.33E-02    |  |
| ENSG00000152102.16    | FAM168B       | Protein    | -0.22                       | 4.74E-04 | 1.02E-02    | -0.16                           | 9.54E-03 | 9.98E-02    |  |
| ENSG00000152104.10    | PTPN14        | Protein    | -0.34                       | 2.11E-04 | 5.58E-03    | -0.26                           | 2.90E-03 | 4.84E-02    |  |
| ENSG00000152117.16    | AC093838.4    | Pseudogene | 0.24                        | 1.09E-02 | 8.20E-02    | 0.16                            | 8.61E-02 | 3.36E-01    |  |
| ENSG00000152127.7     | MGAT5         | Protein    | -0.27                       | 2.84E-04 | 7.01E-03    | -0.18                           | 1.17E-02 | 1.13E-01    |  |
| ENSG00000152133.13    | GPATCH11      | Protein    | -0.15                       | 8.90E-03 | 7.23E-02    | -0.12                           | 2.59E-02 | 1.77E-01    |  |
| ENSG00000152219.4     | ARL14EP       | Protein    | -0.10                       | 1.16E-02 | 8.54E-02    | -0.08                           | 3.28E-02 | 2.01E-01    |  |
| ENSG00000152270.7     | PDE3B         | Protein    | -0.32                       | 7.20E-03 | 6.32E-02    | -0.21                           | 6.80E-02 | 2.99E-01    |  |
| ENSG00000152291.12    | TGOLN2        | Protein    | -0.19                       | 3.63E-03 | 4.08E-02    | -0.10                           | 1.20E-01 | 3.97E-01    |  |
| ENSG00000152558.13    | TMEM123       | Protein    | -0.22                       | 9.36E-03 | 7.46E-02    | -0.20                           | 1.20E-02 | 1.14E-01    |  |
| ENSG00000152578.11    | GRIA4         | Protein    | -0.77                       | 1.10E-03 | 1.82E-02    | -0.53                           | 9.70E-03 | 1.01E-01    |  |
| ENSG00000152582.11    | SPEF2         | Protein    | 0.26                        | 6.03E-04 | 1.19E-02    | 0.21                            | 4.26E-03 | 6.23E-02    |  |
| ENSG00000152611.10    | CAPSL         | Protein    | -0.68                       | 4.75E-03 | 4.85E-02    | -0.47                           | 3.82E-02 | 2.18E-01    |  |
| ENSG00000152683.13    | SLC30A6       | Protein    | -0.14                       | 1.39E-02 | 9.63E-02    | -0.11                           | 3.75E-02 | 2.16E-01    |  |
| ENSG00000152684.10    | PELO          | Protein    | -0.23                       | 9.35E-06 | 4.94E-04    | -0.22                           | 1.36E-05 | 9.61E-04    |  |
| ENSG00000152766.5     | ANKRD22       | Protein    | 0.42                        | 4.95E-03 | 4.98E-02    | 0.44                            | 1.77E-03 | 3.43E-02    |  |
| ENSG00000152784.14    | PRDM8         | Protein    | -0.49                       | 5.64E-03 | 5.43E-02    | -0.09                           | 6.07E-01 | 8.26E-01    |  |
| ENSG00000152795.16    | HNRNPDL       | Protein    | 0.25                        | 2.44E-08 | 3.13E-06    | 0.18                            | 2.05E-05 | 1.34E-03    |  |
| ENSG00000152894.13    | PTPRK         | Protein    | -0.31                       | 5.34E-04 | 1.10E-02    | -0.25                           | 3.80E-03 | 5.78E-02    |  |
| ENSG00000152939.13    | MARVELD2      | Protein    | -0.43                       | 8.72E-07 | 6.94E-05    | -0.39                           | 4.03E-06 | 3.61E-04    |  |
| ENSG00000152977.8     | ZIC1          | Protein    | -0.86                       | 8.04E-04 | 1.46E-02    | -0.40                           | 1.02E-01 | 3.65E-01    |  |
| ENSG00000153002.10    | CPB1          | Protein    | -0.57                       | 1.00E-02 | 7.79E-02    | -0.65                           | 2.26E-03 | 4.07E-02    |  |
| ENSG00000153006.13    | SREK11P1      | Protein    | -0.17                       | 1.21E-02 | 8.79E-02    | -0.07                           | 3.00E-01 | 6.09E-01    |  |
| ENSG00000153015.14    | CWC27         | Protein    | -0.13                       | 5.78E-03 | 5.50E-02    | -0.08                           | 9.12E-02 | 3.46E-01    |  |
| ENSG00000153147.5     | SMARCA5       | Protein    | -0.16                       | 1.07E-02 | 8.15E-02    | -0.13                           | 3.26E-02 | 2.00E-01    |  |
| ENSG00000153157.11    | SYCP2L        | Protein    | 0.61                        | 3.32E-03 | 3.85E-02    | 0.65                            | 1.18E-03 | 2.62E-02    |  |
| ENSG00000153201.14    | RANBP2        | Protein    | -0.24                       | 4.68E-03 | 4.81E-02    | -0.19                           | 1.53E-02 | 1.32E-01    |  |
| ENSG00000153233.11    | PTPRR         | Protein    | -0.66                       | 2.97E-03 | 3.55E-02    | -0.84                           | 3.44E-05 | 1.99E-03    |  |
| ENSG00000153237.16    | CCDC148       | Protein    | 0.25                        | 1.09E-02 | 8.21E-02    | 0.10                            | 2.67E-01 | 5.77E-01    |  |
| ENSG00000153246.10    | PLA2R1        | Protein    | -0.27                       | 6.62E-03 | 5.99E-02    | -0.15                           | 1.18E-01 | 3.93E-01    |  |
| ENSG00000153283.11    | CD96          | Protein    | 0.47                        | 2.07E-03 | 2.80E-02    | 0.38                            | 9.53E-03 | 9.98E-02    |  |
| ENSG00000153292.14    | GPR110        | Protein    | -0.73                       | 1.41E-03 | 2.15E-02    | -0.50                           | 2.57E-02 | 1.76E-01    |  |
| ENSG00000153404.12    | PLEKHG4B      | Protein    | -0.46                       | 3.20E-03 | 3.75E-02    | -0.39                           | 9.58E-03 | 1.00E-01    |  |
| ENSG00000153561.11    | RMND5A        | Protein    | -0.24                       | 1.09E-04 | 3.39E-03    | -0.21                           | 4.45E-04 | 1.36E-02    |  |
| ENSG00000153779.9     | TGIF2LX       | Protein    | 0.83                        | 6.65E-06 | 3.76E-04    | 0.12                            | 4.44E-01 | NA          |  |
| ENSG00000153786.11    | ZDHHC7        | Protein    | -0.24                       | 2.17E-05 | 9.83E-04    | -0.18                           | 1.23E-03 | 2.70E-02    |  |
| ENSG00000153789.11    | FAM92B        | Protein    | -0.77                       | 2.17E-03 | 2.89E-02    | -0.34                           | 1.49E-01 | 4.38E-01    |  |
| ENSG00000153827.12    | TRIP12        | Protein    | -0.19                       | 2.79E-03 | 3.42E-02    | -0.16                           | 5.47E-03 | 7.18E-02    |  |
| ENSG00000153923.9     | CLCA3P        | Pseudogene | 0.64                        | 3.74E-03 | 4.16E-02    | 0.58                            | 7.12E-03 | 8.39E-02    |  |
| ENSG00000153936.15    | HS2ST1        | Protein    | -0.38                       | 8.82E-05 | 2.88E-03    | -0.39                           | 1.70E-05 | 1.14E-03    |  |
| ENSG00000153956.14    | CACNA2D1      | Protein    | -0.41                       | 3.87E-03 | 4.26E-02    | -0.14                           | 3.15E-01 | 6.23E-01    |  |
| ENSG00000153989.7     | NUS1          | Protein    | -0.25                       | 2.47E-04 | 6.28E-03    | -0.17                           | 1.22E-02 | 1.16E-01    |  |
| ENSG00000153993.12    | SEMA3D        | Protein    | 0.69                        | 4.51E-04 | 9.83E-03    | 0.71                            | 1.28E-04 | 5.49E-03    |  |
| ENSG00000154001.12    | PPP2R5E       | Protein    | -0.14                       | 2.85E-03 | 3.46E-02    | -0.14                           | 2.14E-03 | 3.91E-02    |  |
| ENSG00000154027.17    | AK5           | Protein    | 0.52                        | 5.42E-03 | 5.29E-02    | -0.11                           | 5.47E-01 | 7.91E-01    |  |
| ENSG00000154040.19    | CABYR         | Protein    | -0.45                       | 1.62E-04 | 4.58E-03    | -0.56                           | 1.25E-06 | 1.41E-04    |  |
| ENSG000               |               |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol  | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|--------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |              |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000154153.12    | FAM134B      | Protein    | -0.26                       | 1.31E-02 | 9.25E-02    | -0.34                           | 7.02E-04 | 1.85E-02    |  |
| ENSG00000154252.11    | GAL3ST2      | Protein    | 0.76                        | 6.04E-05 | 2.16E-03    | 0.52                            | 4.92E-03 | 6.76E-02    |  |
| ENSG00000154263.16    | ABCA10       | Protein    | 0.59                        | 1.52E-06 | 1.11E-04    | 0.57                            | 1.29E-06 | 1.44E-04    |  |
| ENSG00000154265.14    | ABCA5        | Protein    | 0.28                        | 1.09E-04 | 3.39E-03    | 0.32                            | 3.81E-06 | 3.49E-04    |  |
| ENSG00000154316.13    | TDH          | Pseudogene | 0.54                        | 1.55E-04 | 4.42E-03    | 0.39                            | 5.56E-03 | 7.24E-02    |  |
| ENSG00000154359.11    | LONRF1       | Protein    | 0.22                        | 9.57E-03 | 7.55E-02    | 0.23                            | 4.26E-03 | 6.23E-02    |  |
| ENSG00000154451.13    | GBP5         | Protein    | 0.49                        | 3.16E-03 | 3.72E-02    | 0.36                            | 2.80E-02 | 1.84E-01    |  |
| ENSG00000154485.4     | MMP21        | Protein    | 0.43                        | 2.48E-03 | 3.16E-02    | 0.31                            | 2.44E-02 | 1.71E-01    |  |
| ENSG00000154529.13    | CNTNAP3B     | Protein    | 0.43                        | 6.19E-03 | 5.76E-02    | 0.54                            | 4.12E-04 | 1.28E-02    |  |
| ENSG00000154553.12    | PDLIM3       | Protein    | -0.48                       | 3.56E-04 | 8.29E-03    | -0.35                           | 7.98E-03 | 8.97E-02    |  |
| ENSG00000154556.16    | SORBS2       | Protein    | -0.26                       | 1.02E-03 | 1.72E-02    | -0.17                           | 3.18E-02 | 1.98E-01    |  |
| ENSG00000154645.12    | CHODL        | Protein    | -0.56                       | 1.69E-03 | 2.44E-02    | -0.65                           | 1.59E-04 | 6.42E-03    |  |
| ENSG00000154646.7     | TMPRSS15     | Protein    | 0.69                        | 5.06E-03 | 5.05E-02    | 0.49                            | 3.40E-02 | 2.05E-01    |  |
| ENSG00000154734.13    | ADAMTS1      | Protein    | 0.80                        | 3.72E-07 | 3.38E-05    | 0.72                            | 2.32E-06 | 2.34E-04    |  |
| ENSG00000154928.15    | EPHB1        | Protein    | -0.44                       | 1.07E-02 | 8.13E-02    | -0.28                           | 9.07E-02 | 3.45E-01    |  |
| ENSG00000154975.12    | CA10         | Protein    | -1.09                       | 4.01E-06 | 2.48E-04    | -0.90                           | 4.07E-05 | 2.27E-03    |  |
| ENSG00000154997.8     | 14-Sep       | Protein    | 0.62                        | 8.75E-03 | 7.16E-02    | 0.58                            | 1.15E-02 | 1.12E-01    |  |
| ENSG00000155026.15    |              | Protein    | 0.53                        | 4.22E-04 | 9.33E-03    | 0.41                            | 5.20E-03 | 6.97E-02    |  |
| ENSG00000155066.14    | PROM2        | Protein    | -0.27                       | 1.40E-02 | 9.67E-02    | -0.19                           | 7.16E-02 | 3.06E-01    |  |
| ENSG00000155070.8     | UNC93B2      | Pseudogene | 0.74                        | 1.59E-03 | 2.34E-02    | 0.74                            | 1.06E-03 | 2.44E-02    |  |
| ENSG00000155100.9     | OTUD6B       | Protein    | 0.25                        | 6.60E-03 | 5.98E-02    | 0.10                            | 2.58E-01 | 5.69E-01    |  |
| ENSG00000155189.10    | AGPAT5       | Protein    | -0.27                       | 1.49E-03 | 2.24E-02    | -0.20                           | 1.80E-02 | 1.45E-01    |  |
| ENSG00000155249.4     | OR4K1        | Protein    | 0.64                        | 7.89E-03 | 6.70E-02    | 0.23                            | 3.06E-01 | NA          |  |
| ENSG00000155269.10    | GPR78        | Protein    | 0.49                        | 2.42E-03 | 3.11E-02    | 0.28                            | 7.69E-02 | 3.18E-01    |  |
| ENSG00000155304.5     | HSPA13       | Protein    | -0.24                       | 5.64E-03 | 5.43E-02    | -0.18                           | 2.89E-02 | 1.88E-01    |  |
| ENSG00000155367.14    | PPM1J        | Protein    | 0.57                        | 2.23E-05 | 1.00E-03    | 0.36                            | 6.77E-03 | 8.14E-02    |  |
| ENSG00000155368.15    | DBI          | Protein    | 0.35                        | 1.95E-03 | 2.69E-02    | 0.36                            | 8.34E-04 | 2.08E-02    |  |
| ENSG00000155428.11    | TRIM74       | Protein    | 0.39                        | 1.46E-02 | 9.93E-02    | 0.25                            | 1.00E-01 | 3.63E-01    |  |
| ENSG00000155530.2     | LRGUK        | Protein    | 0.33                        | 1.33E-02 | 9.34E-02    | 0.23                            | 8.13E-02 | 3.27E-01    |  |
| ENSG00000155660.9     | PDIA4        | Protein    | -0.22                       | 9.00E-03 | 7.28E-02    | -0.12                           | 1.31E-01 | 4.14E-01    |  |
| ENSG00000155719.15    | OTOA         | Protein    | 0.56                        | 2.73E-04 | 6.83E-03    | 0.46                            | 2.19E-03 | 3.96E-02    |  |
| ENSG00000155749.11    | ALS2CR12     | Protein    | 0.35                        | 5.38E-03 | 5.26E-02    | 0.16                            | 2.03E-01 | 5.10E-01    |  |
| ENSG00000155827.10    | RNF20        | Protein    | -0.14                       | 6.36E-03 | 5.87E-02    | -0.12                           | 1.52E-02 | 1.31E-01    |  |
| ENSG00000155886.10    | SLC24A2      | Protein    | -0.77                       | 6.87E-04 | 1.31E-02    | -0.82                           | 2.11E-04 | 8.02E-03    |  |
| ENSG00000155926.12    | SLA          | Protein    | 0.39                        | 3.26E-03 | 3.81E-02    | 0.29                            | 2.48E-02 | 1.73E-01    |  |
| ENSG00000155959.9     | VBP1         | Protein    | -0.16                       | 1.09E-03 | 1.81E-02    | -0.16                           | 7.52E-04 | 1.94E-02    |  |
| ENSG00000156017.11    | C9orf41      | Protein    | -0.17                       | 9.78E-03 | 7.66E-02    | -0.14                           | 2.29E-02 | 1.65E-01    |  |
| ENSG00000156076.8     | WIF1         | Protein    | 0.54                        | 1.23E-02 | 8.87E-02    | 0.57                            | 6.96E-03 | 8.28E-02    |  |
| ENSG00000156097.11    | GPR61        | Protein    | 0.34                        | 1.08E-02 | 8.16E-02    | 0.24                            | 5.72E-02 | 2.73E-01    |  |
| ENSG00000156170.11    | NDUFAF6      | Protein    | 0.23                        | 2.34E-03 | 3.03E-02    | 0.09                            | 2.36E-01 | 5.47E-01    |  |
| ENSG00000156172.5     | C8orf37      | Protein    | 0.22                        | 1.16E-02 | 8.56E-02    | 0.20                            | 1.81E-02 | 1.45E-01    |  |
| ENSG00000156194.16    | PPEF2        | Protein    | 0.53                        | 1.09E-03 | 1.81E-02    | 0.44                            | 5.47E-03 | 7.18E-02    |  |
| ENSG00000156413.12    | FUT6         | Protein    | -0.79                       | 1.77E-03 | 2.52E-02    | -0.22                           | 3.52E-01 | 6.53E-01    |  |
| ENSG00000156469.7     | MTERF3       | Protein    | 0.27                        | 1.03E-04 | 3.22E-03    | 0.12                            | 9.84E-02 | 3.59E-01    |  |
| ENSG00000156482.9     | RPL30        | Protein    | 0.24                        | 5.73E-03 | 5.47E-02    | 0.10                            | 2.60E-01 | 5.72E-01    |  |
| ENSG00000156509.12    | FBXO43       | Protein    | 0.48                        | 3.25E-04 | 7.77E-03    | 0.26                            | 5.26E-02 | 2.61E-01    |  |
| ENSG00000156515.20    | HK1          | Protein    | -0.14                       | 7.15E-03 | 6.29E-02    | -0.04                           | 4.23E-01 | 7.08E-01    |  |
| ENSG00000156564.8     | LRFN2        | Protein    | 1.00                        | 1.37E-08 | 1.92E-06    | 0.73                            | 2.93E-05 | 1.75E-03    |  |
| ENSG00000156642.15    | NPTN         | Protein    | -0.17                       | 1.22E-02 | 8.84E-02    | -0.14                           | 2.88E-02 | 1.87E-01    |  |
| ENSG00000156650.11    | KAT6B        | Protein    | -0.21                       | 1.45E-02 | 9.89E-02    | -0.15                           | 7.88E-02 | 3.22E-01    |  |
| ENSG00000156804.6     | FBXO32       | Protein    | -0.38                       | 4.81E-05 | 1.82E-03    | -0.30                           | 1.01E-03 | 2.35E-02    |  |
| ENSG00000156831.6     | NSMCE2       | Protein    | 0.17                        | 1.18E-02 | 8.67E-02    | 0.05                            | 4.48E-01 | 7.26E-01    |  |
| ENSG00000156886.11    | ITGAD        | Protein    | 0.53                        | 4.39E-03 | 4.62E-02    | 0.44                            | 1.42E-02 | 1.26E-01    |  |
| ENSG00000157093.7     | LYZL4        | Protein    | 0.83                        | 5.74E-05 | 2.09E-03    | 0.91                            | 5.61E-06 | 4.76E-04    |  |
| ENSG00000157216.14    | SSBP3        | Protein    | -0.18                       | 4.99E-03 | 5.01E-02    | -0.16                           | 1.01E-02 | 1.03E-01    |  |
| ENSG00000157259.6     | GATAD1       | Protein    | 0.14                        | 3.15E-03 | 3.71E-02    | 0.08                            | 1.15E-01 | 3.89E-01    |  |
| ENSG00000157306.13    | RP11-66N24.4 | LncRNA     | 0.45                        | 5.77E-04 | 1.16E-02    | 0.39                            | 1.65E-03 | 3.27E-02    |  |
| ENSG00000157315.4     | TMED6        | Protein    | 0.60                        | 7.52E-03 | 6.49E-02    | 0.55                            | 1.19E-02 | 1.14E-01    |  |
| ENSG00000157330.8     | C1orf158     | Protein    | -0.68                       | 7.23E-03 | 6.33E-02    | -0.40                           | 9.60E-02 | 3.55E-01    |  |
| ENSG00000157343.7     | ARMC12       | Protein    | 0.50                        | 1.77E-04 | 4.91E-03    | 0.45                            | 3.90E-04 | 1.22E-02    |  |
| ENSG00000157353.15    | FUK          | Protein    | -0.17                       | 1.42E-02 | 9.75E-02    | -0.12                           | 5.97E-02 | 2.79E-01    |  |
| ENSG00000157399.13    | ARSE         | Protein    | -0.35                       | 1.23E-02 | 8.87E-02    | -0.27                           | 4.19E-02 | 2.31E-01    |  |
| ENSG00000157578.12    | LC45L        | Protein    | 0.29                        | 3.75E-04 | 8.58E-03    | 0.22                            | 4.97E-03 | 6.80E-02    |  |
| ENSG00000157600.10    | TMEM164      | Protein    | -0.16                       | 9.87E-03 | 7.71E-02    | -0.13                           | 2.38E-02 | 1.68E-01    |  |
| ENSG00000157765.10    | SLC34A2      | Protein    | -0.64                       | 5.11E-03 | 5.09E-02    | -0.67                           | 2.46E-03 | 4.33E-02    |  |
| ENSG00000157796.16    | WDR19        | Protein    | 0.17                        | 2.72E-03 | 3.36E-02    | 0.12                            | 3.12E-02 | 1.96E-01    |  |
| ENSG00000157856.9     | DRC1         | Protein    | -0.68                       | 2.74E-03 | 3.37E-02    | -0.14                           | 4.87E-01 | 7.52E-01    |  |
| ENSG00000157870.13    | FAM213B      | Protein    | -0.38                       | 1.22E-04 | 3.69E-03    | -0.27                           | 5.32E-03 | 7.07E-02    |  |
| ENSG00000157911.8     | PEX10        | Protein    | -0.56                       | 4.89E-04 | 1.04E-02    | -0.62                           | 6.03E-05 | 3.06E-03    |  |
| ENSG00000158006.12    | PAFAH2       | Protein    | -0.22                       | 5.95E-04 | 1.18E-02    | -0.11                           | 9.33E-02 | 3.50E-01    |  |
| ENSG00000158019.19    | BRE          | Protein    | -0.16                       | 4.34E-03 | 4.58E-02    | -0.12                           | 3.05E-02 | 1.94E-01    |  |
| ENSG00000158023.8     | WDR66        | Protein    | -0.45                       | 1.28E-03 | 2.01E-02    | -0.50                           | 1.99E-04 | 7.67E-03    |  |
| ENSG00000158195.9     | WASF2        | Protein    | -0.21                       | 5.31E-04 | 1.10E-02    | -0.18                           | 1.79E-03 | 3.45E-02    |  |
| ENSG00000158286.11    | RNF207       | Protein    | 0.39                        | 1.42E-03 | 2.16E-02    | 0.26                            | 2.70E-02 | 1.81E-01    |  |
| ENSG00000158301.17    | GPRASP2      | Protein    | -0.20                       | 2.21E-03 | 2.93E-02    | -0.13                           | 3.86E-02 | 2.20E-01    |  |
| ENSG00000158417.9     | EIF5B        | Protein    | -0.27                       | 5.48E-04 | 1.12E-02    | -0.17                           | 2.30E-02 | 1.66E-01    |  |
| ENSG00000158485.9     | CD1B         | Protein    | 0.82                        | 4.22E-05 | 1.66E-03    | 0.75                            | 1.21E-04 | 5.27E-03    |  |
| ENSG00000158488.14    | CD1E         | Protein    | 0.64                        | 9.65E-05 | 3.08E-03    | 0.60                            | 1.53E-04 | 6.28E-03    |  |
| ENSG00000158604.13    | TMED4        | Protein    | -0.11                       | 1.31E-02 | 9.28E-02    | -0.09                           | 2.86E-02 | 1.87E-01    |  |
| ENSG00000158623.13    | COPG2        | Protein    | -0.17                       | 7.43E-03 | 6.44E-02    | -0.15                           | 9.32E-03 | 9.84E-02    |  |
| ENSG00000158639.10    | PAGE5        | Protein    | 2.71                        | 2.22E-27 | 2.99E-24    | 0.15                            | 5.20E-01 | 7.75E-01    |  |
| ENSG00000158717.9     | RNF166       | Protein    | 0.25                        | 7.65E-04 | 1.42E-02    | 0.20                            | 4.32E-03 | 6.28E-02    |  |
| ENSG00000158748.3     | HTR6         | Protein    | -0.59                       | 1.72E-03 | 2.47E-02    | -0.63                           | 5.71E-04 | 1.61E-02    |  |
| ENSG00000158764.6     | ITLN2        | Protein    | -0.74                       | 5.94E-04 | 1.18E-02    | -0.33                           | 1.03E-01 | 3.68E-01    |  |
| ENSG00000158769.16    | F11R         | Protein    | -0.22                       | 8.99E-05 | 2.92E-03    | -0.16                           | 2.60E-03 | 4.49E-02    |  |
| ENSG00000158805.10    | ZNF276       | Protein    | 0.33                        | 2.20E-04 | 5.80E-03    | 0.30                            | 5.46E-04 | 1.56E-02    |  |
| ENSG00000158815.9     | FGF17        | Protein    | 0.56                        | 1.96E-03 | 2.70E-02    | 0.36                            | 4.22E-02 | 2.32E-01    |  |
| ENSG00000158825.5     | CDA          | Protein    | -0.38                       | 5.03E-03 | 5.03E-02    | -0.46                           | 4.42E-04 | 1.35E-02    |  |
| ENSG00000158869.9     | FCER1G       | Protein    | 0.29                        | 1.04E-02 | 8.00E-02    | 0.13                            | 2.35E-01 | 5.46E-01    |  |
| ENSG00000159086.13    | PAXBP1       | Protein    | 0.16                        | 1.14E-02 | 8.47E-02    | 0.09                            | 1.49E-01 | 4.39E-01    |  |
| ENSG00000159128.13    | IFNGR2       | Protein    | -0.16                       | 7.42E-03 | 6.44E-02    | -0.12                           | 4.04E-02 | 2.26E-01    |  |
| ENSG00000159147.16    | DONSON       | Protein    | 0.22                        | 1.65E-03 | 2.40E-02    | 0.06                            | 4.36E-01 | 7.17E-01    |  |
| ENSG00000159208.14    | CIART        | Protein    | 0.34                        | 1.01E-02 | 7.83E-02    | 0.36                            | 4.57E-03 | 6.47E-02    |  |
| ENSG00000159217.8     | IGF2BP1      | Protein    | 1.21                        | 2.80E-07 | 2.68E-05    | -0.07                           | 7.57E-01 | 9.03E-01    |  |
| ENSG00000159247.11    | TUBBP5       | Pseudogene | 0.54                        | 1.61E-03 | 2.36E-02    | 0.55                            | 9.36E-04 | 2.24E-02    |  |
| ENSG00000159314.10    | ARHGAP27     | Protein    | 0.22                        | 3.62E-03 | 4.07E-02    | 0.15                            | 5.12E-02 | 2.58E-01    |  |
| ENSG00000159337.6     | PLA2G4D      | Protein    | -1.13                       | 2.47E-06 | 1.67E-04    | -0.87                           | 9.29E-05 | 4.26E-03    |  |
| ENSG00000159346.11    | ADIPOR1      | Protein    | -0.14                       | 1.25E-02 | 8.98E-02    | -0.13                           | 1.50E-02 | 1.30E-01    |  |
| ENSG00000159461.13    | AMFR         | Protein    | -0.15                       | 3.46E-03 | 3.95E-02    | -0.12                           | 1.14E-02 | 1.12E-01    |  |
| ENSG00000159592.9     | GPBP1L1      | Protein    | -0.13                       | 1.47E-03 | 2.21E-02    | -0.09                           | 2.50E-02 | 1.73E-01    |  |
| ENSG00000159625.13    | DRC7         | Protein    | -0.62                       | 5.52E-03 | 5.36E-02    | -0.36                           | 7.97E-02 | 3.23E-01    |  |
| ENSG00000159640.13    | ACE          | Protein    | -0.33                       | 3.32E-03 | 3.85E-02    | -0.21                           | 5.04E-02 | 2.55E-01    |  |
| ENSG00000159650.7     | UROCI        | Protein    | 0.75                        | 4.04E-04 | 9.08E-03    | 0.53                            | 9.68E-03 | 1.01E-01    |  |
| ENSG00000159708.16    | LRRK36       | Protein    | 1.34                        | 4.74E-15 | 2.04E-12    | 1.24                            | 6.57E-14 | 3.64E-11    |  |
| ENSG00000159712.10    | ANKRD18CP    | Pseudogene | 0.52                        | 2.57E-03 | 3.25E-02    | 0.42                            | 1.13E-02 | 1.11E-01    |  |
| ENSG00000159763.3     | PIP          | Protein    | 1.55                        | 6.90E-11 | 1.59E-08    | -0.03                           | 9.10E-01 | 9.68E-01    |  |
| ENSG00000159904.10    | ZNF890P      | Pseudogene | 0                           |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |             |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000159917.13    | ZNF235      | Protein    | 0.21                        | 6.27E-04 | 1.23E-02    | 0.21                            | 2.82E-04 | 9.77E-03    |  |
| ENSG00000160111.11    | CPAMD8      | Protein    | -0.44                       | 1.37E-03 | 2.11E-02    | -0.21                           | 1.29E-01 | 4.11E-01    |  |
| ENSG00000160117.13    | ANKLE1      | Protein    | 0.32                        | 1.12E-02 | 8.36E-02    | 0.14                            | 2.65E-01 | 5.76E-01    |  |
| ENSG00000160200.16    | CBS         | Protein    | 0.48                        | 8.55E-03 | 7.06E-02    | 0.36                            | 3.82E-02 | 2.19E-01    |  |
| ENSG00000160208.12    | RRP1B       | Protein    | -0.13                       | 5.79E-03 | 5.50E-02    | -0.12                           | 8.33E-03 | 9.22E-02    |  |
| ENSG00000160211.14    | G6PD        | Protein    | -0.15                       | 8.14E-03 | 6.85E-02    | -0.13                           | 1.22E-02 | 1.15E-01    |  |
| ENSG00000160221.15    | C21orf33    | Protein    | 1.12                        | 2.84E-07 | 2.70E-05    | 1.15                            | 5.11E-08 | 9.42E-06    |  |
| ENSG00000160284.13    | SPATC1L     | Protein    | 0.41                        | 2.82E-03 | 3.44E-02    | 0.47                            | 3.25E-04 | 1.08E-02    |  |
| ENSG00000160323.17    | ADAMTS13    | Protein    | 0.38                        | 2.99E-04 | 7.30E-03    | 0.23                            | 3.03E-02 | 1.93E-01    |  |
| ENSG00000160472.4     | TMEM190     | Protein    | -0.59                       | 1.16E-02 | 8.56E-02    | -0.52                           | 1.11E-02 | 1.10E-01    |  |
| ENSG00000160679.11    | CHTOP       | Protein    | 0.12                        | 3.59E-04 | 8.33E-03    | 0.08                            | 1.22E-02 | 1.16E-01    |  |
| ENSG00000160766.13    | GBAP1       | Pseudogene | 0.25                        | 9.30E-03 | 7.43E-02    | 0.13                            | 1.58E-01 | 4.51E-01    |  |
| ENSG00000160886.12    | LY6K        | Protein    | -1.03                       | 1.59E-05 | 7.68E-04    | -0.88                           | 1.50E-04 | 6.19E-03    |  |
| ENSG00000160959.6     | LRRC14      | Protein    | 0.22                        | 1.78E-03 | 2.52E-02    | 0.13                            | 5.52E-02 | 2.68E-01    |  |
| ENSG00000160973.7     | FOXH1       | Protein    | 0.57                        | 1.04E-04 | 3.27E-03    | 0.34                            | 1.85E-02 | 1.47E-01    |  |
| ENSG00000161036.9     | LRWD1       | Protein    | 0.20                        | 1.76E-03 | 2.50E-02    | 0.11                            | 8.77E-02 | 3.39E-01    |  |
| ENSG00000161048.10    | NAPEPLD     | Protein    | -0.36                       | 2.97E-06 | 1.94E-04    | -0.31                           | 2.64E-05 | 1.62E-03    |  |
| ENSG00000161243.7     | FBXO27      | Protein    | -0.43                       | 2.33E-03 | 3.03E-02    | -0.34                           | 1.30E-02 | 1.20E-01    |  |
| ENSG00000161533.10    | ACOX1       | Protein    | -0.21                       | 1.07E-04 | 3.33E-03    | -0.11                           | 3.00E-02 | 1.92E-01    |  |
| ENSG00000161542.15    | PRPSAP1     | Protein    | -0.19                       | 3.67E-04 | 8.46E-03    | -0.16                           | 1.16E-03 | 2.60E-02    |  |
| ENSG00000161647.17    | MPP3        | Protein    | 0.26                        | 7.37E-03 | 6.41E-02    | 0.19                            | 4.64E-02 | 2.43E-01    |  |
| ENSG00000161649.11    | CD300LG     | Protein    | 0.76                        | 7.77E-05 | 2.62E-03    | 0.80                            | 1.62E-05 | 1.11E-03    |  |
| ENSG00000161860.7     | SYCE2       | Protein    | 0.24                        | 7.61E-03 | 6.55E-02    | 0.09                            | 2.88E-01 | 5.98E-01    |  |
| ENSG00000161904.10    | LEMD2       | Protein    | 0.12                        | 1.04E-02 | 7.96E-02    | 0.05                            | 2.70E-01 | 5.80E-01    |  |
| ENSG00000161911.10    | TREML1      | Protein    | 0.48                        | 1.72E-03 | 2.47E-02    | 0.27                            | 6.79E-02 | 2.98E-01    |  |
| ENSG00000161912.16    | ADCY10P1    | Pseudogene | 0.64                        | 3.10E-07 | 2.92E-05    | 0.52                            | 1.67E-05 | 1.13E-03    |  |
| ENSG00000161960.13    | EIF4A1      | Protein    | 0.29                        | 6.41E-03 | 5.90E-02    | 0.19                            | 6.31E-02 | 2.87E-01    |  |
| ENSG00000162066.13    | AMDHD2      | Protein    | 0.22                        | 4.47E-03 | 4.68E-02    | 0.14                            | 5.66E-02 | 2.71E-01    |  |
| ENSG00000162144.8     | CYB561A3    | Protein    | -0.43                       | 5.93E-04 | 1.18E-02    | -0.43                           | 3.43E-04 | 1.12E-02    |  |
| ENSG00000162231.12    | NXF1        | Protein    | 0.22                        | 3.58E-04 | 8.32E-03    | 0.21                            | 3.86E-04 | 1.21E-02    |  |
| ENSG00000162337.10    | LRP5        | Protein    | -0.21                       | 1.54E-03 | 2.29E-02    | -0.15                           | 1.84E-02 | 1.46E-01    |  |
| ENSG00000162344.3     | FGF19       | Protein    | -1.09                       | 2.29E-05 | 1.02E-03    | -0.97                           | 8.51E-05 | 3.98E-03    |  |
| ENSG00000162368.12    | CMPK1       | Protein    | -0.29                       | 1.03E-05 | 5.34E-04    | -0.22                           | 4.54E-04 | 1.38E-02    |  |
| ENSG00000162378.11    | ZYG11B      | Protein    | -0.17                       | 7.62E-03 | 6.55E-02    | -0.14                           | 2.69E-02 | 1.81E-01    |  |
| ENSG00000162409.9     | PRKAA2      | Protein    | -0.27                       | 1.26E-02 | 9.04E-02    | -0.20                           | 5.94E-02 | 2.78E-01    |  |
| ENSG00000162413.15    | KLHL21      | Protein    | -0.17                       | 1.02E-02 | 7.85E-02    | -0.13                           | 3.27E-02 | 2.01E-01    |  |
| ENSG00000162482.4     | AKR7A3      | Protein    | 1.89                        | 1.31E-32 | 2.52E-29    | 0.14                            | 2.57E-01 | 5.68E-01    |  |
| ENSG00000162521.17    | RBBP4       | Protein    | -0.15                       | 5.08E-03 | 5.06E-02    | -0.13                           | 7.72E-03 | 8.79E-02    |  |
| ENSG00000162526.6     | TSSK3       | Protein    | 0.35                        | 5.53E-03 | 5.36E-02    | 0.22                            | 7.47E-02 | 3.13E-01    |  |
| ENSG00000162543.5     | UBXN10      | Protein    | -0.44                       | 4.75E-03 | 4.85E-02    | -0.17                           | 2.72E-01 | 5.83E-01    |  |
| ENSG00000162552.13    | WNT4        | Protein    | 0.30                        | 4.99E-03 | 5.01E-02    | 0.23                            | 2.36E-02 | 1.68E-01    |  |
| ENSG00000162571.12    | TLL10       | Protein    | -0.50                       | 6.72E-03 | 6.05E-02    | -0.50                           | 3.82E-03 | 5.80E-02    |  |
| ENSG00000162572.18    | SCNN1D      | Protein    | 0.44                        | 2.29E-03 | 2.99E-02    | 0.32                            | 2.08E-02 | 1.56E-01    |  |
| ENSG00000162620.14    | LRR1Q3      | Protein    | 0.51                        | 1.39E-04 | 4.07E-03    | 0.59                            | 5.55E-06 | 4.74E-04    |  |
| ENSG00000162630.5     | B3GALT2     | Protein    | -0.45                       | 4.93E-03 | 4.97E-02    | -0.19                           | 2.35E-01 | 5.45E-01    |  |
| ENSG00000162631.17    | NTNG1       | Protein    | 0.49                        | 1.17E-02 | 8.61E-02    | 0.42                            | 2.48E-02 | 1.72E-01    |  |
| ENSG00000162642.12    | C1orf52     | Protein    | 0.12                        | 1.32E-02 | 9.32E-02    | 0.07                            | 1.32E-01 | 4.15E-01    |  |
| ENSG00000162676.10    | GFI1        | Protein    | 0.48                        | 3.04E-04 | 7.38E-03    | 0.32                            | 1.25E-02 | 1.18E-01    |  |
| ENSG00000162688.14    | AGL         | Protein    | -0.20                       | 6.51E-03 | 5.94E-02    | -0.09                           | 2.39E-01 | 5.50E-01    |  |
| ENSG00000162694.12    | EXTL2       | Protein    | 0.29                        | 5.77E-04 | 1.16E-02    | 0.29                            | 2.53E-04 | 9.14E-03    |  |
| ENSG00000162711.15    | NLRP3       | Protein    | 0.60                        | 8.74E-06 | 4.68E-04    | 0.52                            | 7.95E-05 | 3.79E-03    |  |
| ENSG00000162735.17    | PEX19       | Protein    | -0.11                       | 9.70E-03 | 7.61E-02    | -0.05                           | 2.06E-01 | 5.13E-01    |  |
| ENSG00000162736.14    | NCSTN       | Protein    | -0.28                       | 3.36E-06 | 2.15E-04    | -0.17                           | 3.85E-03 | 5.81E-02    |  |
| ENSG00000162738.5     | VANGL2      | Protein    | -0.42                       | 2.34E-03 | 3.04E-02    | -0.17                           | 2.01E-01 | 5.07E-01    |  |
| ENSG00000162747.8     | FCGR3B      | Protein    | -0.55                       | 7.74E-03 | 6.63E-02    | -0.43                           | 3.35E-02 | 2.03E-01    |  |
| ENSG00000162755.12    | KLHDC9      | Protein    | 0.23                        | 7.12E-03 | 6.26E-02    | 0.15                            | 7.13E-02 | 3.06E-01    |  |
| ENSG00000162757.4     | C1orf74     | Protein    | -0.25                       | 1.20E-02 | 8.74E-02    | -0.26                           | 4.95E-03 | 6.77E-02    |  |
| ENSG00000162819.10    | BROX        | Protein    | -0.22                       | 1.90E-03 | 2.64E-02    | -0.24                           | 2.99E-04 | 1.02E-02    |  |
| ENSG00000162843.16    | WDR64       | Protein    | 1.00                        | 1.53E-08 | 2.14E-06    | -0.05                           | 7.43E-01 | 8.96E-01    |  |
| ENSG00000162877.11    | PM20D1      | Protein    | 0.63                        | 3.74E-05 | 1.51E-03    | 0.62                            | 2.10E-05 | 1.36E-03    |  |
| ENSG00000162878.11    | PKDCC       | Protein    | -0.41                       | 6.50E-03 | 5.94E-02    | -0.52                           | 4.18E-04 | 1.29E-02    |  |
| ENSG00000162946.19    | DISC1       | Protein    | 0.32                        | 5.53E-03 | 5.36E-02    | 0.36                            | 1.14E-03 | 2.56E-02    |  |
| ENSG00000162947.4     | AC007364.1  | LncRNA     | -0.70                       | 6.06E-03 | 5.68E-02    | -0.70                           | 4.99E-03 | 6.81E-02    |  |
| ENSG00000162972.9     | C2orf47     | Protein    | -0.12                       | 6.12E-03 | 5.72E-02    | -0.13                           | 1.33E-03 | 2.84E-02    |  |
| ENSG00000162980.15    | ARL5A       | Protein    | -0.23                       | 1.47E-03 | 2.21E-02    | -0.17                           | 2.02E-02 | 1.54E-01    |  |
| ENSG00000162981.13    | FAM84A      | Protein    | 0.39                        | 8.17E-03 | 6.86E-02    | 0.22                            | 1.34E-01 | 4.19E-01    |  |
| ENSG00000162994.14    | CLHC1       | Protein    | 0.23                        | 1.55E-03 | 2.30E-02    | 0.21                            | 2.40E-03 | 4.24E-02    |  |
| ENSG00000162999.11    | DUSP19      | Protein    | -0.23                       | 1.20E-02 | 8.76E-02    | -0.16                           | 6.66E-02 | 2.95E-01    |  |
| ENSG00000163001.10    | CFAP36      | Protein    | 0.18                        | 3.98E-03 | 4.34E-02    | 0.13                            | 2.28E-02 | 1.65E-01    |  |
| ENSG00000163016.8     | ALMS1P      | Pseudogene | 0.30                        | 3.64E-03 | 4.08E-02    | 0.34                            | 7.75E-04 | 1.98E-02    |  |
| ENSG00000163017.12    | ACTG2       | Protein    | -0.50                       | 2.69E-03 | 3.35E-02    | -0.23                           | 1.62E-01 | 4.56E-01    |  |
| ENSG00000163064.6     | EN1         | Protein    | -0.88                       | 4.52E-04 | 9.84E-03    | -0.95                           | 7.92E-05 | 3.78E-03    |  |
| ENSG00000163083.5     | INHBB       | Protein    | -0.28                       | 7.44E-03 | 6.45E-02    | -0.25                           | 1.30E-02 | 1.20E-01    |  |
| ENSG00000163125.14    | RPRD2       | Protein    | -0.19                       | 4.47E-03 | 4.68E-02    | -0.18                           | 5.02E-03 | 6.84E-02    |  |
| ENSG00000163251.3     | FZD5        | Protein    | -0.31                       | 6.59E-03 | 5.98E-02    | -0.18                           | 9.41E-02 | 3.51E-01    |  |
| ENSG00000163263.6     | C1orf189    | Protein    | -0.59                       | 4.81E-03 | 4.89E-02    | -0.38                           | 4.49E-02 | 2.40E-01    |  |
| ENSG00000163346.15    | PBXIP1      | Protein    | -0.18                       | 8.39E-03 | 6.98E-02    | -0.09                           | 1.73E-01 | 4.71E-01    |  |
| ENSG00000163354.13    | DCST2       | Protein    | 0.44                        | 9.57E-04 | 1.65E-02    | 0.32                            | 1.33E-02 | 1.21E-01    |  |
| ENSG00000163357.9     | DCST1       | Protein    | 0.47                        | 2.75E-04 | 6.85E-03    | 0.25                            | 5.10E-02 | 2.57E-01    |  |
| ENSG00000163374.18    | YYIAP1      | Protein    | -0.09                       | 6.29E-03 | 5.83E-02    | -0.11                           | 6.11E-04 | 1.69E-02    |  |
| ENSG00000163394.5     | CCKAR       | Protein    | -0.75                       | 1.93E-03 | 2.67E-02    | -0.89                           | 1.54E-04 | 6.29E-03    |  |
| ENSG00000163399.14    | ATP1A1      | Protein    | -0.33                       | 8.28E-06 | 4.47E-04    | -0.27                           | 2.23E-04 | 8.39E-03    |  |
| ENSG00000163412.11    | EIF4E3      | Protein    | -0.20                       | 4.66E-03 | 4.80E-02    | -0.19                           | 4.46E-03 | 6.39E-02    |  |
| ENSG00000163464.7     | CXCR1       | Protein    | -0.72                       | 8.67E-04 | 1.54E-02    | -0.62                           | 3.05E-03 | 5.00E-02    |  |
| ENSG00000163467.10    | TSACC       | Protein    | 0.32                        | 6.41E-03 | 5.90E-02    | 0.22                            | 5.24E-02 | 2.61E-01    |  |
| ENSG00000163492.12    | CCDC141     | Protein    | 0.62                        | 6.17E-03 | 5.75E-02    | 0.48                            | 2.92E-02 | 1.89E-01    |  |
| ENSG00000163515.6     | RETNLB      | Protein    | 1.02                        | 5.84E-05 | 2.12E-03    | 0.82                            | 7.00E-04 | 1.85E-02    |  |
| ENSG00000163516.12    | ANKZF1      | Protein    | 0.21                        | 7.00E-03 | 6.21E-02    | 0.15                            | 4.60E-02 | 2.42E-01    |  |
| ENSG00000163527.8     | STT3B       | Protein    | -0.15                       | 4.76E-03 | 4.85E-02    | -0.16                           | 2.62E-03 | 4.51E-02    |  |
| ENSG00000163586.8     | FABP1       | Protein    | 0.82                        | 1.24E-03 | 1.97E-02    | -0.27                           | 2.80E-01 | 5.90E-01    |  |
| ENSG00000163599.13    | CTLA4       | Protein    | 0.51                        | 3.75E-03 | 4.17E-02    | 0.32                            | 5.96E-02 | 2.79E-01    |  |
| ENSG00000163607.13    | GTPBP8      | Protein    | -0.13                       | 5.38E-03 | 5.26E-02    | -0.12                           | 8.73E-03 | 9.46E-02    |  |
| ENSG00000163612.10    | FAM86KP     | Pseudogene | 0.70                        | 2.45E-05 | 1.08E-03    | 0.61                            | 1.28E-04 | 5.49E-03    |  |
| ENSG00000163617.9     | KIAA1407    | Protein    | 0.24                        | 8.49E-04 | 1.52E-02    | 0.18                            | 9.58E-03 | 1.00E-01    |  |
| ENSG00000163645.13    | ERICH6      | Protein    | 0.55                        | 8.39E-04 | 1.50E-02    | 0.39                            | 1.42E-02 | 1.26E-01    |  |
| ENSG00000163660.10    | CCNL1       | Protein    | 0.32                        | 3.10E-04 | 7.49E-03    | 0.24                            | 4.40E-03 | 6.34E-02    |  |
| ENSG00000163681.13    | SLMAP       | Protein    | -0.20                       | 8.29E-03 | 6.92E-02    | -0.12                           | 9.93E-02 | 3.61E-01    |  |
| ENSG00000163694.13    | RBM47       | Protein    | -0.29                       | 1.52E-04 | 4.34E-03    | -0.14                           | 6.89E-02 | 3.01E-01    |  |
| ENSG00000163702.17    | IL17RC      | Protein    | 0.24                        | 1.69E-03 | 2.44E-02    | 0.26                            | 4.31E-04 | 1.32E-02    |  |
| ENSG00000163728.9     | TTC14       | Protein    | 0.20                        | 2.79E-03 | 3.42E-02    | 0.16                            | 1.28E-02 | 1.19E-01    |  |
| ENSG00000163735.6     | CXCL5       | Protein    | -1.01                       | 2.07E-05 | 9.53E-04    | -0.79                           | 4.91E-04 | 1.45E-02    |  |
| ENSG00000163754.16    | GYG1        | Protein    | -0.26                       | 2.50E-05 | 1.09E-03    | -0.23                           | 8.88E-05 | 4.11E-03    |  |
| ENSG00000163795.12    | ZNF513      | Protein    | 0.18                        | 2.73E-03 | 3.37E-02    | 0.12                            | 4.64E-02 | 2.43E-01    |  |
| ENSG00000163798.12    | SLC4A1AP    | Protein    | -0.07                       | 1.15E-02 | 8.51E-02    | -0.06                           | 2.35E-02 | 1.67E-01    |  |
| ENSG00000163806.14    | SPDYA       | Protein    | 0.40                        | 7.21E-04 | 1.36E-02    | 0.29                            | 9.57E-03 | 1.00E-01    |  |
| ENSG00000163810.10    | TGM4        | Protein    | -1.34                       | 1.48E-07 | 1.54E-05    | -0.75                           | 2.26E-03 | 4.07E-02    |  |
| ENSG00000163814.6     |             |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol         | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                     |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000163820.13    | <i>FYCO1</i>        | Protein    | -0.28                       | 3.44E-04 | 8.10E-03    | -0.22                           | 3.83E-03 | 5.80E-02    |  |
| ENSG00000163884.3     | <i>KLFI5</i>        | Protein    | 0.25                        | 6.36E-03 | 5.87E-02    | 0.24                            | 6.46E-03 | 7.93E-02    |  |
| ENSG00000163885.10    | <i>CCDC37</i>       | Protein    | -0.56                       | 7.76E-03 | 6.63E-02    | -0.28                           | 1.33E-01 | 4.17E-01    |  |
| ENSG00000163947.10    | <i>ARHGEF3</i>      | Protein    | -0.24                       | 9.34E-03 | 7.45E-02    | -0.23                           | 9.11E-03 | 9.71E-02    |  |
| ENSG00000163961.4     | <i>RNF168</i>       | Protein    | -0.15                       | 4.06E-03 | 4.39E-02    | -0.14                           | 4.90E-03 | 6.74E-02    |  |
| ENSG00000164002.10    | <i>EXO5</i>         | Protein    | 0.13                        | 4.41E-03 | 4.64E-02    | 0.14                            | 1.88E-03 | 3.57E-02    |  |
| ENSG00000164040.15    | <i>PGRMC2</i>       | Protein    | -0.13                       | 6.02E-03 | 5.65E-02    | -0.15                           | 1.80E-03 | 3.46E-02    |  |
| ENSG00000164049.13    | <i>FBXW12</i>       | Protein    | 0.63                        | 3.01E-05 | 1.26E-03    | 0.45                            | 2.01E-03 | 3.75E-02    |  |
| ENSG00000164081.11    | <i>TEX264</i>       | Protein    | 0.21                        | 1.05E-02 | 8.03E-02    | 0.23                            | 4.69E-03 | 6.56E-02    |  |
| ENSG00000164112.11    | <i>TMEM115</i>      | Protein    | 0.58                        | 7.44E-04 | 1.39E-02    | 0.45                            | 7.33E-03 | 8.53E-02    |  |
| ENSG00000164116.15    | <i>GUCY1A3</i>      | Protein    | -0.38                       | 2.39E-03 | 3.08E-02    | -0.23                           | 5.88E-02 | 2.77E-01    |  |
| ENSG00000164117.11    | <i>FBXO8</i>        | Protein    | -0.14                       | 3.03E-03 | 3.61E-02    | -0.11                           | 1.69E-02 | 1.40E-01    |  |
| ENSG00000164120.12    | <i>HPGD</i>         | Protein    | 1.05                        | 1.71E-06 | 1.22E-04    | 1.04                            | 9.37E-07 | 1.11E-04    |  |
| ENSG00000164125.14    | <i>FAM198B</i>      | Protein    | -0.32                       | 1.13E-02 | 8.43E-02    | -0.33                           | 6.00E-03 | 7.60E-02    |  |
| ENSG00000164136.15    | <i>IL15</i>         | Protein    | 0.34                        | 1.44E-03 | 2.18E-02    | 0.24                            | 1.81E-02 | 1.45E-01    |  |
| ENSG00000164161.8     | <i>HHIP</i>         | Protein    | -0.61                       | 1.95E-04 | 5.28E-03    | -0.51                           | 1.32E-03 | 2.83E-02    |  |
| ENSG00000164197.10    | <i>RNF180</i>       | Protein    | -0.27                       | 2.11E-03 | 2.83E-02    | -0.15                           | 8.27E-02 | 3.30E-01    |  |
| ENSG00000164266.9     | <i>SPINK1</i>       | Protein    | 0.66                        | 9.43E-03 | 7.48E-02    | 0.79                            | 1.14E-03 | 2.57E-02    |  |
| ENSG00000164270.16    | <i>HTR4</i>         | Protein    | 0.45                        | 1.35E-02 | 9.44E-02    | 0.25                            | 1.55E-01 | 4.48E-01    |  |
| ENSG00000164291.15    | <i>ARSK</i>         | Protein    | -0.19                       | 1.40E-02 | 9.69E-02    | -0.10                           | 1.72E-01 | 4.70E-01    |  |
| ENSG00000164296.6     | <i>TIGD6</i>        | Protein    | 0.18                        | 5.66E-03 | 5.44E-02    | 0.22                            | 6.16E-04 | 1.70E-02    |  |
| ENSG00000164306.9     | <i>PRIMPOL</i>      | Protein    | -0.14                       | 8.14E-03 | 6.85E-02    | -0.18                           | 3.07E-04 | 1.04E-02    |  |
| ENSG00000164334.14    | <i>FAM170A</i>      | Protein    | 0.52                        | 8.98E-03 | 7.27E-02    | 0.41                            | 3.28E-02 | 2.01E-01    |  |
| ENSG00000164344.14    | <i>KLKB1</i>        | Protein    | 0.71                        | 1.17E-05 | 5.92E-04    | 0.65                            | 2.93E-05 | 1.75E-03    |  |
| ENSG00000164385.7     | <i>C6orf195</i>     | Protein    | -0.45                       | 3.33E-03 | 3.86E-02    | -0.45                           | 2.71E-03 | 4.61E-02    |  |
| ENSG00000164404.7     | <i>GDF9</i>         | Protein    | 0.90                        | 1.21E-14 | 4.84E-12    | 0.12                            | 2.48E-01 | 5.59E-01    |  |
| ENSG00000164406.7     | <i>LEAP2</i>        | Protein    | 0.34                        | 8.04E-03 | 6.79E-02    | 0.21                            | 9.63E-02 | 3.55E-01    |  |
| ENSG00000164411.9     | <i>GJB7</i>         | Protein    | 0.88                        | 4.05E-05 | 1.60E-03    | 0.01                            | 9.62E-01 | 9.87E-01    |  |
| ENSG00000164434.10    | <i>FABP7</i>        | Protein    | 1.08                        | 9.03E-06 | 4.81E-04    | -0.10                           | 6.29E-01 | 8.39E-01    |  |
| ENSG00000164483.15    | <i>SAMD3</i>        | Protein    | 0.80                        | 4.28E-08 | 5.12E-06    | 0.22                            | 1.11E-01 | 3.81E-01    |  |
| ENSG00000164488.10    | <i>DACT2</i>        | Protein    | -0.51                       | 1.26E-02 | 9.02E-02    | -0.38                           | 5.38E-02 | 2.65E-01    |  |
| ENSG00000164494.10    | <i>PDS52</i>        | Protein    | -0.40                       | 1.54E-04 | 4.37E-03    | -0.41                           | 5.16E-05 | 2.74E-03    |  |
| ENSG00000164512.16    | <i>ANKRD55</i>      | Protein    | 0.61                        | 5.98E-04 | 1.19E-02    | 0.57                            | 9.97E-04 | 2.33E-02    |  |
| ENSG00000164543.5     | <i>STK17A</i>       | Protein    | 0.20                        | 5.87E-03 | 5.57E-02    | 0.13                            | 6.28E-02 | 2.87E-01    |  |
| ENSG00000164574.14    | <i>GALNT10</i>      | Protein    | -0.26                       | 7.19E-04 | 1.35E-02    | -0.21                           | 4.49E-03 | 6.41E-02    |  |
| ENSG00000164588.4     | <i>HCN1</i>         | Protein    | 1.54                        | 3.94E-10 | 7.76E-08    | 0.08                            | 7.45E-01 | 8.97E-01    |  |
| ENSG00000164609.8     | <i>SLU7</i>         | Protein    | -0.13                       | 2.85E-04 | 7.05E-03    | -0.11                           | 2.31E-03 | 4.13E-02    |  |
| ENSG00000164620.7     | <i>RELL2</i>        | Protein    | 0.28                        | 9.40E-03 | 7.47E-02    | 0.15                            | 1.69E-01 | 4.66E-01    |  |
| ENSG00000164690.6     | <i>SHH</i>          | Protein    | -0.61                       | 5.20E-03 | 5.14E-02    | -0.70                           | 9.31E-04 | 2.23E-02    |  |
| ENSG00000164744.11    | <i>SUN3</i>         | Protein    | 0.67                        | 1.86E-03 | 2.60E-02    | 0.59                            | 5.24E-03 | 7.01E-02    |  |
| ENSG00000164796.16    | <i>CSMD3</i>        | Protein    | 0.61                        | 8.78E-04 | 1.55E-02    | 0.55                            | 1.76E-03 | 3.42E-02    |  |
| ENSG00000164825.3     | <i>DEFB1</i>        | Protein    | -0.62                       | 2.72E-03 | 3.36E-02    | -0.69                           | 5.78E-04 | 1.63E-02    |  |
| ENSG00000164845.15    | <i>FAM86FP</i>      | Pseudogene | 0.51                        | 7.08E-06 | 3.94E-04    | 0.52                            | 1.68E-06 | 1.82E-04    |  |
| ENSG00000164877.17    | <i>MICALL2</i>      | Protein    | 0.24                        | 1.43E-02 | 9.81E-02    | 0.14                            | 1.57E-01 | 4.50E-01    |  |
| ENSG00000164893.7     | <i>SLC7A13</i>      | Protein    | 1.01                        | 2.80E-07 | 2.68E-05    | 0.71                            | 2.49E-04 | 9.05E-03    |  |
| ENSG00000164898.11    | <i>C7orf55</i>      | Protein    | 0.27                        | 6.92E-03 | 6.17E-02    | 0.24                            | 1.09E-02 | 1.09E-01    |  |
| ENSG00000164941.12    | <i>INTS8</i>        | Protein    | 0.20                        | 6.82E-03 | 6.11E-02    | 0.07                            | 3.41E-01 | 6.44E-01    |  |
| ENSG00000164972.11    | <i>C9orf24</i>      | Protein    | -0.79                       | 5.20E-05 | 1.93E-03    | -0.38                           | 2.75E-02 | 1.83E-01    |  |
| ENSG00000164983.7     | <i>TMEM65</i>       | Protein    | 0.27                        | 2.78E-03 | 3.41E-02    | 0.12                            | 1.81E-01 | 4.82E-01    |  |
| ENSG00000165025.13    | <i>SYK</i>          | Protein    | 0.41                        | 3.76E-04 | 8.61E-03    | 0.26                            | 2.05E-02 | 1.55E-01    |  |
| ENSG00000165029.14    | <i>ABCA1</i>        | Protein    | -0.30                       | 8.30E-03 | 6.93E-02    | -0.29                           | 9.19E-03 | 9.76E-02    |  |
| ENSG00000165071.13    | <i>TMEM71</i>       | Protein    | 0.52                        | 5.46E-05 | 2.01E-03    | 0.46                            | 1.86E-04 | 7.27E-03    |  |
| ENSG00000165121.10    | <i>RP11-213G2.3</i> | Pseudogene | 0.19                        | 4.24E-03 | 4.52E-02    | 0.17                            | 9.36E-03 | 9.86E-02    |  |
| ENSG00000165131.6     | <i>C7orf34</i>      | Protein    | 0.74                        | 8.38E-05 | 2.77E-03    | 0.77                            | 1.85E-05 | 1.22E-03    |  |
| ENSG00000165169.9     | <i>DYNLT3</i>       | Protein    | -0.18                       | 3.62E-03 | 4.07E-02    | -0.19                           | 1.11E-03 | 2.52E-02    |  |
| ENSG00000165171.9     | <i>WBSCR27</i>      | Protein    | 0.62                        | 2.88E-06 | 1.89E-04    | 0.65                            | 3.51E-07 | 4.95E-05    |  |
| ENSG00000165178.9     | <i>NCF1C</i>        | Pseudogene | 0.41                        | 4.65E-03 | 4.79E-02    | 0.32                            | 2.37E-02 | 1.68E-01    |  |
| ENSG00000165186.10    | <i>PTCHD1</i>       | Protein    | -0.40                       | 1.47E-02 | 9.96E-02    | -0.24                           | 1.32E-01 | 4.15E-01    |  |
| ENSG00000165192.12    | <i>ASB11</i>        | Protein    | -0.70                       | 4.76E-03 | 4.85E-02    | -0.56                           | 1.77E-02 | 1.44E-01    |  |
| ENSG00000165275.8     | <i>TRMT10B</i>      | Protein    | 0.13                        | 9.49E-04 | 1.64E-02    | 0.11                            | 5.00E-03 | 6.82E-02    |  |
| ENSG00000165282.12    | <i>PIGO</i>         | Protein    | -0.23                       | 3.51E-03 | 3.98E-02    | -0.16                           | 3.40E-02 | 2.05E-01    |  |
| ENSG00000165300.7     | <i>SLITRK5</i>      | Protein    | -0.57                       | 4.04E-04 | 9.08E-03    | -0.66                           | 2.46E-05 | 1.54E-03    |  |
| ENSG00000165323.14    | <i>FAT3</i>         | Protein    | -0.44                       | 9.03E-03 | 7.29E-02    | -0.17                           | 2.99E-01 | 6.09E-01    |  |
| ENSG00000165406.14    | <i>8-Mar</i>        | Protein    | -0.14                       | 1.19E-02 | 8.67E-02    | -0.09                           | 9.35E-02 | 3.50E-01    |  |
| ENSG00000165416.13    |                     | Protein    | -0.20                       | 4.53E-04 | 9.85E-03    | -0.13                           | 2.19E-02 | 1.61E-01    |  |
| ENSG00000165474.5     | <i>SUGT1</i>        | Protein    | -0.61                       | 5.38E-04 | 1.11E-02    | -0.66                           | 1.11E-04 | 4.92E-03    |  |
| ENSG00000165475.12    | <i>CRYL1</i>        | Protein    | -0.22                       | 4.30E-03 | 4.56E-02    | -0.15                           | 4.06E-02 | 2.26E-01    |  |
| ENSG00000165496.4     | <i>RPL10L</i>       | Protein    | 0.81                        | 7.10E-05 | 2.44E-03    | -0.28                           | 1.53E-01 | 4.45E-01    |  |
| ENSG00000165511.6     | <i>C10orf25</i>     | LncRNA     | -0.24                       | 9.08E-04 | 1.58E-02    | -0.17                           | 1.85E-02 | 1.47E-01    |  |
| ENSG00000165527.6     | <i>ARF6</i>         | Protein    | -0.15                       | 1.15E-02 | 8.49E-02    | -0.10                           | 5.76E-02 | 2.74E-01    |  |
| ENSG00000165548.9     | <i>TMEM63C</i>      | Protein    | -0.76                       | 4.69E-05 | 1.79E-03    | -0.97                           | 9.87E-08 | 1.67E-05    |  |
| ENSG00000165556.9     | <i>CDX2</i>         | Protein    | 0.56                        | 1.36E-02 | 9.49E-02    | 0.48                            | 2.84E-02 | 1.86E-01    |  |
| ENSG00000165572.7     | <i>KBTRD6</i>       | Protein    | -0.37                       | 5.05E-06 | 3.00E-04    | -0.24                           | 2.22E-03 | 4.01E-02    |  |
| ENSG00000165591.6     | <i>FAH2</i>         | Protein    | 0.24                        | 1.69E-03 | 2.44E-02    | 0.23                            | 1.29E-03 | 2.79E-02    |  |
| ENSG00000165632.7     | <i>TAF3</i>         | Protein    | -0.13                       | 1.04E-02 | 7.96E-02    | -0.10                           | 3.50E-02 | 2.08E-01    |  |
| ENSG00000165644.9     | <i>COMTD1</i>       | Protein    | 0.35                        | 8.43E-03 | 7.00E-02    | 0.19                            | 1.33E-01 | 4.16E-01    |  |
| ENSG00000165646.10    | <i>SLC18A2</i>      | Protein    | -0.51                       | 9.39E-03 | 7.47E-02    | -0.37                           | 5.58E-02 | 2.69E-01    |  |
| ENSG00000165650.10    | <i>PDZD8</i>        | Protein    | -0.30                       | 2.02E-04 | 5.42E-03    | -0.27                           | 6.41E-04 | 1.75E-02    |  |
| ENSG00000165675.15    | <i>ENOX2</i>        | Protein    | -0.14                       | 6.78E-03 | 6.08E-02    | -0.12                           | 1.65E-02 | 1.38E-01    |  |
| ENSG00000165782.9     | <i>TMEM55B</i>      | Protein    | 0.12                        | 6.70E-03 | 6.04E-02    | 0.09                            | 4.16E-02 | 2.30E-01    |  |
| ENSG00000165792.16    | <i>METTL17</i>      | Protein    | 0.17                        | 5.89E-03 | 5.57E-02    | 0.09                            | 1.25E-01 | 4.06E-01    |  |
| ENSG00000165794.8     | <i>SLC39A2</i>      | Protein    | -0.81                       | 1.04E-03 | 1.75E-02    | -0.81                           | 5.16E-04 | 1.50E-02    |  |
| ENSG00000165819.10    | <i>METTL3</i>       | Protein    | 0.24                        | 2.68E-05 | 1.15E-03    | 0.19                            | 4.89E-04 | 1.45E-02    |  |
| ENSG00000165861.12    | <i>ZFYVE1</i>       | Protein    | -0.19                       | 8.21E-06 | 4.44E-04    | -0.13                           | 1.33E-03 | 2.84E-02    |  |
| ENSG00000165995.17    | <i>CACNB2</i>       | Protein    | -0.28                       | 1.52E-03 | 2.26E-02    | -0.18                           | 2.97E-02 | 1.90E-01    |  |
| ENSG00000165996.12    | <i>PTPLA</i>        | Protein    | -0.35                       | 3.00E-03 | 3.58E-02    | -0.13                           | 2.62E-01 | 5.73E-01    |  |
| ENSG00000166006.11    | <i>KCNC2</i>        | Protein    | -1.16                       | 5.50E-07 | 4.72E-05    | -1.13                           | 5.75E-07 | 7.49E-05    |  |
| ENSG00000166012.13    | <i>TAF1D</i>        | Protein    | 0.23                        | 2.65E-03 | 3.31E-02    | 0.15                            | 4.47E-02 | 2.39E-01    |  |
| ENSG00000166037.9     | <i>CEP57</i>        | Protein    | -0.18                       | 2.28E-03 | 2.98E-02    | -0.18                           | 9.77E-04 | 2.31E-02    |  |
| ENSG00000166152.3     | <i>C16orf78</i>     | Protein    | 0.77                        | 2.58E-03 | 3.25E-02    | 0.23                            | 3.57E-01 | 6.57E-01    |  |
| ENSG00000166159.9     | <i>LRTM2</i>        | Protein    | -0.63                       | 6.16E-03 | 5.75E-02    | -0.76                           | 4.64E-04 | 1.39E-02    |  |
| ENSG00000166170.9     | <i>BAG5</i>         | Protein    | -0.15                       | 3.85E-04 | 8.74E-03    | -0.11                           | 4.87E-03 | 6.71E-02    |  |
| ENSG00000166181.11    | <i>API5</i>         | Protein    | -0.16                       | 8.50E-04 | 1.52E-02    | -0.11                           | 1.96E-02 | 1.52E-01    |  |
| ENSG00000166183.14    | <i>ASPG</i>         | Protein    | 0.56                        | 1.52E-04 | 4.34E-03    | 0.25                            | 9.10E-02 | 3.45E-01    |  |
| ENSG00000166200.13    | <i>COPS2</i>        | Protein    | -0.15                       | 2.44E-03 | 3.13E-02    | -0.12                           | 8.54E-03 | 9.34E-02    |  |
| ENSG00000166206.12    | <i>GABRB3</i>       | Protein    | -0.51                       | 7.17E-04 | 1.35E-02    | -0.47                           | 1.37E-03 | 2.90E-02    |  |
| ENSG00000166257.7     | <i>SCN3B</i>        | Protein    | -0.41                       | 1.48E-02 | 1.00E-01    | -0.47                           | 1.33E-03 | 2.85E-02    |  |
| ENSG00000166261.9     | <i>ZNF202</i>       | Protein    | 0.15                        | 3.32E-03 | 3.85E-02    | 0.12                            | 1.39E-02 | 1.24E-01    |  |
| ENSG00000166263.12    | <i>STXBP4</i>       | Protein    | -0.27                       | 3.73E-04 | 8.57E-03    | -0.21                           | 4.37E-03 | 6.32E-02    |  |
| ENSG00000166268.9     | <i>MYRFL</i>        | Protein    | 0.55                        | 4.27E-04 | 9.41E-03    | 0.50                            | 9.35E-04 | 2.24E-02    |  |
| ENSG00000166321.12    | <i>NUDT13</i>       | Protein    | -0.19                       | 8.69E-03 | 7.13E-02    | -0.17                           | 1.29E-02 | 1.20E-01    |  |
| ENSG00000166340.13    | <i>TPP1</i>         | Protein    | -0.23                       | 2.82E-04 | 6.98E-03    | -0.18                           | 3.13E-03 | 5.08E-02    |  |
| ENSG00000166432.13    | <i>ZMAT1</i>        | Protein    | 0.41                        | 8.08E-05 | 2.70E-03    | 0.34                            |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol   | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |               |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000166562.7     | SEC11C        | Protein    | -0.40                       | 1.09E-03 | 1.81E-02    | -0.40                           | 5.84E-04 | 1.64E-02    |  |
| ENSG00000166575.15    | TMEM135       | Protein    | -0.24                       | 3.61E-03 | 4.07E-02    | -0.22                           | 5.50E-03 | 7.20E-02    |  |
| ENSG00000166682.9     | TMPRSS5       | Protein    | 0.34                        | 7.32E-03 | 6.38E-02    | 0.28                            | 2.51E-02 | 1.73E-01    |  |
| ENSG00000166743.8     | ACSM1         | Protein    | 0.52                        | 1.02E-02 | 7.89E-02    | 0.45                            | 2.09E-02 | 1.57E-01    |  |
| ENSG00000166750.8     | SLFN5         | Protein    | -0.29                       | 6.76E-03 | 6.07E-02    | -0.28                           | 6.28E-03 | 7.80E-02    |  |
| ENSG00000166763.7     | STRCP1        | Pseudogene | 0.64                        | 4.19E-05 | 1.65E-03    | 0.54                            | 3.68E-04 | 1.18E-02    |  |
| ENSG00000166783.18    | KIAA0430      | Protein    | -0.14                       | 9.69E-03 | 7.61E-02    | -0.08                           | 1.10E-01 | 3.81E-01    |  |
| ENSG00000166801.14    | FAM111A       | Protein    | 0.25                        | 6.22E-03 | 5.79E-02    | 0.29                            | 1.08E-03 | 2.47E-02    |  |
| ENSG00000166819.10    | PLIN1         | Protein    | 0.47                        | 1.30E-03 | 2.03E-02    | 0.21                            | 1.38E-01 | 4.23E-01    |  |
| ENSG00000166823.5     | MESP1         | Protein    | 0.67                        | 1.68E-04 | 4.71E-03    | 0.65                            | 1.43E-04 | 6.01E-03    |  |
| ENSG00000166869.2     | CHP2          | Protein    | 0.57                        | 8.76E-03 | 7.16E-02    | 0.03                            | 9.00E-01 | 9.65E-01    |  |
| ENSG00000166913.11    | YWHAB         | Protein    | -0.13                       | 9.17E-03 | 7.37E-02    | -0.11                           | 1.65E-02 | 1.38E-01    |  |
| ENSG00000166922.7     | SCG5          | Protein    | -0.72                       | 5.69E-05 | 2.08E-03    | -0.66                           | 1.42E-04 | 5.97E-03    |  |
| ENSG00000166946.12    | CCNDBP1       | Protein    | -0.15                       | 1.19E-03 | 1.92E-02    | -0.12                           | 5.96E-03 | 7.57E-02    |  |
| ENSG00000166959.6     | MS4A8         | Protein    | -0.50                       | 9.27E-03 | 7.42E-02    | -0.42                           | 2.44E-02 | 1.71E-01    |  |
| ENSG00000167011.7     | NAT16         | Protein    | 0.61                        | 3.09E-03 | 3.65E-02    | 0.36                            | 7.21E-02 | 3.08E-01    |  |
| ENSG00000167014.9     | C15orf43      | Protein    | 0.79                        | 1.10E-03 | 1.82E-02    | 0.14                            | 5.49E-01 | 7.92E-01    |  |
| ENSG00000167117.7     | LINC00483     | LncRNA     | 0.49                        | 1.47E-02 | 9.97E-02    | 0.28                            | 1.47E-01 | 4.37E-01    |  |
| ENSG00000167196.12    | FBXO22        | Protein    | 0.16                        | 5.45E-03 | 5.31E-02    | 0.14                            | 1.14E-02 | 1.11E-01    |  |
| ENSG00000167261.12    | DPEP2         | Protein    | 0.50                        | 5.79E-05 | 2.10E-03    | 0.37                            | 1.93E-03 | 3.64E-02    |  |
| ENSG00000167281.17    | RBFOX3        | Protein    | -0.50                       | 6.71E-03 | 6.05E-02    | -0.21                           | 2.36E-01 | 5.47E-01    |  |
| ENSG00000167286.8     | CD3D          | Protein    | 0.41                        | 1.08E-02 | 8.18E-02    | 0.31                            | 4.93E-02 | 2.53E-01    |  |
| ENSG00000167291.14    | TBC1D16       | Protein    | -0.27                       | 5.54E-03 | 5.37E-02    | -0.28                           | 2.66E-03 | 4.55E-02    |  |
| ENSG00000167359.8     | OR51I1        | Protein    | 0.85                        | 8.32E-04 | 1.50E-02    | 0.79                            | 1.43E-03 | 2.98E-02    |  |
| ENSG00000167363.12    | FN3K          | Protein    | -0.21                       | 4.45E-03 | 4.66E-02    | -0.24                           | 6.22E-04 | 1.71E-02    |  |
| ENSG00000167524.13    | SGK494        | Protein    | 0.43                        | 7.24E-05 | 2.48E-03    | 0.26                            | 1.40E-02 | 1.25E-01    |  |
| ENSG00000167562.10    | ZN7F01        | Protein    | -0.15                       | 9.02E-03 | 7.29E-02    | -0.11                           | 6.15E-02 | 2.84E-01    |  |
| ENSG00000167566.15    | NCKAP5L       | Protein    | -0.26                       | 8.30E-03 | 6.93E-02    | -0.20                           | 3.60E-02 | 2.11E-01    |  |
| ENSG00000167614.12    | TTYH1         | Protein    | 0.55                        | 3.40E-06 | 2.16E-04    | 0.43                            | 2.06E-04 | 7.87E-03    |  |
| ENSG00000167615.15    | LENG8         | Protein    | 0.35                        | 5.62E-04 | 1.14E-02    | 0.21                            | 3.22E-02 | 1.99E-01    |  |
| ENSG00000167618.8     | LAIR2         | Protein    | 0.84                        | 8.16E-06 | 4.43E-04    | 0.75                            | 3.66E-05 | 2.09E-03    |  |
| ENSG00000167653.4     | PSCA          | Protein    | -1.20                       | 4.24E-07 | 3.77E-05    | -1.27                           | 3.22E-08 | 6.13E-06    |  |
| ENSG00000167654.16    | ATCAY         | Protein    | -0.46                       | 6.03E-03 | 5.66E-02    | -0.28                           | 8.39E-02 | 3.32E-01    |  |
| ENSG00000167656.4     | LY6D          | Protein    | 1.20                        | 3.66E-07 | 3.34E-05    | 0.75                            | 1.08E-03 | 2.48E-02    |  |
| ENSG00000167695.13    | FAM57A        | Protein    | -0.24                       | 4.95E-03 | 4.98E-02    | -0.16                           | 5.52E-02 | 2.68E-01    |  |
| ENSG00000167702.10    | KIFC2         | Protein    | 0.66                        | 8.29E-07 | 6.63E-05    | 0.35                            | 9.06E-03 | 9.68E-02    |  |
| ENSG00000167720.11    | SRR           | Protein    | 0.17                        | 2.63E-03 | 3.29E-02    | 0.21                            | 1.19E-04 | 5.21E-03    |  |
| ENSG00000167747.12    | C19orf48      | Protein    | 0.28                        | 1.43E-02 | 9.82E-02    | 0.20                            | 6.69E-02 | 2.96E-01    |  |
| ENSG00000167759.11    | KLK13         | Protein    | 0.60                        | 2.07E-03 | 2.80E-02    | -0.32                           | 8.20E-02 | 3.28E-01    |  |
| ENSG00000167774.2     | NDUFA7        | Protein    | 0.72                        | 3.81E-07 | 3.45E-05    | 0.73                            | 8.18E-08 | 1.41E-05    |  |
| ENSG00000167807.14    | CTD-2369P2.10 | Protein    | 0.58                        | 3.29E-06 | 2.11E-04    | 0.41                            | 8.80E-04 | 2.15E-02    |  |
| ENSG00000167850.3     | CD300C        | Protein    | -0.32                       | 9.80E-03 | 7.67E-02    | -0.46                           | 1.68E-04 | 6.73E-03    |  |
| ENSG00000167881.13    | SRP68         | Protein    | -0.10                       | 2.53E-03 | 3.21E-02    | -0.08                           | 1.77E-02 | 1.44E-01    |  |
| ENSG00000167895.13    | TMC8          | Protein    | 0.39                        | 5.89E-03 | 5.57E-02    | 0.28                            | 4.39E-02 | 2.37E-01    |  |
| ENSG00000167962.11    | ZNFS98        | Protein    | 0.14                        | 1.46E-02 | 9.91E-02    | 0.06                            | 2.51E-01 | 5.62E-01    |  |
| ENSG00000167967.14    | E4F1          | Protein    | 0.25                        | 5.05E-04 | 1.06E-02    | 0.18                            | 8.66E-03 | 9.41E-02    |  |
| ENSG00000167968.11    | DNASE1L2      | Protein    | 0.48                        | 2.02E-03 | 2.76E-02    | 0.27                            | 7.03E-02 | 3.04E-01    |  |
| ENSG00000167984.15    | NLRC3         | Protein    | 0.29                        | 3.84E-03 | 4.23E-02    | 0.21                            | 2.46E-02 | 1.72E-01    |  |
| ENSG00000167986.12    | DDBI          | Protein    | -0.16                       | 2.18E-04 | 5.76E-03    | -0.13                           | 1.28E-03 | 2.78E-02    |  |
| ENSG00000168003.15    | SLC3A2        | Protein    | 0.17                        | 1.44E-02 | 9.84E-02    | 0.11                            | 1.04E-01 | 3.69E-01    |  |
| ENSG00000168004.8     | HRASL5        | Protein    | -0.42                       | 1.13E-02 | 8.41E-02    | -0.17                           | 2.98E-01 | 6.07E-01    |  |
| ENSG00000168010.9     | ATG16L2       | Protein    | 0.29                        | 8.50E-03 | 7.04E-02    | 0.18                            | 8.87E-02 | 3.41E-01    |  |
| ENSG00000168026.15    | TTTC21A       | Protein    | 0.24                        | 7.52E-03 | 6.49E-02    | 0.11                            | 1.91E-01 | 4.95E-01    |  |
| ENSG00000168032.7     | ENTPD3        | Protein    | -0.49                       | 2.74E-04 | 6.84E-03    | -0.44                           | 7.24E-04 | 1.89E-02    |  |
| ENSG00000168036.15    | CTNNB1        | Protein    | -0.17                       | 1.89E-03 | 2.64E-02    | -0.14                           | 4.95E-03 | 6.77E-02    |  |
| ENSG00000168038.9     | ULK4          | Protein    | 0.34                        | 3.30E-07 | 3.06E-05    | 0.31                            | 8.65E-07 | 1.05E-04    |  |
| ENSG00000168071.20    | CCDC88B       | Protein    | 0.35                        | 3.98E-03 | 4.34E-02    | 0.31                            | 6.34E-03 | 7.85E-02    |  |
| ENSG00000168096.13    | ANKS3         | Protein    | 0.30                        | 1.22E-03 | 1.94E-02    | 0.24                            | 7.53E-03 | 8.67E-02    |  |
| ENSG00000168228.13    | ZCCHC4        | Protein    | 0.12                        | 1.14E-02 | 8.47E-02    | 0.12                            | 1.03E-02 | 1.05E-01    |  |
| ENSG00000168234.11    | TTTC39C       | Protein    | -0.26                       | 3.98E-03 | 4.34E-02    | -0.17                           | 4.53E-02 | 2.41E-01    |  |
| ENSG00000168255.17    | POLR2J3       | Protein    | 1.01                        | 8.87E-25 | 1.05E-21    | 0.97                            | 7.59E-25 | 1.20E-21    |  |
| ENSG00000168288.11    | MMADHC        | Protein    | -0.25                       | 3.62E-05 | 1.47E-03    | -0.18                           | 2.86E-03 | 4.79E-02    |  |
| ENSG00000168291.11    | PDHB          | Protein    | -0.13                       | 3.39E-03 | 3.90E-02    | -0.09                           | 4.09E-02 | 2.28E-01    |  |
| ENSG00000168348.3     | INSM2         | Protein    | -0.83                       | 1.03E-03 | 1.74E-02    | -0.54                           | 2.21E-02 | 1.62E-01    |  |
| ENSG00000168350.7     | DEGS2         | Protein    | 0.76                        | 1.05E-06 | 8.13E-05    | 0.69                            | 3.28E-06 | 3.07E-04    |  |
| ENSG00000168356.10    | SCN11A        | Protein    | 0.87                        | 2.09E-08 | 2.76E-06    | 0.37                            | 8.58E-03 | 9.36E-02    |  |
| ENSG00000168385.16    | 2-Sep         | Protein    | -0.13                       | 4.47E-03 | 4.68E-02    | -0.12                           | 4.75E-03 | 6.62E-02    |  |
| ENSG00000168405.13    | CMAHP         | Pseudogene | 0.43                        | 2.45E-04 | 6.25E-03    | 0.24                            | 3.56E-02 | 2.10E-01    |  |
| ENSG00000168438.13    | CDC40         | Protein    | -0.24                       | 5.72E-03 | 5.47E-02    | -0.13                           | 1.20E-01 | 3.97E-01    |  |
| ENSG00000168591.14    | TMUB2         | Protein    | 0.13                        | 6.29E-03 | 5.83E-02    | 0.13                            | 4.22E-03 | 6.19E-02    |  |
| ENSG00000168594.14    | ADAM29        | Protein    | 0.99                        | 4.78E-05 | 1.81E-03    | -0.11                           | 6.59E-01 | 8.54E-01    |  |
| ENSG00000168615.10    | ADAM9         | Protein    | -0.33                       | 4.62E-03 | 4.77E-02    | -0.23                           | 4.00E-02 | 2.24E-01    |  |
| ENSG00000168619.14    | ADAM18        | Protein    | -0.75                       | 3.31E-03 | 3.84E-02    | -0.76                           | 2.11E-03 | 3.88E-02    |  |
| ENSG00000168621.13    | GDNF          | Protein    | -0.35                       | 1.38E-02 | 9.59E-02    | -0.43                           | 1.65E-03 | 3.27E-02    |  |
| ENSG00000168658.17    | VWA3B         | Protein    | -0.86                       | 1.08E-04 | 3.36E-03    | -0.67                           | 1.25E-03 | 2.72E-02    |  |
| ENSG00000168676.9     | KCTD19        | Protein    | 1.59                        | 3.49E-19 | 2.39E-16    | 0.26                            | 1.02E-01 | 3.66E-01    |  |
| ENSG00000168754.12    | FAM178B       | Protein    | -0.48                       | 5.03E-03 | 5.03E-02    | -0.26                           | 8.45E-02 | 3.33E-01    |  |
| ENSG00000168763.14    | CNNM3         | Protein    | -0.19                       | 5.88E-04 | 1.17E-02    | -0.13                           | 1.61E-02 | 1.36E-01    |  |
| ENSG00000168802.11    | CHTF8         | Protein    | -0.16                       | 7.65E-03 | 6.57E-02    | -0.07                           | 2.66E-01 | 5.77E-01    |  |
| ENSG00000168803.13    | ADAL          | Protein    | -0.26                       | 1.33E-06 | 9.96E-05    | -0.23                           | 8.40E-06 | 6.61E-04    |  |
| ENSG00000168826.14    | ZBTB49        | Protein    | 0.20                        | 4.19E-05 | 1.65E-03    | 0.17                            | 2.57E-04 | 9.20E-03    |  |
| ENSG00000168872.14    | DDX19A        | Protein    | -0.14                       | 3.39E-03 | 3.90E-02    | -0.09                           | 7.31E-02 | 3.09E-01    |  |
| ENSG00000168970.19    | JMJD7-PLA2G4B | Protein    | 0.38                        | 3.89E-03 | 4.27E-02    | 0.30                            | 1.71E-02 | 1.41E-01    |  |
| ENSG00000169018.5     | FEM1B         | Protein    | -0.15                       | 5.48E-03 | 5.33E-02    | -0.11                           | 4.03E-02 | 2.26E-01    |  |
| ENSG00000169026.11    | MFSD7         | Protein    | 0.62                        | 1.66E-06 | 1.20E-04    | 0.58                            | 3.73E-06 | 3.43E-04    |  |
| ENSG00000169031.17    | COL4A3        | Protein    | 0.37                        | 5.81E-03 | 5.52E-02    | 0.35                            | 6.85E-03 | 8.21E-02    |  |
| ENSG00000169045.16    | HNRNPH1       | Protein    | 0.18                        | 3.43E-03 | 3.93E-02    | 0.09                            | 1.55E-01 | 4.48E-01    |  |
| ENSG00000169057.18    | MECP2         | Protein    | -0.12                       | 6.43E-03 | 5.91E-02    | -0.11                           | 1.40E-02 | 1.25E-01    |  |
| ENSG00000169062.13    | UPF3A         | Protein    | 0.20                        | 3.31E-04 | 7.87E-03    | 0.18                            | 8.95E-04 | 2.18E-02    |  |
| ENSG00000169071.13    | ROR2          | Protein    | -0.46                       | 1.32E-03 | 2.06E-02    | -0.29                           | 3.65E-02 | 2.13E-01    |  |
| ENSG00000169131.9     | ZNFX3A4       | Protein    | 0.14                        | 9.26E-03 | 7.42E-02    | 0.05                            | 3.30E-01 | 6.35E-01    |  |
| ENSG00000169180.10    | XPO6          | Protein    | 0.42                        | 2.62E-06 | 1.75E-04    | 0.29                            | 1.16E-03 | 2.59E-02    |  |
| ENSG00000169181.11    | SGS1L         | Protein    | 0.47                        | 4.31E-03 | 4.57E-02    | 0.44                            | 5.43E-03 | 7.16E-02    |  |
| ENSG00000169184.5     | MNV1          | Protein    | -0.55                       | 2.80E-04 | 6.95E-03    | -0.47                           | 1.19E-03 | 2.64E-02    |  |
| ENSG00000169213.6     | RAB3B         | Protein    | -0.45                       | 1.44E-04 | 4.18E-03    | -0.27                           | 1.92E-02 | 1.50E-01    |  |
| ENSG00000169228.12    | RAB24         | Protein    | 0.34                        | 4.18E-04 | 9.29E-03    | 0.23                            | 1.21E-02 | 1.15E-01    |  |
| ENSG00000169231.12    | THBS3         | Protein    | 0.29                        | 2.31E-04 | 6.01E-03    | 0.13                            | 8.61E-02 | 3.36E-01    |  |
| ENSG00000169247.10    | SH3TC2        | Protein    | 0.51                        | 2.05E-04 | 5.48E-03    | 0.48                            | 2.81E-04 | 9.77E-03    |  |
| ENSG00000169282.16    | KCNAB1        | Protein    | -0.41                       | 7.28E-03 | 6.36E-02    | -0.32                           | 3.16E-02 | 1.97E-01    |  |
| ENSG00000169344.14    | UMOD          | Protein    | -0.89                       | 1.77E-05 | 8.39E-04    | -0.53                           | 5.26E-03 | 7.02E-02    |  |
| ENSG00000169347.15    | GP2           | Protein    | -1.43                       | 7.58E-11 | 1.73E-08    | -1.53                           | 6.51E-13 | 3.14E-10    |  |
| ENSG00000169393.7     | ELSPBP1       | Protein    | 0.63                        | 1.34E-02 | 9.37E-02    | 0.55                            | 2.80E-02 | 1.84E-01    |  |
| ENSG00000169446.5     | MMGT1         | Protein    | -0.15                       | 1.06E-02 | 8.08E-02    | -0.14                           | 1.53E-02 | 1.32E-01    |  |
| ENSG00000169605.5     | GKN1          | Protein    | 1.18                        | 4.20E-07 | 3.75E-05    | 0.23                            | 3.03E-01 | 6.12E-01    |  |
| ENSG00000169612.3     | FAM103A1      | Protein    | -0.13                       | 4.92E-03 | 4.96E-02    | -0.11                           | 1.05E-02 | 1.06E-01    |  |
| ENSG00000169660.14    | HEXDC         | Protein    | 0.34                        | 2.16E-03 | 2.88E-02    | 0.33                            | 2.02E-03 | 3.75E-02    |  |
| ENSG000               |               |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol         | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                     |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000169758.11    | <i>C15orf27</i>     | Protein    | 0.50                        | 5.43E-05 | 2.00E-03    | 0.28                            | 2.43E-02 | 1.71E-01    |  |
| ENSG00000169764.13    | <i>UGP2</i>         | Protein    | -0.14                       | 2.95E-03 | 3.54E-02    | -0.10                           | 2.23E-02 | 1.63E-01    |  |
| ENSG00000169777.6     | <i>TAS2R1</i>       | Protein    | 0.69                        | 5.89E-03 | 5.57E-02    | 0.00                            | 9.97E-01 | 9.99E-01    |  |
| ENSG00000169783.11    | <i>LINGO1</i>       | Protein    | -0.47                       | 7.96E-03 | 6.74E-02    | -0.58                           | 7.37E-04 | 1.91E-02    |  |
| ENSG00000169905.11    | <i>TOR1AIP2</i>     | Protein    | -0.15                       | 1.80E-03 | 2.54E-02    | -0.16                           | 4.74E-04 | 1.41E-02    |  |
| ENSG00000169926.8     | <i>KLIF3</i>        | Protein    | -0.31                       | 3.36E-03 | 3.88E-02    | -0.35                           | 5.64E-04 | 1.60E-02    |  |
| ENSG00000169994.17    | <i>MYO7B</i>        | Protein    | 0.36                        | 8.21E-03 | 6.88E-02    | 0.26                            | 4.26E-02 | 2.32E-01    |  |
| ENSG00000170044.7     | <i>ZPLD1</i>        | Protein    | 2.75                        | 6.94E-32 | 1.27E-28    | -0.07                           | 7.68E-01 | 9.08E-01    |  |
| ENSG00000170049.8     | <i>KCNAB3</i>       | Protein    | 0.48                        | 3.74E-04 | 8.58E-03    | 0.36                            | 5.87E-03 | 7.51E-02    |  |
| ENSG00000170074.18    | <i>FAM153A</i>      | Protein    | 0.51                        | 3.32E-04 | 7.88E-03    | 0.55                            | 5.18E-05 | 2.74E-03    |  |
| ENSG00000170092.13    | <i>SPDYES</i>       | Protein    | 0.55                        | 4.78E-07 | 4.17E-05    | 0.40                            | 2.02E-04 | 7.75E-03    |  |
| ENSG00000170099.5     | <i>SERPINA6</i>     | Protein    | -1.01                       | 7.92E-05 | 2.66E-03    | -0.68                           | 6.10E-03 | 7.68E-02    |  |
| ENSG00000170122.5     | <i>FOXD4</i>        | Protein    | 0.55                        | 7.14E-04 | 1.35E-02    | 0.41                            | 9.71E-03 | 1.01E-01    |  |
| ENSG00000170153.9     | <i>RNF150</i>       | Protein    | -0.31                       | 1.00E-02 | 7.79E-02    | -0.22                           | 5.99E-02 | 2.80E-01    |  |
| ENSG00000170165.5     | <i>CR48007.2</i>    | Pseudogene | 0.76                        | 2.60E-03 | 3.26E-02    | 0.77                            | 1.75E-03 | 3.41E-02    |  |
| ENSG00000170209.4     | <i>ANKK1</i>        | Protein    | 0.73                        | 6.15E-07 | 5.18E-05    | 0.65                            | 3.94E-06 | 3.57E-04    |  |
| ENSG00000170231.14    | <i>FABP6</i>        | Protein    | -0.79                       | 2.00E-03 | 2.74E-02    | -0.31                           | 1.95E-01 | 5.00E-01    |  |
| ENSG00000170248.12    | <i>PDCD6IP</i>      | Protein    | -0.14                       | 8.92E-03 | 7.23E-02    | -0.10                           | 5.78E-02 | 2.74E-01    |  |
| ENSG00000170266.14    | <i>GLB1</i>         | Protein    | -0.34                       | 4.91E-06 | 2.93E-04    | -0.25                           | 6.37E-04 | 1.74E-02    |  |
| ENSG00000170275.13    | <i>CRTAP</i>        | Protein    | -0.16                       | 2.54E-03 | 3.22E-02    | -0.11                           | 3.19E-02 | 1.98E-01    |  |
| ENSG00000170289.11    | <i>CNGB3</i>        | Protein    | 2.86                        | 1.63E-47 | 5.49E-44    | 1.99                            | 7.18E-27 | 1.29E-23    |  |
| ENSG00000170323.7     | <i>FABP4</i>        | Protein    | -0.93                       | 2.82E-05 | 1.19E-03    | -0.31                           | 1.10E-01 | 3.80E-01    |  |
| ENSG00000170348.7     | <i>TMED10</i>       | Protein    | -0.17                       | 3.54E-03 | 4.01E-02    | -0.09                           | 1.30E-01 | 4.12E-01    |  |
| ENSG00000170356.8     | <i>OR2420P</i>      | Pseudogene | -0.72                       | 2.37E-03 | 3.07E-02    | -0.71                           | 1.91E-03 | 3.60E-02    |  |
| ENSG00000170373.7     | <i>CST1</i>         | Protein    | -1.18                       | 2.95E-06 | 1.93E-04    | -0.94                           | 7.05E-05 | 3.48E-03    |  |
| ENSG00000170390.13    | <i>DCLK2</i>        | Protein    | 0.24                        | 2.02E-03 | 2.76E-02    | 0.15                            | 5.00E-02 | 2.54E-01    |  |
| ENSG00000170409.7     | <i>CTA-313A17.2</i> | Pseudogene | 0.82                        | 3.21E-05 | 1.33E-03    | 0.68                            | 3.83E-04 | 1.21E-02    |  |
| ENSG00000170426.1     | <i>SDR9C7</i>       | Protein    | 1.11                        | 1.12E-07 | 1.22E-05    | 0.30                            | 1.35E-01 | 4.19E-01    |  |
| ENSG00000170442.10    | <i>KRT86</i>        | Protein    | -0.41                       | 1.39E-02 | 9.61E-02    | -0.54                           | 7.27E-04 | 1.89E-02    |  |
| ENSG00000170454.5     | <i>KRT75</i>        | Protein    | -0.92                       | 1.84E-04 | 5.06E-03    | -1.06                           | 5.57E-06 | 4.74E-04    |  |
| ENSG00000170456.13    | <i>DENND5B</i>      | Protein    | -0.27                       | 9.45E-03 | 7.49E-02    | -0.26                           | 1.13E-02 | 1.11E-01    |  |
| ENSG00000170465.9     | <i>KRT6C</i>        | Protein    | -0.93                       | 2.39E-04 | 6.15E-03    | -0.70                           | 4.05E-03 | 6.02E-02    |  |
| ENSG00000170482.15    | <i>SLC23A1</i>      | Protein    | 0.63                        | 1.03E-05 | 5.34E-04    | 0.65                            | 1.97E-06 | 2.07E-04    |  |
| ENSG00000170486.9     | <i>KRT72</i>        | Protein    | 1.50                        | 2.48E-09 | 4.08E-07    | 0.53                            | 2.87E-02 | 1.87E-01    |  |
| ENSG00000170523.3     | <i>KRT83</i>        | Protein    | -0.60                       | 9.74E-03 | 7.63E-02    | -0.73                           | 1.07E-03 | 2.47E-02    |  |
| ENSG00000170537.11    | <i>TMC7</i>         | Protein    | -0.24                       | 9.55E-03 | 7.54E-02    | -0.24                           | 5.59E-03 | 7.28E-02    |  |
| ENSG00000170545.15    | <i>SMAGP</i>        | Protein    | 0.31                        | 5.15E-04 | 1.08E-02    | 0.27                            | 1.32E-03 | 2.84E-02    |  |
| ENSG00000170549.3     | <i>IRX1</i>         | Protein    | -0.82                       | 1.18E-03 | 1.91E-02    | -0.45                           | 5.60E-02 | 2.70E-01    |  |
| ENSG00000170571.10    | <i>EMB</i>          | Protein    | -0.38                       | 3.77E-05 | 1.52E-03    | -0.29                           | 1.09E-03 | 2.48E-02    |  |
| ENSG00000170619.9     | <i>COMMD5</i>       | Protein    | 0.18                        | 1.12E-02 | 8.37E-02    | 0.09                            | 1.93E-01 | 4.98E-01    |  |
| ENSG00000170631.13    | <i>ZNF16</i>        | Protein    | 0.15                        | 7.23E-03 | 6.33E-02    | 0.07                            | 1.82E-01 | 4.84E-01    |  |
| ENSG00000170632.12    | <i>ARMC10</i>       | Protein    | 0.17                        | 6.94E-04 | 1.32E-02    | 0.12                            | 1.58E-02 | 1.34E-01    |  |
| ENSG00000170743.15    | <i>SYT9</i>         | Protein    | 0.51                        | 4.91E-03 | 4.96E-02    | 0.40                            | 2.35E-02 | 1.67E-01    |  |
| ENSG00000170759.10    | <i>KIF5B</i>        | Protein    | -0.20                       | 2.26E-03 | 2.96E-02    | -0.13                           | 4.86E-02 | 2.51E-01    |  |
| ENSG00000170791.16    | <i>CHCHD7</i>       | Protein    | 0.18                        | 9.05E-03 | 7.30E-02    | 0.17                            | 1.02E-02 | 1.04E-01    |  |
| ENSG00000170837.2     | <i>GPR27</i>        | Protein    | -0.26                       | 3.46E-03 | 3.95E-02    | -0.26                           | 2.07E-03 | 3.83E-02    |  |
| ENSG00000170893.3     | <i>TRH</i>          | Protein    | 1.59                        | 4.78E-12 | 1.41E-09    | -0.08                           | 7.13E-01 | 8.81E-01    |  |
| ENSG00000170909.12    | <i>OSCAR</i>        | Protein    | 0.31                        | 8.99E-03 | 7.27E-02    | 0.21                            | 7.87E-02 | 3.21E-01    |  |
| ENSG00000170919.14    | <i>TPT1-ASI</i>     | LncRNA     | 0.30                        | 4.08E-04 | 9.14E-03    | 0.31                            | 1.03E-04 | 4.66E-03    |  |
| ENSG00000170927.13    | <i>PKHD1</i>        | Protein    | 0.68                        | 1.18E-03 | 1.91E-02    | 0.48                            | 1.90E-02 | 1.49E-01    |  |
| ENSG00000170935.6     | <i>NCBP2L</i>       | Protein    | 0.40                        | 6.40E-03 | 5.90E-02    | 0.31                            | 3.09E-02 | 1.95E-01    |  |
| ENSG00000170959.13    | <i>DCDC1</i>        | Protein    | 0.69                        | 4.02E-05 | 1.60E-03    | 0.51                            | 2.01E-03 | 3.75E-02    |  |
| ENSG00000171102.13    | <i>OBP2B</i>        | Protein    | -0.62                       | 9.79E-03 | 7.66E-02    | -0.43                           | 6.08E-02 | 2.82E-01    |  |
| ENSG00000171155.7     | <i>C1GALT1C1</i>    | Protein    | -0.15                       | 4.68E-03 | 4.81E-02    | -0.09                           | 8.95E-02 | 3.42E-01    |  |
| ENSG00000171161.11    | <i>ZNF672</i>       | Protein    | 0.24                        | 1.42E-04 | 4.15E-03    | 0.22                            | 2.80E-04 | 9.76E-03    |  |
| ENSG00000171163.14    | <i>ZNF692</i>       | Protein    | 0.31                        | 5.27E-03 | 5.19E-02    | 0.26                            | 1.36E-02 | 1.23E-01    |  |
| ENSG00000171180.1     | <i>OR2M4</i>        | Protein    | 0.76                        | 3.06E-03 | 3.63E-02    | 0.72                            | 3.70E-03 | 5.69E-02    |  |
| ENSG00000171189.15    | <i>GRIK1</i>        | Protein    | -1.42                       | 1.50E-11 | 3.83E-09    | -1.35                           | 7.19E-12 | 3.10E-09    |  |
| ENSG00000171201.9     | <i>SMR3B</i>        | Protein    | 0.87                        | 9.18E-05 | 2.96E-03    | 0.03                            | 9.09E-01 | 9.67E-01    |  |
| ENSG00000171234.12    | <i>UGT2B7</i>       | Protein    | -0.58                       | 1.39E-02 | 9.64E-02    | -0.67                           | 3.66E-03 | 5.64E-02    |  |
| ENSG00000171262.10    | <i>FAM98B</i>       | Protein    | -0.18                       | 4.10E-04 | 9.17E-03    | -0.13                           | 7.20E-03 | 8.43E-02    |  |
| ENSG00000171291.7     | <i>ZNF439</i>       | Protein    | -0.34                       | 5.76E-03 | 5.49E-02    | -0.29                           | 1.37E-02 | 1.24E-01    |  |
| ENSG00000171298.11    | <i>GAA</i>          | Protein    | -0.26                       | 4.91E-04 | 1.04E-02    | -0.14                           | 5.47E-02 | 2.66E-01    |  |
| ENSG00000171303.6     | <i>KCNK3</i>        | Protein    | -0.54                       | 2.71E-03 | 3.35E-02    | -0.32                           | 6.53E-02 | 2.92E-01    |  |
| ENSG00000171385.8     | <i>KCND3</i>        | Protein    | -0.23                       | 1.25E-02 | 8.99E-02    | -0.12                           | 1.88E-01 | 4.91E-01    |  |
| ENSG00000171433.10    | <i>GLOD5</i>        | Protein    | 0.35                        | 2.88E-03 | 3.49E-02    | 0.34                            | 2.69E-03 | 4.59E-02    |  |
| ENSG00000171469.9     | <i>ZNF561</i>       | Protein    | -0.20                       | 9.62E-05 | 3.07E-03    | -0.12                           | 1.34E-02 | 1.22E-01    |  |
| ENSG00000171483.12    | <i>SSX6</i>         | Pseudogene | 1.16                        | 4.55E-07 | 4.01E-05    | 0.54                            | 1.36E-02 | NA          |  |
| ENSG00000171497.4     | <i>PPID</i>         | Protein    | -0.13                       | 3.22E-03 | 3.78E-02    | -0.12                           | 4.47E-03 | 6.39E-02    |  |
| ENSG00000171505.5     | <i>ORIN1</i>        | Protein    | -0.67                       | 9.08E-03 | 7.33E-02    | -0.68                           | 5.51E-03 | 7.21E-02    |  |
| ENSG00000171522.5     | <i>PTGER4</i>       | Protein    | 0.47                        | 1.16E-03 | 1.89E-02    | 0.44                            | 1.36E-03 | 2.88E-02    |  |
| ENSG00000171595.12    | <i>DNAI2</i>        | Protein    | -1.08                       | 8.17E-06 | 4.43E-04    | -0.65                           | 3.54E-03 | 5.52E-02    |  |
| ENSG00000171596.6     | <i>NMUR1</i>        | Protein    | -0.40                       | 7.00E-03 | 6.21E-02    | -0.25                           | 8.78E-02 | 3.39E-01    |  |
| ENSG00000171603.15    | <i>CLSTN1</i>       | Protein    | -0.22                       | 2.88E-05 | 1.21E-03    | -0.13                           | 1.60E-02 | 1.36E-01    |  |
| ENSG00000171606.16    | <i>ZNF274</i>       | Protein    | 0.16                        | 1.18E-02 | 8.67E-02    | 0.09                            | 1.31E-01 | 4.14E-01    |  |
| ENSG00000171611.8     | <i>PTCRA</i>        | Protein    | 0.60                        | 4.71E-04 | 1.01E-02    | 0.58                            | 3.85E-04 | 1.21E-02    |  |
| ENSG00000171714.10    | <i>ANOS</i>         | Protein    | -0.52                       | 8.20E-04 | 1.48E-02    | -0.33                           | 2.68E-02 | 1.80E-01    |  |
| ENSG00000171747.7     | <i>LGALS4</i>       | Protein    | 0.61                        | 6.53E-04 | 1.26E-02    | 0.46                            | 8.08E-03 | 9.04E-02    |  |
| ENSG00000171759.7     | <i>PAH</i>          | Protein    | 0.89                        | 2.37E-04 | 6.13E-03    | 1.13                            | 1.62E-06 | 1.77E-04    |  |
| ENSG00000171786.5     | <i>NHLH1</i>        | Protein    | 0.36                        | 1.10E-02 | 8.29E-02    | 0.24                            | 8.35E-02 | 3.31E-01    |  |
| ENSG00000171847.9     | <i>FAM90A1</i>      | Protein    | -0.46                       | 2.43E-03 | 3.12E-02    | -0.40                           | 6.10E-03 | 7.68E-02    |  |
| ENSG00000171954.11    | <i>CYP4F22</i>      | Protein    | -0.68                       | 1.57E-03 | 2.32E-02    | -0.31                           | 1.04E-01 | 3.70E-01    |  |
| ENSG00000171962.16    | <i>LRRC48</i>       | Protein    | 0.26                        | 9.64E-04 | 1.66E-02    | 0.21                            | 4.80E-03 | 6.66E-02    |  |
| ENSG00000171970.11    | <i>ZNF57</i>        | Protein    | 0.16                        | 2.67E-03 | 3.32E-02    | 0.15                            | 3.21E-03 | 5.17E-02    |  |
| ENSG00000171987.1     | <i>C11orf40</i>     | Protein    | 0.90                        | 3.66E-04 | 8.46E-03    | 0.84                            | 6.12E-04 | 1.69E-02    |  |
| ENSG00000172009.13    | <i>THOP1</i>        | Protein    | 0.23                        | 8.08E-03 | 6.81E-02    | 0.21                            | 1.45E-02 | 1.27E-01    |  |
| ENSG00000172037.12    | <i>LAMB2</i>        | Protein    | -0.29                       | 1.61E-03 | 2.36E-02    | -0.18                           | 4.02E-02 | 2.25E-01    |  |
| ENSG00000172058.14    | <i>SERF1A</i>       | Protein    | -1.10                       | 7.36E-08 | 8.38E-06    | -1.12                           | 1.48E-08 | 3.12E-06    |  |
| ENSG00000172062.15    | <i>SMN1</i>         | Protein    | 0.40                        | 2.41E-08 | 3.11E-06    | 0.37                            | 5.49E-08 | 9.96E-06    |  |
| ENSG00000172071.10    | <i>EIF2AK3</i>      | Protein    | -0.21                       | 7.30E-03 | 6.38E-02    | -0.16                           | 3.13E-02 | 1.96E-01    |  |
| ENSG00000172167.6     | <i>MTBP</i>         | Protein    | 0.31                        | 9.77E-04 | 1.67E-02    | 0.13                            | 1.82E-01 | 4.84E-01    |  |
| ENSG00000172215.5     | <i>CXCR6</i>        | Protein    | 0.45                        | 2.06E-03 | 2.80E-02    | 0.43                            | 2.13E-03 | 3.90E-02    |  |
| ENSG00000172238.4     | <i>ATOH1</i>        | Protein    | 1.17                        | 3.42E-06 | 2.17E-04    | -0.26                           | 2.82E-01 | 5.92E-01    |  |
| ENSG00000172250.13    | <i>SERHL</i>        | LncRNA     | 0.55                        | 5.20E-04 | 1.09E-02    | 0.49                            | 1.35E-03 | 2.88E-02    |  |
| ENSG00000172264.15    | <i>MACROD2</i>      | Protein    | -0.35                       | 7.37E-04 | 1.38E-02    | -0.21                           | 4.43E-02 | 2.38E-01    |  |
| ENSG00000172340.13    | <i>SUCLG2</i>       | Protein    | -0.17                       | 7.43E-03 | 6.44E-02    | -0.12                           | 5.03E-02 | 2.55E-01    |  |
| ENSG00000172379.17    | <i>ARNT2</i>        | Protein    | -0.27                       | 3.90E-03 | 4.28E-02    | -0.25                           | 4.77E-03 | 6.63E-02    |  |
| ENSG00000172380.5     | <i>GNG12</i>        | Protein    | -0.18                       | 1.17E-02 | 8.59E-02    | -0.12                           | 7.94E-02 | 3.23E-01    |  |
| ENSG00000172403.9     | <i>SYNPO2</i>       | Protein    | -0.39                       | 1.28E-02 | 9.13E-02    | -0.19                           | 1.98E-01 | 5.03E-01    |  |
| ENSG00000172426.14    | <i>RSPH9</i>        | Protein    | 0.42                        | 2.06E-05 | 9.50E-04    | 0.37                            | 7.46E-05 | 3.63E-03    |  |
| ENSG00000172432.17    | <i>GTPBP2</i>       | Protein    | 0.12                        | 7.10E-03 | 6.25E-02    | 0.05                            | 2.14E-01 | 5.22E-01    |  |
| ENSG00000172461.9     | <i>FUT9</i>         | Protein    | -0.60                       | 5.22E-03 | 5.16E-02    | -0.53                           | 8.91E-03 | 9.58E-02    |  |
| ENSG00000172469.13    | <i>MANEA</i>        | Protein    | -0.29                       | 5.97E-03 | 5.62E-02    | -0.21                           | 4.28E-02 | 2.33E-01    |  |
| ENSG0000              |                     |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol    | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000172799.5     | ZBTB8OSP2      | Pseudogene | 1.97                        | 4.87E-24 | 5.45E-21    | 2.03                            | 2.45E-27 | 4.62E-24    |  |
| ENSG00000172828.11    | CE53           | Protein    | 0.67                        | 2.26E-03 | 2.96E-02    | 0.50                            | 1.99E-02 | 1.53E-01    |  |
| ENSG00000172900.10    | FLJ42102       | Pseudogene | 0.59                        | 5.69E-03 | 5.45E-02    | 0.46                            | 2.66E-02 | 1.80E-01    |  |
| ENSG00000172915.17    | NBEA           | Protein    | -0.29                       | 7.03E-03 | 6.22E-02    | -0.24                           | 2.07E-02 | 1.56E-01    |  |
| ENSG00000172932.13    | ANKRD13D       | Protein    | 0.20                        | 4.62E-03 | 4.77E-02    | 0.05                            | 4.91E-01 | 7.55E-01    |  |
| ENSG00000172974.11    | AC007318.5     | Pseudogene | 0.41                        | 4.33E-04 | 9.51E-03    | 0.39                            | 4.52E-04 | 1.37E-02    |  |
| ENSG00000173065.12    | FAM222B        | Protein    | -0.22                       | 1.10E-03 | 1.82E-02    | -0.15                           | 2.11E-02 | 1.57E-01    |  |
| ENSG00000173080.5     | RXFP4          | Protein    | -0.77                       | 1.64E-03 | 2.39E-02    | -0.84                           | 3.56E-04 | 1.15E-02    |  |
| ENSG00000173137.10    | ADCK5          | Protein    | 0.28                        | 8.14E-03 | 6.85E-02    | 0.12                            | 2.52E-01 | 5.63E-01    |  |
| ENSG00000173210.18    | ABLIM3         | Protein    | 0.59                        | 1.27E-07 | 1.36E-05    | 0.55                            | 1.92E-07 | 2.94E-05    |  |
| ENSG00000173213.8     | RP11-683L23.1  | Protein    | 0.89                        | 4.70E-08 | 5.52E-06    | 0.86                            | 4.51E-08 | 8.47E-06    |  |
| ENSG00000173218.13    | VANGL1         | Protein    | -0.19                       | 7.93E-03 | 6.72E-02    | -0.19                           | 5.72E-03 | 7.39E-02    |  |
| ENSG00000173221.12    | GLRX           | Protein    | -0.38                       | 5.10E-04 | 1.07E-02    | -0.27                           | 9.51E-03 | 9.97E-02    |  |
| ENSG00000173239.12    | LIPM           | Protein    | 0.68                        | 1.24E-05 | 6.18E-04    | 0.72                            | 1.66E-06 | 1.80E-04    |  |
| ENSG00000173262.10    | SLC2A14        | Protein    | 0.82                        | 5.89E-05 | 2.12E-03    | 0.80                            | 5.05E-05 | 2.69E-03    |  |
| ENSG00000173391.7     | OLR1           | Protein    | 0.50                        | 1.23E-03 | 1.95E-02    | 0.23                            | 1.39E-01 | 4.27E-01    |  |
| ENSG00000173402.10    | DAG1           | Protein    | -0.22                       | 3.46E-04 | 8.11E-03    | -0.16                           | 6.01E-03 | 7.60E-02    |  |
| ENSG00000173406.14    | DAB1           | Protein    | -0.62                       | 1.84E-03 | 2.58E-02    | -0.14                           | 4.16E-01 | 7.03E-01    |  |
| ENSG00000173432.9     | SAA1           | Protein    | -0.77                       | 1.08E-03 | 1.80E-02    | -0.90                           | 5.59E-05 | 2.90E-03    |  |
| ENSG00000173452.12    | TMEM196        | Protein    | 0.76                        | 2.07E-03 | 2.80E-02    | 0.68                            | 4.11E-03 | 6.09E-02    |  |
| ENSG00000173467.7     | AGR3           | Protein    | -0.78                       | 3.02E-04 | 7.35E-03    | -0.90                           | 1.71E-05 | 1.15E-03    |  |
| ENSG00000173531.14    | MST1           | Protein    | 0.35                        | 8.64E-03 | 7.10E-02    | 0.20                            | 1.34E-01 | 4.18E-01    |  |
| ENSG00000173557.13    | C2orf70        | Protein    | -0.42                       | 1.09E-02 | 8.22E-02    | -0.35                           | 2.40E-02 | 1.69E-01    |  |
| ENSG00000173610.10    | UGT2A1         | Protein    | -0.69                       | 5.60E-03 | 5.40E-02    | -0.66                           | 6.36E-03 | 7.86E-02    |  |
| ENSG00000173674.9     | EIF1AX         | Protein    | -0.16                       | 2.13E-04 | 5.64E-03    | -0.14                           | 6.48E-04 | 1.76E-02    |  |
| ENSG00000173678.13    | SPDYE2B        | Protein    | 1.59                        | 2.15E-12 | 6.56E-10    | 1.45                            | 5.63E-11 | 1.94E-08    |  |
| ENSG00000173692.11    | PSMD1          | Protein    | -0.12                       | 7.25E-03 | 6.34E-02    | -0.08                           | 4.54E-02 | 2.41E-01    |  |
| ENSG00000173698.16    | GPR64          | Protein    | 0.86                        | 6.26E-08 | 7.27E-06    | 0.94                            | 1.01E-09 | 2.75E-07    |  |
| ENSG00000173702.6     | MUC13          | Protein    | 0.91                        | 4.64E-05 | 1.78E-03    | 0.46                            | 3.46E-02 | 2.07E-01    |  |
| ENSG00000173715.14    | C11orf80       | Protein    | 0.24                        | 1.74E-03 | 2.49E-02    | 0.10                            | 1.86E-01 | 4.90E-01    |  |
| ENSG00000173818.15    | ENDOV          | Protein    | 0.18                        | 6.87E-03 | 6.13E-02    | 0.18                            | 4.81E-03 | 6.66E-02    |  |
| ENSG00000173867.8     | RP11-970I2.7   | LncRNA     | 0.42                        | 5.46E-05 | 2.01E-03    | 0.40                            | 4.54E-05 | 2.47E-03    |  |
| ENSG00000173930.8     | SLCO4C1        | Protein    | 0.97                        | 9.10E-06 | 4.83E-04    | -0.17                           | 4.01E-01 | 6.92E-01    |  |
| ENSG00000173988.11    | LRRC63         | Protein    | 0.44                        | 6.04E-04 | 1.19E-02    | 0.43                            | 4.88E-04 | 1.45E-02    |  |
| ENSG00000174016.10    | FAM46D         | Protein    | -0.63                       | 4.20E-03 | 4.49E-02    | -0.52                           | 1.51E-02 | 1.31E-01    |  |
| ENSG00000174032.15    | SLC25A30       | Protein    | -0.21                       | 1.04E-02 | 8.00E-02    | -0.12                           | 1.32E-01 | 4.15E-01    |  |
| ENSG00000174137.11    | FAM53A         | Protein    | 0.24                        | 1.07E-02 | 8.16E-02    | 0.14                            | 1.31E-01 | 4.14E-01    |  |
| ENSG00000174145.7     | NWD2           | Protein    | -1.19                       | 3.24E-06 | 2.09E-04    | -1.02                           | 3.07E-05 | 1.81E-03    |  |
| ENSG00000174171.5     | RP11-23P13.6   | LncRNA     | 0.74                        | 1.75E-04 | 4.88E-03    | 0.63                            | 8.28E-04 | 2.07E-02    |  |
| ENSG00000174226.7     | SNX31          | Protein    | 1.49                        | 2.50E-15 | 1.11E-12    | 1.59                            | 2.41E-18 | 2.12E-15    |  |
| ENSG00000174306.20    | ZHX3           | Protein    | -0.24                       | 1.76E-03 | 2.50E-02    | -0.29                           | 8.46E-05 | 3.97E-03    |  |
| ENSG00000174384.9     | RP11-313P13.4  | Pseudogene | 0.40                        | 3.63E-03 | 4.08E-02    | 0.38                            | 3.33E-03 | 5.29E-02    |  |
| ENSG00000174500.11    | GCSAM          | Protein    | 0.49                        | 2.30E-04 | 6.00E-03    | 0.39                            | 2.97E-03 | 4.90E-02    |  |
| ENSG00000174501.13    | ANKRD36C       | Protein    | 0.31                        | 6.44E-03 | 5.91E-02    | 0.23                            | 3.61E-02 | 2.12E-01    |  |
| ENSG00000174562.12    | KLK15          | Protein    | 0.51                        | 4.25E-03 | 4.52E-02    | 0.41                            | 1.75E-02 | 1.43E-01    |  |
| ENSG00000174586.9     | ZNF497         | Protein    | 0.21                        | 8.01E-03 | 6.77E-02    | 0.13                            | 9.75E-02 | 3.57E-01    |  |
| ENSG00000174672.14    | BRSK2          | Protein    | -0.59                       | 4.50E-03 | 4.70E-02    | -0.54                           | 6.51E-03 | 7.97E-02    |  |
| ENSG00000174705.10    | SH3PXD2B       | Protein    | -0.28                       | 6.25E-03 | 5.80E-02    | -0.16                           | 1.05E-01 | 3.72E-01    |  |
| ENSG00000174827.12    | PDZK1          | Protein    | 0.26                        | 5.72E-03 | 5.47E-02    | 0.20                            | 2.90E-02 | 1.88E-01    |  |
| ENSG00000174837.13    | EMR1           | Protein    | 0.55                        | 9.80E-05 | 3.10E-03    | 0.43                            | 1.53E-03 | 3.13E-02    |  |
| ENSG00000174898.14    | CATSPERD       | Protein    | -0.60                       | 1.29E-02 | 9.17E-02    | -0.26                           | 2.45E-01 | 5.56E-01    |  |
| ENSG00000174928.14    | C3orf33        | Protein    | 0.14                        | 9.56E-03 | 7.55E-02    | 0.13                            | 9.70E-03 | 1.01E-01    |  |
| ENSG00000174938.13    | SEZ6L2         | Protein    | -0.38                       | 3.45E-04 | 8.11E-03    | -0.24                           | 1.88E-02 | 1.48E-01    |  |
| ENSG00000174943.8     | KCTD13         | Protein    | 0.17                        | 5.70E-03 | 5.46E-02    | 0.08                            | 1.81E-01 | 4.83E-01    |  |
| ENSG00000174944.7     | P2RY14         | Protein    | 0.36                        | 1.07E-02 | 8.13E-02    | 0.33                            | 1.52E-02 | 1.32E-01    |  |
| ENSG00000174946.6     | GPR171         | Protein    | 0.61                        | 4.29E-04 | 9.45E-03    | 0.51                            | 2.08E-03 | 3.84E-02    |  |
| ENSG00000174977.8     | AC026271.5     | Pseudogene | -0.33                       | 4.35E-06 | 2.64E-04    | -0.33                           | 1.10E-06 | 1.28E-04    |  |
| ENSG00000175084.10    | DES            | Protein    | -0.49                       | 4.15E-03 | 4.45E-02    | -0.30                           | 7.81E-02 | 3.20E-01    |  |
| ENSG00000175121.10    | WFD5C5         | Protein    | -0.79                       | 1.48E-03 | 2.22E-02    | -0.99                           | 2.34E-05 | 1.48E-03    |  |
| ENSG00000175147.10    | TMEM51-AS1     | LncRNA     | 0.39                        | 1.46E-03 | 2.20E-02    | 0.37                            | 1.62E-03 | 3.23E-02    |  |
| ENSG00000175170.13    | FAM182B        | Protein    | 0.43                        | 8.36E-04 | 1.50E-02    | 0.32                            | 9.95E-03 | 1.03E-01    |  |
| ENSG00000175197.9     | DDIT3          | Protein    | 0.26                        | 5.54E-03 | 5.37E-02    | 0.14                            | 1.20E-01 | 3.96E-01    |  |
| ENSG00000175216.13    | CKAP5          | Protein    | -0.17                       | 1.09E-02 | 8.24E-02    | -0.18                           | 5.38E-03 | 7.12E-02    |  |
| ENSG00000175220.10    | ARHGAP1        | Protein    | -0.27                       | 1.70E-06 | 1.22E-04    | -0.22                           | 5.86E-05 | 3.00E-03    |  |
| ENSG00000175229.6     | GAL3ST3        | Protein    | -0.43                       | 1.21E-02 | 8.79E-02    | -0.36                           | 3.03E-02 | 1.93E-01    |  |
| ENSG00000175267.13    | VWAZA          | Protein    | -0.61                       | 2.49E-03 | 3.17E-02    | -0.46                           | 1.24E-02 | 1.17E-01    |  |
| ENSG00000175279.20    | APITD1         | Protein    | 0.23                        | 3.40E-03 | 3.90E-02    | 0.23                            | 2.41E-03 | 4.25E-02    |  |
| ENSG00000175305.15    | CCNE2          | Protein    | 0.40                        | 4.62E-04 | 1.00E-02    | 0.13                            | 2.46E-01 | 5.56E-01    |  |
| ENSG00000175309.13    | PHYKPL         | Protein    | 0.34                        | 9.89E-09 | 1.44E-06    | 0.29                            | 2.08E-07 | 3.17E-05    |  |
| ENSG00000175315.2     | CST6           | Protein    | -0.82                       | 1.11E-04 | 3.43E-03    | -1.02                           | 2.51E-07 | 3.75E-05    |  |
| ENSG00000175352.9     | NRIP3          | Protein    | 0.62                        | 2.29E-03 | 2.99E-02    | -0.61                           | 8.70E-04 | 2.13E-02    |  |
| ENSG00000175387.14    | SMAD2          | Protein    | -0.16                       | 1.44E-03 | 2.18E-02    | -0.12                           | 1.29E-02 | 1.19E-01    |  |
| ENSG00000175426.9     | PCSK1          | Protein    | 1.01                        | 1.11E-08 | 1.59E-06    | -0.40                           | 1.19E-02 | 1.14E-01    |  |
| ENSG00000175455.13    | CCDC14         | Protein    | 0.35                        | 6.18E-05 | 2.20E-03    | 0.25                            | 3.93E-03 | 5.90E-02    |  |
| ENSG00000175463.10    | TBC1D10C       | Protein    | 0.42                        | 2.44E-03 | 3.13E-02    | 0.24                            | 7.84E-02 | 3.21E-01    |  |
| ENSG00000175505.10    | CLCF1          | Protein    | 0.37                        | 1.45E-03 | 2.20E-02    | 0.24                            | 3.09E-02 | 1.95E-01    |  |
| ENSG00000175509.8     | RP11-395L14.13 | Pseudogene | -1.21                       | 7.38E-07 | 6.01E-05    | -0.91                           | 5.58E-05 | 2.90E-03    |  |
| ENSG00000175513.8     | TSGA10IP       | Protein    | 0.65                        | 1.21E-03 | 1.94E-02    | 0.56                            | 3.73E-03 | 5.72E-02    |  |
| ENSG00000175520.8     | UBQLN3         | Protein    | 0.75                        | 3.27E-03 | 3.81E-02    | 0.80                            | 1.24E-03 | NA          |  |
| ENSG00000175564.11    | UCP3           | Protein    | 0.32                        | 2.73E-03 | 3.37E-02    | 0.15                            | 1.37E-01 | 4.22E-01    |  |
| ENSG00000175711.7     | B3GNTL1        | Protein    | 0.22                        | 5.54E-03 | 5.37E-02    | 0.20                            | 9.87E-03 | 1.02E-01    |  |
| ENSG00000175727.12    | MLXIP          | Protein    | -0.19                       | 9.00E-03 | 7.28E-02    | -0.23                           | 9.79E-04 | 2.31E-02    |  |
| ENSG00000175730.8     | BAK1P1         | Pseudogene | 0.32                        | 2.72E-03 | 3.36E-02    | 0.24                            | 2.33E-02 | 1.67E-01    |  |
| ENSG00000175746.6     | C15orf54       | LncRNA     | 0.56                        | 9.73E-03 | 7.63E-02    | 0.43                            | 3.92E-02 | 2.22E-01    |  |
| ENSG00000175772.10    | LINC01106      | LncRNA     | -0.42                       | 9.47E-05 | 3.03E-03    | -0.49                           | 2.28E-06 | 2.32E-04    |  |
| ENSG00000176029.12    | C11orf16       | Protein    | -0.59                       | 2.29E-03 | 2.99E-02    | -0.40                           | 2.14E-02 | 1.59E-01    |  |
| ENSG00000176058.10    | TPRN           | Protein    | 0.26                        | 1.45E-02 | 9.87E-02    | 0.16                            | 1.20E-01 | 3.97E-01    |  |
| ENSG00000176092.12    | AIM1L          | Protein    | 0.63                        | 6.32E-04 | 1.24E-02    | -0.02                           | 9.24E-01 | 9.73E-01    |  |
| ENSG00000176236.6     | C10orf111      | LncRNA     | 0.37                        | 1.44E-03 | 2.18E-02    | 0.35                            | 1.85E-03 | 3.52E-02    |  |
| ENSG00000176248.8     | ANAPC2         | Protein    | 0.16                        | 6.83E-03 | 6.11E-02    | 0.12                            | 3.12E-02 | 1.96E-01    |  |
| ENSG00000176268.5     | CYCSP34        | Pseudogene | -0.39                       | 2.80E-03 | 3.42E-02    | -0.45                           | 3.69E-04 | 1.18E-02    |  |
| ENSG00000176593.6     | CTD-2368P22.1  | LncRNA     | 0.37                        | 7.21E-04 | 1.36E-02    | 0.26                            | 1.13E-02 | 1.11E-01    |  |
| ENSG00000176601.10    | MAP3K19        | Protein    | -0.55                       | 8.92E-03 | 7.23E-02    | -0.78                           | 8.20E-05 | 3.88E-03    |  |
| ENSG00000176658.15    | MYO1D          | Protein    | -0.25                       | 2.42E-04 | 6.21E-03    | -0.21                           | 9.52E-04 | 2.27E-02    |  |
| ENSG00000176659.7     | C20orf197      | LncRNA     | 0.42                        | 6.45E-03 | 5.91E-02    | 0.31                            | 4.26E-02 | 2.33E-01    |  |
| ENSG00000176716.4     | OR10AB1P       | Pseudogene | 0.53                        | 2.51E-03 | 3.19E-02    | 0.56                            | 1.09E-03 | 2.49E-02    |  |
| ENSG00000176731.10    | C8orf59        | Protein    | 0.26                        | 3.26E-03 | 3.81E-02    | 0.12                            | 1.69E-01 | 4.65E-01    |  |
| ENSG00000176732.6     | PFN4           | Protein    | 0.25                        | 7.06E-03 | 6.24E-02    | 0.16                            | 8.31E-02 | 3.31E-01    |  |
| ENSG00000176788.8     | BASP1          | Protein    | 0.35                        | 9.47E-03 | 7.50E-02    | 0.25                            | 6.05E-02 | 2.81E-01    |  |
| ENSG00000176871.7     | WSB2           | Protein    | -0.33                       | 1.17E-05 | 5.92E-04    | -0.35                           | 1.20E-06 | 1.37E-04    |  |
| ENSG00000176907.4     | C8orf4         | Protein    | 0.51                        | 1.92E-03 | 2.66E-02    | 0.57                            | 2.82E-04 | 9.77E-03    |  |
| ENSG00000176956.11    | LY6H           | Protein    | -1.07                       | 1.31E-06 | 9.83E-05    | -0.88                           | 1.91E-05 | 1.25E-03    |  |
| ENSG00000177025.3     | C19orf18       | Protein    | 0.35                        | 1.17E-02 | 8.59E-02    | 0.33                            | 1.30E-02 | 1.20E-01    |  |
| ENSG00000177042.13    | TMEM80         | Protein    | 0.17                        | 5.04E-03 | 5.04E-02    | 0.16                            | 7.69E-03 | 8.77E-02    |  |
| ENSG00000177058.10    | SLC38A9        | Protein    | 0.21                        | 3.30E-03 | 3.84E-02    | 0.19                            | 4.58E-03 | 6.47E-02    |  |
| ENSG00000177082.11    | WDR73          | Protein    | 0.18                        | 6.54E-04 | 1.26E-02</  |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000177112.6     | <i>MRV11-AS1</i>     | LncRNA     | -0.59                       | 1.48E-04 | 4.28E-03    | -0.40                           | 7.32E-03 | 8.52E-02    |  |
| ENSG00000177174.1     | <i>OR14C36</i>       | Protein    | 1.06                        | 8.34E-06 | 4.49E-04    | 0.82                            | 2.93E-04 | 1.00E-02    |  |
| ENSG00000177181.13    | <i>RIMKLA</i>        | Protein    | -0.27                       | 4.93E-03 | 4.97E-02    | -0.22                           | 1.60E-02 | 1.36E-01    |  |
| ENSG00000177212.3     | <i>OR2T33</i>        | Protein    | 0.93                        | 3.06E-05 | 1.28E-03    | 0.90                            | 2.93E-05 | 1.75E-03    |  |
| ENSG00000177294.6     | <i>FBXO39</i>        | Protein    | 0.55                        | 2.46E-03 | 3.15E-02    | 0.41                            | 2.01E-02 | 1.53E-01    |  |
| ENSG00000177301.12    | <i>KCNA2</i>         | Protein    | -0.45                       | 6.97E-03 | 6.19E-02    | -0.32                           | 5.07E-02 | 2.56E-01    |  |
| ENSG00000177410.11    | <i>ZFAS1</i>         | LncRNA     | 0.25                        | 1.32E-02 | 9.30E-02    | 0.15                            | 1.32E-01 | 4.16E-01    |  |
| ENSG00000177425.9     | <i>PAWR</i>          | Protein    | -0.13                       | 1.43E-02 | 9.80E-02    | -0.13                           | 8.11E-03 | 9.06E-02    |  |
| ENSG00000177462.6     | <i>OR2T8</i>         | Protein    | 1.01                        | 3.41E-09 | 5.49E-07    | 1.02                            | 5.91E-10 | 1.66E-07    |  |
| ENSG00000177468.6     | <i>OLIG3</i>         | Protein    | -0.72                       | 3.23E-03 | 3.79E-02    | -0.60                           | 1.21E-02 | 1.15E-01    |  |
| ENSG00000177469.12    | <i>PTRF</i>          | Protein    | -0.30                       | 1.22E-02 | 8.84E-02    | -0.18                           | 1.16E-01 | 3.89E-01    |  |
| ENSG00000177483.10    | <i>RBMA4</i>         | Protein    | 1.69                        | 4.84E-29 | 7.23E-26    | 0.15                            | 2.29E-01 | 5.40E-01    |  |
| ENSG00000177535.7     | <i>OR2B11</i>        | Protein    | 1.14                        | 5.04E-06 | 3.00E-04    | 1.08                            | 9.08E-06 | 7.07E-04    |  |
| ENSG00000177614.8     | <i>PGBD5</i>         | Protein    | -0.28                       | 1.01E-02 | 7.84E-02    | -0.31                           | 2.91E-03 | 4.85E-02    |  |
| ENSG00000177628.14    | <i>GBA</i>           | Protein    | -0.19                       | 1.41E-02 | 9.73E-02    | -0.18                           | 1.59E-02 | 1.35E-01    |  |
| ENSG00000177663.12    | <i>IL17RA</i>        | Protein    | -0.24                       | 4.04E-05 | 1.60E-03    | -0.15                           | 7.02E-03 | 8.32E-02    |  |
| ENSG00000177669.3     | <i>MBOAT4</i>        | Protein    | 0.38                        | 7.11E-03 | 6.26E-02    | 0.26                            | 5.05E-02 | 2.56E-01    |  |
| ENSG00000177675.7     | <i>CD163L1</i>       | Protein    | -0.45                       | 1.31E-02 | 9.27E-02    | -0.55                           | 1.56E-03 | 3.16E-02    |  |
| ENSG00000177688.6     | <i>SUMO4</i>         | Protein    | 0.51                        | 2.39E-04 | 6.16E-03    | 0.49                            | 2.95E-04 | 1.01E-02    |  |
| ENSG00000177697.16    | <i>CD151</i>         | Protein    | -0.23                       | 4.54E-03 | 4.73E-02    | -0.19                           | 1.90E-02 | 1.49E-01    |  |
| ENSG00000177721.4     | <i>ANXA2R</i>        | Protein    | 0.39                        | 7.11E-03 | 6.26E-02    | 0.35                            | 1.12E-02 | 1.11E-01    |  |
| ENSG00000177839.6     | <i>PCDHB9</i>        | Protein    | -0.50                       | 1.42E-03 | 2.16E-02    | -0.53                           | 4.77E-04 | 1.42E-02    |  |
| ENSG00000177885.12    | <i>GRB2</i>          | Protein    | -0.11                       | 2.10E-03 | 2.82E-02    | -0.09                           | 6.43E-03 | 7.91E-02    |  |
| ENSG00000177888.7     | <i>ZBTB41</i>        | Protein    | -0.29                       | 4.29E-04 | 9.44E-03    | -0.26                           | 8.29E-04 | 2.07E-02    |  |
| ENSG00000177910.7     | <i>SPAT431C2</i>     | Pseudogene | -0.55                       | 9.22E-03 | 7.39E-02    | -0.61                           | 2.78E-03 | 4.70E-02    |  |
| ENSG00000177981.9     | <i>ASB8</i>          | Protein    | -0.13                       | 5.31E-04 | 1.10E-02    | -0.09                           | 1.42E-02 | 1.26E-01    |  |
| ENSG00000177990.10    | <i>DPY19L2</i>       | Protein    | 0.55                        | 4.66E-04 | 1.01E-02    | 0.34                            | 2.60E-02 | 1.77E-01    |  |
| ENSG00000178075.18    | <i>GRAMD1C</i>       | Protein    | 0.30                        | 5.60E-03 | 5.40E-02    | 0.28                            | 7.00E-03 | 8.31E-02    |  |
| ENSG00000178082.6     | <i>TWFP1P1</i>       | Pseudogene | -0.53                       | 1.68E-03 | 2.43E-02    | -0.48                           | 3.08E-03 | 5.02E-02    |  |
| ENSG00000178105.8     | <i>DDX10</i>         | Protein    | -0.12                       | 1.40E-02 | 9.68E-02    | -0.13                           | 8.61E-03 | 9.38E-02    |  |
| ENSG00000178162.7     | <i>FAR2P2</i>        | Pseudogene | 1.17                        | 4.42E-10 | 8.61E-08    | 1.01                            | 2.20E-08 | 4.40E-06    |  |
| ENSG00000178163.6     | <i>ZNFS18B</i>       | Protein    | -0.21                       | 1.34E-02 | 9.37E-02    | -0.15                           | 5.41E-02 | 2.65E-01    |  |
| ENSG00000178177.13    | <i>LCORL</i>         | Protein    | -0.29                       | 1.04E-03 | 1.75E-02    | -0.23                           | 7.35E-03 | 8.54E-02    |  |
| ENSG00000178193.5     | <i>RP4-682C21.5</i>  | LncRNA     | 0.67                        | 2.94E-03 | 3.53E-02    | 0.54                            | 1.27E-02 | 1.19E-01    |  |
| ENSG00000178222.11    | <i>RNF212</i>        | Protein    | 0.68                        | 1.98E-04 | 5.34E-03    | 0.66                            | 1.85E-04 | 7.26E-03    |  |
| ENSG00000178248.11    | <i>AP000345.1</i>    | LncRNA     | -0.64                       | 1.52E-03 | 2.26E-02    | -0.45                           | 2.12E-02 | 1.58E-01    |  |
| ENSG00000178295.13    | <i>GEN1</i>          | Protein    | 0.20                        | 3.98E-03 | 4.34E-02    | 0.17                            | 1.28E-02 | 1.19E-01    |  |
| ENSG00000178297.11    | <i>TMPPRSS9</i>      | Protein    | 0.50                        | 7.75E-04 | 1.43E-02    | 0.25                            | 8.87E-02 | 3.41E-01    |  |
| ENSG00000178338.9     | <i>ZNFS34B</i>       | Protein    | 0.21                        | 4.55E-03 | 4.73E-02    | 0.10                            | 1.56E-01 | 4.50E-01    |  |
| ENSG00000178343.4     | <i>SHISA3</i>        | Protein    | -0.49                       | 1.16E-02 | 8.54E-02    | -0.50                           | 6.57E-03 | 8.02E-02    |  |
| ENSG00000178404.8     | <i>KLAA1731NL</i>    | Protein    | 0.56                        | 8.56E-04 | 1.53E-02    | 0.50                            | 2.01E-03 | 3.75E-02    |  |
| ENSG00000178445.8     | <i>GLDC</i>          | Protein    | -0.70                       | 1.96E-03 | 2.70E-02    | -1.08                           | 6.42E-07 | 8.16E-05    |  |
| ENSG00000178623.10    | <i>GPR35</i>         | Protein    | 0.66                        | 4.71E-07 | 4.12E-05    | 0.19                            | 1.35E-01 | 4.19E-01    |  |
| ENSG00000178631.7     | <i>ACTG1P1</i>       | Pseudogene | 0.58                        | 5.82E-07 | 4.96E-05    | 0.47                            | 3.12E-05 | 1.84E-03    |  |
| ENSG00000178685.12    | <i>PARP10</i>        | Protein    | 0.29                        | 9.32E-03 | 7.44E-02    | 0.18                            | 8.46E-02 | 3.33E-01    |  |
| ENSG00000178695.5     | <i>KCTD12</i>        | Protein    | -0.30                       | 9.92E-03 | 7.73E-02    | -0.37                           | 9.17E-04 | 2.21E-02    |  |
| ENSG00000178715.8     | <i>RP11-169K16.8</i> | Pseudogene | 0.58                        | 7.88E-04 | 1.44E-02    | 0.54                            | 1.30E-03 | 2.79E-02    |  |
| ENSG00000178723.7     | <i>GLULP4</i>        | Pseudogene | 0.63                        | 1.32E-03 | 2.06E-02    | 0.13                            | 5.03E-01 | 7.62E-01    |  |
| ENSG00000178773.13    | <i>CPNE7</i>         | Protein    | 0.50                        | 8.26E-03 | 6.91E-02    | 0.35                            | 5.97E-02 | 2.79E-01    |  |
| ENSG00000178809.10    | <i>TRIM73</i>        | Protein    | 0.48                        | 3.47E-04 | 8.13E-03    | 0.33                            | 1.17E-02 | 1.13E-01    |  |
| ENSG00000178904.17    | <i>DPY19L3</i>       | Protein    | -0.20                       | 6.13E-03 | 5.73E-02    | -0.08                           | 2.92E-01 | 6.03E-01    |  |
| ENSG00000178965.12    | <i>ERICH3</i>        | Protein    | -1.11                       | 5.76E-06 | 3.30E-04    | -0.32                           | 1.41E-01 | 4.29E-01    |  |
| ENSG00000178996.11    | <i>SNX18</i>         | Protein    | -0.17                       | 8.74E-03 | 7.15E-02    | -0.16                           | 1.09E-02 | 1.09E-01    |  |
| ENSG00000179041.3     | <i>RRS1</i>          | Protein    | 0.29                        | 8.42E-04 | 1.51E-02    | 0.18                            | 3.79E-02 | 2.18E-01    |  |
| ENSG00000179083.6     | <i>FAM133A</i>       | Protein    | 0.62                        | 2.44E-03 | 3.13E-02    | -0.19                           | 2.99E-01 | 6.09E-01    |  |
| ENSG00000179101.5     | <i>RP11-349N19.2</i> | Pseudogene | -0.28                       | 1.09E-02 | 8.22E-02    | -0.27                           | 1.06E-02 | 1.07E-01    |  |
| ENSG00000179141.8     | <i>MTUS2-AS1</i>     | LncRNA     | 0.60                        | 6.60E-03 | 5.98E-02    | 0.47                            | 2.94E-02 | 1.90E-01    |  |
| ENSG00000179163.11    | <i>FUCA1</i>         | Protein    | -0.32                       | 5.71E-06 | 3.28E-04    | -0.17                           | 1.33E-02 | 1.21E-01    |  |
| ENSG00000179277.9     | <i>MEIS3P1</i>       | Pseudogene | -0.46                       | 8.77E-04 | 1.55E-02    | -0.36                           | 7.43E-03 | 8.60E-02    |  |
| ENSG00000179314.12    | <i>WSCD1</i>         | Protein    | -0.35                       | 6.57E-03 | 5.97E-02    | -0.35                           | 3.97E-03 | 5.94E-02    |  |
| ENSG00000179428.2     | <i>AC073072.5</i>    | LncRNA     | -0.66                       | 1.99E-03 | 2.73E-02    | -0.61                           | 3.18E-03 | 5.13E-02    |  |
| ENSG00000179476.6     | <i>C14orf28</i>      | Protein    | -0.15                       | 5.77E-03 | 5.49E-02    | -0.13                           | 1.52E-02 | 1.31E-01    |  |
| ENSG00000179532.11    | <i>DNHD1</i>         | Protein    | 0.48                        | 1.22E-05 | 6.11E-04    | 0.27                            | 1.10E-02 | 1.10E-01    |  |
| ENSG00000179571.10    | <i>NBPF17P</i>       | Pseudogene | 0.53                        | 7.39E-03 | 6.42E-02    | 0.53                            | 5.57E-03 | 7.26E-02    |  |
| ENSG00000179580.8     | <i>RNF151</i>        | Protein    | 0.57                        | 5.64E-03 | 5.43E-02    | 0.53                            | 7.29E-03 | 8.50E-02    |  |
| ENSG00000179598.5     | <i>PLD6</i>          | Protein    | 0.27                        | 1.66E-03 | 2.41E-02    | 0.23                            | 5.03E-03 | 6.85E-02    |  |
| ENSG00000179674.3     | <i>ARL14</i>         | Protein    | 0.57                        | 8.31E-03 | 6.93E-02    | -0.39                           | 5.69E-02 | 2.72E-01    |  |
| ENSG00000179715.11    | <i>PCED1B</i>        | Protein    | 0.32                        | 1.16E-02 | 8.54E-02    | 0.12                            | 3.40E-01 | 6.44E-01    |  |
| ENSG00000179766.16    | <i>ATP8B3P</i>       | Pseudogene | 0.53                        | 6.05E-05 | 2.16E-03    | 0.38                            | 3.26E-03 | 5.22E-02    |  |
| ENSG00000179774.8     | <i>ATOH7</i>         | Protein    | 0.42                        | 1.31E-02 | 9.28E-02    | 0.21                            | 2.10E-01 | 5.18E-01    |  |
| ENSG00000179796.10    | <i>LRRRC3B</i>       | Protein    | 0.64                        | 1.76E-03 | 2.51E-02    | 0.65                            | 1.09E-03 | 2.49E-02    |  |
| ENSG00000179813.5     | <i>FAM216B</i>       | Protein    | -0.70                       | 6.00E-03 | 5.64E-02    | -0.62                           | 1.14E-02 | 1.12E-01    |  |
| ENSG00000179841.8     | <i>AKAP5</i>         | Protein    | -0.39                       | 2.55E-03 | 3.23E-02    | -0.51                           | 3.76E-05 | 2.13E-03    |  |
| ENSG00000179909.14    | <i>ZNFI54</i>        | Protein    | 0.36                        | 4.77E-03 | 4.86E-02    | 0.43                            | 3.82E-04 | 1.21E-02    |  |
| ENSG00000180053.7     | <i>NKX2-6</i>        | Protein    | -0.74                       | 2.69E-03 | 3.34E-02    | -0.48                           | 4.16E-02 | 2.30E-01    |  |
| ENSG00000180178.9     | <i>FAR2P1</i>        | Pseudogene | 0.65                        | 3.37E-03 | 3.89E-02    | 0.51                            | 1.71E-02 | 1.41E-01    |  |
| ENSG00000180257.11    | <i>ZNFS16</i>        | Protein    | -0.17                       | 4.39E-03 | 4.62E-02    | -0.09                           | 1.24E-01 | 4.04E-01    |  |
| ENSG00000180336.16    | <i>C17orf104</i>     | Protein    | -0.29                       | 9.22E-03 | 7.39E-02    | -0.25                           | 1.78E-02 | 1.44E-01    |  |
| ENSG00000180346.3     | <i>TIGD2</i>         | Protein    | -0.17                       | 7.53E-03 | 6.50E-02    | -0.11                           | 8.64E-02 | 3.37E-01    |  |
| ENSG00000180376.15    | <i>CCDC66</i>        | Protein    | 0.19                        | 1.74E-03 | 2.49E-02    | 0.13                            | 2.37E-02 | 1.68E-01    |  |
| ENSG00000180385.7     | <i>EMC3-AS1</i>      | Pseudogene | 0.30                        | 3.62E-03 | 4.07E-02    | 0.15                            | 1.36E-01 | 4.21E-01    |  |
| ENSG00000180398.10    | <i>MCFD2</i>         | Protein    | -0.19                       | 4.79E-03 | 4.87E-02    | -0.11                           | 7.72E-02 | 3.19E-01    |  |
| ENSG00000180432.5     | <i>CYP8B1</i>        | Protein    | 0.71                        | 1.46E-04 | 4.24E-03    | -0.29                           | 8.86E-02 | 3.41E-01    |  |
| ENSG00000180440.3     | <i>SERTM1</i>        | Protein    | -0.66                       | 4.08E-03 | 4.40E-02    | -0.56                           | 1.10E-02 | 1.10E-01    |  |
| ENSG00000180448.9     | <i>HMHA1</i>         | Protein    | 0.43                        | 6.92E-06 | 3.89E-04    | 0.29                            | 1.89E-03 | 3.58E-02    |  |
| ENSG00000180574.3     | <i>EIF2S3L</i>       | Protein    | -0.73                       | 1.12E-05 | 5.73E-04    | -0.70                           | 9.95E-06 | 7.54E-04    |  |
| ENSG00000180581.7     | <i>SRP9P1</i>        | Pseudogene | -0.52                       | 1.50E-04 | 4.32E-03    | -0.45                           | 5.81E-04 | 1.63E-02    |  |
| ENSG00000180660.7     | <i>MAB21L1</i>       | Protein    | -0.62                       | 5.65E-03 | 5.43E-02    | -0.81                           | 1.19E-04 | 5.21E-03    |  |
| ENSG00000180694.12    | <i>TMEM64</i>        | Protein    | -0.23                       | 2.99E-03 | 3.58E-02    | -0.22                           | 2.71E-03 | 4.60E-02    |  |
| ENSG00000180697.7     | <i>C3orf22</i>       | Protein    | 0.69                        | 1.31E-03 | 2.04E-02    | 0.47                            | 2.58E-02 | 1.76E-01    |  |
| ENSG00000180747.14    | <i>SMG1P3</i>        | Pseudogene | 0.34                        | 5.64E-04 | 1.14E-02    | 0.30                            | 1.57E-03 | 3.17E-02    |  |
| ENSG00000180776.14    | <i>ZDHHC20</i>       | Protein    | -0.25                       | 1.32E-03 | 2.05E-02    | -0.21                           | 4.02E-03 | 6.00E-02    |  |
| ENSG00000180801.12    | <i>ARSI</i>          | Protein    | -0.36                       | 1.04E-02 | 8.01E-02    | -0.23                           | 8.71E-02 | 3.38E-01    |  |
| ENSG00000180806.4     | <i>HOXC9</i>         | Protein    | 1.08                        | 1.53E-06 | 1.12E-04    | 0.87                            | 7.39E-05 | 3.60E-03    |  |
| ENSG00000180846.7     | <i>CSNK1G2-AS1</i>   | LncRNA     | 0.59                        | 2.09E-03 | 2.82E-02    | 0.50                            | 6.47E-03 | 7.94E-02    |  |
| ENSG00000180867.10    | <i>PDIA3P1</i>       | Pseudogene | -0.25                       | 2.67E-03 | 3.32E-02    | -0.21                           | 9.43E-03 | 9.91E-02    |  |
| ENSG00000180917.15    | <i>CMTR2</i>         | Protein    | -0.23                       | 5.31E-03 | 5.21E-02    | -0.13                           | 1.04E-01 | 3.71E-01    |  |
| ENSG00000180957.16    | <i>PITPNB</i>        | Protein    | -0.11                       | 4.29E-03 | 4.55E-02    | -0.09                           | 1.94E-02 | 1.51E-01    |  |
| ENSG00000180998.10    | <i>GPR137C</i>       | Protein    | 0.37                        | 3.41E-03 | 3.91E-02    | 0.09                            | 4.88E-01 | 7.53E-01    |  |
| ENSG00000181013.3     | <i>C17orf47</i>      | Protein    | 0.39                        | 1.43E-02 | 9.82E-02    | 0.25                            | 1.03E-01 | 3.68E-01    |  |
| ENSG00000181019.11    | <i>NQO1</i>          | Protein    | -0.72                       | 2.57E-07 | 2.49E-05    | -0.61                           | 6.61E-06 | 5.45E-04    |  |
| ENSG00000181074.3     | <i>ORS2N4</i>        | Protein    | 0.57                        | 1.25E-03 | 1.97E-02    | 0.52                            | 2.34E-03 | 4.16E-02    |  |
| ENSG0000018112        |                      |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol  | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|--------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |              |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000181444.11    | ZNF467       | Protein    | -0.42                       | 9.94E-04 | 1.70E-02    | -0.63                           | 4.37E-07 | 5.88E-05    |  |
| ENSG00000181481.12    | RNF135       | Protein    | -0.31                       | 6.16E-10 | 1.12E-07    | -0.33                           | 8.30E-12 | 3.46E-09    |  |
| ENSG00000181619.11    | GPR135       | Protein    | -0.22                       | 9.13E-03 | 7.35E-02    | -0.15                           | 6.31E-02 | 2.88E-01    |  |
| ENSG00000181625.16    | SLX1B        | Protein    | 0.76                        | 1.62E-04 | 4.57E-03    | 0.63                            | 1.35E-03 | 2.87E-02    |  |
| ENSG00000181634.7     | TNFSF15      | Protein    | -0.46                       | 6.74E-04 | 1.29E-02    | -0.47                           | 2.54E-04 | 9.14E-03    |  |
| ENSG00000181666.16    | HKR1         | Protein    | -0.15                       | 1.24E-02 | 8.95E-02    | -0.06                           | 3.17E-01 | 6.24E-01    |  |
| ENSG00000181778.4     | TMEM252      | Protein    | -0.47                       | 1.20E-02 | 8.75E-02    | -0.23                           | 2.19E-01 | 5.28E-01    |  |
| ENSG00000181788.3     | SLAH2        | Protein    | 0.19                        | 2.09E-03 | 2.82E-02    | 0.16                            | 7.64E-03 | 8.74E-02    |  |
| ENSG00000181800.5     | CELF2-AS1    | LncRNA     | 0.48                        | 1.05E-02 | 8.05E-02    | 0.48                            | 8.51E-03 | 9.32E-02    |  |
| ENSG00000181830.16    | SLC35C1      | Protein    | -0.23                       | 7.31E-05 | 2.49E-03    | -0.19                           | 5.91E-04 | 1.65E-02    |  |
| ENSG00000181852.16    | RNF41        | Protein    | 0.25                        | 7.90E-04 | 1.45E-02    | 0.27                            | 1.75E-04 | 6.95E-03    |  |
| ENSG00000181856.13    | SLC2A4       | Protein    | -0.50                       | 2.13E-03 | 2.85E-02    | -0.15                           | 3.43E-01 | 6.46E-01    |  |
| ENSG00000182048.10    | TRPC2        | Pseudogene | 0.42                        | 1.42E-02 | 9.75E-02    | 0.26                            | 1.16E-01 | 3.90E-01    |  |
| ENSG00000182054.8     | IDH2         | Protein    | 0.21                        | 4.59E-03 | 4.76E-02    | 0.21                            | 3.71E-03 | 5.69E-02    |  |
| ENSG00000182109.6     | RP11-69E11.4 | LncRNA     | 0.38                        | 1.75E-03 | 2.49E-02    | 0.32                            | 5.93E-03 | 7.55E-02    |  |
| ENSG00000182132.11    | KCNIP1       | Protein    | 0.38                        | 4.72E-03 | 4.83E-02    | 0.41                            | 1.44E-03 | 2.98E-02    |  |
| ENSG00000182149.19    | IST1         | Protein    | -0.13                       | 4.70E-03 | 4.83E-02    | -0.07                           | 1.51E-01 | 4.42E-01    |  |
| ENSG00000182218.8     | HHIPL1       | Protein    | -0.42                       | 3.24E-04 | 7.77E-03    | -0.33                           | 2.99E-03 | 4.92E-02    |  |
| ENSG00000182220.12    | ATP6AP2      | Protein    | -0.18                       | 2.03E-04 | 5.43E-03    | -0.15                           | 1.30E-03 | 2.81E-02    |  |
| ENSG00000182253.13    | SYNM         | Protein    | -0.45                       | 3.78E-03 | 4.19E-02    | -0.16                           | 2.92E-01 | 6.03E-01    |  |
| ENSG00000182255.6     | KCNA4        | Protein    | -0.64                       | 5.17E-03 | 5.13E-02    | -0.59                           | 4.35E-03 | 6.30E-02    |  |
| ENSG00000182264.7     | IZUMO1       | Protein    | 1.27                        | 3.66E-13 | 1.22E-10    | 0.56                            | 9.76E-04 | 2.31E-02    |  |
| ENSG00000182362.12    | YBEY         | Protein    | 0.31                        | 1.85E-03 | 2.59E-02    | 0.28                            | 2.68E-03 | 4.58E-02    |  |
| ENSG00000182366.8     | FAM87A       | LncRNA     | -1.28                       | 1.18E-09 | 2.05E-07    | -1.10                           | 2.21E-08 | 4.41E-06    |  |
| ENSG00000182376.2     | RP5-1142A6.8 | LncRNA     | 0.69                        | 1.44E-05 | 7.00E-04    | 0.57                            | 1.98E-04 | 7.63E-03    |  |
| ENSG00000182378.11    | PLCXD1       | Protein    | 0.34                        | 1.48E-06 | 1.09E-04    | 0.26                            | 1.46E-04 | 6.08E-03    |  |
| ENSG00000182389.17    | CACNB4       | Protein    | -0.45                       | 1.64E-03 | 2.39E-02    | -0.29                           | 3.51E-02 | 2.08E-01    |  |
| ENSG00000182472.7     | CAPN12       | Protein    | 1.65                        | 1.54E-27 | 2.14E-24    | -0.10                           | 4.06E-01 | 6.95E-01    |  |
| ENSG00000182477.5     | OR2B8P       | Pseudogene | 0.98                        | 3.27E-06 | 2.10E-04    | 1.02                            | 6.50E-07 | 8.20E-05    |  |
| ENSG00000182484.13    | WASH6P       | Pseudogene | 0.28                        | 7.09E-03 | 6.25E-02    | 0.25                            | 1.34E-02 | 1.22E-01    |  |
| ENSG00000182531.7     | OR7E115P     | Pseudogene | 0.99                        | 5.89E-05 | 2.12E-03    | 0.33                            | 1.63E-01 | 4.57E-01    |  |
| ENSG00000182566.11    | CLEC4G       | Protein    | -0.57                       | 2.70E-03 | 3.35E-02    | -0.56                           | 2.47E-03 | 4.34E-02    |  |
| ENSG00000182580.2     | EPHB3        | Protein    | -0.25                       | 1.25E-02 | 8.99E-02    | -0.15                           | 1.10E-01 | 3.80E-01    |  |
| ENSG00000182584.4     | ACTL10       | Protein    | 0.42                        | 1.30E-02 | 9.21E-02    | 0.38                            | 1.93E-02 | 1.50E-01    |  |
| ENSG00000182606.13    | TRAK1        | Protein    | -0.17                       | 1.20E-02 | 8.76E-02    | -0.11                           | 1.02E-01 | 3.66E-01    |  |
| ENSG00000182612.9     | TSPAN10      | Protein    | 0.66                        | 4.03E-07 | 3.60E-05    | 0.55                            | 1.13E-05 | 8.33E-04    |  |
| ENSG00000182648.10    | LINC01006    | LncRNA     | -0.69                       | 1.15E-09 | 2.00E-07    | -0.58                           | 1.44E-07 | 2.29E-05    |  |
| ENSG00000182722.5     | SEPHS1P1     | Pseudogene | 0.60                        | 2.29E-03 | 2.99E-02    | -0.08                           | 6.85E-01 | 8.68E-01    |  |
| ENSG00000182742.5     | HOXB4        | Protein    | 0.60                        | 1.73E-04 | 4.83E-03    | 0.39                            | 1.24E-02 | 1.17E-01    |  |
| ENSG00000182836.8     | PLCXD3       | Protein    | 1.01                        | 4.83E-07 | 4.20E-05    | -0.43                           | 1.12E-02 | 1.10E-01    |  |
| ENSG00000182853.10    | VMO1         | Protein    | 0.32                        | 1.26E-02 | 9.04E-02    | 0.24                            | 5.23E-02 | 2.61E-01    |  |
| ENSG00000182916.7     | TCEAL7       | Protein    | -0.38                       | 5.89E-03 | 5.57E-02    | -0.30                           | 2.38E-02 | 1.69E-01    |  |
| ENSG00000182968.4     | SOX1         | Protein    | -0.66                       | 7.98E-03 | 6.74E-02    | -0.58                           | 1.73E-02 | 1.42E-01    |  |
| ENSG00000183019.6     | MCEMP1       | Protein    | -0.83                       | 5.40E-05 | 1.99E-03    | -0.71                           | 2.51E-04 | 9.11E-03    |  |
| ENSG00000183020.12    | AP2A2        | Protein    | -0.13                       | 2.75E-03 | 3.38E-02    | -0.08                           | 5.47E-02 | 2.66E-01    |  |
| ENSG00000183036.9     | PCP4         | Protein    | -0.60                       | 4.10E-04 | 9.17E-03    | -0.39                           | 1.89E-02 | 1.48E-01    |  |
| ENSG00000183077.14    | AFMID        | Protein    | -0.22                       | 6.78E-03 | 6.08E-02    | -0.15                           | 6.26E-02 | 2.86E-01    |  |
| ENSG00000183090.5     | FREM3        | Protein    | -1.11                       | 9.18E-06 | 4.87E-04    | -1.25                           | 7.87E-08 | 1.37E-05    |  |
| ENSG00000183092.14    | BEGAIN       | Protein    | -0.45                       | 7.15E-04 | 1.35E-02    | -0.46                           | 3.10E-04 | 1.04E-02    |  |
| ENSG00000183117.16    | CSMD1        | Protein    | 1.36                        | 5.00E-10 | 9.59E-08    | 1.32                            | 5.56E-10 | 1.60E-07    |  |
| ENSG00000183166.9     | CALN1        | Protein    | -0.66                       | 4.07E-03 | 4.40E-02    | -0.53                           | 1.11E-02 | 1.10E-01    |  |
| ENSG00000183171.5     | RP11-49C9.2  | Pseudogene | 0.72                        | 5.08E-06 | 3.01E-04    | 0.52                            | 6.98E-04 | 1.85E-02    |  |
| ENSG00000183199.6     | HSP90AB3P    | Pseudogene | -0.36                       | 1.25E-03 | 1.98E-02    | -0.34                           | 1.51E-03 | 3.10E-02    |  |
| ENSG00000183230.15    | CTNNA3       | Protein    | 1.07                        | 1.72E-06 | 1.22E-04    | 0.43                            | 3.58E-02 | 2.11E-01    |  |
| ENSG00000183281.13    | PLGLB1       | Protein    | -0.80                       | 1.36E-07 | 1.44E-05    | -0.86                           | 3.30E-09 | 7.91E-07    |  |
| ENSG00000183346.6     | C10orf107    | Protein    | 0.35                        | 1.38E-02 | 9.57E-02    | 0.32                            | 2.03E-02 | 1.54E-01    |  |
| ENSG00000183396.3     | TMEM89       | Protein    | 0.76                        | 1.92E-05 | 9.02E-04    | 0.62                            | 3.09E-04 | 1.04E-02    |  |
| ENSG00000183426.14    | NPIP1        | Protein    | 0.46                        | 1.87E-05 | 8.78E-04    | 0.34                            | 9.15E-04 | 2.21E-02    |  |
| ENSG00000183431.10    | SF3A3        | Protein    | -0.09                       | 3.04E-03 | 3.62E-02    | -0.07                           | 2.00E-02 | 1.53E-01    |  |
| ENSG00000183506.15    | PI4KAP2      | Pseudogene | 0.49                        | 1.87E-08 | 2.52E-06    | 0.39                            | 3.29E-06 | 3.08E-04    |  |
| ENSG00000183549.9     | ACSM5        | Protein    | 0.56                        | 8.56E-06 | 4.59E-04    | 0.45                            | 1.89E-04 | 7.36E-03    |  |
| ENSG00000183562.3     | CTC-343N3.1  | LncRNA     | 0.56                        | 2.64E-03 | 3.30E-02    | 0.44                            | 1.34E-02 | 1.22E-01    |  |
| ENSG00000183566.9     | BPIFA4P      | Pseudogene | 0.89                        | 4.37E-04 | 9.56E-03    | 0.78                            | 1.58E-03 | 3.18E-02    |  |
| ENSG00000183570.15    | PCBP3        | Protein    | -0.48                       | 6.28E-03 | 5.83E-02    | -0.27                           | 6.74E-02 | 2.98E-01    |  |
| ENSG00000183604.13    | SMG1P5       | Pseudogene | 0.50                        | 4.37E-06 | 2.65E-04    | 0.49                            | 2.28E-06 | 2.32E-04    |  |
| ENSG00000183682.7     | BMP8A        | Protein    | 0.35                        | 2.11E-03 | 2.83E-02    | 0.21                            | 6.48E-02 | 2.91E-01    |  |
| ENSG00000183688.4     | FAM101B      | Protein    | -0.36                       | 7.90E-05 | 2.66E-03    | -0.38                           | 9.35E-06 | 7.21E-04    |  |
| ENSG00000183691.4     | NOG          | Protein    | -0.52                       | 1.35E-03 | 2.08E-02    | -0.45                           | 4.22E-03 | 6.19E-02    |  |
| ENSG00000183718.5     | TRIM52       | Protein    | 0.20                        | 1.24E-03 | 1.97E-02    | 0.12                            | 5.13E-02 | 2.58E-01    |  |
| ENSG00000183729.3     | NPBWR1       | Protein    | 0.67                        | 5.54E-04 | 1.13E-02    | 0.49                            | 1.00E-02 | 1.03E-01    |  |
| ENSG00000183741.10    | CBX6         | Protein    | -0.30                       | 1.71E-04 | 4.77E-03    | -0.27                           | 3.75E-04 | 1.19E-02    |  |
| ENSG00000183780.11    | SLC35F3      | Protein    | -0.48                       | 6.86E-04 | 1.31E-02    | -0.49                           | 3.06E-04 | 1.04E-02    |  |
| ENSG00000183784.6     | C9orf66      | Protein    | 0.51                        | 4.51E-03 | 4.71E-02    | 0.45                            | 9.57E-03 | 1.00E-01    |  |
| ENSG00000183785.13    | TUBA8        | Protein    | 0.32                        | 6.51E-03 | 5.94E-02    | 0.27                            | 1.76E-02 | 1.43E-01    |  |
| ENSG00000183793.12    | NPIP5        | Protein    | -0.44                       | 1.20E-02 | 8.76E-02    | -0.50                           | 2.62E-03 | 4.51E-02    |  |
| ENSG00000183813.6     | CCR4         | Protein    | 0.55                        | 2.88E-03 | 3.49E-02    | 0.52                            | 3.00E-03 | 4.94E-02    |  |
| ENSG00000183826.15    | BTBD9        | Protein    | -0.16                       | 4.69E-03 | 4.81E-02    | -0.13                           | 1.84E-02 | 1.46E-01    |  |
| ENSG00000183889.11    | AC138969.4   | Protein    | 0.55                        | 7.63E-05 | 2.58E-03    | 0.37                            | 5.70E-03 | 7.38E-02    |  |
| ENSG00000183891.5     | TTC32        | Protein    | 0.26                        | 9.59E-04 | 1.65E-02    | 0.20                            | 6.39E-03 | 7.89E-02    |  |
| ENSG00000183929.7     | DUSP5P1      | Pseudogene | 1.15                        | 3.94E-07 | 3.53E-05    | 0.02                            | 9.16E-01 | 9.70E-01    |  |
| ENSG00000183960.7     | KCNH8        | Protein    | -0.51                       | 1.18E-02 | 8.63E-02    | -0.42                           | 3.20E-02 | 1.99E-01    |  |
| ENSG00000183963.17    | SMTN         | Protein    | -0.34                       | 1.13E-02 | 8.44E-02    | -0.15                           | 2.39E-01 | 5.50E-01    |  |
| ENSG00000184108.6     | TRIML1       | Protein    | 0.63                        | 1.39E-02 | 9.63E-02    | -0.20                           | 4.29E-01 | 7.13E-01    |  |
| ENSG00000184110.13    | EIF3C        | Protein    | -0.31                       | 2.04E-04 | 5.44E-03    | -0.29                           | 3.54E-04 | 1.15E-02    |  |
| ENSG00000184178.14    | SCFD2        | Protein    | -0.14                       | 5.23E-03 | 5.16E-02    | -0.13                           | 8.78E-03 | 9.48E-02    |  |
| ENSG00000184208.10    | C22orf46     | Protein    | 0.15                        | 5.09E-03 | 5.07E-02    | 0.15                            | 2.38E-03 | 4.22E-02    |  |
| ENSG00000184227.6     | ACOT1        | Protein    | 0.36                        | 6.52E-04 | 1.26E-02    | 0.47                            | 5.59E-06 | 4.75E-04    |  |
| ENSG00000184261.4     | KCNK12       | Protein    | 0.56                        | 2.18E-03 | 2.90E-02    | -0.11                           | 5.13E-01 | 7.69E-01    |  |
| ENSG00000184271.14    | POU6F1       | Protein    | 0.31                        | 4.89E-05 | 1.85E-03    | 0.23                            | 1.31E-03 | 2.83E-02    |  |
| ENSG00000184302.6     | SIX6         | Protein    | -0.93                       | 3.69E-06 | 2.31E-04    | -0.85                           | 1.35E-05 | 9.54E-04    |  |
| ENSG00000184349.11    | EFNA5        | Protein    | -0.40                       | 4.93E-03 | 4.97E-02    | -0.41                           | 3.00E-03 | 4.94E-02    |  |
| ENSG00000184368.14    | MAP7D2       | Protein    | 0.44                        | 4.24E-03 | 4.51E-02    | 0.58                            | 1.06E-04 | 4.76E-03    |  |
| ENSG00000184374.2     | COLEC10      | Protein    | 0.75                        | 1.79E-03 | 2.53E-02    | 0.34                            | 1.25E-01 | 4.05E-01    |  |
| ENSG00000184388.5     | PABPC1L2B    | Protein    | -0.63                       | 3.92E-04 | 8.87E-03    | -0.47                           | 6.40E-03 | 7.89E-02    |  |
| ENSG00000184408.8     | KCND2        | Protein    | 0.64                        | 2.19E-03 | 2.91E-02    | -0.07                           | 7.40E-01 | 8.95E-01    |  |
| ENSG00000184428.11    | TOP1MT       | Protein    | 0.45                        | 2.13E-06 | 1.48E-04    | 0.33                            | 3.93E-04 | 1.23E-02    |  |
| ENSG00000184434.7     | LRRIC19      | Protein    | 0.56                        | 1.12E-03 | 1.84E-02    | 0.49                            | 3.12E-03 | 5.07E-02    |  |
| ENSG00000184486.8     | POU3F2       | Protein    | 0.56                        | 7.59E-03 | 6.54E-02    | -0.26                           | 1.98E-01 | 5.04E-01    |  |
| ENSG00000184500.13    | PROS1        | Protein    | -0.32                       | 1.19E-02 | 8.73E-02    | -0.19                           | 1.16E-01 | 3.91E-01    |  |
| ENSG00000184507.14    | NUTM1        | Protein    | 0.55                        | 1.28E-02 | 9.13E-02    | 0.45                            | 3.58E-02 | 2.11E-01    |  |
| ENSG00000184517.10    | ZFP1         | Protein    | -0.17                       | 1.03E-02 | 7.90E-02    | -0.14                           | 2.39E-02 | 1.69E-01    |  |
| ENSG00000184523.3     | PTGER4P2     | Pseudogene | 0.57                        | 9.75E-03 | 7.64E-02    | 0.50                            | 1.94E-02 | 1.51E-01    |  |
| ENSG00000184613.9     | NELL2        | Protein    | 0.59                        | 8.29E-04 | 1.49E-02    | 0.66                            | 1.40E-04 | 5.90E-03    |  |
| ENSG00000184616.8     | AC004166.6   | Pseudogene | 0.28                        | 5.60E-04 | 1.13E-02    | 0.26                            | 1.17E-03 | 2.60E-02    |  |
| ENSG00000184634.14    | MED12        | Protein    | -0.17                       | 1.30E-02 | 9.22E-02    | -0.14                           | 3.12E-02 | 1.96E-01    |  |
| ENSG00000184635.12    | ZNF93        | Protein    | 0.28                        | 1.50E-04 | 4.32E-03    | 0.24                            | 7.63E-04 | 1.95E-02    |  |

| Gene ID (GENCODE v22) | Gene symbol   | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |             |             |
|-----------------------|---------------|------------|-----------------------------|----------|-------------|---------------------------------|-------------|-------------|
|                       |               |            | effect size                 | p value  | adj p value | effect size                     | p value     | adj p value |
| ENSG00000184677.15    | ZBTB40        | Protein    | -0.18                       | 6.73E-03 | 6.06E-02    | -0.13                           | 3.90E-02    | 2.21E-01    |
| ENSG00000184682.5     | PRR33         | Protein    | 0.46                        | 9.06E-03 | 7.31E-02    | 0.37                            | 3.15E-02    | 1.97E-01    |
| ENSG00000184697.6     | CLDN6         | Protein    | 0.56                        | 4.17E-03 | 4.47E-02    | -0.17                           | 3.53E-01    | 6.54E-01    |
| ENSG00000184735.6     | DDX53         | Protein    | 1.22                        | 6.71E-07 | 5.54E-05    | -0.47                           | 4.43E-02    | 2.38E-01    |
| ENSG00000184743.11    | ATL3          | Protein    | -0.20                       | 8.37E-04 | 1.50E-02    | -0.22                           | 1.10E-04    | 4.89E-03    |
| ENSG00000184774.8     | MGAT4EP       | Pseudogene | 0.60                        | 5.32E-04 | 1.10E-02    | 0.40                            | 1.69E-02    | 1.40E-01    |
| ENSG00000184786.5     | TCTE3         | Protein    | 0.26                        | 8.88E-03 | 7.21E-02    | 0.17                            | 6.87E-02    | 3.00E-01    |
| ENSG00000184787.17    | UBE2G2        | Protein    | 0.12                        | 8.13E-03 | 6.84E-02    | 0.09                            | 4.16E-02    | 2.30E-01    |
| ENSG00000184844.6     | CYCSP45       | Pseudogene | -0.68                       | 1.57E-03 | 2.32E-02    | -0.73                           | 3.96E-04    | 1.24E-02    |
| ENSG00000184845.3     | DRD1          | Protein    | -0.47                       | 3.37E-03 | 3.89E-02    | -0.31                           | 5.05E-02    | 2.56E-01    |
| ENSG00000184860.8     | SDR42E1       | Protein    | -0.28                       | 2.37E-04 | 6.13E-03    | -0.20                           | 7.17E-03    | 8.42E-02    |
| ENSG00000184867.12    | ARMCX2        | Protein    | -0.37                       | 1.14E-03 | 1.86E-02    | -0.24                           | 2.86E-02    | 1.87E-01    |
| ENSG00000184923.11    | NUTM2A        | Protein    | 0.46                        | 1.44E-03 | 2.18E-02    | 0.45                            | 9.89E-04    | 2.32E-02    |
| ENSG00000184925.10    | LCN12         | Protein    | 0.42                        | 2.73E-03 | 3.36E-02    | 0.27                            | 4.36E-02    | 2.36E-01    |
| ENSG00000184933.4     | OR6A2         | Protein    | 0.68                        | 7.79E-03 | 6.65E-02    | 0.74                            | 2.96E-03 NA |             |
| ENSG00000184937.11    | WT1           | Protein    | -0.58                       | 7.04E-03 | 6.22E-02    | -0.42                           | 4.63E-02    | 2.43E-01    |
| ENSG00000184949.14    | FAM227A       | Protein    | 0.46                        | 2.16E-05 | 9.82E-04    | 0.35                            | 7.83E-04    | 1.99E-02    |
| ENSG00000184999.10    | SLC22A10      | Protein    | 0.94                        | 3.84E-05 | 1.54E-03    | -0.04                           | 8.67E-01    | 9.52E-01    |
| ENSG00000185013.15    | NTSC1B        | Protein    | -0.30                       | 1.22E-02 | 8.85E-02    | -0.24                           | 3.41E-02    | 2.05E-01    |
| ENSG00000185019.15    | UBOX5         | Protein    | -0.14                       | 7.99E-03 | 6.76E-02    | -0.13                           | 1.66E-02    | 1.39E-01    |
| ENSG00000185038.13    | MROH2A        | Protein    | -0.82                       | 9.01E-04 | 1.57E-02    | -0.61                           | 7.92E-03    | 8.95E-02    |
| ENSG00000185069.2     | KRT76         | Protein    | 1.98                        | 8.82E-15 | 3.58E-12    | 0.69                            | 5.22E-03    | 7.00E-02    |
| ENSG00000185087.10    | FAM169B       | Protein    | 1.06                        | 1.61E-05 | 7.76E-04    | -0.01                           | 9.55E-01    | 9.85E-01    |
| ENSG00000185101.11    | ANO9          | Protein    | 0.45                        | 1.51E-03 | 2.25E-02    | 0.41                            | 3.06E-03    | 5.01E-02    |
| ENSG00000185133.12    | INPP5J        | Protein    | 0.28                        | 1.29E-02 | 9.14E-02    | 0.18                            | 9.83E-02    | 3.59E-01    |
| ENSG00000185163.8     | DDX51         | Protein    | 0.16                        | 3.10E-03 | 3.67E-02    | 0.14                            | 9.32E-03    | 9.84E-02    |
| ENSG00000185189.14    | NRBP2         | Protein    | 0.35                        | 2.02E-04 | 5.42E-03    | 0.22                            | 1.47E-02    | 1.29E-01    |
| ENSG00000185203.10    | WASIR1        | LncRNA     | -1.06                       | 2.55E-05 | 1.11E-03    | -1.18                           | 1.23E-06    | 1.40E-04    |
| ENSG00000185245.7     | GPIBA         | Protein    | 0.41                        | 1.28E-04 | 3.80E-03    | 0.38                            | 1.97E-04    | 7.60E-03    |
| ENSG00000185246.16    | PRPF39        | Protein    | 0.25                        | 1.25E-04 | 3.75E-03    | 0.19                            | 2.24E-03    | 4.03E-02    |
| ENSG00000185272.12    | RBM11         | Protein    | 0.40                        | 1.94E-03 | 2.69E-02    | 0.33                            | 6.63E-03    | 8.06E-02    |
| ENSG00000185275.6     | CD24P4        | Pseudogene | -0.55                       | 1.34E-03 | 2.07E-02    | -0.47                           | 4.86E-03    | 6.71E-02    |
| ENSG00000185296.8     | CTD-2139B15.1 | Pseudogene | 1.10                        | 3.52E-08 | 4.34E-06    | 0.27                            | 1.51E-01    | 4.42E-01    |
| ENSG00000185305.9     | ARL15         | Protein    | -0.18                       | 1.18E-02 | 8.67E-02    | -0.13                           | 5.97E-02    | 2.79E-01    |
| ENSG00000185313.6     | SCN10A        | Protein    | 0.59                        | 1.28E-02 | 9.13E-02    | 0.51                            | 2.70E-02    | 1.81E-01    |
| ENSG00000185414.18    | MRPL30        | Protein    | -0.13                       | 6.46E-03 | 5.91E-02    | -0.12                           | 7.54E-03    | 8.68E-02    |
| ENSG00000185432.11    | METTL7A       | Protein    | 0.25                        | 1.46E-02 | 9.91E-02    | 0.35                            | 3.94E-04    | 1.23E-02    |
| ENSG00000185485.13    | SDHAP1        | Pseudogene | 0.32                        | 2.97E-04 | 7.26E-03    | 0.19                            | 2.91E-02    | 1.88E-01    |
| ENSG00000185513.13    | L3MBTL1       | Protein    | 0.29                        | 3.34E-03 | 3.86E-02    | 0.16                            | 9.72E-02    | 3.57E-01    |
| ENSG00000185518.10    | SV2B          | Protein    | -0.59                       | 1.98E-03 | 2.72E-02    | -0.55                           | 2.96E-03    | 4.89E-02    |
| ENSG00000185519.8     | FAM131C       | Protein    | 1.10                        | 2.77E-08 | 3.51E-06    | -0.18                           | 3.15E-01    | 6.23E-01    |
| ENSG00000185523.6     | SPATA45       | Protein    | -0.43                       | 6.44E-03 | 5.91E-02    | -0.40                           | 8.33E-03    | 9.22E-02    |
| ENSG00000185567.6     | AHNAK2        | Protein    | -0.49                       | 1.06E-03 | 1.78E-02    | -0.31                           | 3.01E-02    | 1.92E-01    |
| ENSG00000185594.4     | SPAT48        | Protein    | -0.61                       | 1.34E-02 | 9.37E-02    | -0.57                           | 1.88E-02    | 1.48E-01    |
| ENSG00000185596.15    | WASH3P        | Pseudogene | 0.25                        | 5.49E-03 | 5.34E-02    | 0.20                            | 2.07E-02    | 1.56E-01    |
| ENSG00000185634.10    | SHC4          | Protein    | 0.31                        | 1.25E-02 | 8.98E-02    | 0.14                            | 2.34E-01    | 5.45E-01    |
| ENSG00000185664.13    | PMEL          | Protein    | 0.41                        | 5.56E-04 | 1.13E-02    | -0.07                           | 5.18E-01    | 7.72E-01    |
| ENSG00000185668.6     | POU3F1        | Protein    | 0.51                        | 2.67E-03 | 3.33E-02    | 0.57                            | 5.53E-04    | 1.58E-02    |
| ENSG00000185674.8     | LYG2          | Protein    | 0.50                        | 3.24E-03 | 3.80E-02    | -0.07                           | 6.56E-01    | 8.52E-01    |
| ENSG00000185697.15    | MYBL1         | Protein    | 0.39                        | 8.35E-05 | 2.76E-03    | 0.27                            | 4.55E-03    | 6.46E-02    |
| ENSG00000185730.6     | ZNF696        | Protein    | 0.25                        | 6.15E-04 | 1.21E-02    | 0.13                            | 6.77E-02    | 2.98E-01    |
| ENSG00000185742.6     | C11orf87      | Protein    | 1.02                        | 2.41E-05 | 1.06E-03    | 0.77                            | 9.46E-04    | 2.26E-02    |
| ENSG00000185761.9     | ADAMTSL5      | Protein    | 0.41                        | 1.04E-03 | 1.75E-02    | 0.38                            | 1.52E-03    | 3.12E-02    |
| ENSG00000185834.10    | RPL12P4       | Pseudogene | -0.63                       | 1.32E-03 | 2.05E-02    | -0.91                           | 6.37E-07    | 8.14E-05    |
| ENSG00000185837.3     | CECR5-AS1     | LncRNA     | 0.31                        | 1.13E-02 | 8.43E-02    | 0.24                            | 4.50E-02    | 2.40E-01    |
| ENSG00000185864.15    | NPIP84        | Protein    | 0.54                        | 2.41E-04 | 6.21E-03    | 0.44                            | 1.93E-03    | 3.63E-02    |
| ENSG00000185880.11    | TRIM69        | Protein    | 0.21                        | 1.11E-02 | 8.31E-02    | 0.19                            | 1.47E-02    | 1.29E-01    |
| ENSG00000185896.10    | LAMP1         | Protein    | -0.17                       | 1.60E-03 | 2.35E-02    | -0.11                           | 3.40E-02    | 2.05E-01    |
| ENSG00000185905.3     | C16orf54      | Protein    | 1.10                        | 4.90E-11 | 1.16E-08    | 0.57                            | 2.58E-04    | 9.21E-03    |
| ENSG00000185917.12    | SETD4         | Protein    | 0.14                        | 1.15E-02 | 8.51E-02    | 0.09                            | 7.17E-02    | 3.07E-01    |
| ENSG00000185986.11    | SDHAP3        | Pseudogene | 0.53                        | 3.63E-08 | 4.47E-06    | 0.46                            | 6.16E-07    | 7.98E-05    |
| ENSG00000185988.10    | PLK5          | Protein    | 0.72                        | 1.40E-06 | 1.04E-04    | 0.65                            | 5.02E-06    | 4.36E-04    |
| ENSG00000186020.11    | ZNF529        | Protein    | 0.13                        | 1.35E-02 | 9.42E-02    | 0.08                            | 9.78E-02    | 3.58E-01    |
| ENSG00000186049.7     | KRT73         | Protein    | 1.06                        | 1.21E-05 | 6.10E-04    | 0.40                            | 9.30E-02    | 3.49E-01    |
| ENSG00000186088.14    | GSAP          | Protein    | 0.21                        | 2.88E-03 | 3.49E-02    | 0.17                            | 1.66E-02    | 1.39E-01    |
| ENSG00000186104.9     | CYP2R1        | Protein    | 0.21                        | 1.15E-03 | 1.87E-02    | 0.14                            | 2.62E-02    | 1.78E-01    |
| ENSG00000186234.7     | FAM86AMP      | Pseudogene | 0.71                        | 2.50E-04 | 6.35E-03    | 0.70                            | 1.69E-04    | 6.73E-03    |
| ENSG00000186281.11    | GPAT2         | Protein    | -0.49                       | 7.92E-03 | 6.71E-02    | -0.82                           | 3.11E-06    | 2.95E-04    |
| ENSG00000186283.12    | TOR3A         | Protein    | -0.13                       | 1.10E-02 | 8.27E-02    | -0.16                           | 5.16E-04    | 1.50E-02    |
| ENSG00000186288.5     | PABPC1L2A     | Protein    | -0.72                       | 7.77E-05 | 2.62E-03    | -0.55                           | 1.70E-03    | 3.34E-02    |
| ENSG00000186354.9     | C9orf47       | Protein    | 0.42                        | 4.46E-03 | 4.67E-02    | -0.13                           | 3.46E-01    | 6.48E-01    |
| ENSG00000186470.12    | BTN3A2        | Protein    | 0.30                        | 9.40E-03 | 7.47E-02    | 0.32                            | 4.64E-03    | 6.52E-02    |
| ENSG00000186471.11    | AKAP14        | Protein    | -0.70                       | 5.18E-03 | 5.13E-02    | -0.38                           | 1.15E-01    | 3.89E-01    |
| ENSG00000186472.18    | PCLO          | Protein    | -0.29                       | 6.44E-03 | 5.91E-02    | -0.25                           | 1.38E-02    | 1.24E-01    |
| ENSG00000186474.14    | KLK12         | Protein    | 0.94                        | 5.60E-05 | 2.05E-03    | -0.20                           | 3.63E-01    | 6.62E-01    |
| ENSG00000186543.7     | CROCCP5       | Pseudogene | 0.58                        | 8.24E-03 | 6.90E-02    | 0.49                            | 2.02E-02    | 1.54E-01    |
| ENSG00000186575.16    | NF2           | Protein    | -0.20                       | 8.05E-04 | 1.46E-02    | -0.22                           | 1.15E-04    | 5.10E-03    |
| ENSG00000186577.10    | C6orf1        | Protein    | 0.24                        | 9.51E-03 | 7.51E-02    | 0.13                            | 1.44E-01    | 4.32E-01    |
| ENSG00000186676.3     | EEF1GPI       | Pseudogene | -0.97                       | 1.19E-05 | 6.00E-04    | -1.00                           | 2.79E-06    | 2.73E-04    |
| ENSG00000186704.9     | DTX2P1        | Pseudogene | 0.34                        | 1.73E-03 | 2.48E-02    | 0.27                            | 9.11E-03    | 9.72E-02    |
| ENSG00000186714.11    | CCDC73        | Protein    | 0.53                        | 2.77E-04 | 6.88E-03    | 0.46                            | 9.66E-04    | 2.29E-02    |
| ENSG00000186715.9     | MST1L         | Pseudogene | 0.63                        | 1.68E-04 | 4.71E-03    | 0.58                            | 3.27E-04    | 1.08E-02    |
| ENSG00000186716.18    | BCR           | Protein    | -0.15                       | 5.37E-03 | 5.26E-02    | -0.18                           | 9.14E-04    | 2.21E-02    |
| ENSG00000186765.10    | FSCN2         | Protein    | 0.44                        | 6.53E-05 | 2.28E-03    | 0.26                            | 1.31E-02    | 1.20E-01    |
| ENSG00000186777.10    | ZNF732        | Protein    | -0.46                       | 2.28E-03 | 2.98E-02    | -0.50                           | 5.04E-04    | 1.48E-02    |
| ENSG00000186825.5     | C2orf27B      | LncRNA     | 0.66                        | 9.38E-03 | 7.46E-02    | 0.74                            | 2.69E-03    | 4.58E-02    |
| ENSG00000186838.12    | SELV          | Protein    | -0.59                       | 9.13E-03 | 7.35E-02    | -0.36                           | 9.64E-02    | 3.55E-01    |
| ENSG00000186854.9     | TRABD2A       | Protein    | 0.72                        | 6.95E-05 | 2.40E-03    | -0.21                           | 2.14E-01    | 5.22E-01    |
| ENSG00000186910.3     | SERPINA11     | Protein    | -0.69                       | 2.09E-03 | 2.82E-02    | -0.47                           | 3.06E-02    | 1.94E-01    |
| ENSG00000186952.13    | TMEM232       | Protein    | 0.35                        | 1.64E-03 | 2.39E-02    | 0.39                            | 2.81E-04    | 9.77E-03    |
| ENSG00000186976.13    | EFCAB6        | Protein    | 0.20                        | 7.04E-03 | 6.22E-02    | 0.22                            | 1.26E-03    | 2.74E-02    |
| ENSG00000187010.17    | RHD           | Protein    | 0.45                        | 1.08E-02 | 8.18E-02    | 0.45                            | 8.63E-03    | 9.39E-02    |
| ENSG00000187049.8     | TMEM216       | Protein    | 0.16                        | 3.35E-03 | 3.87E-02    | 0.11                            | 3.16E-02    | 1.97E-01    |
| ENSG00000187068.2     | C3orf70       | Protein    | -0.40                       | 2.34E-03 | 3.03E-02    | -0.20                           | 1.26E-01    | 4.07E-01    |
| ENSG00000187105.7     | HEATR4        | Protein    | 0.32                        | 3.45E-04 | 8.11E-03    | 0.35                            | 4.38E-05    | 2.40E-03    |
| ENSG00000187166.1     | H1FNT         | Protein    | 0.54                        | 7.28E-03 | 6.36E-02    | 0.40                            | 3.84E-02    | 2.19E-01    |
| ENSG00000187172.14    | BAGE2         | Pseudogene | 1.42                        | 4.41E-09 | 7.00E-07    | -0.13                           | 5.66E-01    | 8.03E-01    |
| ENSG00000187189.10    | TSPYL4        | Protein    | -0.27                       | 8.85E-04 | 1.56E-02    | -0.21                           | 6.73E-03    | 8.11E-02    |
| ENSG00000187288.9     | CIDEC         | Protein    | -0.83                       | 1.36E-04 | 4.01E-03    | -0.42                           | 3.65E-02    | 2.13E-01    |
| ENSG00000187325.4     | TAF9B         | Protein    | -0.12                       | 1.05E-02 | 8.05E-02    | -0.10                           | 1.83E-02    | 1.46E-01    |
| ENSG00000187372.11    | PCDHB13       | Protein    | -0.34                       | 8.38E-03 | 6.98E-02    | -0.29                           | 1.82E-02    | 1.46E-01    |
| ENSG00000187481.2     | HSD3BP1       | Pseudogene | 1.06                        | 3.06E-05 | 1.28E-03    | 0.10                            | 6.81E-01    | 8.65E-01    |
| ENSG00000187536.4     | TPM3P7        | Pseudogene | 0.57                        | 1.45E-02 | 9.88E-02    | 0.50                            | 2.78E-02    | 1.84E-01    |
| ENSG00000187601.4     | MAGEH1        | Protein    | 0.46                        | 1.38E-04 | 4.06E-03    | 0.49                            | 2.55E-05    | 1.58E-03    |
| ENSG00000187607.14    | ZNF286A       | Protein    | -0.22                       | 3.29E-04 | 7.86E-03    | -0.21                           | 3.94E-04    | 1.23E-02    |
| ENSG00000187624.8     | C17orf97      | Protein    | 0.39                        | 1.30E-03 | 2.04E-02    | 0.42                            | 2.54E-04    | 9.14E-03    |
| ENSG00000187627.13    | RGPD1         | Protein    | -0.64                       | 4.91E-03 | 4.96E-02    | -0.61                           | 6.15E-03    | 7.71E-02    |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000187650.3     | <i>VMAC</i>          | Protein    | 0.16                        | 5.23E-03 | 5.16E-02    | 0.17                            | 2.65E-03 | 4.55E-02    |  |
| ENSG00000187658.6     | <i>C3orf52</i>       | Protein    | 0.54                        | 1.01E-02 | 7.79E-02    | 0.63                            | 1.74E-03 | 3.40E-02    |  |
| ENSG00000187678.8     | <i>SPRY4</i>         | Protein    | 0.39                        | 9.67E-03 | 7.60E-02    | 0.20                            | 1.68E-01 | 4.64E-01    |  |
| ENSG00000187714.6     | <i>SLC18A3</i>       | Protein    | -0.77                       | 2.45E-03 | 3.14E-02    | -0.73                           | 3.21E-03 | 5.16E-02    |  |
| ENSG00000187763.3     | <i>OR2B7P</i>        | Pseudogene | 0.79                        | 1.52E-03 | 2.27E-02    | 0.82                            | 7.07E-04 | 1.86E-02    |  |
| ENSG00000187821.7     | <i>HELT</i>          | Protein    | 0.86                        | 6.37E-04 | 1.24E-02    | 0.59                            | 1.72E-02 | 1.42E-01    |  |
| ENSG00000187824.7     | <i>TMEM220</i>       | Protein    | 0.41                        | 5.90E-03 | 5.58E-02    | 0.52                            | 3.13E-04 | 1.05E-02    |  |
| ENSG00000187860.9     | <i>CCDC157</i>       | Protein    | 0.38                        | 3.12E-05 | 1.30E-03    | 0.30                            | 6.24E-04 | 1.71E-02    |  |
| ENSG00000187862.10    | <i>TTC24</i>         | Protein    | 0.68                        | 1.45E-03 | 2.19E-02    | 0.55                            | 7.59E-03 | 8.72E-02    |  |
| ENSG00000187870.7     | <i>RNFT1P3</i>       | Pseudogene | 0.60                        | 3.18E-03 | 3.73E-02    | 0.53                            | 6.69E-03 | 8.09E-02    |  |
| ENSG00000187871.2     | <i>GFRAL</i>         | Protein    | 0.96                        | 1.11E-04 | 3.44E-03    | 0.04                            | 8.54E-01 | NA          |  |
| ENSG00000187889.11    | <i>C1orf168</i>      | Protein    | 0.40                        | 6.81E-03 | 6.10E-02    | 0.32                            | 2.41E-02 | 1.70E-01    |  |
| ENSG00000187954.11    | <i>CYHR1</i>         | Protein    | 0.25                        | 6.66E-03 | 6.01E-02    | 0.15                            | 9.21E-02 | 3.48E-01    |  |
| ENSG00000187987.8     | <i>ZSCAN23</i>       | Protein    | 0.38                        | 6.95E-03 | 6.18E-02    | 0.33                            | 1.43E-02 | 1.27E-01    |  |
| ENSG00000188021.8     | <i>UBQLN2</i>        | Protein    | -0.15                       | 2.12E-03 | 2.84E-02    | -0.12                           | 1.53E-02 | 1.32E-01    |  |
| ENSG00000188033.8     | <i>ZNF490</i>        | Protein    | -0.28                       | 7.66E-03 | 6.58E-02    | -0.23                           | 2.20E-02 | 1.61E-01    |  |
| ENSG00000188039.12    | <i>NWD1</i>          | Protein    | -0.29                       | 7.75E-03 | 6.63E-02    | -0.15                           | 1.61E-01 | 4.55E-01    |  |
| ENSG00000188056.10    | <i>TREML4</i>        | Protein    | 0.81                        | 5.38E-04 | 1.11E-02    | 0.67                            | 3.18E-03 | 5.13E-02    |  |
| ENSG00000188086.11    | <i>PRSS45</i>        | Protein    | 0.58                        | 3.64E-03 | 4.08E-02    | 0.64                            | 8.73E-04 | 2.14E-02    |  |
| ENSG00000188095.4     | <i>MESP2</i>         | Protein    | 0.53                        | 8.14E-04 | 1.47E-02    | 0.38                            | 1.48E-02 | 1.29E-01    |  |
| ENSG00000188152.11    | <i>NUTM2G</i>        | Protein    | 0.34                        | 9.50E-03 | 7.51E-02    | 0.26                            | 3.48E-02 | 2.07E-01    |  |
| ENSG00000188163.7     | <i>FAM166A</i>       | Protein    | 0.55                        | 1.10E-03 | 1.81E-02    | 0.42                            | 1.11E-02 | 1.10E-01    |  |
| ENSG00000188206.6     | <i>HNRNPU-AS1</i>    | LncRNA     | 0.50                        | 1.63E-05 | 7.82E-04    | 0.33                            | 3.77E-03 | 5.76E-02    |  |
| ENSG00000188257.9     | <i>PLA2G2A</i>       | Protein    | -1.31                       | 1.96E-09 | 3.28E-07    | -1.45                           | 8.23E-12 | 3.46E-09    |  |
| ENSG00000188269.7     | <i>OR7A5</i>         | Protein    | -0.56                       | 4.71E-03 | 4.83E-02    | -0.25                           | 2.07E-01 | 5.14E-01    |  |
| ENSG00000188282.11    | <i>RUFY4</i>         | Protein    | 0.86                        | 4.38E-06 | 2.66E-04    | 0.69                            | 1.49E-04 | 6.18E-03    |  |
| ENSG00000188293.5     | <i>IGFL1</i>         | Protein    | -0.69                       | 3.40E-03 | 3.90E-02    | -0.93                           | 4.16E-05 | 2.30E-03    |  |
| ENSG00000188306.6     | <i>LRR1Q4</i>        | Protein    | -1.07                       | 2.06E-06 | 1.43E-04    | -1.20                           | 3.74E-08 | 7.09E-06    |  |
| ENSG00000188312.12    | <i>CENPP</i>         | Protein    | 0.36                        | 7.30E-07 | 5.95E-05    | 0.23                            | 1.50E-03 | 3.09E-02    |  |
| ENSG00000188315.6     | <i>C3orf62</i>       | Protein    | 0.17                        | 5.56E-03 | 5.38E-02    | 0.19                            | 1.06E-03 | 2.44E-02    |  |
| ENSG00000188352.11    | <i>FOCAD</i>         | Protein    | -0.24                       | 6.99E-04 | 1.33E-02    | -0.19                           | 3.81E-03 | 5.80E-02    |  |
| ENSG00000188460.4     | <i>ACTBP11</i>       | Pseudogene | -0.39                       | 1.22E-02 | 8.82E-02    | -0.39                           | 9.35E-03 | 9.86E-02    |  |
| ENSG00000188467.9     | <i>SLC24A5</i>       | Protein    | 0.66                        | 6.56E-03 | 5.97E-02    | 0.46                            | 4.88E-02 | 2.51E-01    |  |
| ENSG00000188487.10    | <i>INSC</i>          | Protein    | 0.50                        | 4.67E-03 | 4.81E-02    | 0.50                            | 3.11E-03 | 5.06E-02    |  |
| ENSG00000188501.10    | <i>LCTL</i>          | Protein    | 0.42                        | 9.58E-04 | 1.65E-02    | 0.32                            | 1.03E-02 | 1.05E-01    |  |
| ENSG00000188525.3     | <i>AC010969.1</i>    | LncRNA     | -0.69                       | 6.84E-03 | 6.12E-02    | -0.69                           | 5.01E-03 | 6.83E-02    |  |
| ENSG00000188536.11    | <i>HBA2</i>          | Protein    | -0.66                       | 7.19E-04 | 1.35E-02    | -0.34                           | 5.84E-02 | 2.76E-01    |  |
| ENSG00000188542.8     | <i>DUSP28</i>        | Protein    | 0.18                        | 5.70E-04 | 1.15E-02    | 0.15                            | 2.93E-03 | 4.86E-02    |  |
| ENSG00000188566.10    | <i>NDOR1</i>         | Protein    | 0.13                        | 8.99E-03 | 7.27E-02    | 0.06                            | 2.60E-01 | 5.71E-01    |  |
| ENSG00000188611.13    | <i>ASAH2</i>         | Protein    | -0.80                       | 5.44E-10 | 1.01E-07    | -0.74                           | 2.17E-09 | 5.52E-07    |  |
| ENSG00000188626.6     | <i>GOLGA8M</i>       | Protein    | 0.47                        | 1.98E-03 | 2.72E-02    | 0.41                            | 5.56E-03 | 7.24E-02    |  |
| ENSG00000188646.6     | <i>RP11-361A23.2</i> | Pseudogene | -0.82                       | 1.40E-03 | 2.14E-02    | -0.84                           | 7.17E-04 | 1.88E-02    |  |
| ENSG00000188649.10    | <i>CC2D2B</i>        | Protein    | 0.40                        | 2.45E-03 | 3.14E-02    | 0.32                            | 1.13E-02 | 1.11E-01    |  |
| ENSG00000188672.15    | <i>RHCE</i>          | Protein    | 0.61                        | 1.16E-06 | 8.84E-05    | 0.49                            | 5.90E-05 | 3.01E-03    |  |
| ENSG00000188676.12    | <i>IDO2</i>          | Protein    | 0.59                        | 6.47E-04 | 1.26E-02    | 0.53                            | 1.61E-03 | 3.22E-02    |  |
| ENSG00000188729.5     | <i>OSTN</i>          | Protein    | -0.83                       | 1.12E-03 | 1.84E-02    | -0.34                           | 1.55E-01 | 4.48E-01    |  |
| ENSG00000188730.4     | <i>YWC2</i>          | Protein    | -0.90                       | 1.13E-04 | 3.47E-03    | -0.15                           | 4.66E-01 | 7.39E-01    |  |
| ENSG00000188732.9     | <i>FAM221A</i>       | Protein    | 0.39                        | 1.83E-04 | 5.05E-03    | 0.30                            | 2.53E-03 | 4.41E-02    |  |
| ENSG00000188747.7     | <i>NOXA1</i>         | Protein    | 0.35                        | 5.15E-03 | 5.11E-02    | 0.23                            | 5.77E-02 | 2.74E-01    |  |
| ENSG00000188784.4     | <i>PLA2G2E</i>       | Protein    | -0.83                       | 1.13E-03 | 1.86E-02    | -0.86                           | 5.01E-04 | 1.48E-02    |  |
| ENSG00000188817.6     | <i>SNTN</i>          | Protein    | -0.63                       | 9.20E-03 | 7.38E-02    | -0.39                           | 9.02E-02 | 3.44E-01    |  |
| ENSG00000188856.6     | <i>RPSAP47</i>       | Pseudogene | 1.04                        | 7.32E-08 | 8.36E-06    | 0.94                            | 4.63E-07 | 6.16E-05    |  |
| ENSG00000188897.7     | <i>CTD-3088G3.8</i>  | Protein    | 1.17                        | 6.83E-14 | 2.52E-11    | 0.64                            | 1.42E-05 | 9.92E-04    |  |
| ENSG00000189089.5     | <i>RIMKLBP1</i>      | Pseudogene | 0.37                        | 7.65E-03 | 6.57E-02    | 0.29                            | 2.85E-02 | 1.87E-01    |  |
| ENSG00000189091.11    | <i>SF3B3</i>         | Protein    | -0.21                       | 5.66E-04 | 1.14E-02    | -0.17                           | 2.58E-03 | 4.47E-02    |  |
| ENSG00000189127.6     | <i>ANKRD34B</i>      | Protein    | -0.81                       | 1.03E-03 | 1.74E-02    | -0.93                           | 1.02E-04 | 4.62E-03    |  |
| ENSG00000189157.12    | <i>FAM47E</i>        | Protein    | 0.23                        | 5.53E-03 | 5.36E-02    | 0.22                            | 6.52E-03 | 7.98E-02    |  |
| ENSG00000189233.10    | <i>NUGGC</i>         | Protein    | 0.50                        | 9.35E-03 | 7.46E-02    | 0.56                            | 1.57E-03 | 3.17E-02    |  |
| ENSG00000189238.5     | <i>LINC00943</i>     | LncRNA     | 0.66                        | 8.32E-04 | 1.50E-02    | 0.52                            | 5.94E-03 | 7.56E-02    |  |
| ENSG00000189241.6     | <i>TSPYL1</i>        | Protein    | -0.24                       | 6.67E-04 | 1.28E-02    | -0.10                           | 1.28E-01 | 4.09E-01    |  |
| ENSG00000189269.11    | <i>DRICH1</i>        | Protein    | 0.52                        | 4.97E-04 | 1.05E-02    | 0.39                            | 8.00E-03 | 8.98E-02    |  |
| ENSG00000189316.3     | <i>RP11-797H7.5</i>  | LncRNA     | 0.47                        | 1.46E-02 | 9.91E-02    | 0.49                            | 8.54E-03 | 9.34E-02    |  |
| ENSG00000189325.6     | <i>C6orf222</i>      | Protein    | -0.69                       | 1.22E-03 | 1.95E-02    | -0.59                           | 3.05E-03 | 4.99E-02    |  |
| ENSG00000189350.11    | <i>FAM179A</i>       | Protein    | -0.57                       | 1.29E-03 | 2.02E-02    | -0.54                           | 1.06E-03 | 2.44E-02    |  |
| ENSG00000189369.8     | <i>GSPT2</i>         | Protein    | -0.30                       | 6.15E-04 | 1.21E-02    | -0.18                           | 3.27E-02 | 2.01E-01    |  |
| ENSG00000196071.3     | <i>OR2L13</i>        | Protein    | 0.92                        | 8.13E-05 | 2.70E-03    | 0.73                            | 1.40E-03 | 2.93E-02    |  |
| ENSG00000196096.3     | <i>AC079610.2</i>    | LncRNA     | 0.79                        | 2.49E-06 | 1.68E-04    | 0.75                            | 3.05E-06 | 2.91E-04    |  |
| ENSG00000196118.10    | <i>C16orf93</i>      | Protein    | 0.27                        | 9.64E-03 | 7.59E-02    | 0.13                            | 1.96E-01 | 5.01E-01    |  |
| ENSG00000196126.9     | <i>HLA-DRB1</i>      | Protein    | 0.31                        | 1.30E-02 | 9.19E-02    | 0.22                            | 7.27E-02 | 3.08E-01    |  |
| ENSG00000196132.10    | <i>MYT1</i>          | Protein    | -1.12                       | 7.11E-07 | 5.82E-05    | -1.87                           | 1.21E-17 | 9.21E-15    |  |
| ENSG00000196136.15    | <i>SERPINA3</i>      | Protein    | -0.54                       | 1.32E-02 | 9.29E-02    | -0.70                           | 9.36E-04 | 2.24E-02    |  |
| ENSG00000196141.11    | <i>SPATS2L</i>       | Protein    | -0.37                       | 9.58E-06 | 5.03E-04    | -0.33                           | 4.71E-05 | 2.55E-03    |  |
| ENSG00000196156.4     | <i>KRTAP4-3</i>      | Protein    | 1.51                        | 4.83E-16 | 2.29E-13    | 1.26                            | 3.41E-13 | 1.78E-10    |  |
| ENSG00000196183.5     | <i>RPS2P4</i>        | Pseudogene | 0.96                        | 1.60E-10 | 3.37E-08    | -0.07                           | 6.04E-01 | 8.25E-01    |  |
| ENSG00000196188.9     | <i>CTSE</i>          | Protein    | -0.68                       | 8.89E-04 | 1.56E-02    | -0.65                           | 9.84E-04 | 2.31E-02    |  |
| ENSG00000196240.3     | <i>OR2T2</i>         | Protein    | 0.65                        | 3.02E-03 | 3.60E-02    | 0.58                            | 5.21E-03 | 6.99E-02    |  |
| ENSG00000196274.5     | <i>Metazoa_SRP</i>   | Other      | 0.50                        | 6.46E-04 | 1.26E-02    | 0.40                            | 4.02E-03 | 6.00E-02    |  |
| ENSG00000196295.10    | <i>AC005154.6</i>    | LncRNA     | 0.32                        | 5.74E-04 | 1.15E-02    | 0.16                            | 7.94E-02 | 3.23E-01    |  |
| ENSG00000196301.3     | <i>HLA-DRB9</i>      | Pseudogene | 0.64                        | 5.34E-04 | 1.10E-02    | 0.07                            | 6.96E-01 | 8.72E-01    |  |
| ENSG00000196312.10    | <i>HLATL2</i>        | Protein    | -0.24                       | 7.60E-04 | 1.41E-02    | -0.32                           | 2.87E-06 | 2.80E-04    |  |
| ENSG00000196344.10    | <i>ADH7</i>          | Protein    | 0.87                        | 5.71E-04 | 1.15E-02    | 0.87                            | 3.90E-04 | 1.22E-02    |  |
| ENSG00000196368.4     | <i>NUDT11</i>        | Protein    | -0.37                       | 7.49E-03 | 6.48E-02    | -0.24                           | 7.45E-02 | 3.13E-01    |  |
| ENSG00000196391.9     | <i>ZNF774</i>        | Protein    | 0.24                        | 2.98E-03 | 3.56E-02    | 0.23                            | 2.30E-03 | 4.11E-02    |  |
| ENSG00000196405.11    | <i>EVL</i>           | Protein    | 0.29                        | 8.06E-05 | 2.69E-03    | 0.22                            | 1.81E-03 | 3.47E-02    |  |
| ENSG00000196411.8     | <i>EPHB4</i>         | Protein    | -0.28                       | 2.18E-03 | 2.90E-02    | -0.27                           | 2.52E-03 | 4.39E-02    |  |
| ENSG00000196417.11    | <i>ZNF765</i>        | Protein    | -0.25                       | 6.68E-03 | 6.03E-02    | -0.16                           | 7.19E-02 | 3.07E-01    |  |
| ENSG00000196420.6     | <i>SI00A5</i>        | Protein    | 0.48                        | 4.76E-03 | 4.85E-02    | 0.53                            | 1.24E-03 | 2.72E-02    |  |
| ENSG00000196421.6     | <i>LINC00176</i>     | LncRNA     | 0.41                        | 6.44E-03 | 5.91E-02    | 0.06                            | 7.04E-01 | 8.76E-01    |  |
| ENSG00000196427.12    | <i>NBPF4</i>         | Protein    | 0.86                        | 8.07E-04 | 1.46E-02    | 0.77                            | 1.93E-03 | 3.63E-02    |  |
| ENSG00000196433.10    | <i>ASMT</i>          | Protein    | 0.57                        | 2.96E-04 | 7.24E-03    | 0.48                            | 1.53E-03 | 3.13E-02    |  |
| ENSG00000196436.8     | <i>NPIP815</i>       | Protein    | 0.89                        | 2.60E-05 | 1.13E-03    | 0.88                            | 1.76E-05 | 1.17E-03    |  |
| ENSG00000196476.10    | <i>C20orf96</i>      | Protein    | 0.45                        | 2.97E-07 | 2.81E-05    | 0.43                            | 3.99E-07 | 5.50E-05    |  |
| ENSG00000196482.15    | <i>ESRRG</i>         | Protein    | -0.50                       | 4.11E-04 | 9.17E-03    | -0.26                           | 5.60E-02 | 2.70E-01    |  |
| ENSG00000196502.10    | <i>SULT1A1</i>       | Protein    | 0.32                        | 2.51E-03 | 3.19E-02    | 0.30                            | 2.91E-03 | 4.85E-02    |  |
| ENSG00000196505.9     | <i>GDAP2</i>         | Protein    | -0.22                       | 4.24E-05 | 1.66E-03    | -0.20                           | 7.83E-05 | 3.76E-03    |  |
| ENSG00000196591.10    | <i>HDAC2</i>         | Protein    | -0.22                       | 1.36E-03 | 2.10E-02    | -0.18                           | 6.36E-03 | 7.86E-02    |  |
| ENSG00000196597.10    | <i>ZNF782</i>        | Protein    | 0.21                        | 4.25E-03 | 4.52E-02    | 0.12                            | 8.58E-02 | 3.35E-01    |  |
| ENSG00000196652.10    | <i>ZKSCAN5</i>       | Protein    | 0.11                        | 1.02E-02 | 7.87E-02    | 0.09                            | 2.84E-02 | 1.86E-01    |  |
| ENSG00000196656.7     | <i>AC004057.1</i>    | Pseudogene | 0.59                        | 2.58E-03 | 3.25E-02    | 0.54                            | 4.41E-03 | 6.34E-02    |  |
| ENSG00000196659.9     | <i>TTC30B</i>        | Protein    | -0.21                       | 3.07E-03 | 3.64E-02    | -0.11                           | 1.13E-01 | 3.84E-01    |  |
| ENSG00000196684.11    | <i>HSH2D</i>         | Protein    | 0.34                        | 1.68E-03 | 2.43E-02    | 0.31                            | 2.57E-03 | 4.46E-02    |  |
| ENSG00000196689.9     | <i>TRPV1</i>         | Protein    | 0.36                        | 1.45E-02 | 9.88E-02    | 0.26                            | 6.80E-02 | 2.99E-01    |  |
| ENSG00000196756.10    | <i>SNHG17</i>        | LncRNA     | 0.44                        |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol   | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |               |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000196924.13    | FLNA          | Protein    | -0.38                       | 7.99E-03 | 6.75E-02    | -0.21                           | 1.32E-01 | 4.15E-01    |  |
| ENSG00000196932.10    | TMEM26        | Protein    | -0.76                       | 5.21E-05 | 1.94E-03    | -0.79                           | 1.25E-05 | 8.98E-04    |  |
| ENSG00000196933.5     | RPS26P11      | Pseudogene | 0.96                        | 3.93E-10 | 7.76E-08    | 0.92                            | 3.64E-10 | 1.08E-07    |  |
| ENSG00000196943.11    | NOP9          | Protein    | -0.12                       | 8.60E-03 | 7.09E-02    | -0.11                           | 1.77E-02 | 1.44E-01    |  |
| ENSG00000196944.3     | OR2T4         | Protein    | 0.98                        | 1.27E-04 | 3.77E-03    | 1.03                            | 2.84E-05 | 1.71E-03    |  |
| ENSG00000196979.1     | RP11-88G17.6  | LncRNA     | 0.56                        | 4.60E-03 | 4.76E-02    | 0.50                            | 8.39E-03 | 9.25E-02    |  |
| ENSG00000196993.7     | NPIP89        | Protein    | 0.63                        | 1.50E-03 | 2.24E-02    | 0.51                            | 7.40E-03 | 8.58E-02    |  |
| ENSG00000196998.14    | WDR45         | Protein    | 0.18                        | 3.75E-03 | 4.17E-02    | 0.17                            | 4.52E-03 | 6.44E-02    |  |
| ENSG00000197006.12    | METTL9        | Protein    | -0.15                       | 3.33E-03 | 3.86E-02    | -0.11                           | 2.63E-02 | 1.78E-01    |  |
| ENSG00000197046.10    | SIGLEC15      | Protein    | -0.40                       | 1.36E-02 | 9.48E-02    | -0.39                           | 1.14E-02 | 1.12E-01    |  |
| ENSG00000197062.10    | ZSCAN26       | Protein    | -0.11                       | 8.78E-03 | 7.16E-02    | -0.11                           | 6.75E-03 | 8.13E-02    |  |
| ENSG00000197081.11    | IGF2R         | Protein    | -0.32                       | 3.62E-04 | 8.39E-03    | -0.19                           | 2.92E-02 | 1.89E-01    |  |
| ENSG00000197119.11    | SLC25A29      | Protein    | 0.26                        | 6.10E-03 | 5.71E-02    | 0.17                            | 5.65E-02 | 2.71E-01    |  |
| ENSG00000197122.10    | SRC           | Protein    | 0.23                        | 6.36E-04 | 1.24E-02    | 0.23                            | 3.86E-04 | 1.21E-02    |  |
| ENSG00000197140.13    | ADAM32        | Protein    | -0.45                       | 4.47E-03 | 4.68E-02    | -0.34                           | 2.51E-02 | 1.73E-01    |  |
| ENSG00000197181.10    | PIWIL2        | Protein    | -0.37                       | 1.27E-02 | 9.07E-02    | -0.30                           | 3.49E-02 | 2.07E-01    |  |
| ENSG00000197191.4     | CYSRT1        | Protein    | 0.54                        | 5.50E-05 | 2.02E-03    | 0.34                            | 1.01E-02 | 1.04E-01    |  |
| ENSG00000197258.5     | EIF4BP6       | Pseudogene | -0.77                       | 1.92E-16 | 9.31E-14    | -0.73                           | 5.92E-16 | 4.19E-13    |  |
| ENSG00000197273.3     | GUCA2A        | Protein    | -0.62                       | 1.10E-02 | 8.29E-02    | -0.12                           | 6.37E-01 | 8.43E-01    |  |
| ENSG00000197275.11    | RAD54B        | Protein    | 0.26                        | 4.67E-03 | 4.81E-02    | 0.11                            | 2.08E-01 | 5.15E-01    |  |
| ENSG00000197372.8     | ZNF675        | Protein    | -0.25                       | 5.55E-03 | 5.37E-02    | -0.22                           | 1.09E-02 | 1.09E-01    |  |
| ENSG00000197381.14    | ADARB1        | Protein    | 0.18                        | 4.21E-03 | 4.49E-02    | 0.16                            | 7.56E-03 | 8.70E-02    |  |
| ENSG00000197405.6     | C5AR1         | Protein    | 0.35                        | 7.49E-03 | 6.48E-02    | 0.18                            | 1.61E-01 | 4.55E-01    |  |
| ENSG00000197421.8     | GGT3P         | Pseudogene | 0.57                        | 6.40E-03 | 5.90E-02    | 0.66                            | 1.09E-03 | 2.48E-02    |  |
| ENSG00000197444.8     | OGDHL         | Protein    | -0.61                       | 3.47E-03 | 3.96E-02    | -0.61                           | 2.64E-03 | 4.53E-02    |  |
| ENSG00000197446.7     | CYP2F1        | Protein    | 0.64                        | 4.40E-03 | 4.63E-02    | 0.53                            | 1.55E-02 | 1.33E-01    |  |
| ENSG00000197454.1     | OR2L5         | Protein    | 0.82                        | 1.37E-03 | 2.11E-02    | 0.82                            | 9.15E-04 | 2.21E-02    |  |
| ENSG00000197475.10    | ADAM3A        | Pseudogene | 0.74                        | 3.96E-03 | 4.32E-02    | 0.67                            | 7.13E-03 | 8.40E-02    |  |
| ENSG00000197506.7     | SLC28A3       | Protein    | -0.84                       | 9.64E-05 | 3.08E-03    | -0.97                           | 3.82E-06 | 3.49E-04    |  |
| ENSG00000197536.9     | C5orf56       | Protein    | 0.23                        | 3.00E-03 | 3.58E-02    | 0.14                            | 5.87E-02 | 2.77E-01    |  |
| ENSG00000197540.6     | GZMM          | Protein    | 0.40                        | 8.84E-03 | 7.20E-02    | 0.28                            | 5.36E-02 | 2.64E-01    |  |
| ENSG00000197549.8     | PRAMENP       | Pseudogene | 1.99                        | 4.94E-16 | 2.32E-13    | 1.02                            | 1.87E-05 | 1.24E-03    |  |
| ENSG00000197550.3     | RP11-460N11.2 | Pseudogene | 0.97                        | 1.14E-04 | 3.51E-03    | 0.89                            | 2.33E-04 | 8.64E-03    |  |
| ENSG00000197558.10    | SSPO          | Protein    | 0.48                        | 1.12E-03 | 1.84E-02    | 0.23                            | 1.14E-01 | 3.87E-01    |  |
| ENSG00000197561.5     | ELANE         | Protein    | 0.41                        | 1.45E-02 | 9.87E-02    | 0.49                            | 2.88E-03 | 4.82E-02    |  |
| ENSG00000197588.8     | KLKP1         | Pseudogene | 0.58                        | 2.46E-05 | 1.08E-03    | 0.52                            | 8.80E-05 | 4.08E-03    |  |
| ENSG00000197594.10    | ENPP1         | Protein    | -0.28                       | 9.94E-04 | 1.70E-02    | -0.28                           | 5.59E-04 | 1.59E-02    |  |
| ENSG00000197632.7     | SERPINB2      | Protein    | 1.33                        | 5.94E-09 | 9.14E-07    | 0.78                            | 4.17E-04 | 1.29E-02    |  |
| ENSG00000197653.13    | DNAH10        | Protein    | 0.51                        | 5.27E-05 | 1.96E-03    | 0.35                            | 4.80E-03 | 6.66E-02    |  |
| ENSG00000197702.10    | PARVA         | Protein    | -0.21                       | 8.17E-04 | 1.48E-02    | -0.11                           | 6.58E-02 | 2.94E-01    |  |
| ENSG00000197728.8     | RPS26         | Protein    | 0.51                        | 2.76E-05 | 1.17E-03    | 0.44                            | 1.73E-04 | 6.88E-03    |  |
| ENSG00000197744.5     | PTMAP2        | Pseudogene | -0.37                       | 8.99E-04 | 1.57E-02    | -0.40                           | 1.23E-04 | 5.32E-03    |  |
| ENSG00000197766.6     | CFD           | Protein    | 0.64                        | 4.36E-04 | 9.56E-03    | 0.74                            | 2.47E-05 | 1.54E-03    |  |
| ENSG00000197768.9     | C9orf173      | Protein    | 0.45                        | 4.31E-03 | 4.57E-02    | 0.30                            | 4.92E-02 | 2.52E-01    |  |
| ENSG00000197774.11    | EME2          | Protein    | 0.34                        | 9.48E-03 | 7.51E-02    | 0.13                            | 3.20E-01 | 6.27E-01    |  |
| ENSG00000197776.6     | KLHDC1        | Protein    | 0.22                        | 5.70E-03 | 5.46E-02    | 0.23                            | 2.27E-03 | 4.07E-02    |  |
| ENSG00000197816.12    | CCDC180       | Protein    | 0.62                        | 2.83E-06 | 1.87E-04    | 0.46                            | 3.40E-04 | 1.11E-02    |  |
| ENSG00000197822.9     | OCLN          | Protein    | -0.34                       | 9.86E-03 | 7.71E-02    | -0.41                           | 1.32E-03 | 2.84E-02    |  |
| ENSG00000197888.2     | UGT2B17       | Protein    | 1.02                        | 3.61E-05 | 1.46E-03    | 0.53                            | 2.74E-02 | 1.83E-01    |  |
| ENSG00000197927.11    | C2orf27A      | Pseudogene | 0.35                        | 9.89E-03 | 7.72E-02    | 0.18                            | 1.67E-01 | 4.63E-01    |  |
| ENSG00000197948.9     | FCHSD1        | Protein    | 0.22                        | 9.72E-03 | 7.63E-02    | 0.20                            | 1.61E-02 | 1.36E-01    |  |
| ENSG00000197976.9     | AKAP17A       | Protein    | 0.22                        | 2.99E-04 | 7.30E-03    | 0.17                            | 5.26E-03 | 7.02E-02    |  |
| ENSG00000197977.3     | ELOVL2        | Protein    | 0.80                        | 3.13E-06 | 2.03E-04    | 0.73                            | 9.63E-06 | 7.39E-04    |  |
| ENSG00000197980.10    | LEKR1         | Protein    | -0.26                       | 5.64E-03 | 5.43E-02    | -0.26                           | 3.20E-03 | 5.16E-02    |  |
| ENSG00000197989.12    | SNHG12        | LncRNA     | 0.42                        | 5.81E-04 | 1.16E-02    | 0.23                            | 5.33E-02 | 2.63E-01    |  |
| ENSG00000198019.11    | FCGR1B        | Protein    | 0.53                        | 1.51E-04 | 4.33E-03    | 0.30                            | 3.21E-02 | 1.99E-01    |  |
| ENSG00000198026.7     | ZNF335        | Protein    | 0.16                        | 1.06E-03 | 1.78E-02    | 0.11                            | 2.74E-02 | 1.83E-01    |  |
| ENSG00000198130.13    | HIBCH         | Protein    | -0.17                       | 1.14E-02 | 8.46E-02    | -0.12                           | 7.31E-02 | 3.09E-01    |  |
| ENSG00000198134.3     | RP11-267J23.4 | Pseudogene | -0.27                       | 4.57E-03 | 4.75E-02    | -0.30                           | 1.05E-03 | 2.42E-02    |  |
| ENSG00000198156.9     | NPIP86        | Protein    | 0.72                        | 6.41E-05 | 2.25E-03    | 0.59                            | 7.41E-04 | 1.91E-02    |  |
| ENSG00000198169.7     | ZNF251        | Protein    | 0.29                        | 1.13E-04 | 3.48E-03    | 0.14                            | 5.36E-02 | 2.64E-01    |  |
| ENSG00000198205.6     | ZXDA          | Protein    | -0.20                       | 5.20E-03 | 5.14E-02    | -0.16                           | 2.40E-02 | 1.69E-01    |  |
| ENSG00000198223.13    | CSF2RA        | Protein    | 0.35                        | 4.34E-03 | 4.58E-02    | 0.26                            | 2.75E-02 | 1.83E-01    |  |
| ENSG00000198225.5     | FKBP1C        | Protein    | -0.30                       | 4.61E-03 | 4.76E-02    | -0.31                           | 2.18E-03 | 3.96E-02    |  |
| ENSG00000198237.8     | RP11-98J23.2  | Pseudogene | -0.63                       | 3.66E-04 | 8.45E-03    | -0.68                           | 5.48E-05 | 2.87E-03    |  |
| ENSG00000198251.7     | CTC-490E21.13 | Pseudogene | 0.72                        | 4.75E-03 | 4.85E-02    | 0.58                            | 1.87E-02 | NA          |  |
| ENSG00000198270.11    | TMEM116       | Protein    | 0.22                        | 2.38E-03 | 3.08E-02    | 0.17                            | 1.80E-02 | 1.45E-01    |  |
| ENSG00000198286.8     | CARD11        | Protein    | 0.37                        | 8.45E-03 | 7.01E-02    | 0.23                            | 8.76E-02 | 3.39E-01    |  |
| ENSG00000198300.11    | PEG3          | Protein    | -0.28                       | 8.61E-03 | 7.09E-02    | -0.23                           | 2.86E-02 | 1.87E-01    |  |
| ENSG00000198346.9     | ZNF813        | Protein    | -0.32                       | 9.69E-04 | 1.66E-02    | -0.12                           | 2.32E-01 | 5.43E-01    |  |
| ENSG00000198373.11    | WWP2          | Protein    | -0.22                       | 1.27E-03 | 2.00E-02    | -0.15                           | 1.70E-02 | 1.41E-01    |  |
| ENSG00000198393.6     | ZNF26         | Protein    | 0.18                        | 7.56E-03 | 6.51E-02    | 0.10                            | 1.28E-01 | 4.10E-01    |  |
| ENSG00000198454.2     | PRR31         | LncRNA     | 0.77                        | 2.73E-04 | 6.83E-03    | 0.85                            | 4.16E-05 | 2.30E-03    |  |
| ENSG00000198455.4     | ZXDB          | Protein    | -0.16                       | 6.07E-03 | 5.69E-02    | -0.13                           | 1.72E-02 | 1.42E-01    |  |
| ENSG00000198467.12    | TPM2          | Protein    | -0.46                       | 6.33E-03 | 5.86E-02    | -0.22                           | 1.73E-01 | 4.71E-01    |  |
| ENSG00000198468.6     | FLVCR1-AS1    | LncRNA     | -0.49                       | 1.30E-05 | 6.43E-04    | -0.42                           | 1.28E-04 | 5.49E-03    |  |
| ENSG00000198488.9     | B3GNT6        | Protein    | -1.59                       | 1.42E-10 | 3.01E-08    | -1.65                           | 8.51E-12 | 3.48E-09    |  |
| ENSG00000198496.9     | NBR2          | Pseudogene | 0.20                        | 8.74E-03 | 7.15E-02    | 0.18                            | 1.34E-02 | 1.22E-01    |  |
| ENSG00000198520.9     | C1orf228      | Protein    | 0.47                        | 3.97E-04 | 8.96E-03    | 0.38                            | 3.01E-03 | 4.96E-02    |  |
| ENSG00000198523.5     | PLN           | Protein    | -0.37                       | 1.21E-02 | 8.80E-02    | -0.30                           | 3.57E-02 | 2.10E-01    |  |
| ENSG00000198556.12    | ZNF789        | Protein    | 0.23                        | 1.14E-03 | 1.87E-02    | 0.22                            | 7.99E-04 | 2.01E-02    |  |
| ENSG00000198563.12    | DDX39B        | Protein    | 0.28                        | 2.89E-03 | 3.49E-02    | 0.17                            | 6.95E-02 | 3.02E-01    |  |
| ENSG00000198569.8     | SLC34A3       | Protein    | 0.59                        | 1.85E-04 | 5.07E-03    | 0.26                            | 1.02E-01 | 3.65E-01    |  |
| ENSG00000198643.5     | FAM3D         | Protein    | -0.71                       | 2.78E-04 | 6.90E-03    | -0.56                           | 3.21E-03 | 5.16E-02    |  |
| ENSG00000198670.10    | LPA           | Protein    | 0.40                        | 1.26E-02 | 9.04E-02    | 0.46                            | 3.10E-03 | 5.05E-02    |  |
| ENSG00000198734.9     | F5            | Protein    | -0.65                       | 1.32E-03 | 2.05E-02    | -0.67                           | 5.81E-04 | 1.63E-02    |  |
| ENSG00000198765.10    | SYCP1         | Protein    | 0.94                        | 2.36E-04 | 6.10E-03    | 0.79                            | 1.40E-03 | 2.94E-02    |  |
| ENSG00000198774.4     | RASSF9        | Protein    | -0.46                       | 8.91E-04 | 1.56E-02    | -0.36                           | 6.21E-03 | 7.76E-02    |  |
| ENSG00000198829.6     | SUCNR1        | Protein    | -1.25                       | 2.33E-07 | 2.27E-05    | -0.84                           | 7.19E-05 | 3.52E-03    |  |
| ENSG00000198848.11    | CESI          | Protein    | -0.56                       | 2.29E-04 | 5.97E-03    | -0.39                           | 8.12E-03 | 9.07E-02    |  |
| ENSG00000198865.8     | CCDC152       | Protein    | 0.30                        | 1.17E-02 | 8.59E-02    | 0.29                            | 9.76E-03 | 1.01E-01    |  |
| ENSG00000198881.9     | ASB12         | Protein    | -0.56                       | 4.90E-04 | 1.04E-02    | -0.46                           | 3.14E-03 | 5.09E-02    |  |
| ENSG00000198894.6     | CIPC          | Protein    | -0.15                       | 5.52E-03 | 5.36E-02    | -0.06                           | 2.83E-01 | 5.93E-01    |  |
| ENSG00000198908.10    | BHLHB9        | Protein    | -0.32                       | 1.15E-06 | 8.75E-05    | -0.23                           | 3.01E-04 | 1.02E-02    |  |
| ENSG00000198930.11    | CSAG1         | Protein    | 2.09                        | 1.73E-16 | 8.62E-14    | 0.21                            | 3.88E-01 | 6.83E-01    |  |
| ENSG00000198933.8     | TBKBP1        | Protein    | 0.21                        | 5.50E-03 | 5.35E-02    | 0.12                            | 8.93E-02 | 3.42E-01    |  |
| ENSG00000198960.9     | ARMCX6        | Protein    | 0.16                        | 2.73E-03 | 3.37E-02    | 0.12                            | 2.22E-02 | 1.62E-01    |  |
| ENSG00000199172.2     | MIR331        | Other      | 0.63                        | 2.69E-05 | 1.15E-03    | 0.43                            | 3.49E-03 | 5.46E-02    |  |
| ENSG00000199349.1     | Y_RNA         | Other      | 0.90                        | 4.34E-04 | 9.52E-03    | 0.83                            | 8.23E-04 | NA          |  |
| ENSG00000199407.1     | RNASSP301     | Other      | 0.32                        | 8.04E-03 | 6.79E-02    | 0.29                            | 1.27E-02 | 1.19E-01    |  |
| ENSG00000199436.1     | SNORD9        | Other      | 0.53                        | 5.18E-03 | 5.13E-02    | 0.41                            | 2.34E-02 | 1.67E-01    |  |
| ENSG00000199472.1     | Y_RNA         | Other      | 0.74                        | 3.31E-03 | 3.85E-02    | 0.62                            | 1.05E-02 | 1.06E-01    |  |
| ENSG00000199506.1     | RNU6-247P     | Other      | -0.69                       | 6.89E-03 | 6.15E-02    | -0.71                           | 4.21E-03 | 6.19E-02    |  |
| ENSG00000199667.1     | Y_RNA         | Other      | 0.78                        | 2.04E-04 | 5.44E-03    | 0.62                            | 2.26E-03 | 4.07E-02    |  |
| ENSG00000199711.1     | Y_RNA         | Other      | 0.59                        | 9.60E-03 | 7.56E-02    | 0.53                            | 1.74E-02 | 1.43E-01    |  |
| ENSG00000199804.1     | RNASSP383     | Other      | 0.48                        | 1.19E-03 | 1.92E-02    | 0.31                            | 3.03E-02 | 1.93E-01    |  |
| ENSG00000199961.1     | SNORD1B       | Other      | 0.53                        |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |             |             |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|-------------|-------------|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value     | adj p value |
| ENSG00000200209.1     | <i>Y_RNA</i>         | Other      | 0.54                        | 1.20E-02 | 8.73E-02    | 0.43                            | 4.21E-02    | 2.31E-01    |
| ENSG00000200253.1     | <i>RNU6-529P</i>     | Other      | 0.40                        | 7.83E-04 | 1.44E-02    | 0.40                            | 3.56E-04    | 1.15E-02    |
| ENSG00000200344.1     | <i>Y_RNA</i>         | Other      | 0.43                        | 3.40E-03 | 3.90E-02    | 0.30                            | 3.41E-02    | 2.05E-01    |
| ENSG00000200350.1     | <i>RNU6-1285P</i>    | Other      | 0.73                        | 2.58E-03 | 3.25E-02    | 0.67                            | 4.35E-03    | 6.30E-02    |
| ENSG00000200356.1     | <i>RNU6-833P</i>     | Other      | 0.46                        | 1.45E-03 | 2.19E-02    | 0.36                            | 1.00E-02    | 1.03E-01    |
| ENSG00000200403.1     | <i>RNU6-1099P</i>    | Other      | 0.47                        | 8.23E-03 | 6.89E-02    | 0.33                            | 5.22E-02    | 2.61E-01    |
| ENSG00000200506.1     | <i>Y_RNA</i>         | Other      | 0.60                        | 2.50E-03 | 3.19E-02    | 0.53                            | 5.48E-03    | 7.18E-02    |
| ENSG00000200534.1     | <i>SNORA33</i>       | Other      | 0.46                        | 9.12E-04 | 1.59E-02    | 0.34                            | 1.18E-02    | 1.13E-01    |
| ENSG00000200594.1     | <i>RNU6-824P</i>     | Other      | 0.69                        | 2.02E-03 | 2.76E-02    | 0.61                            | 5.01E-03    | 6.83E-02    |
| ENSG00000200714.1     | <i>Y_RNA</i>         | Other      | 0.35                        | 2.26E-03 | 2.96E-02    | 0.31                            | 5.47E-03    | 7.18E-02    |
| ENSG00000200814.1     | <i>RNU6-595P</i>     | Other      | 0.46                        | 1.32E-02 | 9.28E-02    | 0.45                            | 1.13E-02    | 1.11E-01    |
| ENSG00000200839.1     | <i>RNASSP48</i>      | Other      | -0.61                       | 9.30E-03 | 7.43E-02    | -0.71                           | 1.80E-03    | 3.47E-02    |
| ENSG00000201041.1     | <i>RNASSP242</i>     | Other      | 0.71                        | 5.19E-03 | 5.13E-02    | 0.59                            | 1.81E-02    | 1.45E-01    |
| ENSG00000201183.1     | <i>RNVU1-3</i>       | Other      | 1.65                        | 1.06E-22 | 9.93E-20    | 1.43                            | 7.43E-18    | 6.01E-15    |
| ENSG00000201207.1     | <i>Y_RNA</i>         | Other      | 0.40                        | 1.25E-03 | 1.98E-02    | 0.25                            | 3.65E-02    | 2.13E-01    |
| ENSG00000201388.1     | <i>SNORA68</i>       | Other      | 0.49                        | 1.29E-02 | 9.17E-02    | 0.41                            | 3.17E-02    | 1.97E-01    |
| ENSG00000201451.1     | <i>Y_RNA</i>         | Other      | 0.54                        | 1.09E-02 | 8.22E-02    | 0.32                            | 1.24E-01    | 4.04E-01    |
| ENSG00000201579.1     | <i>RNU6-343P</i>     | Other      | 0.49                        | 8.87E-03 | 7.21E-02    | 0.41                            | 2.22E-02    | 1.62E-01    |
| ENSG00000201600.1     | <i>RN7SKP124</i>     | Other      | -0.65                       | 1.15E-02 | 8.50E-02    | -0.66                           | 7.69E-03    | 8.77E-02    |
| ENSG00000201602.1     | <i>Y_RNA</i>         | Other      | 0.51                        | 9.96E-03 | 7.75E-02    | 0.12                            | 5.01E-01    | 7.61E-01    |
| ENSG00000201772.1     | <i>SNORA5C</i>       | Other      | 0.35                        | 6.64E-03 | 6.00E-02    | 0.20                            | 1.17E-01    | 3.91E-01    |
| ENSG00000201823.1     | <i>SNORD48</i>       | Other      | 0.76                        | 5.34E-04 | 1.10E-02    | 0.60                            | 5.41E-03    | 7.14E-02    |
| ENSG00000202081.1     | <i>RNU6-1280P</i>    | Other      | -0.61                       | 8.47E-03 | 7.02E-02    | -0.64                           | 4.39E-03    | 6.33E-02    |
| ENSG00000202172.1     | <i>RNU6-1327P</i>    | Other      | 0.64                        | 1.23E-02 | 8.90E-02    | 0.66                            | 8.24E-03 NA |             |
| ENSG00000202251.1     | <i>Y_RNA</i>         | Other      | 0.58                        | 4.77E-03 | 4.86E-02    | 0.47                            | 1.77E-02    | 1.44E-01    |
| ENSG00000202314.1     | <i>SNORD6</i>        | Other      | 0.46                        | 1.33E-03 | 2.06E-02    | 0.34                            | 1.42E-02    | 1.26E-01    |
| ENSG00000202318.1     | <i>Y_RNA</i>         | Other      | 0.52                        | 1.64E-03 | 2.39E-02    | 0.43                            | 6.33E-03    | 7.85E-02    |
| ENSG00000202441.2     | <i>RNY4P10</i>       | Other      | 0.35                        | 4.58E-03 | 4.76E-02    | 0.22                            | 6.36E-02    | 2.89E-01    |
| ENSG00000202533.1     | <i>Y_RNA</i>         | Other      | 0.47                        | 8.63E-04 | 1.53E-02    | 0.36                            | 8.44E-03    | 9.29E-02    |
| ENSG00000203279.3     | <i>RP11-498P14.5</i> | LncRNA     | 0.74                        | 8.05E-08 | 9.06E-06    | 0.63                            | 2.44E-06    | 2.45E-04    |
| ENSG00000203280.4     | <i>CTA-221G9.12</i>  | LncRNA     | 0.35                        | 4.03E-03 | 4.37E-02    | 0.31                            | 9.19E-03    | 9.76E-02    |
| ENSG00000203321.2     | <i>C9orf41-AS1</i>   | LncRNA     | 0.42                        | 9.33E-03 | 7.44E-02    | 0.33                            | 3.28E-02    | 2.01E-01    |
| ENSG00000203364.2     | <i>RP11-370F5.4</i>  | LncRNA     | 0.52                        | 3.26E-03 | 3.81E-02    | 0.49                            | 4.35E-03    | 6.30E-02    |
| ENSG00000203523.3     | <i>TAS2R2P</i>       | Pseudogene | 0.63                        | 1.80E-03 | 2.54E-02    | 0.64                            | 9.40E-04    | 2.25E-02    |
| ENSG00000203588.3     | <i>IGBP1-AS1</i>     | LncRNA     | 0.39                        | 5.44E-03 | 5.31E-02    | 0.33                            | 1.44E-02    | 1.27E-01    |
| ENSG00000203644.3     | <i>RP11-332M2.1</i>  | LncRNA     | 0.26                        | 3.76E-03 | 4.17E-02    | 0.21                            | 1.58E-02    | 1.35E-01    |
| ENSG00000203663.3     | <i>OR2L2</i>         | Protein    | 1.13                        | 1.89E-06 | 1.33E-04    | 0.96                            | 3.45E-05    | 1.99E-03    |
| ENSG00000203666.11    | <i>EFCAB2</i>        | Protein    | 0.29                        | 6.81E-05 | 2.37E-03    | 0.27                            | 1.58E-04    | 6.39E-03    |
| ENSG00000203685.8     | <i>Clorf95</i>       | Protein    | -0.39                       | 1.10E-02 | 8.25E-02    | -0.24                           | 9.78E-02    | 3.58E-01    |
| ENSG00000203688.4     | <i>RP11-351J23.1</i> | LncRNA     | -0.59                       | 1.61E-03 | 2.36E-02    | -0.30                           | 9.47E-02    | 3.53E-01    |
| ENSG00000203697.10    | <i>CAPN8</i>         | Protein    | 0.68                        | 2.86E-04 | 7.05E-03    | 0.52                            | 4.37E-03    | 6.32E-02    |
| ENSG00000203739.3     | <i>RP11-296O14.3</i> | LncRNA     | 0.42                        | 7.77E-07 | 6.28E-05    | 0.34                            | 2.60E-05    | 1.60E-03    |
| ENSG00000203782.5     | <i>LOR</i>           | Protein    | 0.76                        | 1.93E-03 | 2.68E-02    | 0.65                            | 6.63E-03    | 8.06E-02    |
| ENSG00000203791.12    | <i>METTL10</i>       | Protein    | 0.14                        | 1.17E-02 | 8.59E-02    | 0.13                            | 1.78E-02    | 1.44E-01    |
| ENSG00000203804.4     | <i>ADAMTSL4-AS1</i>  | LncRNA     | 0.46                        | 4.71E-03 | 4.83E-02    | 0.23                            | 1.47E-01    | 4.37E-01    |
| ENSG00000203857.8     | <i>HSD3B1</i>        | Protein    | 0.60                        | 5.15E-03 | 5.11E-02    | 0.08                            | 6.92E-01    | 8.71E-01    |
| ENSG00000203858.3     | <i>HSD3BP2</i>       | Pseudogene | 0.93                        | 2.76E-04 | 6.87E-03    | -0.14                           | 5.73E-01    | 8.07E-01    |
| ENSG00000203865.8     | <i>ATP1A1-AS1</i>    | LncRNA     | 0.27                        | 5.60E-06 | 3.23E-04    | 0.32                            | 2.58E-08    | 5.09E-06    |
| ENSG00000203875.9     | <i>SNHG5</i>         | LncRNA     | -0.31                       | 1.25E-02 | 8.98E-02    | -0.33                           | 5.92E-03    | 7.55E-02    |
| ENSG00000203877.6     | <i>RIPPLY2</i>       | Protein    | 0.64                        | 2.84E-03 | 3.46E-02    | 0.69                            | 8.90E-04    | 2.17E-02    |
| ENSG00000203896.8     | <i>LIME1</i>         | Protein    | 0.38                        | 3.63E-03 | 4.08E-02    | 0.21                            | 9.60E-02    | 3.55E-01    |
| ENSG00000203910.7     | <i>Clorf146</i>      | Protein    | 0.49                        | 3.72E-03 | 4.15E-02    | 0.44                            | 5.97E-03    | 7.57E-02    |
| ENSG00000203942.4     | <i>C10orf62</i>      | Protein    | 0.60                        | 1.41E-02 | 9.74E-02    | 0.57                            | 1.66E-02    | 1.39E-01    |
| ENSG00000203943.7     | <i>SAMD13</i>        | Protein    | -0.54                       | 3.32E-04 | 7.88E-03    | -0.53                           | 2.79E-04    | 9.73E-03    |
| ENSG00000203999.7     | <i>LINC01270</i>     | LncRNA     | 0.45                        | 4.84E-03 | 4.91E-02    | 0.27                            | 8.66E-02    | 3.37E-01    |
| ENSG00000204091.6     | <i>TDRG1</i>         | LncRNA     | 0.89                        | 5.45E-04 | 1.11E-02    | 0.20                            | 4.18E-01    | 7.04E-01    |
| ENSG00000204110.6     | <i>RP1-153P14.8</i>  | LncRNA     | 0.68                        | 3.70E-03 | 4.12E-02    | 0.62                            | 6.95E-03    | 8.27E-02    |
| ENSG00000204183.1     | <i>GDFSOS</i>        | Protein    | 1.38                        | 1.07E-08 | 1.54E-06    | -0.28                           | 2.42E-01    | 5.53E-01    |
| ENSG00000204252.11    | <i>HLA-DOA</i>       | Protein    | 0.34                        | 8.24E-03 | 6.90E-02    | 0.29                            | 1.83E-02    | 1.46E-01    |
| ENSG00000204261.7     | <i>PSMB8-AS1</i>     | LncRNA     | 0.45                        | 8.02E-05 | 2.68E-03    | 0.38                            | 4.87E-04    | 1.44E-02    |
| ENSG00000204283.3     | <i>FLJ45079</i>      | LncRNA     | 0.58                        | 5.92E-03 | 5.59E-02    | 0.48                            | 1.73E-02    | 1.42E-01    |
| ENSG00000204296.10    | <i>C6orf10</i>       | Protein    | -0.69                       | 7.16E-03 | 6.29E-02    | -0.68                           | 4.41E-03    | 6.34E-02    |
| ENSG00000204305.12    | <i>AGER</i>          | Protein    | 0.50                        | 8.98E-05 | 2.92E-03    | 0.41                            | 9.84E-04    | 2.31E-02    |
| ENSG00000204323.5     | <i>SMIM5</i>         | Protein    | 0.38                        | 1.00E-02 | 7.79E-02    | 0.31                            | 3.16E-02    | 1.97E-01    |
| ENSG00000204361.8     | <i>NXPE2</i>         | Protein    | 0.60                        | 8.31E-04 | 1.49E-02    | 0.03                            | 8.67E-01    | 9.52E-01    |
| ENSG00000204385.9     | <i>SLC44A4</i>       | Protein    | -0.22                       | 9.39E-03 | 7.47E-02    | -0.13                           | 1.20E-01    | 3.97E-01    |
| ENSG00000204387.11    | <i>C6orf48</i>       | Protein    | 0.21                        | 8.18E-03 | 6.86E-02    | 0.15                            | 4.85E-02    | 2.50E-01    |
| ENSG00000204396.9     | <i>VWA7</i>          | Protein    | -0.35                       | 1.34E-02 | 9.38E-02    | -0.40                           | 2.83E-03    | 4.75E-02    |
| ENSG00000204403.8     | <i>CASP12</i>        | Pseudogene | 0.42                        | 2.58E-03 | 3.25E-02    | 0.26                            | 5.73E-02    | 2.73E-01    |
| ENSG00000204410.13    | <i>MSH5</i>          | Protein    | 0.37                        | 2.33E-03 | 3.02E-02    | 0.26                            | 2.76E-02    | 1.83E-01    |
| ENSG00000204424.9     | <i>LY6G6F</i>        | Protein    | 0.62                        | 1.39E-02 | 9.62E-02    | 0.55                            | 2.25E-02 NA |             |
| ENSG00000204429.4     | <i>RP11-1E11.1</i>   | Pseudogene | -0.43                       | 2.31E-03 | 3.01E-02    | -0.35                           | 1.01E-02    | 1.04E-01    |
| ENSG00000204449.3     | <i>TRIM49C</i>       | Protein    | 1.14                        | 4.60E-07 | 4.05E-05    | 0.03                            | 8.76E-01 NA |             |
| ENSG00000204463.11    | <i>BAG6</i>          | Protein    | -0.11                       | 1.84E-03 | 2.58E-02    | -0.10                           | 3.36E-03    | 5.32E-02    |
| ENSG00000204475.8     | <i>NCR3</i>          | Protein    | 0.55                        | 1.96E-03 | 2.70E-02    | 0.50                            | 3.45E-03    | 5.42E-02    |
| ENSG00000204556.4     | <i>CTD-2514C3.1</i>  | Pseudogene | -0.33                       | 1.20E-02 | 8.74E-02    | -0.23                           | 7.60E-02    | 3.16E-01    |
| ENSG00000204588.5     | <i>LINC01123</i>     | LncRNA     | 0.60                        | 9.35E-08 | 1.04E-05    | 0.51                            | 2.89E-06    | 2.81E-04    |
| ENSG00000204604.8     | <i>ZNF468</i>        | Protein    | -0.21                       | 4.90E-03 | 4.95E-02    | -0.15                           | 3.49E-02    | 2.08E-01    |
| ENSG00000204616.9     | <i>TRIM31</i>        | Protein    | 2.05                        | 2.70E-28 | 3.89E-25    | -0.09                           | 5.80E-01    | 8.11E-01    |
| ENSG00000204618.7     | <i>RNF39</i>         | Protein    | -0.51                       | 4.48E-04 | 9.77E-03    | -0.46                           | 9.57E-04    | 2.27E-02    |
| ENSG00000204624.7     | <i>PTCHD2</i>        | Protein    | 0.37                        | 5.95E-03 | 5.61E-02    | 0.30                            | 2.01E-02    | 1.53E-01    |
| ENSG00000204625.9     | <i>HCG9</i>          | LncRNA     | 0.76                        | 1.17E-07 | 1.26E-05    | 0.75                            | 5.19E-08    | 9.52E-06    |
| ENSG00000204632.10    | <i>HLA-G</i>         | Protein    | 0.52                        | 5.45E-04 | 1.11E-02    | 0.58                            | 6.07E-05    | 3.07E-03    |
| ENSG00000204642.12    | <i>HLA-F</i>         | Protein    | 0.47                        | 2.93E-04 | 7.17E-03    | 0.44                            | 3.63E-04    | 1.16E-02    |
| ENSG00000204644.8     | <i>ZFP57</i>         | Protein    | -0.65                       | 3.56E-03 | 4.03E-02    | -0.55                           | 1.18E-02    | 1.13E-01    |
| ENSG00000204652.6     | <i>RPS26P8</i>       | Pseudogene | 0.93                        | 9.89E-10 | 1.76E-07    | 0.84                            | 7.71E-09    | 1.71E-06    |
| ENSG00000204661.8     | <i>C5orf60</i>       | Protein    | 1.00                        | 4.26E-12 | 1.26E-09    | 0.85                            | 9.48E-10    | 2.59E-07    |
| ENSG00000204677.9     | <i>FAM153C</i>       | Protein    | 0.38                        | 1.27E-02 | 9.05E-02    | 0.37                            | 1.01E-02    | 1.04E-01    |
| ENSG00000204688.8     | <i>OR2H1</i>         | Protein    | 0.61                        | 1.15E-02 | 8.49E-02    | 0.65                            | 5.40E-03    | 7.14E-02    |
| ENSG00000204709.4     | <i>LINC01556</i>     | LncRNA     | 1.08                        | 5.25E-10 | 1.00E-07    | 1.00                            | 2.18E-09    | 5.52E-07    |
| ENSG00000204713.9     | <i>TRIM27</i>        | Protein    | 0.14                        | 4.37E-03 | 4.60E-02    | 0.12                            | 1.63E-02    | 1.37E-01    |
| ENSG00000204758.6     | <i>CTC-308K20.1</i>  | LncRNA     | 0.29                        | 1.98E-03 | 2.72E-02    | 0.26                            | 3.85E-03    | 5.82E-02    |
| ENSG00000204778.4     | <i>RP11-1S1J0.1</i>  | Pseudogene | 0.44                        | 4.81E-03 | 4.89E-02    | 0.36                            | 1.57E-02    | 1.34E-01    |
| ENSG00000204779.2     | <i>FOXDL5</i>        | Protein    | 0.80                        | 8.03E-04 | 1.46E-02    | 0.85                            | 2.74E-04    | 9.61E-03    |
| ENSG00000204802.3     | <i>RP11-111F5.4</i>  | LncRNA     | 0.84                        | 1.31E-05 | 6.43E-04    | 0.84                            | 5.24E-06    | 4.50E-04    |
| ENSG00000204843.11    | <i>DCTN1</i>         | Protein    | -0.20                       | 1.45E-06 | 1.08E-04    | -0.14                           | 6.51E-04    | 1.76E-02    |
| ENSG00000204859.10    | <i>ZBTB48</i>        | Protein    | 0.21                        | 9.62E-03 | 7.58E-02    | 0.22                            | 4.75E-03    | 6.62E-02    |
| ENSG00000204872.3     | <i>NAT8B</i>         | Pseudogene | 0.68                        | 6.88E-05 | 2.38E-03    | 0.57                            | 5.05E-04    | 1.48E-02    |
| ENSG00000204894.4     | <i>RP11-208G20.2</i> | Pseudogene | 1.03                        | 5.52E-05 | 2.02E-03    | 1.04                            | 2.39E-05    | 1.51E-03    |
| ENSG00000204899.5     | <i>MZT1</i>          | Protein    | -0.25                       | 1.03E-03 | 1.74E-02    | -0.20                           | 5.90E-03    | 7.54E-02    |
| ENSG00000204913.5     | <i>LRRC3C</i>        | Protein    | 0.54                        | 5.22E-03 | 5.15E-02    | 0.57                            | 2.19E-03    | 3.96E-02    |
| ENSG00000204923.3     | <i>FBXO48</i>        | Protein    | -0.18                       | 3.89E-03 | 4.27E-02    | -0.14                           | 1.74E-02    | 1.43E-01    |
| ENSG00000204933.3     | <i>CD177P1</i>       | Pseudogene | -0.63                       | 1.01E-02 | 7.83E-02    | -0.39                           | 1.04E-01    | 3.70E-01    |
| ENSG00000204936.8     | <i>CD177</i>         | Protein    | -0.82                       | 3.12E-04 | 7.53E-03    | -0.57                           | 1.07E-02    | 1.08E-01    |
| ENSG00000204946.8     | <i>ZNF783</i>        | Protein    | 0.21                        | 4.67E-03 | 4.81E-02    | 0.09                            | 2.25E-01    | 5.35E-01    |
| ENSG00000204949.7     | <i>FAM834-AS1</i>    | LncRNA     | 1.39                        | 1.59E-08 | 2.20E-06    | 0.23                            | 3.26E-01    |             |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000204978.2     | <i>ERICH4</i>        | Protein    | 0.57                        | 3.91E-03 | 4.29E-02    | 0.56                            | 3.36E-03 | 5.32E-02    |
| ENSG00000204982.3     | <i>PRSS3P4</i>       | Pseudogene | 0.57                        | 8.24E-03 | 6.90E-02    | 0.46                            | 2.76E-02 | 1.83E-01    |
| ENSG00000205035.7     | <i>RP11-707M1.1</i>  | Pseudogene | 0.87                        | 4.73E-05 | 1.80E-03    | 0.35                            | 7.70E-02 | NA          |
| ENSG00000205037.2     | <i>RP11-863P13.4</i> | LncRNA     | -0.72                       | 6.56E-04 | 1.27E-02    | -0.82                           | 5.63E-05 | 2.92E-03    |
| ENSG00000205045.7     | <i>SLFN12L</i>       | Protein    | -0.44                       | 6.16E-03 | 5.75E-02    | 0.27                            | 7.85E-02 | 3.21E-01    |
| ENSG00000205057.4     | <i>CLUU1OS</i>       | Protein    | -0.76                       | 2.22E-03 | 2.93E-02    | -0.82                           | 6.28E-04 | 1.72E-02    |
| ENSG00000205060.9     | <i>SLC35B4</i>       | Protein    | -0.21                       | 4.60E-03 | 4.76E-02    | -0.20                           | 5.37E-03 | 7.12E-02    |
| ENSG00000205084.9     | <i>TMEM231</i>       | Protein    | -0.19                       | 1.33E-02 | 9.35E-02    | -0.17                           | 2.14E-02 | 1.59E-01    |
| ENSG00000205085.7     | <i>FAM71F2</i>       | Protein    | 0.38                        | 2.93E-03 | 3.53E-02    | 0.31                            | 1.31E-02 | 1.21E-01    |
| ENSG00000205105.6     | <i>COX17P1</i>       | Pseudogene | 0.32                        | 1.06E-02 | 8.10E-02    | 0.28                            | 2.06E-02 | 1.56E-01    |
| ENSG00000205108.5     | <i>FAM205A</i>       | Protein    | 0.58                        | 3.56E-03 | 4.02E-02    | 0.44                            | 2.33E-02 | 1.67E-01    |
| ENSG00000205212.3     | <i>CCDC144NL</i>     | Protein    | 0.91                        | 1.18E-04 | 3.61E-03    | -0.58                           | 9.03E-03 | 9.66E-02    |
| ENSG00000205236.6     | <i>RP11-514P8.6</i>  | Protein    | 1.09                        | 7.48E-06 | 4.14E-04    | 1.03                            | 1.41E-05 | 9.88E-04    |
| ENSG00000205238.8     | <i>SPDYE2</i>        | Protein    | 0.57                        | 6.98E-04 | 1.33E-02    | 0.41                            | 1.18E-02 | 1.13E-01    |
| ENSG00000205267.5     | <i>DGAT2L7P</i>      | Pseudogene | 0.77                        | 2.67E-03 | 3.32E-02    | 0.12                            | 6.40E-01 | 8.45E-01    |
| ENSG00000205279.7     | <i>CTXN3</i>         | Protein    | 0.66                        | 8.87E-04 | 1.56E-02    | 0.63                            | 1.08E-03 | 2.48E-02    |
| ENSG00000205307.9     | <i>SAP25</i>         | Protein    | 0.47                        | 5.17E-03 | 5.13E-02    | 0.37                            | 2.37E-02 | 1.68E-01    |
| ENSG00000205309.12    | <i>NT3M</i>          | Protein    | 0.29                        | 5.43E-03 | 5.30E-02    | 0.25                            | 1.46E-02 | 1.28E-01    |
| ENSG00000205325.1     | <i>AC005863.1</i>    | LncRNA     | 0.68                        | 1.17E-03 | 1.89E-02    | 0.56                            | 5.93E-03 | 7.56E-02    |
| ENSG00000205356.8     | <i>TECPR1</i>        | Protein    | 0.27                        | 7.10E-03 | 6.25E-02    | 0.27                            | 5.29E-03 | 7.03E-02    |
| ENSG00000205361.7     | <i>MT1DP</i>         | Pseudogene | 0.52                        | 1.14E-03 | 1.87E-02    | 0.61                            | 9.27E-05 | 4.26E-03    |
| ENSG00000205363.5     | <i>C1Sor59</i>       | Protein    | -0.39                       | 7.16E-03 | 6.29E-02    | -0.28                           | 4.05E-02 | 2.26E-01    |
| ENSG00000205436.6     | <i>EXOC3L4</i>       | Protein    | 0.72                        | 3.39E-06 | 2.16E-04    | 0.68                            | 5.19E-06 | 4.49E-04    |
| ENSG00000205449.10    | <i>NBPF22P</i>       | Pseudogene | 2.46                        | 1.30E-26 | 1.69E-23    | 0.10                            | 6.51E-01 | NA          |
| ENSG00000205464.10    | <i>ATP6AP1L</i>      | Protein    | 0.36                        | 9.47E-05 | 3.03E-03    | 0.28                            | 2.15E-03 | 3.92E-02    |
| ENSG00000205485.12    | <i>AC004980.7</i>    | Pseudogene | 0.75                        | 1.38E-18 | 8.83E-16    | 0.65                            | 1.67E-15 | 1.10E-12    |
| ENSG00000205559.3     | <i>CHKB-AS1</i>      | LncRNA     | 0.34                        | 1.69E-03 | 2.44E-02    | 0.27                            | 1.02E-02 | 1.04E-01    |
| ENSG00000205571.11    | <i>SMN2</i>          | Protein    | -0.54                       | 2.39E-03 | 3.08E-02    | -0.58                           | 8.04E-04 | 2.02E-02    |
| ENSG00000205583.12    | <i>STAG3L1</i>       | Pseudogene | 0.30                        | 9.23E-03 | 7.40E-02    | 0.23                            | 3.78E-02 | 2.17E-01    |
| ENSG00000205609.11    | <i>EIF3CL</i>        | Protein    | 0.39                        | 4.93E-04 | 1.05E-02    | 0.37                            | 4.90E-04 | 1.45E-02    |
| ENSG00000205622.8     | <i>AF064858.6</i>    | LncRNA     | 0.62                        | 1.20E-03 | 1.93E-02    | -0.13                           | 4.77E-01 | 7.46E-01    |
| ENSG00000205632.2     | <i>LINC01310</i>     | LncRNA     | -0.98                       | 8.26E-05 | 2.74E-03    | -1.41                           | 4.22E-09 | 9.84E-07    |
| ENSG00000205659.9     | <i>LIN52</i>         | Protein    | 0.13                        | 7.67E-03 | 6.59E-02    | 0.13                            | 3.47E-03 | 5.45E-02    |
| ENSG00000205663.5     | <i>RP11-706O15.5</i> | LncRNA     | -0.67                       | 8.71E-03 | 7.14E-02    | -0.65                           | 8.63E-03 | 9.39E-02    |
| ENSG00000205664.9     | <i>RP11-706O15.1</i> | LncRNA     | -0.21                       | 1.34E-02 | 9.38E-02    | -0.25                           | 1.97E-03 | 3.70E-02    |
| ENSG00000205740.2     | <i>RP11-363N22.3</i> | LncRNA     | 0.32                        | 1.03E-02 | 7.91E-02    | 0.18                            | 1.38E-01 | 4.23E-01    |
| ENSG00000205771.5     | <i>CATSPER2P1</i>    | Pseudogene | -0.58                       | 1.12E-11 | 2.99E-09    | -0.56                           | 6.22E-12 | 2.71E-09    |
| ENSG00000205784.2     | <i>ARRDC5</i>        | Protein    | 0.41                        | 9.64E-03 | 7.59E-02    | 0.28                            | 6.96E-02 | 3.02E-01    |
| ENSG00000205837.6     | <i>LINC00487</i>     | LncRNA     | 0.70                        | 2.58E-03 | 3.25E-02    | 0.42                            | 6.29E-02 | 2.87E-01    |
| ENSG00000205838.11    | <i>TTC23L</i>        | Protein    | 0.29                        | 4.90E-03 | 4.95E-02    | 0.18                            | 8.36E-02 | 3.32E-01    |
| ENSG00000205853.9     | <i>RFPL3S</i>        | Protein    | 0.62                        | 3.70E-06 | 2.31E-04    | 0.48                            | 2.36E-04 | 8.71E-03    |
| ENSG00000205856.3     | <i>C22orf42</i>      | Protein    | 0.85                        | 1.64E-04 | 4.61E-03    | 0.82                            | 1.97E-04 | 7.60E-03    |
| ENSG00000205885.6     | <i>C1RL-AS1</i>      | LncRNA     | 0.27                        | 1.25E-02 | 8.98E-02    | 0.23                            | 2.63E-02 | 1.78E-01    |
| ENSG00000205890.3     | <i>RP11-473M20.5</i> | LncRNA     | 0.33                        | 5.97E-03 | 5.63E-02    | 0.18                            | 1.18E-01 | 3.93E-01    |
| ENSG00000205913.5     | <i>SRRM2-AS1</i>     | LncRNA     | 0.41                        | 2.40E-04 | 6.19E-03    | 0.24                            | 2.45E-02 | 1.71E-01    |
| ENSG00000205976.4     | <i>RP11-404K5.2</i>  | Pseudogene | 0.66                        | 1.02E-02 | 7.85E-02    | 0.06                            | 8.17E-01 | 9.30E-01    |
| ENSG00000206075.12    | <i>SERPINB5</i>      | Protein    | 0.82                        | 4.99E-05 | 1.87E-03    | 0.16                            | 4.06E-01 | 6.96E-01    |
| ENSG00000206077.9     | <i>ZDHHC11B</i>      | Protein    | 0.38                        | 8.40E-03 | 6.98E-02    | 0.15                            | 2.92E-01 | 6.03E-01    |
| ENSG00000206140.8     | <i>TMEM191C</i>      | LncRNA     | 0.36                        | 6.18E-03 | 5.76E-02    | 0.24                            | 5.40E-02 | 2.65E-01    |
| ENSG00000206177.5     | <i>HBM</i>           | Protein    | 0.68                        | 7.25E-03 | 6.34E-02    | 0.61                            | 1.42E-02 | 1.26E-01    |
| ENSG00000206190.10    | <i>ATP10A</i>        | Protein    | -0.26                       | 1.45E-02 | 9.90E-02    | -0.21                           | 3.58E-02 | 2.11E-01    |
| ENSG00000206192.7     | <i>ANKRD20A9P</i>    | Pseudogene | 1.92                        | 4.97E-14 | 1.91E-11    | 1.83                            | 9.46E-14 | 5.13E-11    |
| ENSG00000206337.9     | <i>HCP5</i>          | LncRNA     | 0.42                        | 2.79E-03 | 3.42E-02    | 0.49                            | 2.84E-04 | 9.83E-03    |
| ENSG00000206341.7     | <i>HLA-H</i>         | Pseudogene | 0.37                        | 2.52E-03 | 3.20E-02    | 0.43                            | 2.74E-04 | 9.61E-03    |
| ENSG00000206417.7     | <i>H1FX-AS1</i>      | LncRNA     | 0.39                        | 1.11E-03 | 1.84E-02    | 0.27                            | 1.97E-02 | 1.52E-01    |
| ENSG00000206530.7     | <i>CFAP44</i>        | Protein    | 0.29                        | 3.87E-03 | 4.26E-02    | 0.25                            | 1.07E-02 | 1.07E-01    |
| ENSG00000206561.11    | <i>COLQ</i>          | Protein    | 0.26                        | 1.26E-02 | 9.02E-02    | 0.21                            | 3.55E-02 | 2.10E-01    |
| ENSG00000206573.7     | <i>THUMPD3-AS1</i>   | LncRNA     | 0.28                        | 7.67E-04 | 1.42E-02    | 0.15                            | 6.78E-02 | 2.98E-01    |
| ENSG00000206590.1     | <i>RNU6-132P</i>     | Other      | 0.80                        | 1.24E-04 | 3.73E-03    | 0.77                            | 1.35E-04 | 5.73E-03    |
| ENSG00000206601.1     | <i>RNU6-431P</i>     | Other      | 0.51                        | 7.22E-03 | 6.33E-02    | 0.40                            | 2.97E-02 | 1.90E-01    |
| ENSG00000206739.1     | <i>Y_RNA</i>         | Other      | 0.50                        | 4.26E-03 | 4.53E-02    | 0.45                            | 7.16E-03 | 8.42E-02    |
| ENSG00000206844.1     | <i>Y_RNA</i>         | Other      | -0.91                       | 2.58E-04 | 6.52E-03    | -0.89                           | 2.25E-04 | 8.43E-03    |
| ENSG00000206869.1     | <i>SNORA70F</i>      | Other      | 0.45                        | 9.37E-03 | 7.46E-02    | 0.40                            | 1.61E-02 | 1.36E-01    |
| ENSG00000206878.1     | <i>SNORA51</i>       | Other      | 0.96                        | 7.52E-05 | 2.55E-03    | -0.23                           | 3.35E-01 | 6.40E-01    |
| ENSG00000206911.1     | <i>Y_RNA</i>         | Other      | 0.63                        | 1.42E-02 | 9.77E-02    | 0.60                            | 1.63E-02 | NA          |
| ENSG00000206927.1     | <i>Y_RNA</i>         | Other      | 1.64                        | 1.17E-10 | 2.57E-08    | 0.70                            | 4.51E-03 | 6.43E-02    |
| ENSG00000206954.1     | <i>RNU6-1201P</i>    | Other      | 0.81                        | 1.26E-03 | 1.98E-02    | 0.79                            | 1.19E-03 | 2.64E-02    |
| ENSG00000207003.1     | <i>RNU6-611P</i>     | Other      | 0.46                        | 7.92E-03 | 6.71E-02    | 0.35                            | 3.74E-02 | 2.16E-01    |
| ENSG00000207036.1     | <i>RNY3P14</i>       | Other      | 0.90                        | 3.97E-04 | 8.96E-03    | 0.91                            | 2.67E-04 | NA          |
| ENSG00000207053.1     | <i>RNU6-937P</i>     | Other      | 0.74                        | 2.80E-03 | 3.43E-02    | 0.66                            | 6.27E-03 | 7.79E-02    |
| ENSG00000207110.1     | <i>RNU1-106P</i>     | Other      | 0.36                        | 3.92E-03 | 4.29E-02    | 0.28                            | 1.95E-02 | 1.51E-01    |
| ENSG00000207146.1     | <i>Y_RNA</i>         | Other      | 0.52                        | 9.40E-04 | 1.63E-02    | 0.48                            | 1.54E-03 | 3.13E-02    |
| ENSG00000207185.1     | <i>RNU6-1157P</i>    | Other      | 0.46                        | 5.55E-03 | 5.37E-02    | 0.36                            | 2.10E-02 | 1.57E-01    |
| ENSG00000207242.1     | <i>RNU6-1065P</i>    | Other      | 0.67                        | 5.32E-04 | 1.10E-02    | 0.65                            | 4.97E-04 | 1.47E-02    |
| ENSG00000207258.1     | <i>Y_RNA</i>         | Other      | 0.66                        | 4.32E-03 | 4.57E-02    | 0.72                            | 1.22E-03 | 2.69E-02    |
| ENSG00000207336.1     | <i>RNU6-658P</i>     | Other      | 0.45                        | 1.30E-02 | 9.20E-02    | 0.34                            | 5.09E-02 | 2.57E-01    |
| ENSG00000207340.1     | <i>RNVU1-10</i>      | Other      | 1.21                        | 1.01E-10 | 2.24E-08    | 1.11                            | 1.03E-09 | 2.77E-07    |
| ENSG00000207359.1     | <i>RNU6-925P</i>     | Other      | 0.46                        | 1.24E-04 | 3.72E-03    | 0.40                            | 5.12E-04 | 1.49E-02    |
| ENSG00000207370.1     | <i>Y_RNA</i>         | Other      | 0.44                        | 1.36E-02 | 9.51E-02    | 0.41                            | 1.65E-02 | 1.38E-01    |
| ENSG00000207457.1     | <i>RNU6-476P</i>     | Other      | 0.53                        | 5.88E-03 | 5.57E-02    | 0.40                            | 3.28E-02 | 2.01E-01    |
| ENSG00000207507.1     | <i>RNU6-9</i>        | Other      | -0.78                       | 2.26E-03 | 2.97E-02    | -0.85                           | 5.85E-04 | 1.64E-02    |
| ENSG00000207588.1     | <i>MIR393</i>        | Other      | 0.46                        | 9.44E-03 | 7.49E-02    | 0.37                            | 3.27E-02 | 2.01E-01    |
| ENSG00000207642.1     | <i>MIR571</i>        | Other      | 0.79                        | 1.14E-04 | 3.49E-03    | 0.76                            | 1.19E-04 | 5.22E-03    |
| ENSG00000207704.2     | <i>MIR548AA1</i>     | Other      | 0.58                        | 5.81E-03 | 5.52E-02    | 0.45                            | 2.53E-02 | 1.75E-01    |
| ENSG00000207744.1     | <i>MIR10B</i>        | Other      | 0.55                        | 1.46E-02 | 9.91E-02    | 0.30                            | 1.79E-01 | 4.79E-01    |
| ENSG00000207770.1     | <i>MIR568</i>        | Other      | -0.31                       | 1.41E-02 | 9.74E-02    | -0.22                           | 7.72E-02 | 3.19E-01    |
| ENSG00000207926.1     | <i>MIR135A1</i>      | Other      | 0.38                        | 7.73E-03 | 6.62E-02    | 0.29                            | 3.13E-02 | 1.96E-01    |
| ENSG00000211452.9     | <i>DIO1</i>          | Protein    | 1.13                        | 5.58E-07 | 4.78E-05    | -0.47                           | 2.72E-02 | 1.82E-01    |
| ENSG00000211454.12    | <i>AKR7L</i>         | Pseudogene | 0.88                        | 2.49E-10 | 5.10E-08    | 0.76                            | 1.78E-08 | 3.69E-06    |
| ENSG00000211460.10    | <i>TSN</i>           | Protein    | -0.18                       | 3.99E-05 | 1.59E-03    | -0.16                           | 1.06E-04 | 4.75E-03    |
| ENSG00000211482.1     | <i>AC092574.1</i>    | Other      | -0.42                       | 6.42E-03 | 5.90E-02    | -0.36                           | 1.51E-02 | 1.31E-01    |
| ENSG00000211599.2     | <i>IGKV5-2</i>       | Other      | 0.87                        | 5.26E-04 | 1.09E-02    | 0.38                            | 1.14E-01 | 3.86E-01    |
| ENSG00000211637.2     | <i>IGLV4-69</i>      | Other      | 1.55                        | 1.81E-11 | 4.59E-09    | 0.53                            | 1.68E-02 | 1.40E-01    |
| ENSG00000211638.2     | <i>IGLV8-61</i>      | Other      | 1.22                        | 1.53E-07 | 1.58E-05    | 0.89                            | 7.92E-05 | 3.78E-03    |
| ENSG00000211640.3     | <i>IGLV6-57</i>      | Other      | 0.63                        | 7.52E-03 | 6.49E-02    | 0.40                            | 8.46E-02 | 3.33E-01    |
| ENSG00000211641.2     | <i>IGLV11-55</i>     | Other      | 1.00                        | 9.04E-05 | 2.93E-03    | 0.92                            | 1.85E-04 | 7.26E-03    |
| ENSG00000211644.2     | <i>IGLV1-51</i>      | Other      | 0.88                        | 1.65E-05 | 7.85E-04    | 0.72                            | 3.15E-04 | 1.05E-02    |
| ENSG00000211645.2     | <i>IGLV1-50</i>      | Other      | 0.67                        | 1.10E-03 | 1.82E-02    | 0.57                            | 4.15E-03 | 6.13E-02    |
| ENSG00000211648.2     | <i>IGLV1-47</i>      | Other      | 0.97                        | 1.93E-05 | 9.06E-04    | 0.84                            | 1.49E-04 | 6.18E-03    |
| ENSG00000211649.3     | <i>IGLV7-46</i>      | Other      | 0.68                        | 3.14E-03 | 3.70E-02    | 0.55                            | 1.39E-02 | 1.24E-01    |
| ENSG00000211650.2     | <i>IGLV5-45</i>      | Other      | 0.87                        | 2.38E-04 | 6.15E-03    | 0.68                            | 3.23E-03 | 5.17E-02    |
| ENSG00000211652.2     | <i>IGLV7-43</i>      | Other      | 0.74                        | 1.42E-03 | 2.16E-02    | 0.10                            | 6.41E-01 | 8.45E-01    |
| ENSG00000211653.2     | <i>IGLV1-40</i>      | Other      | 0.59                        | 8.66E-03 | 7.11E-02    | 0.35                            | 1.13E-01 | 3.84E-01    |
| ENSG00000211658.2     | <i>IGLV3-27</i>      | Other      | 0.65                        | 8.26E-03 | 6.91E-02    | 0.54                            | 2.23E-02 | 1.63E-01    |
| ENSG00000211659.2     | <i>IGLV3-25</i>      | Other      | 0.92                        | 8.21E-05 | 2.72E-03    | 0.21                            | 3.45E-01 | 6.47E-01    |
| ENSG00000211663.2     | <i>IGLV3-19</i>      | Other      | 0.94                        | 4.88E-05 | 1.84E-03    | 0.                              |          |             |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000211665.2     | <i>IGLV3-16</i>       | Other      | 0.89                        | 3.48E-04 | 8.16E-03    | 0.45                            | 6.63E-02 | 2.95E-01    |
| ENSG00000211668.2     | <i>IGLV2-11</i>       | Other      | 0.64                        | 4.29E-03 | 4.55E-02    | 0.60                            | 5.86E-03 | 7.51E-02    |
| ENSG00000211669.2     | <i>IGLV3-10</i>       | Other      | 0.69                        | 3.52E-03 | 3.99E-02    | 0.50                            | 2.85E-02 | 1.87E-01    |
| ENSG00000211673.2     | <i>IGLV3-1</i>        | Other      | 0.59                        | 1.07E-02 | 8.12E-02    | 0.55                            | 1.37E-02 | 1.24E-01    |
| ENSG00000211677.2     | <i>IGLC2</i>          | Other      | 0.71                        | 8.08E-04 | 1.47E-02    | 0.59                            | 4.32E-03 | 6.28E-02    |
| ENSG00000211679.2     | <i>IGLC3</i>          | Other      | 0.77                        | 4.35E-04 | 9.53E-03    | 0.59                            | 5.84E-03 | 7.49E-02    |
| ENSG00000211683.3     | <i>KB-1572G7.3</i>    | LncRNA     | 0.63                        | 1.67E-04 | 4.70E-03    | 0.51                            | 1.67E-03 | 3.31E-02    |
| ENSG00000211694.2     | <i>TRGV10</i>         | Other      | -0.65                       | 1.86E-04 | 5.09E-03    | -0.80                           | 2.07E-06 | 2.14E-04    |
| ENSG00000211701.2     | <i>TRGV1</i>          | Other      | 0.75                        | 3.14E-03 | 3.70E-02    | 0.77                            | 1.80E-03 | 3.46E-02    |
| ENSG00000211706.2     | <i>TRBV6-1</i>        | Other      | 0.57                        | 3.09E-03 | 3.65E-02    | 0.50                            | 6.72E-03 | 8.11E-02    |
| ENSG00000211713.3     | <i>TRBV6-4</i>        | Other      | 0.74                        | 1.78E-03 | 2.53E-02    | 0.72                            | 1.77E-03 | 3.44E-02    |
| ENSG00000211725.3     | <i>TRBV5-5</i>        | Other      | 0.55                        | 1.12E-02 | 8.40E-02    | 0.44                            | 3.51E-02 | 2.08E-01    |
| ENSG00000211734.3     | <i>TRBV5-1</i>        | Other      | 0.53                        | 3.09E-03 | 3.65E-02    | 0.38                            | 2.94E-02 | 1.89E-01    |
| ENSG00000211750.2     | <i>TRBV24-1</i>       | Other      | 0.76                        | 1.97E-04 | 5.32E-03    | 0.63                            | 1.39E-03 | 2.93E-02    |
| ENSG00000211766.1     | <i>TRBJ2-2P</i>       | Other      | 0.79                        | 6.90E-04 | 1.31E-02    | 0.63                            | 5.07E-03 | 6.87E-02    |
| ENSG00000211890.3     | <i>IGHA2</i>          | Other      | 0.90                        | 5.33E-05 | 1.97E-03    | 0.83                            | 1.42E-04 | 5.97E-03    |
| ENSG00000211896.5     | <i>IGHG1</i>          | Other      | 0.97                        | 9.49E-06 | 4.99E-04    | 0.78                            | 2.59E-04 | 9.21E-03    |
| ENSG00000211898.6     | <i>IGHD</i>           | Other      | 0.75                        | 1.04E-03 | 1.75E-02    | 0.33                            | 1.22E-01 | 4.00E-01    |
| ENSG00000211904.2     | <i>IGHJ2</i>          | Other      | 0.61                        | 1.21E-02 | 8.77E-02    | 0.59                            | 1.29E-02 | 1.19E-01    |
| ENSG00000211905.1     | <i>IGHJ1</i>          | Other      | 0.88                        | 4.92E-04 | 1.04E-02    | 0.82                            | 8.42E-04 | 2.09E-02    |
| ENSG00000211934.3     | <i>IGHV1-2</i>        | Other      | 0.84                        | 2.82E-04 | 6.98E-03    | 0.75                            | 8.39E-04 | 2.09E-02    |
| ENSG00000211937.3     | <i>IGHV2-5</i>        | Other      | 1.00                        | 2.78E-05 | 1.18E-03    | 0.76                            | 9.87E-04 | 2.31E-02    |
| ENSG00000211941.3     | <i>IGHV3-11</i>       | Other      | 0.75                        | 1.26E-03 | 1.99E-02    | 0.53                            | 1.79E-02 | 1.45E-01    |
| ENSG00000211942.3     | <i>IGHV3-13</i>       | Other      | -0.73                       | 3.28E-03 | 3.82E-02    | -0.27                           | 2.36E-01 | 5.47E-01    |
| ENSG00000211943.2     | <i>IGHV3-15</i>       | Other      | 0.95                        | 1.81E-05 | 8.56E-04    | 0.28                            | 1.95E-01 | 5.00E-01    |
| ENSG00000211945.2     | <i>IGHV1-18</i>       | Other      | 0.72                        | 1.28E-03 | 2.01E-02    | 0.60                            | 5.44E-03 | 7.16E-02    |
| ENSG00000211946.3     | <i>IGHV3-20</i>       | Other      | 1.27                        | 1.07E-07 | 1.18E-05    | 1.20                            | 2.27E-07 | 3.43E-05    |
| ENSG00000211956.2     | <i>IGHV4-34</i>       | Other      | 0.62                        | 7.65E-03 | 6.57E-02    | 0.62                            | 4.79E-03 | 6.65E-02    |
| ENSG00000211958.2     | <i>IGHV3-38</i>       | Other      | 0.68                        | 5.31E-03 | 5.21E-02    | 0.64                            | 7.24E-03 | 8.47E-02    |
| ENSG00000211961.3     | <i>IGHV1-45</i>       | Other      | 0.78                        | 1.31E-03 | 2.04E-02    | 0.68                            | 3.62E-03 | 5.60E-02    |
| ENSG00000211964.3     | <i>IGHV3-48</i>       | Other      | 1.13                        | 1.09E-06 | 8.42E-05    | 0.88                            | 1.04E-04 | 4.70E-03    |
| ENSG00000212089.1     | <i>AP002490.1</i>     | Other      | 1.13                        | 9.94E-06 | 5.20E-04    | 0.03                            | 9.18E-01 | 9.71E-01    |
| ENSG00000212093.1     | <i>AP000807.1</i>     | Other      | -0.55                       | 1.41E-02 | 9.71E-02    | -0.44                           | 4.24E-02 | 2.32E-01    |
| ENSG00000212123.3     | <i>PRR22</i>          | Protein    | 0.39                        | 2.84E-03 | 3.45E-02    | 0.29                            | 2.01E-02 | 1.54E-01    |
| ENSG00000212125.2     | <i>TAS2R15P</i>       | Pseudogene | 0.35                        | 1.33E-03 | 2.06E-02    | 0.27                            | 8.77E-03 | 9.48E-02    |
| ENSG00000212127.5     | <i>TAS2R14</i>        | Protein    | 0.33                        | 8.96E-05 | 2.91E-03    | 0.33                            | 4.78E-05 | 2.57E-03    |
| ENSG00000212237.1     | <i>RNASSP18</i>       | Other      | 1.35                        | 4.60E-09 | 7.24E-07    | -0.12                           | 5.91E-01 | 8.18E-01    |
| ENSG00000212242.1     | <i>RNASSP219</i>      | Other      | -0.50                       | 9.38E-04 | 1.63E-02    | -0.56                           | 1.23E-04 | 5.32E-03    |
| ENSG00000212327.1     | <i>RNU6-882P</i>      | Other      | 0.71                        | 2.54E-07 | 2.47E-05    | 0.53                            | 8.99E-05 | 4.15E-03    |
| ENSG00000212332.1     | <i>RNU6-780P</i>      | Other      | 0.75                        | 2.16E-03 | 2.88E-02    | 0.71                            | 2.94E-03 | 4.88E-02    |
| ENSG00000212371.1     | <i>SNORA46</i>        | Other      | 0.46                        | 8.20E-03 | 6.88E-02    | 0.39                            | 1.80E-02 | 1.45E-01    |
| ENSG00000212380.1     | <i>SNORD115-45</i>    | Other      | -0.64                       | 9.43E-03 | 7.48E-02    | -0.66                           | 6.12E-03 | 7.69E-02    |
| ENSG00000212387.1     | <i>RNU6-1055P</i>     | Other      | 0.76                        | 7.05E-04 | 1.34E-02    | 0.27                            | 1.99E-01 | 5.04E-01    |
| ENSG00000212452.1     | <i>SNORD69</i>        | Other      | 0.50                        | 1.41E-04 | 4.12E-03    | 0.43                            | 7.54E-04 | 1.94E-02    |
| ENSG00000212493.1     | <i>SNORD19</i>        | Other      | 0.39                        | 1.30E-02 | 9.20E-02    | 0.25                            | 1.02E-01 | 3.67E-01    |
| ENSG00000212541.1     | <i>RNU6-510P</i>      | Other      | 0.47                        | 2.59E-03 | 3.26E-02    | 0.36                            | 1.58E-02 | 1.35E-01    |
| ENSG00000212789.4     | <i>ST13P5</i>         | Pseudogene | -0.35                       | 1.83E-03 | 2.57E-02    | -0.30                           | 5.84E-03 | 7.49E-02    |
| ENSG00000212899.2     | <i>KRTAP3-3</i>       | Protein    | 0.86                        | 2.80E-04 | 6.95E-03    | 0.84                            | 2.77E-04 | 9.70E-03    |
| ENSG00000212916.4     | <i>MAP10</i>          | Protein    | -0.52                       | 1.87E-04 | 5.11E-03    | -0.30                           | 2.62E-02 | 1.78E-01    |
| ENSG00000212994.5     | <i>RPS26P6</i>        | Pseudogene | 0.62                        | 3.44E-05 | 1.41E-03    | 0.54                            | 1.95E-04 | 7.56E-03    |
| ENSG00000213023.8     | <i>SYT3</i>           | Protein    | -1.48                       | 1.08E-10 | 2.39E-08    | -0.98                           | 1.20E-06 | 1.37E-04    |
| ENSG00000213025.2     | <i>COX20P1</i>        | Pseudogene | 1.01                        | 5.68E-06 | 3.27E-04    | 0.99                            | 3.97E-06 | 3.58E-04    |
| ENSG00000213030.5     | <i>CGB8</i>           | Protein    | -0.58                       | 1.28E-02 | 9.09E-02    | -0.55                           | 1.36E-02 | NA          |
| ENSG00000213055.3     | <i>EEF1B2P7</i>       | Pseudogene | 1.91                        | 1.01E-23 | 1.10E-20    | -0.08                           | 6.23E-01 | 8.35E-01    |
| ENSG00000213064.8     | <i>SFT2D2</i>         | Protein    | -0.25                       | 1.46E-07 | 1.53E-05    | -0.23                           | 7.31E-07 | 9.00E-05    |
| ENSG00000213069.3     | <i>KRT8P40</i>        | Pseudogene | 0.97                        | 3.70E-06 | 2.31E-04    | 0.93                            | 4.07E-06 | 3.62E-04    |
| ENSG00000213113.3     | <i>TUBB8P8</i>        | Pseudogene | 0.79                        | 2.38E-05 | 1.05E-03    | 0.80                            | 1.03E-05 | 7.73E-04    |
| ENSG00000213130.3     | <i>EEF1DP5</i>        | Pseudogene | -1.22                       | 1.68E-06 | 1.21E-04    | -1.15                           | 3.71E-06 | 3.42E-04    |
| ENSG00000213160.8     | <i>KLHL23</i>         | Protein    | -0.26                       | 1.94E-03 | 2.68E-02    | -0.15                           | 5.52E-02 | 2.68E-01    |
| ENSG00000213199.6     | <i>ASIC3</i>          | Protein    | 0.50                        | 1.16E-03 | 1.88E-02    | 0.34                            | 2.41E-02 | 1.70E-01    |
| ENSG00000213221.4     | <i>DNLZ</i>           | Protein    | 0.80                        | 5.98E-09 | 9.16E-07    | 0.62                            | 2.92E-06 | 2.82E-04    |
| ENSG00000213235.3     | <i>EEF1A1P16</i>      | Pseudogene | -0.42                       | 8.77E-04 | 1.55E-02    | -0.36                           | 3.52E-03 | 5.50E-02    |
| ENSG00000213247.3     | <i>RP11-479A21.1</i>  | Pseudogene | 0.63                        | 1.13E-02 | 8.43E-02    | 0.51                            | 3.51E-02 | 2.08E-01    |
| ENSG00000213303.3     | <i>CTC-398G3.2</i>    | Pseudogene | 0.56                        | 4.53E-05 | 1.74E-03    | 0.57                            | 1.29E-05 | 9.15E-04    |
| ENSG00000213331.4     | <i>RP11-713C19.2</i>  | Pseudogene | 0.70                        | 8.05E-04 | 1.46E-02    | 0.58                            | 3.92E-03 | 5.89E-02    |
| ENSG00000213368.3     | <i>ST13P11</i>        | Pseudogene | 0.53                        | 4.18E-03 | 4.47E-02    | 0.43                            | 1.67E-02 | 1.39E-01    |
| ENSG00000213373.6     | <i>LINC00671</i>      | LncRNA     | 1.35                        | 1.04E-13 | 3.77E-11    | 0.36                            | 3.08E-02 | 1.95E-01    |
| ENSG00000213391.3     | <i>RP11-66N11.6</i>   | Pseudogene | 0.75                        | 2.54E-03 | 3.22E-02    | 0.81                            | 7.68E-04 | 1.96E-02    |
| ENSG00000213413.2     | <i>PVRIG</i>          | Protein    | 0.44                        | 4.30E-03 | 4.56E-02    | 0.26                            | 8.11E-02 | 3.27E-01    |
| ENSG00000213463.4     | <i>SYNJ2BP</i>        | Protein    | -0.32                       | 2.26E-04 | 5.93E-03    | -0.14                           | 1.06E-01 | 3.73E-01    |
| ENSG00000213467.4     | <i>HMGBP1P37</i>      | Pseudogene | -0.60                       | 6.50E-04 | 1.26E-02    | -0.23                           | 1.06E-01 | 3.73E-01    |
| ENSG00000213471.7     | <i>TTL13P</i>         | Pseudogene | 0.36                        | 1.32E-03 | 2.05E-02    | 0.30                            | 5.02E-03 | 6.84E-02    |
| ENSG00000213492.2     | <i>NTSC3AP1</i>       | Pseudogene | 0.38                        | 1.29E-02 | 9.17E-02    | 0.34                            | 1.88E-02 | 1.48E-01    |
| ENSG00000213493.3     | <i>ACTN4P1</i>        | Pseudogene | -0.58                       | 8.00E-04 | 1.46E-02    | -0.57                           | 6.20E-04 | 1.70E-02    |
| ENSG00000213526.3     | <i>SETP8</i>          | Pseudogene | -0.59                       | 7.05E-03 | 6.23E-02    | -0.59                           | 5.17E-03 | 6.95E-02    |
| ENSG00000213574.2     | <i>LDHAP5</i>         | Pseudogene | -0.47                       | 3.42E-03 | 3.92E-02    | -0.53                           | 4.96E-04 | 1.47E-02    |
| ENSG00000213578.5     | <i>CPLX3</i>          | Protein    | 0.71                        | 2.74E-03 | 3.37E-02    | 0.67                            | 3.68E-03 | 5.67E-02    |
| ENSG00000213612.3     | <i>FAM220CP</i>       | Pseudogene | 0.86                        | 3.77E-08 | 4.58E-06    | 0.68                            | 7.26E-06 | 5.83E-04    |
| ENSG00000213614.8     | <i>HEXA</i>           | Protein    | -0.37                       | 9.18E-04 | 1.60E-02    | -0.22                           | 4.15E-02 | 2.29E-01    |
| ENSG00000213639.8     | <i>PPP1CB</i>         | Protein    | -0.20                       | 7.23E-04 | 1.36E-02    | -0.15                           | 9.39E-03 | 9.87E-02    |
| ENSG00000213642.3     | <i>RP11-561N12.5</i>  | Pseudogene | -0.67                       | 4.29E-03 | 4.55E-02    | -0.42                           | 5.98E-02 | 2.80E-01    |
| ENSG00000213699.7     | <i>SLC35F6</i>        | Protein    | -0.19                       | 1.07E-03 | 1.78E-02    | -0.14                           | 1.33E-02 | 1.22E-01    |
| ENSG00000213703.2     | <i>RP5-849H19.2</i>   | Pseudogene | 0.52                        | 6.63E-03 | 6.00E-02    | 0.55                            | 2.88E-03 | 4.81E-02    |
| ENSG00000213731.2     | <i>RAB5CP1</i>        | Pseudogene | 0.78                        | 6.76E-04 | 1.30E-02    | 0.82                            | 2.39E-04 | 8.77E-03    |
| ENSG00000213740.2     | <i>SERBP1P1</i>       | Pseudogene | -0.42                       | 1.64E-03 | 2.39E-02    | -0.34                           | 7.36E-03 | 8.54E-02    |
| ENSG00000213742.5     | <i>ZNF337-AS1</i>     | LncRNA     | 0.21                        | 2.23E-03 | 2.94E-02    | 0.14                            | 2.92E-02 | 1.89E-01    |
| ENSG00000213759.7     | <i>UGT2B11</i>        | Protein    | 0.76                        | 3.15E-03 | 3.71E-02    | -0.67                           | 6.40E-03 | 7.89E-02    |
| ENSG00000213763.4     | <i>ACTBP2</i>         | Pseudogene | -0.39                       | 2.05E-03 | 2.79E-02    | -0.35                           | 3.61E-03 | 5.58E-02    |
| ENSG00000213770.3     | <i>FAM210CP</i>       | Pseudogene | 0.83                        | 9.81E-05 | 3.10E-03    | 0.91                            | 1.04E-05 | 7.80E-04    |
| ENSG00000213771.3     | <i>KRT8P37</i>        | Pseudogene | -0.58                       | 1.74E-03 | 2.49E-02    | -0.55                           | 2.19E-03 | 3.96E-02    |
| ENSG00000213772.3     | <i>EIF1P7</i>         | Pseudogene | 0.62                        | 3.71E-04 | 8.54E-03    | 0.59                            | 4.40E-04 | 1.35E-02    |
| ENSG00000213782.6     | <i>DDX47</i>          | Protein    | 0.26                        | 1.21E-02 | 8.79E-02    | 0.16                            | 1.02E-01 | 3.67E-01    |
| ENSG00000213799.9     | <i>ZNF845</i>         | Protein    | -0.27                       | 4.04E-03 | 4.38E-02    | -0.15                           | 9.43E-02 | 3.52E-01    |
| ENSG00000213801.4     | <i>ZNF816-ZNF321P</i> | Pseudogene | 0.22                        | 1.19E-02 | 8.71E-02    | 0.26                            | 2.04E-03 | 3.79E-02    |
| ENSG00000213853.8     | <i>EMP2</i>           | Protein    | -0.24                       | 4.46E-03 | 4.67E-02    | -0.11                           | 1.70E-01 | 4.67E-01    |
| ENSG00000213864.3     | <i>EEF1B2P2</i>       | Pseudogene | -0.36                       | 1.28E-02 | 9.09E-02    | -0.40                           | 3.57E-03 | 5.55E-02    |
| ENSG00000213865.6     | <i>C8orf44</i>        | Protein    | 0.32                        | 8.52E-05 | 2.81E-03    | 0.20                            | 1.19E-02 | 1.14E-01    |
| ENSG00000213873.4     | <i>RP11-678D18.1</i>  | Pseudogene | 0.63                        | 8.61E-03 | 7.09E-02    | 0.49                            | 3.58E-02 | 2.11E-01    |
| ENSG00000213906.8     | <i>LTB4R2</i>         | Protein    | 0.33                        | 2.99E-03 | 3.57E-02    | 0.17                            | 1.29E-01 | 4.11E-01    |
| ENSG00000213918.9     | <i>DNASE1</i>         | Protein    | 0.35                        | 2.30E-05 | 1.02E-03    | 0.26                            | 1.02E-03 | 2.38E-02    |
| ENSG00000213928.7     | <i>IRF9</i>           | Protein    | 0.50                        | 4.69E-05 | 1.79E-03    | 0.36                            | 2.56E-03 | 4.45E-02    |
| ENSG00000213935.3     | <i>AC092610.12</i>    | Pseudogene | -0.45                       | 4.29E-03 | 4.55E-02    | -0.40                           | 7.11E-03 | 8.39E-02    |
| ENSG00000213938.3     | <i>SEPHS1P6</i>       | Pseudogene | -0.57                       | 4.93E-04 | 1.05E-02    | -0.41                           | 1.02E-02 | 1.04E-01    |
| ENSG00000213954.3     | <i>ATP5HP3</i>        | Pseudogene | 0.96                        | 1.44E-04 | 4.18E-03    | 0.98                            | 7.42E-05 | 3.61E-03    |
| ENSG00000213971.6     | <i>RP11-15H20.6</i>   | LncRNA     | 0.21                        | 3.17E-04 | 7.61E-03    | 0.22                            | 9.15E-05 | 4.21E-03    |
| ENSG00000213983.10    | <i>APIG2</i>          | Protein    | 0.25                        | 1.41E-03 | 2.15E-02    |                                 |          |             |

| Gene ID (GENCODE v22) | Gene symbol   | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|---------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |               |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000213996.11    | TM6SF2        | Protein    | 0.68                        | 6.39E-05 | 2.25E-03    | 0.20                            | 2.00E-01 | 5.07E-01    |  |
| ENSG00000213997.3     | PGAM1P7       | Pseudogene | 0.54                        | 2.16E-03 | 2.88E-02    | 0.36                            | 3.63E-02 | 2.12E-01    |  |
| ENSG00000214012.4     | KRT18P38      | Pseudogene | -0.41                       | 1.32E-02 | 9.28E-02    | -0.37                           | 1.87E-02 | 1.48E-01    |  |
| ENSG00000214021.14    | TLL3          | Protein    | 0.51                        | 5.54E-06 | 3.22E-04    | 0.36                            | 9.48E-04 | 2.26E-02    |  |
| ENSG00000214081.6     | CYP4F30P      | Pseudogene | 0.76                        | 3.43E-04 | 8.09E-03    | 0.57                            | 6.21E-03 | 7.76E-02    |  |
| ENSG00000214108.4     | TP1P5         | Pseudogene | -0.38                       | 6.09E-03 | 5.71E-02    | -0.31                           | 1.92E-02 | 1.50E-01    |  |
| ENSG00000214110.3     | LDHAP4        | Pseudogene | -0.75                       | 2.55E-09 | 4.18E-07    | -0.80                           | 3.78E-11 | 1.36E-08    |  |
| ENSG00000214135.7     | AC024560.3    | Pseudogene | 0.43                        | 2.16E-07 | 2.14E-05    | 0.28                            | 6.73E-04 | 1.79E-02    |  |
| ENSG00000214142.2     | RPL7P60       | Pseudogene | 0.43                        | 9.59E-03 | 7.56E-02    | 0.33                            | 3.63E-02 | 2.12E-01    |  |
| ENSG00000214176.8     | PLEKHM1P      | Pseudogene | 0.24                        | 7.88E-03 | 6.70E-02    | 0.16                            | 7.04E-02 | 3.04E-01    |  |
| ENSG00000214188.8     | ST7-OT4       | LncRNA     | 0.38                        | 1.42E-02 | 9.79E-02    | 0.19                            | 2.03E-01 | 5.10E-01    |  |
| ENSG00000214192.3     | UBE2V1P2      | Pseudogene | -0.49                       | 2.05E-03 | 2.79E-02    | -0.47                           | 1.98E-03 | 3.70E-02    |  |
| ENSG00000214193.8     | SH3D21        | Protein    | 0.45                        | 1.64E-05 | 7.85E-04    | 0.36                            | 3.41E-04 | 1.11E-02    |  |
| ENSG00000214198.6     | RP11-642P15.1 | Pseudogene | 0.34                        | 8.30E-05 | 2.75E-03    | 0.23                            | 4.72E-03 | 6.59E-02    |  |
| ENSG00000214249.3     | CTAGE11P      | Pseudogene | -0.72                       | 3.20E-04 | 7.69E-03    | -0.69                           | 3.54E-04 | 1.15E-02    |  |
| ENSG00000214279.11    | SCART1        | Pseudogene | 0.58                        | 4.47E-05 | 1.72E-03    | 0.39                            | 5.36E-03 | 7.11E-02    |  |
| ENSG00000214313.7     | AZGP1P1       | Pseudogene | 0.43                        | 6.31E-03 | 5.85E-02    | 0.44                            | 3.58E-03 | 5.56E-02    |  |
| ENSG00000214336.4     | FOXI3         | Protein    | -0.67                       | 7.97E-03 | 6.74E-02    | -0.76                           | 1.89E-03 | 3.58E-02    |  |
| ENSG00000214360.4     | EFCAB9        | Protein    | 0.70                        | 4.90E-03 | 4.95E-02    | 0.62                            | 1.10E-02 | 1.10E-01    |  |
| ENSG00000214401.4     | KANSL1-AS1    | LncRNA     | -0.68                       | 3.93E-06 | 2.43E-04    | -0.66                           | 2.92E-06 | 2.82E-04    |  |
| ENSG00000214402.6     | LCNL1         | Protein    | 0.48                        | 7.93E-03 | 6.72E-02    | 0.60                            | 6.76E-04 | 1.80E-02    |  |
| ENSG00000214425.5     | LRRC37A4P     | Pseudogene | 0.37                        | 6.96E-03 | 6.18E-02    | 0.41                            | 1.98E-03 | 3.70E-02    |  |
| ENSG00000214439.3     | FAM185BP      | Pseudogene | 0.32                        | 7.10E-05 | 2.44E-03    | 0.23                            | 3.75E-03 | 5.73E-02    |  |
| ENSG00000214455.4     | RCN1P2        | Pseudogene | -0.39                       | 1.08E-02 | 8.20E-02    | -0.39                           | 8.13E-03 | 9.07E-02    |  |
| ENSG00000214456.7     | PLIN5         | Protein    | 0.47                        | 1.06E-02 | 8.08E-02    | 0.38                            | 3.44E-02 | 2.06E-01    |  |
| ENSG00000214460.3     | TP1P6         | Pseudogene | -0.38                       | 9.51E-03 | 7.51E-02    | -0.30                           | 3.59E-02 | 2.11E-01    |  |
| ENSG00000214487.3     | OR7E148P      | Pseudogene | 1.23                        | 1.09E-06 | 8.42E-05    | 1.11                            | 7.11E-06 | 5.75E-04    |  |
| ENSG00000214544.6     | GTF2IRD2P1    | Pseudogene | 0.28                        | 5.17E-03 | 5.13E-02    | 0.28                            | 3.23E-03 | 5.18E-02    |  |
| ENSG00000214559.3     | RP11-323J4.1  | LncRNA     | -0.76                       | 4.85E-06 | 2.91E-04    | -0.78                           | 1.18E-06 | 1.35E-04    |  |
| ENSG00000214562.12    | NUTM2D        | Protein    | 0.26                        | 1.07E-02 | 8.13E-02    | 0.25                            | 1.21E-02 | 1.15E-01    |  |
| ENSG00000214578.5     | HMG2N2P15     | Pseudogene | 0.33                        | 8.47E-03 | 7.02E-02    | 0.28                            | 2.16E-02 | 1.60E-01    |  |
| ENSG00000214700.5     | C12orf71      | Protein    | 0.47                        | 7.68E-03 | 6.59E-02    | 0.37                            | 3.01E-02 | 1.92E-01    |  |
| ENSG00000214745.2     | RP11-54I5.1   | Pseudogene | 1.20                        | 2.80E-08 | 3.54E-06    | 1.21                            | 8.43E-09 | 1.84E-06    |  |
| ENSG00000214753.2     | HNRNPUL2      | Protein    | -0.13                       | 4.05E-03 | 4.39E-02    | -0.11                           | 9.52E-03 | 9.97E-02    |  |
| ENSG00000214765.7     | SEPT7P2       | Pseudogene | 0.41                        | 1.04E-08 | 1.50E-06    | 0.33                            | 1.89E-06 | 2.01E-04    |  |
| ENSG00000214770.2     | RP11-54I20.2  | LncRNA     | 0.38                        | 3.21E-03 | 3.77E-02    | 0.21                            | 8.67E-02 | 3.37E-01    |  |
| ENSG00000214776.8     | RP11-726G1.1  | Pseudogene | 0.67                        | 4.43E-07 | 3.91E-05    | 0.61                            | 2.08E-06 | 2.15E-04    |  |
| ENSG00000214783.8     | POLR2J4       | LncRNA     | 0.38                        | 2.29E-05 | 1.02E-03    | 0.28                            | 1.10E-03 | 2.50E-02    |  |
| ENSG00000214810.4     | CYCSP55       | Pseudogene | -0.72                       | 2.90E-03 | 3.50E-02    | -0.72                           | 2.01E-03 | 3.75E-02    |  |
| ENSG00000214826.5     | DDX12P        | Pseudogene | 0.44                        | 9.23E-05 | 2.97E-03    | 0.28                            | 1.23E-02 | 1.16E-01    |  |
| ENSG00000214832.5     | UPF3AP2       | Pseudogene | 1.11                        | 8.76E-21 | 6.92E-18    | 1.14                            | 9.19E-24 | 1.35E-20    |  |
| ENSG00000214846.4     | RP11-115L11.1 | Pseudogene | 0.41                        | 1.43E-02 | 9.79E-02    | 0.24                            | 1.42E-01 | 4.31E-01    |  |
| ENSG00000214855.8     | APOC1P1       | Pseudogene | 0.71                        | 2.33E-04 | 6.06E-03    | 0.56                            | 2.78E-03 | 4.70E-02    |  |
| ENSG00000214890.3     | CTD-2299I2.1  | Pseudogene | 0.60                        | 1.29E-02 | 9.17E-02    | 0.59                            | 1.20E-02 | 1.14E-01    |  |
| ENSG00000214894.5     | LINC00243     | LncRNA     | 0.53                        | 2.68E-04 | 6.74E-03    | 0.37                            | 7.95E-03 | 8.96E-02    |  |
| ENSG00000214954.7     | LRRC69        | Protein    | 0.39                        | 8.45E-03 | 7.01E-02    | 0.30                            | 3.33E-02 | 2.02E-01    |  |
| ENSG00000214975.4     | PPIAP29       | Pseudogene | 0.88                        | 3.26E-06 | 2.10E-04    | 0.78                            | 2.06E-05 | 1.34E-03    |  |
| ENSG00000215006.4     | CHCHD2P2      | Pseudogene | 0.39                        | 2.19E-03 | 2.91E-02    | 0.37                            | 2.95E-03 | 4.88E-02    |  |
| ENSG00000215009.5     | ACSM4         | Protein    | -0.84                       | 4.16E-04 | 9.26E-03    | -0.90                           | 8.59E-05 | 4.00E-03    |  |
| ENSG00000215018.8     | COL28A1       | Protein    | 0.45                        | 8.29E-03 | 6.93E-02    | 0.42                            | 1.02E-02 | 1.04E-01    |  |
| ENSG00000215022.6     | RP1-257A7.4   | LncRNA     | 0.31                        | 2.66E-03 | 3.32E-02    | 0.21                            | 3.79E-02 | 2.18E-01    |  |
| ENSG00000215023.2     | AC114730.5    | LncRNA     | 0.61                        | 2.78E-03 | 3.41E-02    | 0.45                            | 2.22E-02 | 1.62E-01    |  |
| ENSG00000215041.8     | NEURL4        | Protein    | 0.17                        | 1.74E-03 | 2.48E-02    | 0.17                            | 1.28E-03 | 2.77E-02    |  |
| ENSG00000215045.7     | GRID2IP       | Protein    | 0.36                        | 1.63E-05 | 7.82E-04    | 0.25                            | 2.28E-03 | 4.09E-02    |  |
| ENSG00000215126.9     | CBWD7         | Protein    | 0.57                        | 7.35E-09 | 1.10E-06    | 0.45                            | 2.43E-06 | 2.45E-04    |  |
| ENSG00000215177.3     | IGLV8OR8-1    | Other      | 0.64                        | 1.05E-02 | 8.03E-02    | 0.52                            | 2.85E-02 | 1.87E-01    |  |
| ENSG00000215182.8     | MUC5AC        | Protein    | 0.80                        | 6.78E-04 | 1.30E-02    | -0.31                           | 1.59E-01 | 4.53E-01    |  |
| ENSG00000215186.6     | GOLGA6B       | Protein    | 1.14                        | 1.22E-06 | 9.21E-05    | 1.05                            | 4.53E-06 | 3.97E-04    |  |
| ENSG00000215187.8     | FAM166B       | Protein    | -0.46                       | 1.07E-02 | 8.13E-02    | -0.47                           | 7.20E-03 | 8.43E-02    |  |
| ENSG00000215190.7     | LINC00680     | LncRNA     | 0.40                        | 2.29E-06 | 1.58E-04    | 0.37                            | 4.36E-06 | 3.85E-04    |  |
| ENSG00000215196.4     | AC091878.1    | LncRNA     | 0.57                        | 3.03E-03 | 3.60E-02    | 0.46                            | 1.52E-02 | 1.32E-01    |  |
| ENSG00000215237.6     | RP11-54D18.2  | Pseudogene | -0.76                       | 1.06E-05 | 5.47E-04    | -0.79                           | 2.26E-06 | 2.32E-04    |  |
| ENSG00000215252.10    | GOLGA8B       | Protein    | 0.45                        | 4.72E-03 | 4.83E-02    | 0.33                            | 3.29E-02 | 2.01E-01    |  |
| ENSG00000215256.3     | DHRS4-AS1     | LncRNA     | -0.37                       | 1.03E-09 | 1.83E-07    | -0.35                           | 2.12E-09 | 5.47E-07    |  |
| ENSG00000215274.5     | GAGE10        | Protein    | 0.55                        | 1.43E-02 | 9.82E-02    | 0.54                            | 1.27E-02 | 1.19E-01    |  |
| ENSG00000215326.3     | GPX1P2        | Pseudogene | 0.46                        | 1.13E-03 | 1.85E-02    | 0.41                            | 2.28E-03 | 4.08E-02    |  |
| ENSG00000215374.5     | FAM66B        | LncRNA     | -0.74                       | 4.82E-09 | 7.55E-07    | -0.68                           | 1.93E-08 | 3.94E-06    |  |
| ENSG00000215386.9     | MIR99AHG      | LncRNA     | 0.51                        | 4.67E-05 | 1.78E-03    | 0.41                            | 5.84E-04 | 1.64E-02    |  |
| ENSG00000215424.8     | MCM3AP-AS1    | LncRNA     | 0.30                        | 2.13E-04 | 5.63E-03    | 0.27                            | 5.08E-04 | 1.49E-02    |  |
| ENSG00000215440.10    | NPEPL1        | Protein    | 0.32                        | 3.47E-03 | 3.96E-02    | 0.16                            | 1.32E-01 | 4.15E-01    |  |
| ENSG00000215456.5     | BCRP4         | Pseudogene | 0.94                        | 4.11E-05 | 1.62E-03    | 0.88                            | 8.97E-05 | 4.15E-03    |  |
| ENSG00000215478.7     | CESSAP1       | Pseudogene | -0.55                       | 1.38E-02 | 9.59E-02    | -0.13                           | 5.54E-01 | 7.95E-01    |  |
| ENSG00000215571.5     | GRK6P1        | Pseudogene | -0.50                       | 7.60E-04 | 1.41E-02    | -0.49                           | 6.29E-04 | 1.72E-02    |  |
| ENSG00000215769.7     | RP13-104F24.2 | LncRNA     | 0.41                        | 4.45E-04 | 9.70E-03    | 0.28                            | 1.18E-02 | 1.14E-01    |  |
| ENSG00000215785.2     | CFLIP6        | Pseudogene | 0.45                        | 5.55E-03 | 5.37E-02    | 0.37                            | 1.76E-02 | 1.43E-01    |  |
| ENSG00000215790.5     | SLC35E2       | Protein    | -0.39                       | 6.38E-05 | 2.25E-03    | -0.38                           | 4.64E-05 | 2.52E-03    |  |
| ENSG00000215817.4     | ZC3H11B       | Pseudogene | -0.44                       | 1.46E-02 | 9.93E-02    | -0.40                           | 2.04E-02 | 1.55E-01    |  |
| ENSG00000215859.7     | RP6-74O6.2    | LncRNA     | 0.37                        | 1.77E-03 | 2.52E-02    | 0.35                            | 1.74E-03 | 3.41E-02    |  |
| ENSG00000215878.3     | MARCKSL1P2    | Pseudogene | 0.63                        | 1.27E-03 | 1.99E-02    | 0.38                            | 4.58E-02 | 2.42E-01    |  |
| ENSG00000215908.6     | CROCCP2       | LncRNA     | 0.60                        | 5.05E-12 | 1.46E-09    | 0.50                            | 2.13E-09 | 5.47E-07    |  |
| ENSG00000216588.7     | IGSF23        | Protein    | -0.66                       | 3.77E-03 | 4.18E-02    | -0.52                           | 1.83E-02 | 1.46E-01    |  |
| ENSG00000216636.1     | RPL7P25       | Pseudogene | -0.69                       | 1.75E-03 | 2.49E-02    | -0.59                           | 5.55E-03 | 7.24E-02    |  |
| ENSG00000216835.3     | RBMP1         | Pseudogene | 0.79                        | 5.41E-04 | 1.11E-02    | 0.12                            | 5.94E-01 | 8.19E-01    |  |
| ENSG00000216895.7     | AC009403.2    | LncRNA     | 0.21                        | 6.28E-03 | 5.83E-02    | 0.16                            | 2.70E-02 | 1.81E-01    |  |
| ENSG00000216901.1     | AL022393.7    | Pseudogene | 0.61                        | 5.45E-03 | 5.31E-02    | 0.62                            | 3.47E-03 | 5.45E-02    |  |
| ENSG00000216937.10    | CCDC7         | Protein    | 0.31                        | 5.19E-04 | 1.08E-02    | 0.16                            | 6.90E-02 | 3.01E-01    |  |
| ENSG00000217060.1     | RP11-30P6.1   | Pseudogene | -0.63                       | 1.05E-02 | 8.05E-02    | -0.58                           | 1.59E-02 | 1.35E-01    |  |
| ENSG00000217078.1     | RP1-13D10.3   | Pseudogene | 0.57                        | 2.60E-03 | 3.26E-02    | 0.38                            | 4.25E-02 | 2.32E-01    |  |
| ENSG00000217195.1     | RP11-277I20.2 | Pseudogene | 0.75                        | 2.36E-03 | 3.06E-02    | 0.74                            | 2.00E-03 | 3.73E-02    |  |
| ENSG00000217241.1     | CBX3P9        | Pseudogene | -0.52                       | 1.15E-03 | 1.88E-02    | -0.60                           | 8.45E-05 | 3.97E-03    |  |
| ENSG00000217258.2     | AC007249.3    | LncRNA     | 0.51                        | 5.72E-04 | 1.15E-02    | 0.49                            | 5.36E-04 | 1.55E-02    |  |
| ENSG00000217289.3     | AC018865.5    | Pseudogene | 0.36                        | 6.45E-03 | 5.91E-02    | 0.43                            | 7.21E-04 | 1.88E-02    |  |
| ENSG00000217330.1     | SSXP10        | Pseudogene | 0.80                        | 1.05E-03 | 1.76E-02    | 0.30                            | 2.09E-01 | 5.16E-01    |  |
| ENSG00000217442.3     | SYCE3         | Protein    | 0.57                        | 1.64E-03 | 2.39E-02    | 0.47                            | 6.88E-03 | 8.22E-02    |  |
| ENSG00000217576.7     | RP11-248G5.8  | LncRNA     | -0.75                       | 2.66E-03 | 3.31E-02    | -0.39                           | 1.15E-01 | 3.88E-01    |  |
| ENSG00000217702.2     | RP11-287D1.4  | LncRNA     | 0.50                        | 9.87E-03 | 7.71E-02    | 0.40                            | 3.12E-02 | 1.96E-01    |  |
| ENSG00000217769.4     | RP11-76H14.2  | Pseudogene | -0.58                       | 1.10E-02 | 8.27E-02    | -0.61                           | 5.49E-03 | 7.19E-02    |  |
| ENSG00000218027.2     | RP11-157J24.1 | Pseudogene | 0.49                        | 9.22E-03 | 7.39E-02    | 0.36                            | 5.06E-02 | 2.56E-01    |  |
| ENSG00000218048.2     | RP3-407E4.4   | Pseudogene | -0.91                       | 2.67E-04 | 6.72E-03    | -0.89                           | 2.24E-04 | 8.43E-03    |  |
| ENSG00000218052.5     | ADAMTS7P4     | Pseudogene | 0.37                        | 1.13E-02 | 8.41E-02    | 0.41                            | 3.20E-03 | 5.16E-02    |  |
| ENSG00000218107.1     | RP1-26IG23.4  | Pseudogene | 1.26                        | 9.56E-09 | 1.40E-06    | 1.24                            | 5.44E-09 | 1.23E-06    |  |
| ENSG00000218146.4     | PPI4571       | LncRNA     | 0.52                        | 9.59E-04 | 1.65E-02    | 0.41                            | 6.65E-03 | 8.07E-02    |  |
| ENSG00000218454.2     | HNRNP1P19     | Pseudogene | -0.77                       | 2.79E-03 | 3.42E-02    | -0.76                           | 2.19E-03 | 3.96E-02    |  |
| ENSG00000218672.1     | AC008060.7    | LncRNA     | -0.93                       | 2.32E-04 | 6.03E-03    | -0.97                           | 7.13E-05 | 3.52E-03    |  |
| ENSG00000218690.1     | HIST1H2AP54   | Pseudogene | 0.65                        |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |             |             |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|-------------|-------------|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value     | adj p value |
| ENSG00000219294.6     | <i>PIPSK1P1</i>      | Pseudogene | 0.53                        | 1.15E-02 | 8.51E-02    | 0.54                            | 8.47E-03    | 9.30E-02    |
| ENSG00000219410.5     | <i>RP4-761J14.8</i>  | LncRNA     | 0.46                        | 6.79E-04 | 1.30E-02    | 0.32                            | 1.36E-02    | 1.23E-01    |
| ENSG00000219438.7     | <i>FAM1945</i>       | Protein    | -0.74                       | 1.06E-05 | 5.47E-04    | -0.76                           | 2.65E-06    | 2.62E-04    |
| ENSG00000219481.9     | <i>NBPF1</i>         | Protein    | 0.49                        | 1.98E-05 | 9.23E-04    | 0.44                            | 5.20E-05    | 2.75E-03    |
| ENSG00000219626.7     | <i>FAM228B</i>       | Protein    | 0.19                        | 6.37E-03 | 5.88E-02    | 0.17                            | 9.76E-03    | 1.01E-01    |
| ENSG00000219642.2     | <i>BMPR1A.PS1</i>    | Pseudogene | 0.60                        | 6.92E-04 | 1.32E-02    | 0.64                            | 1.81E-04    | 7.16E-03    |
| ENSG00000219712.1     | <i>RP11-532F6.2</i>  | Pseudogene | 0.78                        | 2.21E-03 | 2.92E-02    | 0.67                            | 6.77E-03    | 8.13E-02    |
| ENSG00000219736.1     | <i>RP11-560Q20.1</i> | Pseudogene | 1.01                        | 6.26E-05 | 2.22E-03    | 0.17                            | 4.92E-01    | 7.56E-01    |
| ENSG00000219755.1     | <i>RP1-199J3.5</i>   | Pseudogene | 0.36                        | 3.58E-03 | 4.04E-02    | 0.54                            | 9.76E-06    | 7.48E-04    |
| ENSG00000219797.2     | <i>PPIA.P9</i>       | Pseudogene | 0.64                        | 5.69E-05 | 2.08E-03    | 0.55                            | 3.39E-04    | 1.11E-02    |
| ENSG00000219863.5     | <i>RPL31P28</i>      | Pseudogene | 0.97                        | 3.62E-06 | 2.28E-04    | 0.89                            | 1.24E-05    | 8.92E-04    |
| ENSG00000219986.2     | <i>BTF3P7</i>        | Pseudogene | 0.43                        | 6.82E-03 | 6.11E-02    | 0.43                            | 4.98E-03    | 6.80E-02    |
| ENSG00000220201.6     | <i>ZGLP1</i>         | Protein    | 0.39                        | 9.04E-03 | 7.30E-02    | 0.30                            | 3.65E-02    | 2.13E-01    |
| ENSG00000220343.5     | <i>RP11-440K22.1</i> | Pseudogene | 1.15                        | 2.01E-07 | 2.01E-05    | -0.17                           | 4.23E-01    | 7.08E-01    |
| ENSG00000220563.1     | <i>PKMP3</i>         | Pseudogene | -0.35                       | 3.15E-04 | 7.58E-03    | -0.24                           | 1.15E-02    | 1.12E-01    |
| ENSG00000220666.2     | <i>RCC2P7</i>        | Pseudogene | -0.73                       | 4.09E-03 | 4.40E-02    | -0.73                           | 3.04E-03    | 4.98E-02    |
| ENSG00000220721.1     | <i>ORIF12</i>        | Pseudogene | 0.66                        | 1.79E-03 | 2.53E-02    | 0.69                            | 6.42E-04    | 1.75E-02    |
| ENSG00000220739.2     | <i>RP11-277J20.3</i> | Pseudogene | 0.57                        | 6.87E-03 | 6.13E-02    | 0.61                            | 2.63E-03    | 4.52E-02    |
| ENSG00000221265.1     | <i>MIR1255A</i>      | Other      | -0.83                       | 7.17E-04 | 1.35E-02    | -0.75                           | 1.62E-03    | 3.23E-02    |
| ENSG00000221385.1     | <i>AL354984.2</i>    | Other      | -1.04                       | 1.15E-05 | 5.84E-04    | -0.87                           | 1.68E-04    | 6.73E-03    |
| ENSG00000221386.1     | <i>AC002979.1</i>    | Other      | 0.83                        | 2.95E-04 | 7.23E-03    | 0.39                            | 7.78E-02    | 3.20E-01    |
| ENSG00000221500.1     | <i>SNORD100</i>      | Other      | 0.42                        | 1.41E-03 | 2.15E-02    | 0.30                            | 1.98E-02    | 1.52E-01    |
| ENSG00000221539.1     | <i>SNORD99</i>       | Other      | 0.47                        | 4.02E-03 | 4.37E-02    | 0.25                            | 1.20E-01    | 3.97E-01    |
| ENSG00000221571.3     | <i>RNU6ATAC35P</i>   | LncRNA     | 0.43                        | 1.60E-03 | 2.35E-02    | 0.35                            | 7.03E-03    | 8.33E-02    |
| ENSG00000221611.1     | <i>SNORD88</i>       | Other      | -0.67                       | 3.34E-03 | 3.87E-02    | -0.56                           | 1.11E-02    | 1.10E-01    |
| ENSG00000221740.1     | <i>SNORD93</i>       | Other      | 0.97                        | 1.19E-05 | 6.00E-04    | 0.86                            | 7.51E-05    | 3.64E-03    |
| ENSG00000221823.9     | <i>PPP3R1</i>        | Protein    | -0.17                       | 6.67E-06 | 3.76E-04    | -0.17                           | 2.61E-06    | 2.59E-04    |
| ENSG00000221826.8     | <i>PSG3</i>          | Protein    | 0.67                        | 8.18E-03 | 6.86E-02    | 0.62                            | 1.20E-02    | 1.15E-01    |
| ENSG00000221867.7     | <i>MAGEA3</i>        | Protein    | 0.56                        | 1.47E-02 | 9.98E-02    | -0.12                           | 5.77E-01    | 8.10E-01    |
| ENSG00000221916.3     | <i>C19orf73</i>      | Protein    | 0.34                        | 4.83E-03 | 4.90E-02    | 0.24                            | 4.00E-02    | 2.24E-01    |
| ENSG00000221923.7     | <i>ZNF880</i>        | Protein    | -0.16                       | 1.16E-02 | 8.56E-02    | -0.17                           | 6.26E-03    | 7.79E-02    |
| ENSG00000221944.4     | <i>TIGD1</i>         | Protein    | 0.24                        | 1.05E-02 | 8.01E-02    | 0.13                            | 1.62E-01    | 4.57E-01    |
| ENSG00000221947.6     | <i>XXR9</i>          | Protein    | -0.46                       | 5.13E-03 | 5.10E-02    | -0.57                           | 2.73E-04    | 9.61E-03    |
| ENSG00000221968.7     | <i>FADS3</i>         | Protein    | 0.28                        | 5.21E-04 | 1.09E-02    | 0.13                            | 9.31E-02    | 3.49E-01    |
| ENSG00000221978.10    | <i>CCNL2</i>         | Protein    | 0.33                        | 2.35E-03 | 3.04E-02    | 0.20                            | 5.87E-02    | 2.77E-01    |
| ENSG00000222009.7     | <i>BTBD19</i>        | Protein    | 0.40                        | 1.31E-03 | 2.05E-02    | 0.20                            | 1.04E-01    | 3.71E-01    |
| ENSG00000222030.1     | <i>AC007131.1</i>    | LncRNA     | 0.82                        | 5.44E-04 | 1.11E-02    | 0.29                            | 2.02E-01    | 5.09E-01    |
| ENSG00000222042.1     | <i>AP000233.4</i>    | LncRNA     | 0.75                        | 3.30E-03 | 3.84E-02    | 0.79                            | 1.43E-03    | 2.98E-02    |
| ENSG00000222112.1     | <i>RN7SKP16</i>      | Other      | 0.45                        | 3.46E-03 | 3.95E-02    | 0.38                            | 9.56E-03    | 1.00E-01    |
| ENSG00000222208.1     | <i>RNASSP129</i>     | Other      | 0.62                        | 1.30E-02 | 9.20E-02    | 0.57                            | 1.77E-02    | 1.44E-01    |
| ENSG00000222213.1     | <i>RNU6-588P</i>     | Other      | 0.73                        | 3.15E-03 | 3.71E-02    | 0.71                            | 3.23E-03    | 5.18E-02    |
| ENSG00000222248.1     | <i>RNASSP201</i>     | Other      | 0.61                        | 3.33E-03 | 3.86E-02    | 0.63                            | 1.65E-03    | 3.27E-02    |
| ENSG00000222339.1     | <i>AP000807.2</i>    | Other      | -0.85                       | 5.31E-04 | 1.10E-02    | -0.78                           | 1.16E-03    | 2.59E-02    |
| ENSG00000222345.1     | <i>SNORD19</i>       | Other      | 0.41                        | 1.61E-03 | 2.36E-02    | 0.26                            | 4.30E-02    | 2.34E-01    |
| ENSG00000222449.1     | <i>RNU6-1140P</i>    | Other      | 0.86                        | 7.91E-04 | 1.45E-02    | 0.80                            | 1.34E-03 NA |             |
| ENSG00000222607.1     | <i>RNU6-628P</i>     | Other      | 0.63                        | 1.35E-02 | 9.45E-02    | 0.46                            | 6.53E-02    | 2.92E-01    |
| ENSG00000223042.1     | <i>RN7SKP161</i>     | Other      | 0.75                        | 2.84E-03 | 3.45E-02    | 0.64                            | 9.09E-03    | 9.71E-02    |
| ENSG00000223294.1     | <i>SNORD83</i>       | Other      | 1.46                        | 7.49E-09 | 1.12E-06    | 0.95                            | 1.06E-04    | 4.76E-03    |
| ENSG00000223327.1     | <i>RNU2-71P</i>      | Other      | 0.78                        | 2.34E-03 | 3.03E-02    | 0.67                            | 7.06E-03    | 8.35E-02    |
| ENSG00000223345.3     | <i>HIST2H2BA</i>     | Pseudogene | -0.53                       | 6.02E-03 | 5.66E-02    | -0.44                           | 1.17E-02    | 1.13E-01    |
| ENSG00000223349.1     | <i>KLF2P3</i>        | Pseudogene | 0.83                        | 2.30E-04 | 6.00E-03    | 0.58                            | 8.77E-03    | 9.48E-02    |
| ENSG00000223396.2     | <i>RP11-134G8.5</i>  | LncRNA     | 0.24                        | 1.13E-02 | 8.43E-02    | 0.25                            | 5.52E-03    | 7.21E-02    |
| ENSG00000223402.1     | <i>AC074121.4</i>    | Pseudogene | 1.20                        | 8.11E-07 | 6.52E-05    | 1.25                            | 1.41E-07    | 2.25E-05    |
| ENSG00000223416.3     | <i>RPS26P15</i>      | Pseudogene | 0.52                        | 1.31E-03 | 2.04E-02    | 0.44                            | 4.53E-03    | 6.45E-02    |
| ENSG00000223489.1     | <i>NEFH.P1</i>       | Pseudogene | -0.89                       | 2.28E-04 | 5.97E-03    | -0.75                           | 1.41E-03    | 2.95E-02    |
| ENSG00000223496.2     | <i>EXOSC6</i>        | Protein    | -0.28                       | 3.85E-06 | 2.39E-04    | -0.24                           | 3.67E-05    | 2.09E-03    |
| ENSG00000223509.7     | <i>RP11-632K20.7</i> | Pseudogene | 0.42                        | 9.71E-06 | 5.09E-04    | 0.31                            | 7.48E-04    | 1.93E-02    |
| ENSG00000223511.4     | <i>RP13-297E16.4</i> | LncRNA     | 0.64                        | 1.70E-03 | 2.45E-02    | 0.62                            | 1.49E-03    | 3.06E-02    |
| ENSG00000223519.6     | <i>KIF28P</i>        | Pseudogene | 0.57                        | 6.81E-04 | 1.30E-02    | 0.38                            | 2.02E-02    | 1.54E-01    |
| ENSG00000223525.1     | <i>RABGAP1L-IT1</i>  | LncRNA     | 0.63                        | 1.15E-02 | 8.52E-02    | 0.63                            | 9.36E-03    | 9.86E-02    |
| ENSG00000223529.1     | <i>EEF1A1P8</i>      | Pseudogene | -0.41                       | 1.53E-03 | 2.28E-02    | -0.36                           | 3.66E-03    | 5.64E-02    |
| ENSG00000223562.1     | <i>RP11-543B16.3</i> | LncRNA     | 0.67                        | 5.88E-03 | 5.57E-02    | -0.31                           | 1.70E-01    | 4.66E-01    |
| ENSG00000223564.1     | <i>CYP4F32P</i>      | Pseudogene | 0.63                        | 2.13E-03 | 2.85E-02    | 0.65                            | 1.03E-03    | 2.39E-02    |
| ENSG00000223572.8     | <i>CKMT1A</i>        | Protein    | -0.44                       | 5.72E-03 | 5.47E-02    | -0.44                           | 4.44E-03    | 6.36E-02    |
| ENSG00000223648.3     | <i>IGHV3-64</i>      | Other      | 1.41                        | 5.71E-09 | 8.82E-07    | 1.24                            | 1.49E-07    | 2.35E-05    |
| ENSG00000223651.1     | <i>RPS-1121H13.1</i> | Pseudogene | -0.66                       | 5.67E-03 | 5.44E-02    | -0.57                           | 1.41E-02    | 1.26E-01    |
| ENSG00000223656.1     | <i>HMGCB3P10</i>     | Pseudogene | 0.43                        | 1.35E-02 | 9.46E-02    | 0.41                            | 1.27E-02    | 1.19E-01    |
| ENSG00000223675.1     | <i>RP11-86H7.6</i>   | LncRNA     | -0.64                       | 8.99E-03 | 7.27E-02    | -0.63                           | 7.83E-03    | 8.88E-02    |
| ENSG00000223705.8     | <i>NSUN5P1</i>       | Pseudogene | 0.53                        | 6.20E-05 | 2.20E-03    | 0.37                            | 4.07E-03    | 6.04E-02    |
| ENSG00000223715.1     | <i>LINC01208</i>     | LncRNA     | 0.68                        | 5.82E-03 | 5.52E-02    | 0.41                            | 7.87E-02    | 3.21E-01    |
| ENSG00000223722.3     | <i>RP11-467L13.5</i> | Pseudogene | 0.97                        | 3.06E-06 | 1.99E-04    | 0.96                            | 1.55E-06    | 1.70E-04    |
| ENSG00000223749.6     | <i>MIR503HG</i>      | LncRNA     | 0.42                        | 1.09E-02 | 8.21E-02    | 0.31                            | 5.33E-02    | 2.63E-01    |
| ENSG00000223770.4     | <i>AC006145.4</i>    | LncRNA     | 0.76                        | 2.40E-03 | 3.08E-02    | 0.69                            | 4.53E-03    | 6.45E-02    |
| ENSG00000223773.5     | <i>CD99P1</i>        | Pseudogene | 0.48                        | 8.80E-13 | 2.77E-10    | 0.46                            | 3.87E-13    | 1.96E-10    |
| ENSG00000223783.1     | <i>AC124944.5</i>    | LncRNA     | 0.81                        | 5.07E-05 | 1.90E-03    | 0.73                            | 1.55E-04    | 6.30E-03    |
| ENSG00000223787.2     | <i>RP4-593M8.1</i>   | Pseudogene | 0.55                        | 5.19E-03 | 5.14E-02    | 0.54                            | 3.83E-03    | 5.80E-02    |
| ENSG00000223797.4     | <i>ENTPD3-AS1</i>    | LncRNA     | 0.22                        | 1.35E-02 | 9.42E-02    | 0.25                            | 2.96E-03    | 4.89E-02    |
| ENSG00000223803.1     | <i>RPS20P14</i>      | Pseudogene | 0.71                        | 3.71E-08 | 4.54E-06    | 0.69                            | 1.83E-08    | 3.76E-06    |
| ENSG00000223820.5     | <i>CFL1P1</i>        | Pseudogene | 0.40                        | 5.20E-04 | 1.09E-02    | 0.45                            | 4.80E-05    | 2.57E-03    |
| ENSG00000223834.2     | <i>RP11-472N13.2</i> | LncRNA     | 0.63                        | 1.23E-03 | 1.97E-02    | 0.53                            | 5.09E-03    | 6.89E-02    |
| ENSG00000223838.1     | <i>AC007091.1</i>    | LncRNA     | 0.62                        | 1.03E-02 | 7.91E-02    | 0.48                            | 4.01E-02    | 2.25E-01    |
| ENSG00000223849.1     | <i>RP11-801I5.1</i>  | Pseudogene | 0.41                        | 3.87E-03 | 4.26E-02    | 0.30                            | 2.90E-02    | 1.88E-01    |
| ENSG00000223865.9     | <i>HLA-DPB1</i>      | Protein    | 0.36                        | 2.37E-03 | 3.06E-02    | 0.27                            | 1.88E-02    | 1.48E-01    |
| ENSG00000223886.3     | <i>RP11-251G23.2</i> | Pseudogene | 2.00                        | 1.50E-29 | 2.33E-26    | 1.92                            | 2.04E-29    | 4.26E-26    |
| ENSG00000223891.4     | <i>OSER1-AS1</i>     | LncRNA     | 0.22                        | 1.05E-02 | 8.03E-02    | 0.15                            | 5.97E-02    | 2.79E-01    |
| ENSG00000223901.2     | <i>AP001469.5</i>    | LncRNA     | 0.57                        | 3.25E-04 | 7.77E-03    | 0.54                            | 3.59E-04    | 1.16E-02    |
| ENSG00000223956.1     | <i>RP4-710M16.2</i>  | LncRNA     | 1.07                        | 7.45E-08 | 8.41E-06    | 0.17                            | 3.66E-01    | 6.65E-01    |
| ENSG00000223959.7     | <i>AFG3L1P</i>       | Pseudogene | 0.27                        | 1.12E-03 | 1.85E-02    | 0.23                            | 3.47E-03    | 5.45E-02    |
| ENSG00000224014.1     | <i>RP11-488L18.6</i> | Pseudogene | 0.35                        | 9.52E-03 | 7.52E-02    | 0.28                            | 3.14E-02    | 1.97E-01    |
| ENSG00000224016.2     | <i>RP11-728K20.1</i> | Pseudogene | 0.73                        | 6.24E-07 | 5.23E-05    | 0.09                            | 4.94E-01    | 7.57E-01    |
| ENSG00000224050.1     | <i>RP1-90G24.6</i>   | LncRNA     | -0.56                       | 9.50E-03 | 7.51E-02    | -0.21                           | 3.10E-01    | 6.18E-01    |
| ENSG00000224057.1     | <i>EGFR-AS1</i>      | LncRNA     | 0.63                        | 2.46E-05 | 1.08E-03    | 0.63                            | 1.14E-05    | 8.38E-04    |
| ENSG00000224066.1     | <i>RP4-622L5.7</i>   | LncRNA     | 0.50                        | 4.04E-04 | 9.08E-03    | 0.29                            | 3.27E-02    | 2.01E-01    |
| ENSG00000224081.6     | <i>LINC01057</i>     | LncRNA     | -0.46                       | 1.89E-03 | 2.63E-02    | -0.41                           | 4.05E-03    | 6.02E-02    |
| ENSG00000224090.1     | <i>AC097468.4</i>    | LncRNA     | -0.42                       | 2.87E-04 | 7.06E-03    | -0.42                           | 1.59E-04    | 6.41E-03    |
| ENSG00000224093.4     | <i>RPS-1033H22.2</i> | LncRNA     | 0.56                        | 3.57E-03 | 4.03E-02    | 0.51                            | 6.89E-03    | 8.23E-02    |
| ENSG00000224100.1     | <i>AP001630.5</i>    | LncRNA     | 0.58                        | 1.13E-03 | 1.86E-02    | 0.46                            | 8.21E-03    | 9.14E-02    |
| ENSG00000224109.1     | <i>CENPV.P3</i>      | Pseudogene | -0.78                       | 8.62E-04 | 1.53E-02    | -0.73                           | 1.42E-03    | 2.97E-02    |
| ENSG00000224138.1     | <i>AC000123.4</i>    | LncRNA     | 0.19                        | 1.24E-02 | 8.92E-02    | 0.16                            | 2.70E-02    | 1.81E-01    |
| ENSG00000224141.4     | <i>AL109763.2</i>    | LncRNA     | 1.10                        | 3.48E-07 | 3.19E-05    | -0.18                           | 3.79E-01    | 6.75E-01    |
| ENSG00000224152.1     | <i>AC009506.1</i>    | LncRNA     | -0.24                       | 7.47E-04 | 1.39E-02    | -0.23                           | 7.45E-04    | 1.92E-02    |
| ENSG00000224161.3     | <i>RPS26P54</i>      | Pseudogene | 0.86                        | 2.29E-04 | 5.98E-03    | 0.89                            | 8.25E-05    | 3.90E-03    |
| ENSG00000224163.4     | <i>RP11-309L24.6</i> | Pseudogene | 3.14                        | 3.67E-45 | 9.86E-42    | 3.21                            | 7.31E-50    | 3.62E-46    |
| ENSG00000224189.5     | <i>HAGLR</i>         | LncRNA     | -0.50                       | 1.12E-02 | 8.38E-02    | -0.59                           | 1.89E-03    | 3.58E-02    |
| ENSG00000224227       |                      |            |                             |          |             |                                 |             |             |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000224272.2     | <i>AC114730.3</i>     | LncRNA     | 0.62                        | 4.66E-04 | 1.01E-02    | 0.44                            | 1.13E-02 | 1.11E-01    |
| ENSG00000224295.2     | <i>AC087380.14</i>    | Pseudogene | 0.47                        | 2.42E-03 | 3.11E-02    | 0.44                            | 2.81E-03 | 4.74E-02    |
| ENSG00000224331.2     | <i>AC019181.3</i>     | Pseudogene | 0.37                        | 6.60E-03 | 5.98E-02    | 0.29                            | 2.82E-02 | 1.85E-01    |
| ENSG00000224356.4     | <i>RP11-151A6.4</i>   | LncRNA     | 0.93                        | 1.30E-12 | 4.06E-10    | 0.80                            | 3.18E-10 | 9.54E-08    |
| ENSG00000224373.3     | <i>IGHV4-59</i>       | Other      | 0.67                        | 3.26E-03 | 3.81E-02    | 0.57                            | 1.08E-02 | 1.08E-01    |
| ENSG00000224387.1     | <i>RP3-395M20.2</i>   | LncRNA     | 0.53                        | 4.18E-03 | 4.47E-02    | 0.56                            | 1.72E-03 | 3.38E-02    |
| ENSG00000224411.3     | <i>HSP90A4A2P</i>     | Pseudogene | -0.45                       | 9.51E-04 | 1.64E-02    | -0.40                           | 2.39E-03 | 4.23E-02    |
| ENSG00000224413.1     | <i>AP001476.2</i>     | LncRNA     | 1.17                        | 9.25E-08 | 1.03E-05    | 0.88                            | 3.59E-05 | 2.06E-03    |
| ENSG00000224418.1     | <i>STK24-AS1</i>      | LncRNA     | 0.40                        | 2.48E-03 | 3.16E-02    | 0.29                            | 2.41E-02 | 1.70E-01    |
| ENSG00000224425.2     | <i>AC073869.2</i>     | Pseudogene | -0.49                       | 8.14E-03 | 6.85E-02    | -0.43                           | 1.48E-02 | 1.29E-01    |
| ENSG00000224435.2     | <i>NF1P6</i>          | Pseudogene | 0.79                        | 1.17E-03 | 1.90E-02    | 0.09                            | 6.99E-01 | 8.73E-01    |
| ENSG00000224458.3     | <i>GUSBP6</i>         | Pseudogene | 0.72                        | 3.95E-03 | 4.32E-02    | -0.29                           | 2.35E-01 | 5.46E-01    |
| ENSG00000224505.2     | <i>AC002117.1</i>     | LncRNA     | 0.32                        | 1.21E-02 | 8.77E-02    | 0.19                            | 1.34E-01 | 4.18E-01    |
| ENSG00000224521.1     | <i>RP11-438F14.3</i>  | LncRNA     | 0.75                        | 3.03E-03 | 3.61E-02    | 0.69                            | 4.98E-03 | 6.80E-02    |
| ENSG00000224536.1     | <i>RP11-134G8.7</i>   | LncRNA     | 0.46                        | 2.59E-05 | 1.12E-03    | 0.47                            | 6.71E-06 | 5.51E-04    |
| ENSG00000224546.2     | <i>EIF4BP3</i>        | Pseudogene | -0.37                       | 5.82E-04 | 1.17E-02    | -0.43                           | 4.00E-05 | 2.24E-03    |
| ENSG00000224549.1     | <i>RP11-370B11.3</i>  | LncRNA     | 0.58                        | 9.08E-03 | 7.32E-02    | 0.43                            | 4.82E-02 | 2.49E-01    |
| ENSG00000224553.1     | <i>AC008065.1</i>     | Pseudogene | 0.73                        | 4.12E-05 | 1.62E-03    | 0.62                            | 3.21E-04 | 1.07E-02    |
| ENSG00000224557.6     | <i>HLA-DPB2</i>       | Pseudogene | 0.99                        | 6.14E-08 | 7.15E-06    | 0.84                            | 1.88E-06 | 2.01E-04    |
| ENSG00000224596.6     | <i>ZMIZ1-AS1</i>      | LncRNA     | 0.53                        | 1.42E-07 | 1.49E-05    | 0.44                            | 6.47E-06 | 5.38E-04    |
| ENSG00000224598.1     | <i>RPSSP2</i>         | Pseudogene | 0.70                        | 5.08E-04 | 1.07E-02    | 0.63                            | 1.25E-03 | 2.72E-02    |
| ENSG00000224614.1     | <i>TNK2-AS1</i>       | LncRNA     | 0.75                        | 2.36E-06 | 1.61E-04    | 0.77                            | 3.95E-07 | 5.47E-05    |
| ENSG00000224635.1     | <i>RP4-564F22.5</i>   | LncRNA     | 0.91                        | 1.04E-08 | 1.50E-06    | 0.75                            | 1.28E-06 | 1.43E-04    |
| ENSG00000224652.1     | <i>LINC00885</i>      | LncRNA     | 0.54                        | 4.65E-04 | 1.01E-02    | 0.39                            | 9.22E-03 | 9.77E-02    |
| ENSG00000224660.1     | <i>SH3BP5-AS1</i>     | LncRNA     | 0.53                        | 2.33E-06 | 1.59E-04    | 0.42                            | 1.14E-04 | 5.03E-03    |
| ENSG00000224683.1     | <i>RPL36AP29</i>      | Pseudogene | -1.18                       | 1.66E-06 | 1.20E-04    | -1.17                           | 8.77E-07 | 1.06E-04    |
| ENSG00000224775.2     | <i>BRAFP1</i>         | Pseudogene | 0.63                        | 1.45E-03 | 2.20E-02    | 0.63                            | 9.81E-04 | 2.31E-02    |
| ENSG00000224785.1     | <i>AC006026.9</i>     | Pseudogene | 0.82                        | 8.89E-04 | 1.56E-02    | 0.75                            | 1.84E-03 | 3.52E-02    |
| ENSG00000224794.1     | <i>RP3-333H23.8</i>   | LncRNA     | 0.71                        | 2.52E-03 | 3.20E-02    | 0.58                            | 1.15E-02 | 1.12E-01    |
| ENSG00000224830.2     | <i>OR2X1P</i>         | Pseudogene | 0.95                        | 2.00E-04 | 5.38E-03    | 0.89                            | 3.30E-04 | NA          |
| ENSG00000224831.3     | <i>RP11-651P23.4</i>  | Pseudogene | -0.27                       | 9.82E-03 | 7.68E-02    | -0.32                           | 1.15E-03 | 2.57E-02    |
| ENSG00000224837.1     | <i>GCSHP5</i>         | Pseudogene | 0.40                        | 8.25E-03 | 6.90E-02    | 0.37                            | 1.11E-02 | 1.10E-01    |
| ENSG00000224858.5     | <i>RPL29P11</i>       | Pseudogene | 1.24                        | 2.96E-13 | 9.94E-11    | 0.52                            | 4.67E-04 | 1.40E-02    |
| ENSG00000224861.1     | <i>YBX1P1</i>         | Pseudogene | -0.35                       | 4.84E-04 | 1.03E-02    | -0.35                           | 2.74E-04 | 9.61E-03    |
| ENSG00000224891.1     | <i>AC007899.3</i>     | Pseudogene | 0.53                        | 2.08E-03 | 2.81E-02    | 0.42                            | 1.30E-02 | 1.20E-01    |
| ENSG00000224897.5     | <i>POT1-AS1</i>       | LncRNA     | 0.50                        | 2.54E-04 | 6.44E-03    | 0.47                            | 2.90E-04 | 9.99E-03    |
| ENSG00000224903.1     | <i>AC005534.8</i>     | LncRNA     | 0.61                        | 1.58E-05 | 7.61E-04    | 0.46                            | 7.90E-04 | 2.00E-02    |
| ENSG00000224934.2     | <i>RP11-441O15.3</i>  | LncRNA     | 0.35                        | 2.79E-03 | 3.42E-02    | 0.27                            | 1.61E-02 | 1.36E-01    |
| ENSG00000224945.1     | <i>RP11-82L18.2</i>   | LncRNA     | 0.52                        | 1.14E-03 | 1.86E-02    | 0.29                            | 6.63E-02 | 2.95E-01    |
| ENSG00000224969.1     | <i>RP11-54O7.11</i>   | LncRNA     | 0.44                        | 1.13E-02 | 8.44E-02    | 0.17                            | 3.11E-01 | 6.20E-01    |
| ENSG00000224975.1     | <i>INE1</i>           | LncRNA     | 0.31                        | 3.13E-03 | 3.69E-02    | 0.18                            | 7.15E-02 | 3.06E-01    |
| ENSG00000225022.1     | <i>UBE2D3P1</i>       | Pseudogene | -0.41                       | 1.22E-03 | 1.94E-02    | -0.39                           | 1.62E-03 | 3.22E-02    |
| ENSG00000225032.4     | <i>RP11-228B15.4</i>  | LncRNA     | 0.33                        | 8.67E-03 | 7.12E-02    | 0.16                            | 1.95E-01 | 5.00E-01    |
| ENSG00000225039.1     | <i>LINC01058</i>      | LncRNA     | 0.39                        | 1.33E-02 | 9.34E-02    | 0.40                            | 7.83E-03 | 8.88E-02    |
| ENSG00000225062.1     | <i>CATIP-AS1</i>      | LncRNA     | 0.39                        | 8.17E-03 | 6.86E-02    | 0.36                            | 1.13E-02 | 1.11E-01    |
| ENSG00000225071.1     | <i>GSI-184P14.2</i>   | Pseudogene | 0.80                        | 1.68E-07 | 1.71E-05    | 0.77                            | 1.58E-07 | 2.46E-05    |
| ENSG00000225075.1     | <i>RP11-426L16.3</i>  | LncRNA     | 0.64                        | 3.41E-05 | 1.40E-03    | 0.46                            | 2.09E-03 | 3.85E-02    |
| ENSG00000225077.2     | <i>LINC00337</i>      | LncRNA     | 0.69                        | 4.47E-05 | 1.72E-03    | 0.52                            | 1.41E-03 | 2.95E-02    |
| ENSG00000225084.1     | <i>AL450226.2</i>     | LncRNA     | 0.72                        | 4.01E-03 | 4.36E-02    | 0.66                            | 7.05E-03 | 8.35E-02    |
| ENSG00000225093.1     | <i>RPL3P7</i>         | Pseudogene | 0.97                        | 2.08E-13 | 7.16E-11    | 1.05                            | 8.80E-17 | 6.58E-14    |
| ENSG00000225117.1     | <i>ARSDP1</i>         | Pseudogene | 0.52                        | 1.08E-03 | 1.80E-02    | 0.38                            | 1.37E-02 | 1.24E-01    |
| ENSG00000225146.1     | <i>AC073957.15</i>    | LncRNA     | 0.70                        | 3.46E-05 | 1.41E-03    | 0.59                            | 2.86E-04 | 9.88E-03    |
| ENSG00000225159.1     | <i>NPM1P39</i>        | Pseudogene | -0.33                       | 4.97E-03 | 5.00E-02    | -0.36                           | 1.45E-03 | 3.00E-02    |
| ENSG00000225173.1     | <i>XXbac-BPG308K3</i> | LncRNA     | 0.50                        | 1.27E-02 | 9.08E-02    | 0.51                            | 8.18E-03 | 9.12E-02    |
| ENSG00000225177.4     | <i>RP11-390P2.4</i>   | LncRNA     | 0.39                        | 3.13E-03 | 3.69E-02    | 0.29                            | 2.09E-02 | 1.57E-01    |
| ENSG00000225231.1     | <i>AC091814.2</i>     | LncRNA     | 0.79                        | 1.75E-03 | 2.49E-02    | 0.72                            | 3.53E-03 | 5.51E-02    |
| ENSG00000225243.4     | <i>RP1-127D3.4</i>    | LncRNA     | 0.70                        | 1.56E-03 | 2.31E-02    | 0.64                            | 3.01E-03 | 4.95E-02    |
| ENSG00000225259.4     | <i>ST13P6</i>         | Pseudogene | -0.37                       | 1.71E-03 | 2.46E-02    | -0.30                           | 8.11E-03 | 9.06E-02    |
| ENSG00000225279.1     | <i>RP11-536C5.2</i>   | LncRNA     | 0.85                        | 2.92E-06 | 1.91E-04    | 0.72                            | 4.06E-05 | 2.27E-03    |
| ENSG00000225328.1     | <i>AC019100.3</i>     | LncRNA     | 0.61                        | 2.50E-03 | 3.19E-02    | 0.52                            | 7.48E-03 | 8.63E-02    |
| ENSG00000225331.1     | <i>AP001055.6</i>     | LncRNA     | 0.84                        | 6.57E-07 | 5.47E-05    | 0.71                            | 1.55E-05 | 1.07E-03    |
| ENSG00000225339.3     | <i>RP11-513I15.6</i>  | LncRNA     | 0.37                        | 6.65E-04 | 1.28E-02    | 0.19                            | 7.16E-02 | 3.06E-01    |
| ENSG00000225361.3     | <i>PPP1R26-AS1</i>    | LncRNA     | 0.27                        | 9.95E-04 | 1.70E-02    | 0.17                            | 4.12E-02 | 2.29E-01    |
| ENSG00000225370.1     | <i>AC011515.2</i>     | Pseudogene | 0.55                        | 2.60E-03 | 3.26E-02    | 0.32                            | 7.46E-02 | 3.13E-01    |
| ENSG00000225383.5     | <i>SFTA1P</i>         | LncRNA     | 0.84                        | 9.44E-04 | 1.64E-02    | 0.11                            | 6.44E-01 | 8.47E-01    |
| ENSG00000225391.4     | <i>NHEG1</i>          | LncRNA     | -0.71                       | 4.57E-03 | 4.75E-02    | -0.66                           | 7.16E-03 | 8.42E-02    |
| ENSG00000225415.2     | <i>RP3-509I19.1</i>   | Pseudogene | 1.54                        | 2.29E-10 | 4.70E-08    | 0.20                            | 3.99E-01 | 6.91E-01    |
| ENSG00000225442.2     | <i>MPRIP-AS1</i>      | LncRNA     | 0.86                        | 6.32E-06 | 3.60E-04    | 0.76                            | 3.18E-05 | 1.87E-03    |
| ENSG00000225460.1     | <i>RP13-93L13.1</i>   | Pseudogene | 0.58                        | 1.20E-02 | 8.76E-02    | 0.41                            | 7.04E-02 | 3.04E-01    |
| ENSG00000225465.8     | <i>RFLP1S</i>         | LncRNA     | -0.88                       | 2.35E-06 | 1.61E-04    | -0.81                           | 7.12E-06 | 5.75E-04    |
| ENSG00000225492.5     | <i>GBP1P1</i>         | Pseudogene | 0.41                        | 4.07E-03 | 4.40E-02    | 0.37                            | 6.73E-03 | 8.12E-02    |
| ENSG00000225498.1     | <i>AC002064.5</i>     | LncRNA     | 0.48                        | 1.28E-02 | 9.14E-02    | 0.46                            | 1.35E-02 | 1.22E-01    |
| ENSG00000225523.2     | <i>IGKV6D-21</i>      | Other      | 0.74                        | 3.53E-03 | 4.00E-02    | 0.52                            | 3.33E-02 | 2.02E-01    |
| ENSG00000225528.1     | <i>RP3-370M22.8</i>   | LncRNA     | 0.44                        | 1.61E-03 | 2.36E-02    | 0.42                            | 1.78E-03 | 3.45E-02    |
| ENSG00000225531.1     | <i>RP11-196I18.3</i>  | Pseudogene | -0.67                       | 4.15E-06 | 2.54E-04    | -0.59                           | 2.62E-05 | 1.61E-03    |
| ENSG00000225544.1     | <i>KB-1027C11.4</i>   | Pseudogene | 0.90                        | 2.56E-04 | 6.47E-03    | 0.88                            | 2.37E-04 | 8.71E-03    |
| ENSG00000225569.1     | <i>CCT4P2</i>         | Pseudogene | 1.88                        | 5.81E-15 | 2.44E-12    | 1.86                            | 2.08E-15 | 1.33E-12    |
| ENSG00000225578.1     | <i>NCBP2-AS1</i>      | LncRNA     | 0.43                        | 3.47E-03 | 3.96E-02    | 0.30                            | 3.40E-02 | 2.05E-01    |
| ENSG00000225598.1     | <i>RP11-339D23.1</i>  | LncRNA     | 0.81                        | 4.24E-04 | 9.36E-03    | 0.62                            | 5.41E-03 | 7.15E-02    |
| ENSG00000225674.1     | <i>IPO7P2</i>         | Pseudogene | -0.76                       | 9.41E-05 | 3.01E-03    | -0.74                           | 7.36E-05 | 3.59E-03    |
| ENSG00000225693.1     | <i>LAGE3P1</i>        | Pseudogene | 0.42                        | 4.25E-03 | 4.52E-02    | 0.39                            | 5.71E-03 | 7.38E-02    |
| ENSG00000225698.3     | <i>IGHV3-72</i>       | Other      | 0.77                        | 3.94E-04 | 8.91E-03    | 0.62                            | 3.39E-03 | 5.36E-02    |
| ENSG00000225708.5     | <i>RP13-379L11.1</i>  | LncRNA     | -0.97                       | 2.46E-05 | 1.08E-03    | -0.75                           | 8.98E-04 | 2.18E-02    |
| ENSG00000225720.5     | <i>RP4-742C19.12</i>  | Pseudogene | 0.57                        | 2.92E-03 | 3.52E-02    | 0.45                            | 1.58E-02 | 1.34E-01    |
| ENSG00000225725.4     | <i>FAM66E</i>         | LncRNA     | 1.09                        | 3.16E-10 | 6.37E-08    | 1.10                            | 3.33E-11 | 1.23E-08    |
| ENSG00000225731.1     | <i>AP001627.1</i>     | LncRNA     | -0.60                       | 2.05E-03 | 2.79E-02    | -0.44                           | 1.97E-02 | 1.52E-01    |
| ENSG00000225766.7     | <i>DHRS4L1</i>        | Pseudogene | -0.44                       | 9.47E-05 | 3.03E-03    | -0.45                           | 2.84E-05 | 1.71E-03    |
| ENSG00000225783.5     | <i>MIAT</i>           | LncRNA     | 0.44                        | 9.74E-03 | 7.63E-02    | 0.23                            | 1.71E-01 | 4.68E-01    |
| ENSG00000225819.1     | <i>AC013269.3</i>     | LncRNA     | 0.76                        | 7.13E-04 | 1.35E-02    | 0.45                            | 3.41E-02 | NA          |
| ENSG00000225828.1     | <i>FAM229A</i>        | Protein    | 0.34                        | 6.42E-03 | 5.90E-02    | 0.24                            | 4.63E-02 | 2.43E-01    |
| ENSG00000225851.1     | <i>HLA-S</i>          | Pseudogene | 0.54                        | 2.90E-03 | 3.50E-02    | 0.55                            | 1.61E-03 | 3.22E-02    |
| ENSG00000225855.5     | <i>RUSC1-AS1</i>      | LncRNA     | 0.28                        | 8.71E-03 | 7.14E-02    | 0.09                            | 4.18E-01 | 7.05E-01    |
| ENSG00000225864.1     | <i>HCG4P11</i>        | Pseudogene | 0.82                        | 8.04E-06 | 4.38E-04    | 0.66                            | 2.26E-04 | 8.47E-03    |
| ENSG00000225880.5     | <i>LINC00115</i>      | LncRNA     | 0.49                        | 2.37E-05 | 1.05E-03    | 0.38                            | 5.24E-04 | 1.52E-02    |
| ENSG00000225905.1     | <i>RP4-758J18.7</i>   | LncRNA     | -0.56                       | 7.53E-07 | 6.10E-05    | -0.49                           | 7.96E-06 | 6.33E-04    |
| ENSG00000225916.1     | <i>AC007879.4</i>     | LncRNA     | 0.49                        | 9.41E-03 | 7.47E-02    | 0.41                            | 2.21E-02 | 1.62E-01    |
| ENSG00000225942.1     | <i>AC093326.2</i>     | LncRNA     | 0.88                        | 2.32E-04 | 6.03E-03    | 0.39                            | 7.89E-02 | 3.22E-01    |
| ENSG00000225953.2     | <i>SATB2-AS1</i>      | LncRNA     | -0.34                       | 6.59E-03 | 5.98E-02    | -0.26                           | 2.66E-02 | 1.80E-01    |
| ENSG00000225969.1     | <i>ABHD11-AS1</i>     | LncRNA     | -0.41                       | 1.31E-02 | 9.28E-02    | -0.58                           | 3.37E-04 | 1.11E-02    |
| ENSG00000225988.1     | <i>LAMP5-AS1</i>      | LncRNA     | -0.91                       | 2.68E-04 | 6.73E-03    | -1.00                           | 2.98E-05 | 1.76E-03    |
| ENSG00000226015.2     | <i>CCT8P1</i>         | Pseudogene | 0.42                        | 5.36E-04 | 1.10E-02    | 0.41                            | 3.71E-04 | 1.18E-02    |
| ENSG00000226025.8     | <i>LGALS17A</i>       | Pseudogene | 0.93                        | 1.64E-06 | 1.19E-04    | 0.75                            | 6.70E-05 | 3.33E-03    |
| ENSG00000226038.5     | <i>PPIAP21</i>        | Pseudogene | 0.49                        | 2.52E-03 | 3.21E-02    | 0.44                            | 4.41E-03 | 6.34E-02    |
| ENSG00000226040.3     | <i>AC005740.3</i>     | Pseudogene | 1.16                        | 3.98E-11 |             |                                 |          |             |

| Gene ID (GENCODE v22) | Gene symbol     | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                 |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000226174.5     | TEX22           | Protein    | 0.37                        | 1.21E-02 | 8.79E-02    | 0.13                            | 3.74E-01 | 6.71E-01    |  |
| ENSG00000226191.3     | CLK3P2          | Pseudogene | 1.18                        | 4.37E-07 | 3.87E-05    | 1.10                            | 1.20E-06 | 1.37E-04    |  |
| ENSG00000226210.3     | WASH7P          | Pseudogene | 0.36                        | 3.72E-03 | 4.14E-02    | 0.31                            | 8.46E-03 | 9.29E-02    |  |
| ENSG00000226263.1     | ISM1-AS1        | LncRNA     | 0.44                        | 1.47E-02 | 9.96E-02    | 0.42                            | 1.46E-02 | 1.28E-01    |  |
| ENSG00000226278.1     | PSPHP1          | Pseudogene | 1.04                        | 4.02E-05 | 1.60E-03    | 1.04                            | 2.32E-05 | 1.48E-03    |  |
| ENSG00000226306.6     | NPY6R           | Pseudogene | -0.58                       | 9.31E-03 | 7.43E-02    | -0.91                           | 1.30E-05 | 9.22E-04    |  |
| ENSG00000226312.6     | CFLAR-AS1       | LncRNA     | 0.34                        | 7.61E-03 | 6.55E-02    | 0.24                            | 4.63E-02 | 2.43E-01    |  |
| ENSG00000226321.5     | AC104809.3      | Protein    | -0.66                       | 3.39E-03 | 3.90E-02    | -0.13                           | 5.21E-01 | 7.75E-01    |  |
| ENSG00000226328.5     | NUP50-AS1       | LncRNA     | 0.41                        | 2.79E-06 | 1.84E-04    | 0.25                            | 3.71E-03 | 5.69E-02    |  |
| ENSG00000226332.2     | RP11-157P1.4    | LncRNA     | 0.35                        | 7.01E-03 | 6.21E-02    | 0.28                            | 2.39E-02 | 1.69E-01    |  |
| ENSG00000226398.1     | AC013480.2      | LncRNA     | -0.82                       | 1.09E-03 | 1.81E-02    | -0.72                           | 2.93E-03 | 4.86E-02    |  |
| ENSG00000226416.1     | MRPL23-AS1      | LncRNA     | 0.48                        | 1.33E-02 | 9.36E-02    | 0.35                            | 6.43E-02 | 2.90E-01    |  |
| ENSG00000226431.1     | RP11-416N2.3    | LncRNA     | 0.61                        | 1.45E-02 | 9.88E-02    | 0.55                            | 2.52E-02 | 1.74E-01    |  |
| ENSG00000226440.6     | RP11-506B6.6    | LncRNA     | -0.46                       | 3.64E-03 | 4.08E-02    | -0.35                           | 2.41E-02 | 1.70E-01    |  |
| ENSG00000226472.6     | RP11-551L14.4   | LncRNA     | 0.43                        | 7.10E-03 | 6.25E-02    | 0.42                            | 5.96E-03 | 7.57E-02    |  |
| ENSG00000226478.3     | UPF3AP1         | Pseudogene | 1.13                        | 9.25E-12 | 2.52E-09    | 1.11                            | 2.31E-12 | 1.06E-09    |  |
| ENSG00000226508.1     | AC104655.3      | LncRNA     | 0.78                        | 1.78E-04 | 4.93E-03    | 0.22                            | 2.70E-01 | 5.81E-01    |  |
| ENSG00000226519.1     | LINC00390       | LncRNA     | -0.62                       | 1.39E-02 | 9.62E-02    | -0.51                           | 3.95E-02 | 2.23E-01    |  |
| ENSG00000226631.1     | SLC9A3P3        | Pseudogene | 0.72                        | 7.96E-04 | 1.45E-02    | 0.75                            | 2.82E-04 | 9.77E-03    |  |
| ENSG00000226644.4     | RP11-128M1.1    | LncRNA     | 0.36                        | 1.34E-02 | 9.39E-02    | 0.40                            | 3.80E-03 | 5.78E-02    |  |
| ENSG00000226686.6     | LINC01535       | LncRNA     | -0.59                       | 8.13E-05 | 2.70E-03    | -0.67                           | 3.35E-06 | 3.12E-04    |  |
| ENSG00000226695.1     | ANKRD20A10P     | Pseudogene | -0.69                       | 6.77E-03 | 6.07E-02    | -0.09                           | 6.92E-01 | 8.71E-01    |  |
| ENSG00000226706.1     | RP11-426A6.5    | LncRNA     | 0.36                        | 1.16E-02 | 8.54E-02    | 0.23                            | 8.50E-02 | 3.34E-01    |  |
| ENSG00000226725.2     | PABPC1L2B-AS1   | LncRNA     | -0.65                       | 1.02E-03 | 1.73E-02    | -0.49                           | 1.04E-02 | 1.05E-01    |  |
| ENSG00000226747.5     | AC007966.1      | LncRNA     | 0.60                        | 9.62E-04 | 1.66E-02    | 0.59                            | 6.72E-04 | 1.79E-02    |  |
| ENSG00000226752.6     | PSMD5-AS1       | LncRNA     | 0.55                        | 5.43E-10 | 1.01E-07    | 0.59                            | 5.67E-12 | 2.52E-09    |  |
| ENSG00000226754.1     | RP5-1024G6.5    | LncRNA     | -0.38                       | 7.43E-06 | 4.12E-04    | -0.33                           | 5.66E-05 | 2.92E-03    |  |
| ENSG00000226756.1     | AC007365.3      | LncRNA     | -0.44                       | 9.49E-03 | 7.51E-02    | -0.47                           | 3.70E-03 | 5.69E-02    |  |
| ENSG00000226757.2     | PP12613         | LncRNA     | 0.83                        | 1.21E-03 | 1.94E-02    | 0.82                            | 9.34E-04 | 2.24E-02    |  |
| ENSG00000226763.4     | SRRM5           | Protein    | 0.35                        | 6.50E-04 | 1.26E-02    | 0.25                            | 1.13E-02 | 1.11E-01    |  |
| ENSG00000226807.5     | MROH5           | Pseudogene | 0.72                        | 5.39E-04 | 1.11E-02    | 0.69                            | 5.71E-04 | 1.61E-02    |  |
| ENSG00000226824.5     | RP4-756H11.3    | LncRNA     | 0.30                        | 6.87E-03 | 6.13E-02    | 0.26                            | 1.34E-02 | 1.22E-01    |  |
| ENSG00000226835.1     | RP11-148B18.3   | LncRNA     | 0.84                        | 7.74E-06 | 4.25E-04    | 0.73                            | 5.66E-05 | 2.92E-03    |  |
| ENSG00000226849.1     | RP4-635E18.7    | LncRNA     | 0.36                        | 6.83E-03 | 6.12E-02    | 0.23                            | 7.84E-02 | 3.21E-01    |  |
| ENSG00000226856.4     | AC093901.1      | LncRNA     | -0.55                       | 3.15E-04 | 7.59E-03    | -0.42                           | 4.40E-03 | 6.34E-02    |  |
| ENSG00000226864.1     | ATE1-AS1        | LncRNA     | 0.57                        | 3.13E-04 | 7.54E-03    | 0.54                            | 3.64E-04 | 1.17E-02    |  |
| ENSG00000226913.1     | BSN-AS2         | LncRNA     | 0.47                        | 4.21E-03 | 4.49E-02    | 0.32                            | 4.62E-02 | 2.43E-01    |  |
| ENSG00000226933.1     | NRBF2P2         | Pseudogene | 1.32                        | 1.53E-09 | 2.59E-07    | 1.32                            | 5.11E-10 | 1.49E-07    |  |
| ENSG00000226944.1     | RP1-120G22.11   | LncRNA     | 0.64                        | 2.07E-05 | 9.52E-04    | 0.62                            | 1.49E-05 | 1.03E-03    |  |
| ENSG00000226957.1     | RP4-533D7.4     | LncRNA     | 0.48                        | 6.57E-03 | 5.97E-02    | 0.43                            | 1.21E-02 | 1.15E-01    |  |
| ENSG00000226958.1     | CTD-2328D6.1    | Pseudogene | 0.76                        | 2.57E-03 | 3.25E-02    | 0.19                            | 4.00E-01 | 6.91E-01    |  |
| ENSG00000226964.1     | RHEBP2          | Pseudogene | 0.52                        | 4.46E-05 | 1.72E-03    | 0.48                            | 8.60E-05 | 4.00E-03    |  |
| ENSG00000227001.3     | NBPF2P          | Pseudogene | -0.74                       | 1.24E-07 | 1.33E-05    | -0.66                           | 8.14E-07 | 9.89E-05    |  |
| ENSG00000227028.5     | SLC8A1-AS1      | LncRNA     | 0.70                        | 1.36E-04 | 4.02E-03    | 0.15                            | 3.93E-01 | 6.86E-01    |  |
| ENSG00000227039.5     | ITGB2-AS1       | LncRNA     | 0.61                        | 2.55E-04 | 6.45E-03    | 0.44                            | 6.16E-03 | 7.72E-02    |  |
| ENSG00000227060.5     | LINC00629       | LncRNA     | 0.48                        | 1.17E-02 | 8.62E-02    | 0.39                            | 3.71E-02 | 2.15E-01    |  |
| ENSG00000227063.5     | RPL41P1         | Pseudogene | 0.30                        | 5.00E-03 | 5.01E-02    | 0.30                            | 2.74E-03 | 4.64E-02    |  |
| ENSG00000227080.2     | CTD-2021A8.3    | Pseudogene | 1.17                        | 1.57E-06 | 1.14E-04    | 1.11                            | 2.69E-06 | 2.65E-04    |  |
| ENSG00000227097.5     | RPS28P7         | Pseudogene | 0.52                        | 7.06E-03 | 6.23E-02    | 0.48                            | 1.11E-02 | 1.10E-01    |  |
| ENSG00000227116.1     | RP3-471C18.1    | LncRNA     | 0.57                        | 1.24E-02 | 8.94E-02    | 0.64                            | 3.87E-03 | 5.83E-02    |  |
| ENSG00000227121.1     | RP11-319F12.2   | LncRNA     | -0.91                       | 3.87E-04 | 8.78E-03    | -0.90                           | 2.60E-04 | 9.21E-03    |  |
| ENSG00000227158.1     | AC073621.2      | Pseudogene | 0.70                        | 4.30E-03 | 4.56E-02    | 0.75                            | 1.78E-03 | 3.44E-02    |  |
| ENSG00000227183.3     | HDGFP1          | Pseudogene | -1.09                       | 5.36E-06 | 3.14E-04    | -1.03                           | 9.58E-06 | 7.37E-04    |  |
| ENSG00000227191.5     | TRGC2           | Other      | 0.52                        | 3.75E-03 | 4.17E-02    | 0.43                            | 1.21E-02 | 1.15E-01    |  |
| ENSG00000227192.1     | RP1-4514.3      | LncRNA     | 0.32                        | 8.78E-03 | 7.16E-02    | 0.31                            | 8.70E-03 | 9.44E-02    |  |
| ENSG00000227203.3     | SUB1P1          | Pseudogene | 0.49                        | 5.97E-04 | 1.18E-02    | 0.46                            | 8.12E-04 | 2.03E-02    |  |
| ENSG00000227232.5     | WASH7P          | Pseudogene | 0.94                        | 2.15E-15 | 9.64E-13    | 0.91                            | 2.00E-15 | 1.30E-12    |  |
| ENSG00000227258.4     | SMIM2-AS1       | LncRNA     | 0.37                        | 1.19E-02 | 8.71E-02    | 0.36                            | 1.11E-02 | 1.10E-01    |  |
| ENSG00000227288.3     | RP5-837I24.1    | Pseudogene | 0.50                        | 3.89E-04 | 8.83E-03    | 0.53                            | 7.28E-05 | 3.56E-03    |  |
| ENSG00000227301.1     | RP11-384P7.5    | LncRNA     | 0.73                        | 2.38E-03 | 3.08E-02    | 0.67                            | 4.06E-03 | 6.04E-02    |  |
| ENSG00000227308.2     | AC009502.4      | LncRNA     | 0.72                        | 3.25E-03 | 3.80E-02    | 0.66                            | 5.87E-03 | 7.51E-02    |  |
| ENSG00000227359.1     | AC017074.2      | LncRNA     | -0.80                       | 3.91E-05 | 1.57E-03    | -0.76                           | 7.49E-06 | 5.99E-04    |  |
| ENSG00000227370.1     | RP4-669P10.19   | Pseudogene | 0.49                        | 5.30E-04 | 1.10E-02    | 0.44                            | 1.45E-03 | 3.00E-02    |  |
| ENSG00000227398.3     | KIF9-AS1        | LncRNA     | 0.19                        | 1.26E-02 | 9.03E-02    | 0.10                            | 1.66E-01 | 4.61E-01    |  |
| ENSG00000227440.1     | ATP5G1P4        | Pseudogene | -0.49                       | 8.49E-03 | 7.03E-02    | -0.58                           | 1.12E-03 | 2.53E-02    |  |
| ENSG00000227467.3     | LINC01537       | LncRNA     | -0.36                       | 1.34E-02 | 9.38E-02    | -0.31                           | 2.66E-02 | 1.80E-01    |  |
| ENSG00000227492.1     | RP11-316M12.6   | LncRNA     | 0.41                        | 1.51E-04 | 4.34E-03    | 0.32                            | 2.06E-03 | 3.82E-02    |  |
| ENSG00000227495.1     | AC109333.10     | LncRNA     | 0.34                        | 1.18E-02 | 8.63E-02    | 0.21                            | 1.15E-01 | 3.88E-01    |  |
| ENSG00000227514.3     | RP11-709P2.1    | Pseudogene | 0.62                        | 7.03E-03 | 6.22E-02    | 0.62                            | 5.44E-03 | 7.16E-02    |  |
| ENSG00000227518.3     | XXYuc-YRM2039.3 | LncRNA     | 0.56                        | 4.59E-03 | 4.76E-02    | 0.38                            | 5.12E-02 | 2.58E-01    |  |
| ENSG00000227543.4     | SPAG5-AS1       | LncRNA     | 0.22                        | 8.50E-03 | 7.04E-02    | 0.13                            | 1.01E-01 | 3.64E-01    |  |
| ENSG00000227568.1     | SNX18P26        | Pseudogene | 0.73                        | 4.03E-03 | 4.37E-02    | 0.69                            | 5.38E-03 | 7.12E-02    |  |
| ENSG00000227578.1     | RPS3AP53        | Pseudogene | 0.78                        | 1.52E-04 | 4.34E-03    | 0.16                            | 4.27E-01 | 7.11E-01    |  |
| ENSG00000227586.5     | RP11-162A23.5   | Pseudogene | 0.55                        | 1.60E-03 | 2.35E-02    | 0.49                            | 3.84E-03 | 5.81E-02    |  |
| ENSG00000227592.1     | PIGFP3          | Pseudogene | 1.33                        | 2.19E-07 | 2.16E-05    | 0.18                            | 4.78E-01 | 7.46E-01    |  |
| ENSG00000227603.1     | RP11-165J3.6    | LncRNA     | 0.34                        | 2.56E-04 | 6.46E-03    | 0.31                            | 6.56E-04 | 1.76E-02    |  |
| ENSG00000227615.1     | RP11-864N7.2    | Pseudogene | 0.58                        | 4.43E-06 | 2.68E-04    | 0.61                            | 4.23E-07 | 5.76E-05    |  |
| ENSG00000227666.1     | CYCS2P4         | Pseudogene | 0.45                        | 9.43E-03 | 7.48E-02    | 0.28                            | 9.49E-02 | 3.53E-01    |  |
| ENSG00000227676.3     | LINC01068       | LncRNA     | -0.77                       | 2.28E-04 | 5.96E-03    | -0.72                           | 3.40E-04 | 1.11E-02    |  |
| ENSG00000227698.1     | AP001619.2      | LncRNA     | 0.42                        | 1.02E-02 | 7.85E-02    | 0.26                            | 1.01E-01 | 3.64E-01    |  |
| ENSG00000227712.1     | RP11-418J17.3   | LncRNA     | 0.60                        | 5.21E-03 | 5.15E-02    | 0.55                            | 7.60E-03 | 8.72E-02    |  |
| ENSG00000227730.2     | MTND6P5         | Pseudogene | 0.92                        | 3.02E-04 | 7.35E-03    | 0.57                            | 2.23E-02 | 1.63E-01    |  |
| ENSG00000227744.4     | FLJ43879        | LncRNA     | 1.74                        | 8.87E-15 | 3.58E-12    | 0.25                            | 2.25E-01 | 5.35E-01    |  |
| ENSG00000227803.2     | RP11-239H6.2    | LncRNA     | 0.55                        | 3.09E-03 | 3.65E-02    | 0.41                            | 2.36E-02 | 1.68E-01    |  |
| ENSG00000227825.4     | SLC9A7P1        | Pseudogene | -0.40                       | 2.38E-03 | 3.08E-02    | -0.28                           | 3.03E-02 | 1.93E-01    |  |
| ENSG00000227835.7     | CARM1P1         | Pseudogene | 1.00                        | 2.72E-05 | 1.16E-03    | 1.03                            | 7.87E-06 | 6.27E-04    |  |
| ENSG00000227879.2     | PSPC1P1         | Pseudogene | -0.32                       | 1.39E-02 | 9.64E-02    | -0.36                           | 3.31E-03 | 5.27E-02    |  |
| ENSG00000227887.1     | RPS26P13        | Pseudogene | 0.67                        | 7.43E-05 | 2.53E-03    | 0.64                            | 6.79E-05 | 3.37E-03    |  |
| ENSG00000227888.4     | FAM66A          | LncRNA     | -0.47                       | 4.71E-03 | 4.83E-02    | -0.35                           | 3.12E-02 | 1.96E-01    |  |
| ENSG00000227895.5     | ISX-AS1         | LncRNA     | 0.82                        | 1.41E-04 | 4.12E-03    | 0.79                            | 1.53E-04 | 6.28E-03    |  |
| ENSG00000227896.2     | RP11-77P6.2     | LncRNA     | 0.41                        | 1.30E-03 | 2.03E-02    | 0.30                            | 1.41E-02 | 1.25E-01    |  |
| ENSG00000227945.1     | RP11-103C16.2   | LncRNA     | 0.49                        | 5.73E-03 | 5.47E-02    | 0.43                            | 1.15E-02 | 1.12E-01    |  |
| ENSG00000227948.4     | AC003989.4      | Pseudogene | 0.66                        | 9.69E-03 | 7.61E-02    | -0.02                           | 9.27E-01 | 9.75E-01    |  |
| ENSG00000227953.5     | LINC01341       | LncRNA     | 0.58                        | 8.43E-04 | 1.51E-02    | 0.41                            | 1.52E-02 | 1.31E-01    |  |
| ENSG00000228000.1     | RPL7AP65        | Pseudogene | 0.58                        | 1.37E-02 | 9.55E-02    | 0.50                            | 2.76E-02 | 1.83E-01    |  |
| ENSG00000228021.6     | RP11-383C5.3    | LncRNA     | 0.38                        | 2.26E-03 | 2.96E-02    | 0.28                            | 2.08E-02 | 1.56E-01    |  |
| ENSG00000228038.1     | VNIR51P         | Pseudogene | 0.66                        | 2.85E-03 | 3.47E-02    | 0.47                            | 2.76E-02 | 1.83E-01    |  |
| ENSG00000228039.3     | KB-1125A3.10    | Pseudogene | 0.56                        | 6.82E-04 | 1.30E-02    | 0.59                            | 1.85E-04 | 7.26E-03    |  |
| ENSG00000228065.9     | LINC01515       | LncRNA     | -0.40                       | 8.59E-03 | 7.08E-02    | -0.29                           | 4.77E-02 | 2.48E-01    |  |
| ENSG00000228067.1     | RP11-61J19.3    | LncRNA     | 0.64                        | 6.25E-03 | 5.81E-02    | -0.36                           | 1.19E-01 | 3.96E-01    |  |
| ENSG00000228074.1     | UBBP5           | Pseudogene | -0.61                       | 1.47E-02 | 9.99E-02    | -0.64                           | 8.12E-03 | 9.07E-02    |  |
| ENSG00000228079.2     | AC012368.1      | LncRNA     | 0.53                        | 3.75E-03 | 4.17E-02    | 0.35                            | 4.89E-02 | 2.51E-01    |  |
| ENSG00000228086.1     | RP5-837M10.4    | LncRNA     | 0.56                        | 1.54E-03 | 2.29E-02    | 0.31                            | 7.37E-02 | 3.11E-01    |  |
| ENSG0000022810        |                 |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol    | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000228146.5     | CASP16         | Protein    | 0.44                        | 7.83E-04 | 1.44E-02    | 0.31                            | 1.31E-02 | 1.20E-01    |  |
| ENSG00000228157.4     | AC007952.5     | LncRNA     | 0.76                        | 5.49E-04 | 1.12E-02    | 0.77                            | 3.08E-04 | 1.04E-02    |  |
| ENSG00000228166.1     | MTND1P11       | Pseudogene | 0.80                        | 1.66E-03 | 2.41E-02    | 0.41                            | 9.62E-02 | 3.55E-01    |  |
| ENSG00000228172.4     | RP1-317E23.3   | LncRNA     | 0.19                        | 7.36E-03 | 6.41E-02    | 0.16                            | 1.73E-02 | 1.42E-01    |  |
| ENSG00000228201.1     | AL022341.3     | LncRNA     | 0.36                        | 1.25E-02 | 8.99E-02    | 0.21                            | 1.40E-01 | 4.27E-01    |  |
| ENSG00000228217.1     | AL390877.1     | Pseudogene | -1.33                       | 1.23E-10 | 2.66E-08    | -1.28                           | 1.46E-10 | 4.65E-08    |  |
| ENSG00000228232.1     | GAPDHP1        | Pseudogene | 0.89                        | 8.80E-06 | 4.70E-04    | 0.86                            | 9.13E-06 | 7.08E-04    |  |
| ENSG00000228238.1     | GSI-304P7.2    | Pseudogene | 1.09                        | 9.13E-07 | 7.23E-05    | 0.29                            | 1.82E-01 | 4.83E-01    |  |
| ENSG00000228252.7     | COL6A4P2       | Pseudogene | 0.80                        | 2.20E-05 | 9.97E-04    | 0.65                            | 3.53E-04 | 1.14E-02    |  |
| ENSG00000228259.3     | RP11-1379J22.7 | Pseudogene | 0.89                        | 1.79E-04 | 4.95E-03    | 0.86                            | 2.23E-04 | 8.40E-03    |  |
| ENSG00000228265.4     | RALY-AS1       | LncRNA     | 0.24                        | 1.08E-02 | 8.17E-02    | 0.18                            | 4.00E-02 | 2.25E-01    |  |
| ENSG00000228307.1     | OR2S1P         | Pseudogene | 0.81                        | 2.72E-05 | 1.16E-03    | 0.80                            | 1.72E-05 | 1.15E-03    |  |
| ENSG00000228314.1     | CYP4F29P       | Pseudogene | 0.97                        | 8.98E-06 | 4.79E-04    | 0.98                            | 3.20E-06 | 3.02E-04    |  |
| ENSG00000228315.10    | GUSBP11        | LncRNA     | 0.37                        | 2.05E-03 | 2.79E-02    | 0.28                            | 1.49E-02 | 1.30E-01    |  |
| ENSG00000228318.3     | AP001610.5     | LncRNA     | 1.04                        | 5.16E-06 | 3.03E-04    | 0.12                            | 6.06E-01 | 8.26E-01    |  |
| ENSG00000228335.1     | AC073063.10    | Pseudogene | 0.30                        | 8.91E-04 | 1.56E-02    | 0.19                            | 2.63E-02 | 1.78E-01    |  |
| ENSG00000228349.1     | RPS26P4        | Pseudogene | 3.55                        | 2.71E-44 | 6.83E-41    | 3.49                            | 3.12E-45 | 1.37E-41    |  |
| ENSG00000228352.2     | RP11-537H15.3  | LncRNA     | 0.47                        | 7.30E-04 | 1.37E-02    | 0.31                            | 2.10E-02 | 1.57E-01    |  |
| ENSG00000228376.3     | GAS2L1P2       | Pseudogene | 0.91                        | 1.45E-05 | 7.04E-04    | 0.75                            | 2.39E-04 | 8.77E-03    |  |
| ENSG00000228389.1     | AC068039.4     | LncRNA     | 0.40                        | 1.07E-02 | 8.12E-02    | 0.48                            | 1.49E-03 | 3.06E-02    |  |
| ENSG00000228393.3     | LINC01004      | LncRNA     | 0.30                        | 1.26E-02 | 9.04E-02    | 0.16                            | 1.64E-01 | 4.58E-01    |  |
| ENSG00000228407.2     | RP4-800M22.1   | Pseudogene | 0.46                        | 1.97E-05 | 9.16E-04    | 0.49                            | 2.01E-06 | 2.10E-04    |  |
| ENSG00000228409.4     | CCT6P1         | Pseudogene | 0.31                        | 3.62E-05 | 1.47E-03    | 0.22                            | 2.01E-03 | 3.75E-02    |  |
| ENSG00000228413.1     | AC024937.2     | Pseudogene | 0.51                        | 4.06E-03 | 4.39E-02    | 0.39                            | 2.13E-02 | 1.59E-01    |  |
| ENSG00000228415.2     | PTMAP1         | Pseudogene | 0.42                        | 6.93E-03 | 6.18E-02    | 0.32                            | 3.20E-02 | 1.99E-01    |  |
| ENSG00000228431.1     | ARL5AP3        | Pseudogene | 0.60                        | 5.26E-03 | 5.18E-02    | 0.53                            | 1.12E-02 | 1.10E-01    |  |
| ENSG00000228446.2     | AC073052.1     | Pseudogene | 0.49                        | 4.95E-04 | 1.05E-02    | 0.44                            | 1.08E-03 | 2.48E-02    |  |
| ENSG00000228463.7     | AP006222.2     | LncRNA     | 0.37                        | 7.58E-03 | 6.53E-02    | 0.45                            | 7.57E-04 | 1.94E-02    |  |
| ENSG00000228466.1     | TUBB4AP1       | Pseudogene | 0.69                        | 3.66E-03 | 4.10E-02    | 0.01                            | 9.53E-01 | 9.84E-01    |  |
| ENSG00000228477.1     | RP3-342P20.2   | Pseudogene | 0.56                        | 7.49E-06 | 4.14E-04    | 0.52                            | 1.38E-05 | 9.69E-04    |  |
| ENSG00000228486.8     | LINC01125      | LncRNA     | 0.43                        | 2.17E-04 | 5.74E-03    | 0.29                            | 9.97E-03 | 1.03E-01    |  |
| ENSG00000228501.2     | RPL15P18       | Pseudogene | 2.90                        | 7.44E-59 | 3.00E-55    | -0.13                           | 3.52E-01 | 6.53E-01    |  |
| ENSG00000228502.1     | EEF1A1P11      | Pseudogene | 0.73                        | 4.14E-08 | 4.99E-06    | 0.15                            | 2.03E-01 | 5.10E-01    |  |
| ENSG00000228509.4     | AC006460.2     | LncRNA     | 0.70                        | 1.22E-03 | 1.94E-02    | 0.55                            | 8.74E-03 | 9.46E-02    |  |
| ENSG00000228526.2     | RP3-510D11.1   | LncRNA     | 0.49                        | 7.46E-05 | 2.53E-03    | 0.37                            | 1.82E-03 | 3.49E-02    |  |
| ENSG00000228544.1     | CCDC183-AS1    | LncRNA     | 0.26                        | 6.95E-03 | 6.18E-02    | 0.16                            | 9.83E-02 | 3.59E-01    |  |
| ENSG00000228546.2     | CTA-313A17.3   | Pseudogene | 0.54                        | 1.83E-03 | 2.57E-02    | 0.54                            | 1.34E-03 | 2.86E-02    |  |
| ENSG00000228549.3     | RP11-108M9.3   | LncRNA     | 1.66                        | 3.97E-22 | 3.48E-19    | 1.72                            | 2.26E-25 | 3.90E-22    |  |
| ENSG00000228569.1     | AC073133.2     | LncRNA     | -0.83                       | 4.66E-05 | 1.78E-03    | -0.69                           | 4.66E-04 | 1.40E-02    |  |
| ENSG00000228598.1     | MACC1-AS1      | LncRNA     | 1.55                        | 3.52E-10 | 6.99E-08    | 0.46                            | 5.43E-02 | 2.66E-01    |  |
| ENSG00000228606.1     | RP11-574F21.2  | LncRNA     | 0.21                        | 1.15E-02 | 8.51E-02    | 0.15                            | 6.37E-02 | 2.89E-01    |  |
| ENSG00000228612.2     | HK2P1          | Pseudogene | 1.23                        | 6.82E-11 | 1.58E-08    | 1.27                            | 2.48E-12 | 1.13E-09    |  |
| ENSG00000228630.4     | HOTAIR         | LncRNA     | 0.61                        | 6.68E-03 | 6.03E-02    | 0.50                            | 2.19E-02 | 1.61E-01    |  |
| ENSG00000228634.1     | RP4-534N18.2   | LncRNA     | 0.65                        | 5.04E-04 | 1.06E-02    | 0.57                            | 1.54E-03 | 3.13E-02    |  |
| ENSG00000228649.7     | AC005682.5     | LncRNA     | 0.47                        | 1.80E-04 | 4.98E-03    | 0.38                            | 1.79E-03 | 3.45E-02    |  |
| ENSG00000228658.1     | RP11-791O21.5  | LncRNA     | 0.94                        | 9.36E-06 | 4.94E-04    | 0.19                            | 3.11E-01 | NA          |  |
| ENSG00000228674.4     | CTB-147C22.3   | Pseudogene | -0.75                       | 2.01E-03 | 2.76E-02    | -0.80                           | 7.30E-04 | 1.89E-02    |  |
| ENSG00000228679.1     | RP4-676J13.2   | LncRNA     | 0.48                        | 1.16E-02 | 8.56E-02    | 0.55                            | 2.90E-03 | 4.84E-02    |  |
| ENSG00000228696.7     | ARL17B         | Protein    | 0.53                        | 1.92E-05 | 9.00E-04    | 0.58                            | 1.17E-06 | 1.35E-04    |  |
| ENSG00000228701.1     | TNKS2-AS1      | LncRNA     | -0.60                       | 2.75E-05 | 1.17E-03    | -0.64                           | 3.72E-06 | 3.42E-04    |  |
| ENSG00000228708.1     | AL109763.1     | LncRNA     | 0.54                        | 1.13E-04 | 3.48E-03    | -0.05                           | 6.78E-01 | NA          |  |
| ENSG00000228753.1     | EIF4BP2        | Pseudogene | -0.69                       | 7.84E-04 | 1.44E-02    | -0.60                           | 2.56E-03 | 4.44E-02    |  |
| ENSG00000228782.6     | CTD-2026D20.3  | Pseudogene | 0.24                        | 2.95E-03 | 3.54E-02    | 0.20                            | 1.16E-02 | 1.13E-01    |  |
| ENSG00000228784.6     | LINC00954      | LncRNA     | 0.39                        | 5.55E-03 | 5.37E-02    | 0.34                            | 1.02E-02 | 1.04E-01    |  |
| ENSG00000228791.6     | THRBS-AS1      | LncRNA     | 0.26                        | 6.96E-03 | 6.19E-02    | 0.16                            | 9.27E-02 | 3.49E-01    |  |
| ENSG00000228793.1     | RP1-223B1.1    | LncRNA     | 0.97                        | 6.40E-05 | 2.25E-03    | 1.18                            | 7.08E-07 | 8.76E-05    |  |
| ENSG00000228794.7     | LINC01128      | LncRNA     | -0.37                       | 2.75E-04 | 6.85E-03    | -0.26                           | 9.10E-03 | 9.71E-02    |  |
| ENSG00000228798.1     | AP000473.5     | LncRNA     | 0.71                        | 1.76E-06 | 1.25E-04    | 0.54                            | 1.93E-04 | 7.48E-03    |  |
| ENSG00000228812.6     | LAM45-AS1      | LncRNA     | -0.56                       | 1.00E-02 | 7.79E-02    | -0.36                           | 7.53E-02 | 3.15E-01    |  |
| ENSG00000228829.1     | AC005077.5     | Pseudogene | 0.61                        | 1.25E-02 | 8.98E-02    | 0.50                            | 3.78E-02 | 2.17E-01    |  |
| ENSG00000228834.1     | RP11-249L21.4  | Pseudogene | 1.10                        | 1.67E-06 | 1.20E-04    | 1.13                            | 3.74E-07 | 5.20E-05    |  |
| ENSG00000228857.2     | AC104653.1     | LncRNA     | -0.58                       | 8.58E-05 | 2.82E-03    | -0.59                           | 3.54E-05 | 2.03E-03    |  |
| ENSG00000228863.7     | RP11-404F10.2  | LncRNA     | 0.71                        | 4.10E-04 | 9.17E-03    | 0.65                            | 7.85E-04 | 1.99E-02    |  |
| ENSG00000228874.1     | AC090954.5     | Pseudogene | 0.74                        | 1.21E-03 | 1.94E-02    | 0.23                            | 3.06E-01 | 6.15E-01    |  |
| ENSG00000228877.2     | RP11-473E2.4   | LncRNA     | 0.61                        | 5.35E-03 | 5.24E-02    | 0.73                            | 6.47E-04 | 1.76E-02    |  |
| ENSG00000228906.1     | RP13-216E22.4  | LncRNA     | -0.35                       | 2.23E-03 | 2.94E-02    | -0.30                           | 6.69E-03 | 8.09E-02    |  |
| ENSG00000228933.6     | RP11-268G12.1  | LncRNA     | 0.74                        | 3.96E-03 | 4.33E-02    | 0.58                            | 2.01E-02 | 1.54E-01    |  |
| ENSG00000228981.3     | RP11-364L4.1   | Pseudogene | 1.52                        | 4.73E-23 | 4.65E-20    | 0.39                            | 3.17E-03 | 5.13E-02    |  |
| ENSG00000229009.6     | TMPRSS11GP     | Pseudogene | 0.66                        | 9.93E-03 | 7.73E-02    | 0.20                            | 4.23E-01 | 7.08E-01    |  |
| ENSG00000229010.1     | RP5-979D14.1   | Pseudogene | 0.63                        | 8.70E-03 | 7.14E-02    | 0.54                            | 2.17E-02 | 1.60E-01    |  |
| ENSG00000229017.5     | LINC01277      | LncRNA     | 0.45                        | 4.54E-05 | 1.74E-03    | 0.42                            | 6.34E-05 | 3.18E-03    |  |
| ENSG00000229028.2     | KRT223P        | Pseudogene | 0.82                        | 7.46E-04 | 1.39E-02    | 0.29                            | 2.02E-01 | 5.09E-01    |  |
| ENSG00000229032.1     | RP11-91A18.1   | Pseudogene | 2.80                        | 3.08E-35 | 6.53E-32    | 2.70                            | 1.18E-34 | 3.90E-31    |  |
| ENSG00000229046.1     | HMGNI1P2       | Pseudogene | 0.60                        | 1.06E-02 | 8.06E-02    | 0.49                            | 3.31E-02 | 2.02E-01    |  |
| ENSG00000229068.1     | TMPOPI         | Pseudogene | 0.54                        | 1.11E-02 | 8.32E-02    | 0.46                            | 2.73E-02 | 1.83E-01    |  |
| ENSG00000229081.1     | LINC01165      | LncRNA     | 0.53                        | 4.94E-03 | 4.97E-02    | 0.41                            | 2.47E-02 | 1.72E-01    |  |
| ENSG00000229091.2     | HSPA8P8        | Pseudogene | 0.85                        | 2.40E-06 | 1.63E-04    | 0.92                            | 1.29E-07 | 2.09E-05    |  |
| ENSG00000229129.1     | ACTG1P2        | Pseudogene | -0.68                       | 7.67E-03 | 6.58E-02    | -0.67                           | 6.87E-03 | 8.22E-02    |  |
| ENSG00000229180.5     | GSI-124K5.11   | LncRNA     | 0.20                        | 3.37E-03 | 3.88E-02    | 0.12                            | 6.75E-02 | 2.98E-01    |  |
| ENSG00000229184.2     | ATP5HP2        | Pseudogene | 0.47                        | 8.62E-03 | 7.09E-02    | 0.49                            | 4.06E-03 | 6.04E-02    |  |
| ENSG00000229222.1     | KRT18P4        | Pseudogene | 0.42                        | 5.32E-04 | 1.10E-02    | 0.35                            | 2.73E-03 | 4.64E-02    |  |
| ENSG00000229240.6     | LINC00710      | LncRNA     | 1.68                        | 4.32E-11 | 1.03E-08    | -0.12                           | 6.30E-01 | 8.39E-01    |  |
| ENSG00000229255.1     | RP11-407H12.8  | LncRNA     | 1.13                        | 8.44E-06 | 4.53E-04    | 1.04                            | 2.53E-05 | 1.57E-03    |  |
| ENSG00000229278.1     | RP11-483F11.7  | LncRNA     | 0.41                        | 2.99E-03 | 3.57E-02    | 0.42                            | 1.53E-03 | 3.12E-02    |  |
| ENSG00000229280.1     | EEF1DP6        | Pseudogene | 0.62                        | 1.43E-02 | 9.82E-02    | 0.52                            | 3.63E-02 | 2.12E-01    |  |
| ENSG00000229314.5     | ORM1           | Protein    | -0.66                       | 9.59E-03 | 7.56E-02    | -1.17                           | 2.31E-06 | 2.34E-04    |  |
| ENSG00000229321.1     | AC008269.2     | LncRNA     | 0.44                        | 8.50E-03 | 7.04E-02    | 0.36                            | 2.69E-02 | 1.81E-01    |  |
| ENSG00000229327.1     | RP11-135A24.2  | LncRNA     | -0.75                       | 3.64E-03 | 4.08E-02    | -0.69                           | 5.19E-03 | 6.97E-02    |  |
| ENSG00000229332.2     | PGBD4P8        | Pseudogene | 0.60                        | 1.19E-02 | 8.73E-02    | 0.57                            | 1.33E-02 | 1.21E-01    |  |
| ENSG00000229344.1     | RP5-857K21.7   | Pseudogene | -0.52                       | 7.01E-03 | 6.21E-02    | -0.04                           | 7.35E-01 | 8.92E-01    |  |
| ENSG00000229367.1     | HMGNI2P19      | Pseudogene | -0.67                       | 8.67E-04 | 1.54E-02    | -0.46                           | 1.74E-02 | 1.42E-01    |  |
| ENSG00000229369.1     | RP13-225O21.5  | Pseudogene | 0.74                        | 3.90E-03 | 4.28E-02    | 0.69                            | 5.56E-03 | 7.24E-02    |  |
| ENSG00000229390.1     | MICD           | Pseudogene | 1.03                        | 1.65E-07 | 1.68E-05    | 0.97                            | 3.63E-07 | 5.08E-05    |  |
| ENSG00000229393.1     | RP3-395M20.3   | LncRNA     | 0.53                        | 5.82E-03 | 5.52E-02    | 0.53                            | 4.13E-03 | 6.11E-02    |  |
| ENSG00000229395.1     | AC013401.1     | LncRNA     | 0.65                        | 1.08E-02 | 8.16E-02    | 0.45                            | 6.93E-02 | 3.01E-01    |  |
| ENSG00000229417.1     | NPM1P25        | Pseudogene | 0.31                        | 1.77E-03 | 2.52E-02    | 0.34                            | 3.65E-04 | 1.17E-02    |  |
| ENSG00000229431.1     | RP1-92O14.6    | LncRNA     | 0.33                        | 1.01E-02 | 7.81E-02    | 0.09                            | 4.91E-01 | 7.54E-01    |  |
| ENSG00000229442.2     | THEMIS3P       | Pseudogene | -0.69                       | 5.70E-03 | 5.46E-02    | -0.58                           | 1.60E-02 | 1.35E-01    |  |
| ENSG00000229474.5     | PATL2          | Protein    | 0.58                        | 1.34E-05 | 6.59E-04    | 0.47                            | 2.15E-04 | 8.13E-03    |  |
| ENSG00000229512.1     | AC068580.5     | LncRNA     | 0.50                        | 2.09E-04 | 5.56E-03    | 0.29                            | 3.02E-02 | 1.93E-01    |  |
| ENSG00000229550.1     | AC012445.1     | LncRNA     | 0.61                        | 1.23E-03 | 1.97E-02    | 0.65                            | 3.29E-04 | 1.08E-02    |  |
| ENSG00000229569.1     | RP11-481G8.2   | LncRNA     | 0.63                        | 5.60E-03 | 5.40E-02    | 0.60                            | 6.88E-03 | 8.22E-02    |  |
| ENSG00000229598.1     | PRDX3P1        | Pseudogene | 0.37                        | 7.23E-03 | 6.33E-02    | 0.33                            | 1.29E-02 | 1.19E-01    |  |
| ENSG00000229604.2     | MTATP8P2       |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |           |             |  |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|-----------|-------------|--|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value   | adj p value |  |
| ENSG00000229727.5     | <i>AC013460.1</i>     | LncRNA     | 0.85                        | 7.99E-06 | 4.36E-04    | 0.68                            | 2.45E-04  | 8.95E-03    |  |
| ENSG00000229780.1     | <i>UBE2Q1-AS1</i>     | LncRNA     | 0.69                        | 1.82E-05 | 8.59E-04    | 0.50                            | 1.33E-03  | 2.85E-02    |  |
| ENSG00000229848.1     | <i>RP13-766D20.2</i>  | LncRNA     | 0.31                        | 6.54E-03 | 5.96E-02    | 0.14                            | 2.09E-01  | 5.17E-01    |  |
| ENSG00000229854.1     | <i>RP11-524G24.2</i>  | LncRNA     | 0.48                        | 1.10E-02 | 8.25E-02    | 0.42                            | 1.87E-02  | 1.48E-01    |  |
| ENSG00000229859.7     | <i>PGA3</i>           | Protein    | 0.74                        | 2.27E-03 | 2.97E-02    | 0.18                            | 4.26E-01  | 7.10E-01    |  |
| ENSG00000229867.1     | <i>STEAP3-AS1</i>     | LncRNA     | 0.37                        | 2.43E-03 | 3.12E-02    | 0.32                            | 6.72E-03  | 8.11E-02    |  |
| ENSG00000229873.1     | <i>OGFR-AS1</i>       | LncRNA     | 0.47                        | 2.33E-05 | 1.03E-03    | 0.29                            | 9.10E-03  | 9.71E-02    |  |
| ENSG00000229896.2     | <i>RP11-456H18.2</i>  | LncRNA     | 0.78                        | 3.09E-06 | 2.01E-04    | 0.63                            | 9.86E-05  | 4.48E-03    |  |
| ENSG00000229913.1     | <i>RP11-378I13.1</i>  | LncRNA     | 0.61                        | 4.21E-03 | 4.50E-02    | 0.56                            | 6.50E-03  | 7.97E-02    |  |
| ENSG00000229915.1     | <i>AC016999.2</i>     | LncRNA     | 0.50                        | 1.85E-03 | 2.59E-02    | 0.43                            | 5.43E-03  | 7.16E-02    |  |
| ENSG00000229921.5     | <i>KIF25-AS1</i>      | LncRNA     | -0.68                       | 6.98E-03 | 6.20E-02    | -0.68                           | 4.98E-03  | 6.81E-02    |  |
| ENSG00000229928.1     | <i>LINC00400</i>      | LncRNA     | 1.00                        | 3.72E-11 | 9.08E-09    | 0.02                            | 8.77E-01  | NA          |  |
| ENSG00000229939.1     | <i>RP11-111F16.2</i>  | Pseudogene | -1.11                       | 1.95E-23 | 2.01E-20    | -1.06                           | 4.88E-23  | 6.67E-20    |  |
| ENSG00000229948.2     | <i>B3GALNT1P1</i>     | Pseudogene | 0.60                        | 7.31E-03 | 6.38E-02    | 0.66                            | 2.28E-03  | 4.09E-02    |  |
| ENSG00000229986.1     | <i>AP001042.1</i>     | LncRNA     | 1.27                        | 1.32E-07 | 1.39E-05    | 0.33                            | 1.61E-01  | NA          |  |
| ENSG00000229990.3     | <i>RP11-574K11.8</i>  | LncRNA     | 0.70                        | 3.29E-03 | 3.83E-02    | -0.01                           | 9.49E-01  | 9.83E-01    |  |
| ENSG00000229999.5     | <i>RP5-1042K10.10</i> | LncRNA     | 0.51                        | 2.92E-03 | 3.52E-02    | 0.45                            | 5.65E-03  | 7.34E-02    |  |
| ENSG00000230022.1     | <i>FNTAP2</i>         | Pseudogene | 0.93                        | 3.27E-05 | 1.35E-03    | 0.28                            | 1.92E-01  | 4.96E-01    |  |
| ENSG00000230039.1     | <i>RP11-314A15.2</i>  | Pseudogene | -0.83                       | 5.33E-04 | 1.10E-02    | -0.55                           | 1.88E-02  | 1.48E-01    |  |
| ENSG00000230076.1     | <i>AC016708.2</i>     | Pseudogene | 1.79                        | 1.41E-14 | 5.56E-12    | 1.84                            | 3.71E-16  | 2.67E-13    |  |
| ENSG00000230149.2     | <i>RP3-308I15.19</i>  | LncRNA     | 0.31                        | 7.83E-03 | 6.67E-02    | 0.22                            | 5.15E-02  | 2.59E-01    |  |
| ENSG00000230177.1     | <i>RP5-1112D6.4</i>   | LncRNA     | 0.28                        | 4.98E-03 | 5.00E-02    | 0.32                            | 7.15E-04  | 1.87E-02    |  |
| ENSG00000230201.5     | <i>ATP6V0CP1</i>      | Pseudogene | 0.72                        | 2.40E-03 | 3.08E-02    | 0.56                            | 1.48E-02  | 1.29E-01    |  |
| ENSG00000230202.1     | <i>RP11-632C17_A_</i> | Pseudogene | 1.22                        | 4.77E-17 | 2.56E-14    | 1.27                            | 7.26E-20  | 7.37E-17    |  |
| ENSG00000230204.1     | <i>FTH1P5</i>         | Pseudogene | -0.35                       | 5.49E-03 | 5.35E-02    | -0.40                           | 7.60E-04  | 1.95E-02    |  |
| ENSG00000230212.5     | <i>AP000688.14</i>    | LncRNA     | 0.49                        | 3.00E-04 | 7.32E-03    | 0.42                            | 1.17E-03  | 2.60E-02    |  |
| ENSG00000230286.1     | <i>AC013472.4</i>     | LncRNA     | 1.34                        | 7.61E-10 | 1.37E-07    | -0.21                           | 3.38E-01  | NA          |  |
| ENSG00000230289.1     | <i>RP11-334J6.6</i>   | LncRNA     | 0.42                        | 4.55E-03 | 4.73E-02    | 0.32                            | 2.31E-02  | 1.66E-01    |  |
| ENSG00000230303.4     | <i>RP11-213G2.2</i>   | LncRNA     | 0.58                        | 3.40E-04 | 8.04E-03    | 0.45                            | 3.89E-03  | 5.85E-02    |  |
| ENSG00000230314.5     | <i>ELOVL2-AS1</i>     | LncRNA     | 0.64                        | 1.59E-04 | 4.50E-03    | 0.52                            | 1.58E-03  | 3.18E-02    |  |
| ENSG00000230342.2     | <i>FANCD2P2</i>       | Pseudogene | 0.68                        | 7.31E-03 | 6.38E-02    | 0.61                            | 1.37E-02  | 1.24E-01    |  |
| ENSG00000230355.1     | <i>AC009474.2</i>     | Pseudogene | -0.67                       | 3.76E-03 | 4.17E-02    | -0.65                           | 3.67E-03  | 5.66E-02    |  |
| ENSG00000230415.1     | <i>RP5-902P8.10</i>   | LncRNA     | 0.48                        | 6.51E-04 | 1.26E-02    | 0.28                            | 3.95E-02  | 2.22E-01    |  |
| ENSG00000230423.1     | <i>XX-C2158C6.1</i>   | LncRNA     | 0.88                        | 5.70E-04 | 1.15E-02    | 0.84                            | 6.87E-04  | 1.83E-02    |  |
| ENSG00000230425.1     | <i>RSU1P1</i>         | Pseudogene | 0.79                        | 1.24E-03 | 1.97E-02    | 0.74                            | 1.98E-03  | 3.70E-02    |  |
| ENSG00000230438.6     | <i>SERPINB9P1</i>     | LncRNA     | 0.59                        | 4.45E-04 | 9.70E-03    | 0.61                            | 1.52E-04  | 6.26E-03    |  |
| ENSG00000230448.4     | <i>LINC00276</i>      | LncRNA     | 1.42                        | 7.82E-12 | 2.19E-09    | 0.28                            | 1.59E-01  | 4.53E-01    |  |
| ENSG00000230450.1     | <i>NEK2P4</i>         | Pseudogene | 0.88                        | 3.22E-04 | 7.72E-03    | 0.72                            | 2.48E-03  | 4.35E-02    |  |
| ENSG00000230454.1     | <i>U73166.2</i>       | LncRNA     | 0.49                        | 3.53E-04 | 8.24E-03    | 0.25                            | 6.89E-02  | 3.00E-01    |  |
| ENSG00000230470.1     | <i>GSI-115G20.1</i>   | LncRNA     | 0.60                        | 2.48E-03 | 3.16E-02    | 0.66                            | 5.71E-04  | 1.61E-02    |  |
| ENSG00000230471.1     | <i>LAI6c-2F2.8</i>    | LncRNA     | 0.75                        | 3.11E-03 | 3.67E-02    | 0.37                            | 1.36E-01  | 4.20E-01    |  |
| ENSG00000230524.7     | <i>COL6A4P1</i>       | Pseudogene | 1.06                        | 2.10E-08 | 2.76E-06    | -0.08                           | 6.62E-01  | 8.55E-01    |  |
| ENSG00000230537.1     | <i>RP11-305L7.1</i>   | LncRNA     | 0.42                        | 8.47E-03 | 7.02E-02    | 0.33                            | 3.08E-02  | 1.95E-01    |  |
| ENSG00000230549.3     | <i>USP17L1</i>        | Protein    | -0.65                       | 1.17E-02 | 8.59E-02    | -0.50                           | 4.28E-02  | 2.33E-01    |  |
| ENSG00000230551.4     | <i>CTB-89H12.4</i>    | LncRNA     | 0.32                        | 6.06E-04 | 1.20E-02    | 0.29                            | 1.39E-03  | 2.92E-02    |  |
| ENSG00000230561.3     | <i>LINC001183</i>     | LncRNA     | 0.41                        | 8.64E-05 | 2.83E-03    | 0.52                            | 1.87E-07  | 2.88E-05    |  |
| ENSG00000230581.2     | <i>ACTG1P14</i>       | Pseudogene | 0.42                        | 5.34E-04 | 1.10E-02    | 0.43                            | 2.07E-04  | 7.89E-03    |  |
| ENSG00000230584.1     | <i>CCT5P2</i>         | Pseudogene | -0.62                       | 5.72E-03 | 5.47E-02    | -0.50                           | 2.08E-02  | 1.57E-01    |  |
| ENSG00000230606.9     | <i>AC159540.1</i>     | LncRNA     | 0.50                        | 1.92E-04 | 5.23E-03    | 0.51                            | 7.72E-05  | 3.72E-03    |  |
| ENSG00000230613.1     | <i>HM13-AS1</i>       | LncRNA     | 0.50                        | 1.48E-04 | 4.29E-03    | 0.50                            | 6.04E-05  | 3.06E-03    |  |
| ENSG00000230637.2     | <i>CTA-246H3.8</i>    | Pseudogene | 0.85                        | 1.08E-06 | 8.36E-05    | 0.76                            | 5.73E-06  | 4.83E-04    |  |
| ENSG00000230641.1     | <i>USP12-AS2</i>      | LncRNA     | 1.48                        | 7.70E-14 | 2.82E-11    | 1.21                            | 5.74E-10  | 1.62E-07    |  |
| ENSG00000230646.1     | <i>KLF2P2</i>         | Pseudogene | 1.11                        | 1.13E-07 | 1.23E-05    | 0.86                            | 2.42E-05  | 1.52E-03    |  |
| ENSG00000230648.1     | <i>RP3-406P24.3</i>   | LncRNA     | 0.70                        | 2.23E-05 | 1.00E-03    | 0.58                            | 2.59E-04  | 9.21E-03    |  |
| ENSG00000230655.3     | <i>OR7E55P</i>        | Pseudogene | 0.68                        | 5.88E-03 | 5.57E-02    | 0.71                            | 3.26E-03  | 5.22E-02    |  |
| ENSG00000230658.1     | <i>KLHL7-AS1</i>      | LncRNA     | 0.53                        | 5.07E-04 | 1.07E-02    | 0.40                            | 6.08E-03  | 7.66E-02    |  |
| ENSG00000230663.1     | <i>FAM224B</i>        | LncRNA     | 0.62                        | 4.93E-03 | 4.97E-02    | 0.67                            | 1.73E-03  | 3.40E-02    |  |
| ENSG00000230709.1     | <i>AC104024.1</i>     | LncRNA     | 0.57                        | 9.12E-03 | 7.35E-02    | 0.56                            | 9.06E-03  | 9.68E-02    |  |
| ENSG00000230734.1     | <i>RPL10P3</i>        | Pseudogene | -0.89                       | 1.32E-10 | 2.84E-08    | -0.90                           | 1.90E-11  | 7.22E-09    |  |
| ENSG00000230736.2     | <i>RP1-149A16.3</i>   | LncRNA     | 0.44                        | 1.97E-03 | 2.72E-02    | 0.29                            | 3.21E-02  | 1.99E-01    |  |
| ENSG00000230741.1     | <i>SC22CB-ID7.1</i>   | LncRNA     | 0.58                        | 1.38E-02 | 9.57E-02    | 0.48                            | 3.44E-02  | 2.06E-01    |  |
| ENSG00000230781.1     | <i>RP1-215K18.4</i>   | Pseudogene | 0.68                        | 7.97E-03 | 6.74E-02    | 0.66                            | 8.14E-03  | 9.07E-02    |  |
| ENSG00000230793.1     | <i>SMARCE1P5</i>      | Pseudogene | 0.62                        | 2.12E-05 | 9.68E-04    | -0.32                           | 8.99E-03  | 9.64E-02    |  |
| ENSG00000230804.2     | <i>C2orf27AP3</i>     | Pseudogene | 1.18                        | 3.12E-07 | 2.93E-05    | 0.98                            | 1.44E-05  | 1.00E-03    |  |
| ENSG00000230812.4     | <i>LINC01358</i>      | LncRNA     | 0.43                        | 5.57E-03 | 5.39E-02    | 0.48                            | 1.20E-03  | 2.66E-02    |  |
| ENSG00000230844.2     | <i>ZNF674-AS1</i>     | LncRNA     | 0.19                        | 7.82E-03 | 6.67E-02    | 0.15                            | 3.66E-02  | 2.13E-01    |  |
| ENSG00000230852.1     | <i>RP11-51G5.1</i>    | LncRNA     | 0.78                        | 2.03E-03 | 2.77E-02    | 0.85                            | 5.23E-04  | 1.52E-02    |  |
| ENSG00000230873.7     | <i>STMND1</i>         | Protein    | -0.99                       | 2.03E-05 | 9.37E-04    | -0.80                           | 2.51E-04  | 9.10E-03    |  |
| ENSG00000230910.2     | <i>RP3-525N10.2</i>   | LncRNA     | 0.60                        | 1.18E-03 | 1.91E-02    | 0.51                            | 4.03E-03  | 6.00E-02    |  |
| ENSG00000230911.1     | <i>PPIHP1</i>         | Pseudogene | -0.51                       | 1.14E-02 | 8.46E-02    | -0.56                           | 3.82E-03  | 5.80E-02    |  |
| ENSG00000230916.2     | <i>RP11-10B2.1</i>    | Pseudogene | 4.07                        | 1.90E-97 | 2.56E-93    | 4.01                            | 1.97E-101 | 3.90E-97    |  |
| ENSG00000230945.1     | <i>LINC01507</i>      | LncRNA     | 0.63                        | 5.79E-03 | 5.50E-02    | 0.55                            | 1.37E-02  | 1.23E-01    |  |
| ENSG00000230978.1     | <i>LINC00160</i>      | LncRNA     | 0.58                        | 9.24E-03 | 7.40E-02    | 0.52                            | 1.67E-02  | 1.39E-01    |  |
| ENSG00000231027.1     | <i>AC079325.6</i>     | Pseudogene | 0.91                        | 1.00E-04 | 3.15E-03    | 1.02                            | 1.00E-06  | 1.18E-04    |  |
| ENSG00000231056.1     | <i>RP1-290I10.5</i>   | LncRNA     | 1.04                        | 3.78E-05 | 1.52E-03    | 0.04                            | 8.69E-01  | 9.53E-01    |  |
| ENSG00000231073.1     | <i>RP11-316M1.3</i>   | LncRNA     | 0.40                        | 1.02E-02 | 7.86E-02    | 0.21                            | 1.71E-01  | 4.68E-01    |  |
| ENSG00000231087.2     | <i>FDPSP7</i>         | Pseudogene | 0.91                        | 1.06E-05 | 5.47E-04    | 0.84                            | 2.59E-05  | 1.60E-03    |  |
| ENSG00000231105.1     | <i>RP5-107I1N3.1</i>  | LncRNA     | 0.45                        | 3.58E-04 | 8.32E-03    | 0.31                            | 1.20E-02  | 1.14E-01    |  |
| ENSG00000231113.2     | <i>RP3-475N16.1</i>   | LncRNA     | 0.16                        | 1.00E-02 | 7.77E-02    | 0.17                            | 3.82E-03  | 5.80E-02    |  |
| ENSG00000231125.2     | <i>AF129075.5</i>     | LncRNA     | 0.24                        | 6.99E-03 | 6.21E-02    | 0.23                            | 6.17E-03  | 7.73E-02    |  |
| ENSG00000231128.4     | <i>RP5-1073O3.2</i>   | LncRNA     | 0.65                        | 4.43E-03 | 4.65E-02    | 0.57                            | 9.84E-03  | 1.02E-01    |  |
| ENSG00000231154.1     | <i>MORF4L2-AS1</i>    | LncRNA     | 0.34                        | 4.68E-03 | 4.81E-02    | 0.19                            | 1.11E-01  | 3.82E-01    |  |
| ENSG00000231173.1     | <i>AC116609.3</i>     | LncRNA     | 0.76                        | 2.28E-03 | 2.99E-02    | 0.68                            | 5.07E-03  | 6.87E-02    |  |
| ENSG00000231202.1     | <i>TRGYB</i>          | Other      | -0.68                       | 1.38E-04 | 4.06E-03    | -0.80                           | 3.85E-06  | 3.51E-04    |  |
| ENSG00000231217.1     | <i>RP11-1M18.1</i>    | LncRNA     | 0.51                        | 1.70E-03 | 2.44E-02    | 0.47                            | 2.13E-03  | 3.90E-02    |  |
| ENSG00000231233.1     | <i>CCDC147-AS1</i>    | LncRNA     | 0.37                        | 5.16E-03 | 5.12E-02    | 0.33                            | 9.32E-03  | 9.84E-02    |  |
| ENSG00000231236.2     | <i>AP001604.3</i>     | LncRNA     | 1.10                        | 3.78E-06 | 2.35E-04    | 0.58                            | 1.27E-02  | 1.19E-01    |  |
| ENSG00000231241.1     | <i>RPS3AP3</i>        | Pseudogene | 0.63                        | 1.25E-02 | 8.97E-02    | 0.52                            | 3.42E-02  | 2.05E-01    |  |
| ENSG00000231259.4     | <i>AC125232.1</i>     | Pseudogene | -0.29                       | 1.15E-03 | 1.88E-02    | -0.30                           | 4.57E-04  | 1.38E-02    |  |
| ENSG00000231305.3     | <i>RP11-723O4.2</i>   | LncRNA     | 0.69                        | 9.24E-08 | 1.03E-05    | 0.49                            | 1.23E-04  | 5.32E-03    |  |
| ENSG00000231331.1     | <i>AC103563.2</i>     | Pseudogene | 1.00                        | 5.91E-05 | 2.12E-03    | 0.99                            | 4.48E-05  | 2.44E-03    |  |
| ENSG00000231336.1     | <i>AC017006.3</i>     | LncRNA     | 1.49                        | 5.29E-09 | 8.23E-07    | 0.61                            | 1.47E-02  | NA          |  |
| ENSG00000231355.1     | <i>AP000302.58</i>    | LncRNA     | 0.59                        | 2.24E-03 | 2.95E-02    | 0.51                            | 6.52E-03  | 7.98E-02    |  |
| ENSG00000231359.3     | <i>AC072052.7</i>     | Pseudogene | 0.38                        | 5.41E-04 | 1.11E-02    | 0.27                            | 1.03E-02  | 1.04E-01    |  |
| ENSG00000231367.4     | <i>AC016995.3</i>     | LncRNA     | -0.32                       | 1.27E-02 | 9.05E-02    | -0.26                           | 3.47E-02  | 2.07E-01    |  |
| ENSG00000231384.1     | <i>AC007919.19</i>    | Pseudogene | 0.66                        | 8.70E-03 | 7.14E-02    | 0.60                            | 1.47E-02  | 1.29E-01    |  |
| ENSG00000231393.1     | <i>RP11-331F9.3</i>   | LncRNA     | 0.65                        | 2.20E-03 | 2.91E-02    | 0.59                            | 3.77E-03  | 5.76E-02    |  |
| ENSG00000231421.6     | <i>AC006050.2</i>     | LncRNA     | 1.48                        | 2.04E-10 | 4.26E-08    | 0.33                            | 1.50E-01  | 4.40E-01    |  |
| ENSG00000231431.6     | <i>FAR2P4</i>         | Pseudogene | 0.59                        | 7.38E-03 | 6.41E-02    | 0.47                            | 2.64E-02  | 1.79E-01    |  |
| ENSG00000231459.1     | <i>LINC00032</i>      | LncRNA     | 0.62                        | 1.31E-03 |             |                                 |           |             |  |

| Gene ID (GENCODE v22) | Gene symbol            | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|------------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                        |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000231579.3     | <i>RPL7P21</i>         | Pseudogene | -0.53                       | 1.00E-02 | 7.78E-02    | -0.54                           | 6.23E-03 | 7.76E-02    |
| ENSG00000231663.1     | <i>RP5-827C21.4</i>    | LncRNA     | 0.32                        | 4.60E-03 | 4.76E-02    | 0.25                            | 2.12E-02 | 1.58E-01    |
| ENSG00000231686.1     | <i>RP1-203P18.1</i>    | Pseudogene | -0.54                       | 9.41E-04 | 1.63E-02    | -0.47                           | 2.91E-03 | 4.84E-02    |
| ENSG00000231703.2     | <i>RP4-669H2.1</i>     | LncRNA     | -0.37                       | 1.28E-02 | 9.12E-02    | -0.31                           | 3.25E-02 | 2.00E-01    |
| ENSG00000231721.5     | <i>LINC-PINT</i>       | LncRNA     | 0.34                        | 3.75E-04 | 8.58E-03    | 0.22                            | 1.49E-02 | 1.30E-01    |
| ENSG00000231742.4     | <i>LINC01273</i>       | LncRNA     | -0.51                       | 1.59E-03 | 2.35E-02    | -0.41                           | 8.27E-03 | 9.18E-02    |
| ENSG00000231760.4     | <i>RP11-350J20.5</i>   | LncRNA     | 0.69                        | 9.35E-07 | 7.36E-05    | 0.69                            | 3.21E-07 | 4.57E-05    |
| ENSG00000231770.4     | <i>TMEM44-AS1</i>      | LncRNA     | 0.34                        | 2.24E-04 | 5.87E-03    | 0.30                            | 6.27E-04 | 1.72E-02    |
| ENSG00000231784.7     | <i>DBIL5P</i>          | Pseudogene | 0.34                        | 8.92E-05 | 2.90E-03    | 0.41                            | 9.25E-07 | 1.10E-04    |
| ENSG00000231830.1     | <i>XX-FW83128A1.2</i>  | LncRNA     | 0.82                        | 4.47E-08 | 5.28E-06    | 0.77                            | 6.99E-08 | 1.23E-05    |
| ENSG00000231840.1     | <i>AC073342.12</i>     | LncRNA     | 0.59                        | 3.32E-03 | 3.85E-02    | 0.41                            | 3.80E-02 | 2.18E-01    |
| ENSG00000231858.4     | <i>AC067945.4</i>      | LncRNA     | 0.55                        | 3.96E-03 | 4.32E-02    | 0.37                            | 4.79E-02 | 2.48E-01    |
| ENSG00000231870.4     | <i>KRT17P3</i>         | Pseudogene | 0.88                        | 3.03E-04 | 7.37E-03    | 0.82                            | 5.01E-04 | 1.48E-02    |
| ENSG00000231871.4     | <i>IP09-AS1</i>        | LncRNA     | 0.25                        | 6.32E-03 | 5.85E-02    | 0.15                            | 9.64E-02 | 3.55E-01    |
| ENSG00000231887.5     | <i>PRH1</i>            | Protein    | 0.54                        | 1.03E-06 | 8.03E-05    | 0.64                            | 1.75E-09 | 4.57E-07    |
| ENSG00000231910.1     | <i>GAMTP2</i>          | Pseudogene | 0.48                        | 1.00E-02 | 7.79E-02    | 0.60                            | 8.63E-04 | 2.12E-02    |
| ENSG00000231931.1     | <i>AC024082.4</i>      | Pseudogene | -0.65                       | 1.05E-02 | 8.01E-02    | -0.43                           | 8.12E-02 | 3.27E-01    |
| ENSG00000231952.3     | <i>DPY19L1P2</i>       | Pseudogene | 0.33                        | 2.58E-03 | 3.25E-02    | 0.33                            | 1.57E-03 | 3.17E-02    |
| ENSG00000232022.5     | <i>FAAHP1</i>          | Pseudogene | 0.64                        | 7.63E-05 | 2.58E-03    | 0.59                            | 1.27E-04 | 5.47E-03    |
| ENSG00000232023.2     | <i>AC009410.1</i>      | LncRNA     | -0.63                       | 1.31E-02 | 9.28E-02    | -0.39                           | 1.21E-01 | 3.98E-01    |
| ENSG00000232043.1     | <i>RP4-530I15.9</i>    | LncRNA     | 0.50                        | 1.78E-03 | 2.52E-02    | 0.38                            | 1.28E-02 | 1.19E-01    |
| ENSG00000232044.6     | <i>LINC01105</i>       | LncRNA     | 0.78                        | 2.51E-04 | 6.37E-03    | 0.66                            | 1.47E-03 | 3.03E-02    |
| ENSG00000232063.1     | <i>RP11-307E17.8</i>   | LncRNA     | 0.46                        | 3.66E-04 | 8.46E-03    | 0.54                            | 1.62E-05 | 1.11E-03    |
| ENSG00000232075.1     | <i>MRPL35P2</i>        | Pseudogene | 0.35                        | 2.58E-03 | 3.25E-02    | 0.30                            | 7.68E-03 | 8.77E-02    |
| ENSG00000232079.5     | <i>AL035610.1</i>      | LncRNA     | 0.71                        | 3.25E-03 | 3.80E-02    | 0.50                            | 3.21E-02 | 1.99E-01    |
| ENSG00000232102.1     | <i>MTCO3P2</i>         | Pseudogene | 1.15                        | 6.78E-06 | 3.81E-04    | -0.02                           | 9.47E-01 | 9.82E-01    |
| ENSG00000232125.2     | <i>DYTN</i>            | Protein    | -0.76                       | 2.83E-03 | 3.45E-02    | -0.77                           | 1.76E-03 | 3.43E-02    |
| ENSG00000232131.1     | <i>NCOA7-AS1</i>       | LncRNA     | 0.96                        | 1.78E-04 | 4.93E-03    | 0.81                            | 1.07E-03 | 2.46E-02    |
| ENSG00000232149.1     | <i>FERP1</i>           | Pseudogene | 0.37                        | 1.41E-02 | 9.71E-02    | 0.29                            | 4.90E-02 | 2.52E-01    |
| ENSG00000232150.3     | <i>ST13P4</i>          | Pseudogene | -0.38                       | 2.85E-03 | 3.46E-02    | -0.32                           | 8.08E-03 | 9.04E-02    |
| ENSG00000232177.1     | <i>MTND4P24</i>        | Pseudogene | 3.79                        | 4.33E-84 | 2.91E-80    | 3.84                            | 1.53E-92 | 1.51E-88    |
| ENSG00000232187.1     | <i>FTH1P7</i>          | Pseudogene | -0.31                       | 1.04E-03 | 1.74E-02    | -0.34                           | 1.45E-04 | 6.05E-03    |
| ENSG00000232216.1     | <i>IGHV3-43</i>        | Other      | 0.88                        | 1.93E-04 | 5.25E-03    | 0.82                            | 3.39E-04 | 1.11E-02    |
| ENSG00000232227.4     | <i>AC013401.2</i>      | LncRNA     | 1.80                        | 8.19E-13 | 2.60E-10    | 0.32                            | 1.85E-01 | 4.87E-01    |
| ENSG00000232228.1     | <i>RP11-7707.1</i>     | Pseudogene | 0.47                        | 7.08E-03 | 6.25E-02    | 0.51                            | 2.48E-03 | 4.34E-02    |
| ENSG00000232237.3     | <i>ASCL5</i>           | Protein    | -0.67                       | 2.61E-05 | 1.13E-03    | -0.78                           | 4.38E-07 | 5.88E-05    |
| ENSG00000232260.2     | <i>BTF3L4P1</i>        | Pseudogene | 0.40                        | 1.09E-02 | 8.22E-02    | 0.34                            | 2.41E-02 | 1.70E-01    |
| ENSG00000232265.6     | <i>XXyac-YX155B6.5</i> | LncRNA     | 0.68                        | 4.38E-03 | 4.62E-02    | 0.69                            | 2.91E-03 | 4.85E-02    |
| ENSG00000232268.5     | <i>OR52I1</i>          | Protein    | 0.66                        | 3.03E-03 | 3.61E-02    | 0.61                            | 4.62E-03 | 6.51E-02    |
| ENSG00000232283.1     | <i>RP11-240L7.4</i>    | LncRNA     | 0.60                        | 2.12E-03 | 2.85E-02    | 0.46                            | 1.55E-02 | 1.33E-01    |
| ENSG00000232285.1     | <i>TCEB2P3</i>         | Pseudogene | -0.61                       | 1.44E-02 | 9.86E-02    | -0.57                           | 1.63E-02 | NA          |
| ENSG00000232298.2     | <i>RP11-10N16.3</i>    | LncRNA     | 0.55                        | 1.24E-02 | 8.93E-02    | 0.59                            | 5.69E-03 | 7.37E-02    |
| ENSG00000232303.2     | <i>DFFBFP1</i>         | Pseudogene | 0.56                        | 5.89E-05 | 2.12E-03    | 0.42                            | 2.07E-03 | 3.83E-02    |
| ENSG00000232320.6     | <i>AC009299.5</i>      | Pseudogene | 0.36                        | 6.57E-03 | 5.97E-02    | 0.39                            | 2.51E-03 | 4.39E-02    |
| ENSG00000232341.2     | <i>RPL4P2</i>          | Pseudogene | 0.39                        | 1.23E-02 | 8.89E-02    | 0.37                            | 1.33E-02 | 1.22E-01    |
| ENSG00000232352.1     | <i>SEMA3B-AS1</i>      | LncRNA     | 0.39                        | 3.05E-03 | 3.62E-02    | 0.22                            | 8.99E-02 | 3.43E-01    |
| ENSG00000232354.6     | <i>VIPR1-AS1</i>       | LncRNA     | 0.33                        | 6.60E-03 | 5.98E-02    | 0.28                            | 1.74E-02 | 1.43E-01    |
| ENSG00000232380.1     | <i>ZDHHC20P4</i>       | Pseudogene | -0.54                       | 2.26E-03 | 2.96E-02    | -0.46                           | 6.63E-03 | 8.06E-02    |
| ENSG00000232386.8     | <i>RP11-66B24.2</i>    | LncRNA     | -0.29                       | 1.89E-03 | 2.63E-02    | -0.28                           | 1.37E-03 | 2.90E-02    |
| ENSG00000232398.1     | <i>TMPRSS11CP</i>      | Pseudogene | 0.43                        | 4.21E-03 | 4.49E-02    | 0.45                            | 1.69E-03 | 3.33E-02    |
| ENSG00000232411.1     | <i>AC009495.3</i>      | LncRNA     | 0.48                        | 5.19E-03 | 5.13E-02    | 0.40                            | 1.46E-02 | 1.28E-01    |
| ENSG00000232450.1     | <i>RP4-730K3.3</i>     | Pseudogene | 0.40                        | 6.02E-05 | 2.16E-03    | 0.31                            | 1.14E-03 | 2.56E-02    |
| ENSG00000232451.1     | <i>AC016768.1</i>      | LncRNA     | 1.00                        | 4.75E-05 | 1.81E-03    | 0.44                            | 6.82E-02 | 2.99E-01    |
| ENSG00000232455.2     | <i>LARS2-AS1</i>       | LncRNA     | 0.70                        | 9.81E-04 | 1.68E-02    | 0.65                            | 1.56E-03 | 3.16E-02    |
| ENSG00000232482.2     | <i>RP4-654C18.1</i>    | Pseudogene | 0.49                        | 1.23E-02 | 8.88E-02    | 0.45                            | 1.76E-02 | 1.43E-01    |
| ENSG00000232485.2     | <i>AC098820.3</i>      | LncRNA     | 0.32                        | 3.89E-03 | 4.27E-02    | 0.31                            | 3.04E-03 | 4.98E-02    |
| ENSG00000232490.5     | <i>OSBPL10-AS1</i>     | LncRNA     | 0.57                        | 8.71E-03 | 7.14E-02    | 0.38                            | 7.57E-02 | 3.16E-01    |
| ENSG00000232491.1     | <i>SAPCD2P3</i>        | Pseudogene | 0.53                        | 1.31E-02 | 9.28E-02    | 0.44                            | 3.00E-02 | 1.92E-01    |
| ENSG00000232493.2     | <i>RPL12P11</i>        | Pseudogene | 0.48                        | 6.99E-03 | 6.21E-02    | 0.45                            | 7.79E-03 | 8.85E-02    |
| ENSG00000232532.1     | <i>RP11-63K6.7</i>     | LncRNA     | 1.21                        | 6.85E-08 | 7.88E-06    | 0.38                            | 7.45E-02 | NA          |
| ENSG00000232573.1     | <i>RPL3P4</i>          | Pseudogene | 0.82                        | 2.47E-08 | 3.17E-06    | 0.88                            | 4.77E-10 | 1.40E-07    |
| ENSG00000232578.4     | <i>CTC-303L1.1</i>     | Pseudogene | 4.32                        | 3.38E-88 | 2.72E-84    | 0.05                            | 7.82E-01 | 9.15E-01    |
| ENSG00000232593.5     | <i>KANTR</i>           | LncRNA     | 1.20                        | 5.80E-14 | 2.21E-11    | 1.19                            | 1.16E-14 | 6.97E-12    |
| ENSG00000232599.1     | <i>RP1-161N10.1</i>    | Pseudogene | 0.95                        | 1.36E-05 | 6.65E-04    | 0.85                            | 5.56E-05 | 2.90E-03    |
| ENSG00000232608.1     | <i>TIMM9P2</i>         | Pseudogene | 0.48                        | 1.38E-02 | 9.57E-02    | 0.45                            | 1.64E-02 | 1.38E-01    |
| ENSG00000232615.4     | <i>CTD-2012J19.1</i>   | Pseudogene | 0.51                        | 1.94E-03 | 2.68E-02    | 0.41                            | 9.92E-03 | 1.02E-01    |
| ENSG00000232618.1     | <i>RP11-439L18.1</i>   | LncRNA     | 0.46                        | 6.73E-03 | 6.06E-02    | 0.35                            | 3.57E-02 | 2.10E-01    |
| ENSG00000232645.4     | <i>LINC01431</i>       | LncRNA     | 0.31                        | 9.56E-03 | 7.54E-02    | 0.21                            | 6.61E-02 | 2.95E-01    |
| ENSG00000232648.3     | <i>RP11-367N14.2</i>   | LncRNA     | 0.56                        | 2.07E-08 | 2.73E-06    | 0.50                            | 1.08E-07 | 1.81E-05    |
| ENSG00000232654.1     | <i>FAM136BP</i>        | Pseudogene | -0.60                       | 1.33E-02 | 9.33E-02    | -0.61                           | 8.99E-03 | 9.64E-02    |
| ENSG00000232667.8     | <i>AC004862.6</i>      | LncRNA     | -0.76                       | 2.76E-03 | 3.40E-02    | -0.60                           | 1.41E-02 | 1.26E-01    |
| ENSG00000232685.4     | <i>LINC00442</i>       | LncRNA     | 0.78                        | 1.64E-03 | 2.39E-02    | 0.80                            | 8.25E-04 | 2.06E-02    |
| ENSG00000232716.2     | <i>AC016831.6</i>      | Pseudogene | 0.77                        | 2.25E-03 | 2.96E-02    | 0.24                            | 3.23E-01 | 6.29E-01    |
| ENSG00000232732.8     | <i>AC073043.1</i>      | LncRNA     | 0.56                        | 6.74E-04 | 1.29E-02    | 0.44                            | 6.22E-03 | 7.76E-02    |
| ENSG00000232750.2     | <i>RP11-177A2.5</i>    | Pseudogene | 0.66                        | 6.89E-04 | 1.31E-02    | 0.41                            | 2.99E-02 | 1.91E-01    |
| ENSG00000232774.6     | <i>FLJ22447</i>        | LncRNA     | 0.39                        | 2.40E-06 | 1.63E-04    | 0.43                            | 6.30E-08 | 1.12E-05    |
| ENSG00000232814.2     | <i>COL4A2-AS1</i>      | LncRNA     | 0.47                        | 7.90E-03 | 6.71E-02    | 0.39                            | 2.31E-02 | 1.66E-01    |
| ENSG00000232815.1     | <i>RP11-764K9.2</i>    | Pseudogene | 0.38                        | 1.01E-02 | 7.83E-02    | 0.36                            | 1.15E-02 | 1.12E-01    |
| ENSG00000232828.1     | <i>AF196970.3</i>      | LncRNA     | 0.87                        | 6.16E-07 | 5.18E-05    | 0.85                            | 2.79E-07 | 4.07E-05    |
| ENSG00000232862.4     | <i>RP4-665N4.4</i>     | Pseudogene | -0.54                       | 4.14E-03 | 4.45E-02    | -0.30                           | 1.03E-01 | 3.68E-01    |
| ENSG00000232889.2     | <i>AC087499.4</i>      | Pseudogene | 1.02                        | 6.03E-05 | 2.16E-03    | 1.03                            | 2.99E-05 | NA          |
| ENSG00000232909.1     | <i>RP3-510O8.4</i>     | LncRNA     | 0.55                        | 5.18E-04 | 1.08E-02    | 0.34                            | 2.79E-02 | 1.84E-01    |
| ENSG00000232934.6     | <i>RP11-324O2.3</i>    | LncRNA     | 0.28                        | 1.20E-02 | 8.75E-02    | 0.22                            | 4.13E-02 | 2.29E-01    |
| ENSG00000232940.4     | <i>HCG25</i>           | LncRNA     | 0.22                        | 1.10E-02 | 8.29E-02    | 0.17                            | 4.81E-02 | 2.49E-01    |
| ENSG00000232956.7     | <i>SNHG15</i>          | LncRNA     | 0.27                        | 2.88E-03 | 3.49E-02    | 0.17                            | 5.62E-02 | 2.70E-01    |
| ENSG00000232987.1     | <i>LINC01219</i>       | LncRNA     | 0.64                        | 8.32E-03 | 6.94E-02    | 0.57                            | 1.53E-02 | 1.32E-01    |
| ENSG00000232995.6     | <i>RG53</i>            | LncRNA     | 0.39                        | 1.03E-06 | 8.03E-05    | 0.39                            | 5.09E-07 | 6.69E-05    |
| ENSG00000233006.5     | <i>AC034220.3</i>      | LncRNA     | 0.35                        | 4.34E-04 | 9.53E-03    | 0.33                            | 5.75E-04 | 1.62E-02    |
| ENSG00000233012.2     | <i>HDAC1P2</i>         | Pseudogene | 1.38                        | 2.55E-13 | 8.64E-11    | 0.27                            | 1.14E-01 | 3.86E-01    |
| ENSG00000233016.5     | <i>SNHG7</i>           | LncRNA     | 0.33                        | 4.18E-03 | 4.47E-02    | 0.20                            | 6.90E-02 | 3.01E-01    |
| ENSG00000233029.3     | <i>RP11-439A17.9</i>   | LncRNA     | 0.46                        | 1.20E-02 | 8.74E-02    | 0.18                            | 3.27E-01 | 6.33E-01    |
| ENSG00000233033.1     | <i>CASK-AS1</i>        | LncRNA     | 0.49                        | 8.69E-03 | 7.13E-02    | 0.30                            | 9.86E-02 | 3.59E-01    |
| ENSG00000233052.1     | <i>RP11-398B16.2</i>   | LncRNA     | -0.63                       | 1.29E-02 | 9.14E-02    | -0.46                           | 6.50E-02 | 2.91E-01    |
| ENSG00000233068.2     | <i>RP1-140K8.1</i>     | LncRNA     | 0.76                        | 1.06E-03 | 1.78E-02    | 0.68                            | 2.85E-03 | 4.77E-02    |
| ENSG00000233080.2     | <i>LINC01399</i>       | LncRNA     | 0.42                        | 1.37E-02 | 9.55E-02    | 0.43                            | 8.13E-03 | 9.07E-02    |
| ENSG00000233081.1     | <i>RP11-440G5.2</i>    | LncRNA     | 0.51                        | 2.72E-03 | 3.36E-02    | 0.38                            | 1.92E-02 | 1.50E-01    |
| ENSG00000233084.2     | <i>AL672183.2</i>      | Pseudogene | -0.44                       | 4.34E-03 | 4.58E-02    | -0.47                           | 1.49E-03 | 3.06E-02    |
| ENSG00000233093.4     | <i>LINC00892</i>       | LncRNA     | 0.54                        | 2.69E-03 | 3.34E-02    | 0.39                            | 2.52E-02 | 1.74E-01    |
| ENSG00000233098.7     | <i>CCDC144NL-AS1</i>   | LncRNA     | 0.51                        | 1.91E-04 | 5.21E-03    | 0.29                            | 3.29E-02 | 2.01E-01    |
| ENSG00000233110.1     | <i>RP11-301L8.2</i>    | LncRNA     | 0.36                        | 1.43E-02 | 9.82E-02    | 0.33                            | 2.08E-02 | 1.56E-01    |
| ENSG00000233115.4     | <i>FAM90A1IP</i>       | Pseudogene | 0.81                        | 1.33E-03 | 2.07E-02    | 0.79                            | 1.18E-03 | NA          |
| ENSG00000233121.1     | <i>VNIR20P</i>         | Pseudogene | -0.49                       | 3.40E-03 | 3.90E-02    | -0.44                           | 6.21E-03 | 7.76E-02    |
| ENSG00000233122.2     | <i>CTAGE7P</i>         | Pseudogene | 0.50                        | 5.34E-04 | 1.10E-02    | 0.34                            | 1.48E-02 | 1.29E-01    |
| ENSG00000233125.2     | <i>ACTBP12</i>         | Pseudogene | 1.16                        | 6.33E-06 | 3.60E-04    | 1.19                            |          |             |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000233198.3     | <i>RNF224</i>        | Protein    | 0.57                        | 4.02E-05 | 1.60E-03    | 0.32                            | 1.90E-02 | 1.49E-01    |
| ENSG00000233200.1     | <i>RP11-324I22.2</i> | LncRNA     | 0.67                        | 4.22E-03 | 4.50E-02    | 0.57                            | 1.25E-02 | 1.17E-01    |
| ENSG00000233215.4     | <i>AP000472.2</i>    | LncRNA     | -0.61                       | 9.57E-03 | 7.55E-02    | -0.57                           | 1.28E-02 | 1.19E-01    |
| ENSG00000233217.1     | <i>MROH3P</i>        | Pseudogene | 0.69                        | 2.95E-03 | 3.54E-02    | 0.20                            | 3.54E-01 | 6.55E-01    |
| ENSG00000233225.3     | <i>AC004987.9</i>    | Pseudogene | -0.28                       | 1.78E-03 | 2.53E-02    | -0.26                           | 2.87E-03 | 4.80E-02    |
| ENSG00000233246.1     | <i>RP11-415J8.5</i>  | LncRNA     | 0.50                        | 6.62E-04 | 1.28E-02    | 0.45                            | 1.55E-03 | 3.15E-02    |
| ENSG00000233250.1     | <i>RP3-339A18.6</i>  | LncRNA     | 0.37                        | 5.77E-03 | 5.49E-02    | 0.25                            | 5.28E-02 | 2.62E-01    |
| ENSG00000233251.6     | <i>AC007743.1</i>    | LncRNA     | 0.39                        | 5.52E-03 | 5.36E-02    | 0.40                            | 2.59E-03 | 4.47E-02    |
| ENSG00000233278.1     | <i>RPS26P2</i>       | Pseudogene | 0.71                        | 5.11E-04 | 1.07E-02    | 0.70                            | 3.44E-04 | 1.12E-02    |
| ENSG00000233293.1     | <i>RP11-410N8.3</i>  | LncRNA     | 1.02                        | 4.78E-05 | 1.81E-03    | 0.99                            | 5.13E-05 | 2.73E-03    |
| ENSG00000233295.3     | <i>FAM90A20P</i>     | Pseudogene | -1.05                       | 1.64E-07 | 1.68E-05    | -0.93                           | 1.63E-06 | 1.78E-04    |
| ENSG00000233297.4     | <i>RASA4DP</i>       | Pseudogene | 0.85                        | 2.04E-09 | 3.39E-07    | 0.75                            | 3.99E-08 | 7.53E-06    |
| ENSG00000233306.2     | <i>TRGV2</i>         | Other      | 0.80                        | 9.05E-05 | 2.93E-03    | 0.95                            | 1.47E-06 | 1.62E-04    |
| ENSG00000233330.1     | <i>RP1-12G14.7</i>   | LncRNA     | -0.26                       | 2.58E-03 | 3.25E-02    | -0.18                           | 2.93E-02 | 1.89E-01    |
| ENSG00000233332.1     | <i>RP4-799P18.2</i>  | LncRNA     | -0.81                       | 1.49E-04 | 4.30E-03    | -0.80                           | 5.70E-05 | 2.94E-03    |
| ENSG00000233337.1     | <i>UBE2FP3</i>       | Pseudogene | 0.37                        | 2.05E-05 | 9.44E-04    | 0.39                            | 2.72E-06 | 2.67E-04    |
| ENSG00000233347.1     | <i>ERP29P1</i>       | Pseudogene | -0.57                       | 2.75E-05 | 1.17E-03    | -0.46                           | 5.26E-04 | 1.52E-02    |
| ENSG00000233369.6     | <i>RP11-396K3.1</i>  | Pseudogene | -0.28                       | 7.63E-04 | 1.41E-02    | -0.27                           | 5.73E-04 | 1.62E-02    |
| ENSG00000233392.4     | <i>AC104809.4</i>    | LncRNA     | 1.63                        | 1.23E-11 | 3.25E-09    | -0.24                           | 2.98E-01 | 6.08E-01    |
| ENSG00000233393.1     | <i>AP000688.29</i>   | LncRNA     | 0.75                        | 2.42E-06 | 1.65E-04    | 0.72                            | 2.09E-06 | 2.16E-04    |
| ENSG00000233403.1     | <i>RP11-86A5.1</i>   | LncRNA     | 0.80                        | 1.60E-03 | 2.36E-02    | 0.71                            | 4.35E-03 | 6.30E-02    |
| ENSG00000233421.4     | <i>RP5-875O13.1</i>  | LncRNA     | 1.65                        | 4.45E-18 | 2.72E-15    | 1.68                            | 6.22E-20 | 6.49E-17    |
| ENSG00000233426.3     | <i>EIF3FP3</i>       | Pseudogene | -0.48                       | 6.78E-06 | 3.81E-04    | -0.48                           | 3.05E-06 | 2.91E-04    |
| ENSG00000233428.1     | <i>AC019050.1</i>    | Pseudogene | 0.73                        | 3.65E-06 | 2.30E-04    | 0.73                            | 1.23E-06 | 1.40E-04    |
| ENSG00000233432.2     | <i>RP11-344P13.3</i> | Pseudogene | -0.78                       | 8.17E-06 | 4.43E-04    | -0.84                           | 7.52E-07 | 9.23E-05    |
| ENSG00000233444.1     | <i>AC013262.1</i>    | Pseudogene | 1.70                        | 9.99E-12 | 2.70E-09    | 1.15                            | 2.03E-06 | 2.11E-04    |
| ENSG00000233478.1     | <i>RP1-187B23.1</i>  | LncRNA     | 0.39                        | 8.11E-03 | 6.83E-02    | 0.31                            | 2.50E-02 | 1.73E-01    |
| ENSG00000233483.2     | <i>CTD-2020K17.4</i> | LncRNA     | -0.63                       | 8.17E-06 | 4.43E-04    | -0.57                           | 2.41E-05 | 1.52E-03    |
| ENSG00000233487.6     | <i>AC011322.1</i>    | Pseudogene | 0.38                        | 7.70E-04 | 1.42E-02    | 0.27                            | 1.46E-02 | 1.28E-01    |
| ENSG00000233517.1     | <i>AC005162.5</i>    | LncRNA     | 0.78                        | 1.25E-03 | 1.98E-02    | 0.75                            | 1.57E-03 | 3.17E-02    |
| ENSG00000233559.1     | <i>AC016831.7</i>    | LncRNA     | 0.62                        | 8.93E-04 | 1.56E-02    | 0.56                            | 2.07E-03 | 3.83E-02    |
| ENSG00000233569.1     | <i>RP11-500B12.1</i> | LncRNA     | -1.09                       | 7.66E-06 | 4.22E-04    | -0.86                           | 2.56E-04 | 9.20E-03    |
| ENSG00000233593.5     | <i>RP4-665J23.1</i>  | LncRNA     | 0.34                        | 1.48E-02 | 9.99E-02    | 0.36                            | 7.17E-03 | 8.42E-02    |
| ENSG00000233609.3     | <i>RP11-62H7.2</i>   | Pseudogene | 0.51                        | 2.79E-04 | 6.93E-03    | 0.46                            | 5.70E-04 | 1.61E-02    |
| ENSG00000233621.1     | <i>LINC01137</i>     | LncRNA     | 0.44                        | 9.60E-04 | 1.65E-02    | 0.40                            | 1.43E-03 | 2.98E-02    |
| ENSG00000233672.5     | <i>RNA5EH2B-AS1</i>  | LncRNA     | 0.43                        | 4.59E-05 | 1.76E-03    | 0.39                            | 1.25E-04 | 5.39E-03    |
| ENSG00000233695.2     | <i>GAS6-AS1</i>      | LncRNA     | 0.42                        | 1.19E-02 | 8.69E-02    | 0.32                            | 4.38E-02 | 2.36E-01    |
| ENSG00000233723.6     | <i>LINC01122</i>     | LncRNA     | 1.04                        | 2.95E-08 | 3.72E-06    | 0.27                            | 1.32E-01 | 4.15E-01    |
| ENSG00000233730.1     | <i>RP4-666F24.3</i>  | LncRNA     | -0.54                       | 6.87E-03 | 6.13E-02    | -0.44                           | 2.30E-02 | 1.66E-01    |
| ENSG00000233760.1     | <i>AC004947.2</i>    | LncRNA     | -0.92                       | 6.13E-05 | 2.18E-03    | -0.68                           | 2.10E-03 | 3.86E-02    |
| ENSG00000233766.6     | <i>AC098617.1</i>    | LncRNA     | 0.53                        | 1.08E-02 | 8.19E-02    | 0.56                            | 5.31E-03 | 7.06E-02    |
| ENSG00000233776.4     | <i>LINC01251</i>     | LncRNA     | 0.69                        | 1.45E-03 | 2.20E-02    | 0.62                            | 3.22E-03 | 5.17E-02    |
| ENSG00000233778.3     | <i>RP11-777J24.1</i> | Pseudogene | 0.63                        | 1.33E-04 | 3.93E-03    | 0.63                            | 8.28E-05 | 3.91E-03    |
| ENSG00000233785.1     | <i>RP13-314C10.5</i> | LncRNA     | 1.10                        | 8.87E-11 | 2.00E-08    | 1.08                            | 4.03E-11 | 1.42E-08    |
| ENSG00000233820.2     | <i>RP11-535M15.2</i> | Pseudogene | 0.42                        | 3.84E-03 | 4.23E-02    | 0.43                            | 1.89E-03 | 3.58E-02    |
| ENSG00000233830.2     | <i>EIF4HP1</i>       | Pseudogene | -0.31                       | 1.14E-02 | 8.47E-02    | -0.25                           | 3.13E-02 | 1.96E-01    |
| ENSG00000233860.1     | <i>RP11-359D14.2</i> | LncRNA     | 0.57                        | 9.70E-05 | 3.09E-03    | 0.42                            | 2.73E-03 | 4.64E-02    |
| ENSG00000233870.1     | <i>AC007881.4</i>    | Pseudogene | 1.24                        | 9.42E-07 | 7.40E-05    | 1.14                            | 3.98E-06 | 3.58E-04    |
| ENSG00000233871.1     | <i>DLG5-AS1</i>      | LncRNA     | 0.37                        | 4.56E-03 | 4.74E-02    | 0.30                            | 1.79E-02 | 1.44E-01    |
| ENSG00000233878.1     | <i>AC073133.1</i>    | LncRNA     | -0.82                       | 3.39E-05 | 1.40E-03    | -0.56                           | 3.77E-03 | 5.76E-02    |
| ENSG00000233894.1     | <i>RP4-650F12.2</i>  | LncRNA     | -0.87                       | 3.10E-04 | 7.50E-03    | -0.81                           | 5.67E-04 | 1.61E-02    |
| ENSG00000233913.7     | <i>CTC-575D19.1</i>  | Pseudogene | 1.93                        | 3.44E-19 | 2.39E-16    | 1.93                            | 2.07E-20 | 2.22E-17    |
| ENSG00000233929.1     | <i>MT1XP1</i>        | Pseudogene | 0.43                        | 3.34E-03 | 3.87E-02    | 0.44                            | 1.71E-03 | 3.35E-02    |
| ENSG00000233937.5     | <i>CTC-338M12.4</i>  | LncRNA     | 0.36                        | 5.97E-06 | 3.42E-04    | 0.31                            | 7.52E-05 | 3.64E-03    |
| ENSG00000233956.1     | <i>BTF3P6</i>        | Pseudogene | 0.70                        | 1.50E-03 | 2.24E-02    | 0.60                            | 4.94E-03 | 6.77E-02    |
| ENSG00000233977.1     | <i>RP11-310H4.2</i>  | LncRNA     | 0.59                        | 1.03E-02 | 7.94E-02    | 0.49                            | 2.69E-02 | 1.81E-01    |
| ENSG00000233984.1     | <i>RPSAP14</i>       | Pseudogene | 0.27                        | 1.19E-02 | 8.69E-02    | 0.18                            | 7.71E-02 | 3.18E-01    |
| ENSG00000234005.3     | <i>GAPDHP22</i>      | Pseudogene | 0.45                        | 8.50E-03 | 7.04E-02    | 0.33                            | 4.57E-02 | 2.42E-01    |
| ENSG00000234042.1     | <i>RP11-452D2.2</i>  | Pseudogene | 0.99                        | 2.28E-06 | 1.57E-04    | 0.93                            | 4.05E-06 | 3.62E-04    |
| ENSG00000234083.1     | <i>AJ006995.3</i>    | LncRNA     | 0.60                        | 1.47E-02 | 9.95E-02    | 0.51                            | 3.34E-02 | 2.03E-01    |
| ENSG00000234120.1     | <i>AF228730.8</i>    | Pseudogene | -0.64                       | 1.26E-02 | 9.03E-02    | -0.66                           | 7.73E-03 | 8.80E-02    |
| ENSG00000234147.1     | <i>RP3-460G2.2</i>   | LncRNA     | -0.80                       | 3.51E-04 | 8.20E-03    | -0.89                           | 9.87E-06 | 7.51E-04    |
| ENSG00000234148.2     | <i>RP11-395L14.3</i> | LncRNA     | 0.60                        | 1.43E-02 | 9.82E-02    | 0.54                            | 1.99E-02 | 1.53E-01    |
| ENSG00000234171.2     | <i>RNA5EH1-AS1</i>   | LncRNA     | 0.26                        | 9.50E-04 | 1.64E-02    | 0.25                            | 8.28E-04 | 2.07E-02    |
| ENSG00000234176.1     | <i>HSPA8P1</i>       | Pseudogene | 0.42                        | 1.12E-02 | 8.36E-02    | 0.45                            | 4.55E-03 | 6.46E-02    |
| ENSG00000234181.1     | <i>RP11-182N22.8</i> | LncRNA     | 0.55                        | 1.15E-03 | 1.88E-02    | 0.47                            | 3.45E-03 | 5.42E-02    |
| ENSG00000234182.1     | <i>RP11-118K6.2</i>  | LncRNA     | 0.58                        | 5.59E-03 | 5.40E-02    | 0.59                            | 3.36E-03 | 5.32E-02    |
| ENSG00000234185.2     | <i>RP5-1132H15.1</i> | LncRNA     | 0.43                        | 3.09E-03 | 3.65E-02    | 0.35                            | 1.19E-02 | 1.14E-01    |
| ENSG00000234192.1     | <i>RP11-57C13.5</i>  | Pseudogene | 2.58                        | 2.02E-35 | 4.53E-32    | 2.52                            | 7.57E-36 | 2.73E-32    |
| ENSG00000234215.2     | <i>RP5-942I116.1</i> | LncRNA     | 0.47                        | 6.17E-03 | 5.75E-02    | 0.26                            | 1.20E-01 | 3.97E-01    |
| ENSG00000234241.1     | <i>RP4-775C13.1</i>  | Pseudogene | -0.45                       | 7.51E-03 | 6.49E-02    | -0.38                           | 2.03E-02 | 1.54E-01    |
| ENSG00000234263.1     | <i>RP3-325F22.3</i>  | LncRNA     | -0.45                       | 4.07E-03 | 4.40E-02    | -0.48                           | 1.39E-03 | 2.92E-02    |
| ENSG00000234286.1     | <i>AC006026.13</i>   | LncRNA     | -0.43                       | 1.55E-03 | 2.30E-02    | -0.42                           | 1.34E-03 | 2.86E-02    |
| ENSG00000234290.2     | <i>AC116366.6</i>    | LncRNA     | 0.41                        | 1.22E-03 | 1.95E-02    | 0.27                            | 3.07E-02 | 1.94E-01    |
| ENSG00000234322.1     | <i>ST13P18</i>       | Pseudogene | -0.37                       | 9.23E-03 | 7.40E-02    | -0.32                           | 1.72E-02 | 1.42E-01    |
| ENSG00000234338.1     | <i>RP11-797H7.1</i>  | Pseudogene | 1.03                        | 3.00E-09 | 4.88E-07    | 0.38                            | 1.49E-02 | 1.30E-01    |
| ENSG00000234352.8     | <i>AC009264.1</i>    | LncRNA     | -0.77                       | 2.18E-03 | 2.89E-02    | -0.67                           | 6.39E-03 | 7.89E-02    |
| ENSG00000234354.3     | <i>RPS26P47</i>      | Pseudogene | 2.84                        | 1.15E-32 | 2.33E-29    | 1.34                            | 1.52E-10 | 4.80E-08    |
| ENSG00000234369.1     | <i>TATDN1P1</i>      | Pseudogene | 0.50                        | 1.08E-03 | 1.80E-02    | 0.44                            | 3.09E-03 | 5.04E-02    |
| ENSG00000234389.1     | <i>AC007278.3</i>    | LncRNA     | 0.74                        | 5.05E-04 | 1.06E-02    | 0.59                            | 4.55E-03 | 6.46E-02    |
| ENSG00000234396.3     | <i>RP11-181G12.4</i> | LncRNA     | 0.69                        | 2.50E-04 | 6.36E-03    | 0.66                            | 3.22E-04 | 1.07E-02    |
| ENSG00000234423.1     | <i>LINC01250</i>     | LncRNA     | 0.58                        | 1.22E-02 | 8.84E-02    | 0.39                            | 8.46E-02 | 3.33E-01    |
| ENSG00000234424.2     | <i>RP11-213G2.1</i>  | Pseudogene | 0.69                        | 4.21E-05 | 1.65E-03    | 0.61                            | 1.54E-04 | 6.29E-03    |
| ENSG00000234449.2     | <i>RP11-706O15.3</i> | LncRNA     | -0.60                       | 1.32E-02 | 9.28E-02    | -0.56                           | 1.89E-02 | 1.48E-01    |
| ENSG00000234466.1     | <i>RP11-266I3.1</i>  | Pseudogene | -0.70                       | 6.39E-03 | 5.89E-02    | -0.64                           | 1.02E-02 | 1.04E-01    |
| ENSG00000234491.1     | <i>HNRNP1AIP51</i>   | Pseudogene | -0.68                       | 1.80E-03 | 2.54E-02    | -0.73                           | 4.79E-04 | 1.43E-02    |
| ENSG00000234509.1     | <i>AP000253.1</i>    | LncRNA     | 0.37                        | 8.24E-03 | 6.90E-02    | 0.26                            | 5.46E-02 | 2.66E-01    |
| ENSG00000234511.7     | <i>C5orf58</i>       | Protein    | 0.90                        | 1.16E-07 | 1.26E-05    | 0.20                            | 2.11E-01 | 5.18E-01    |
| ENSG00000234513.1     | <i>AC073072.7</i>    | Pseudogene | 0.70                        | 3.93E-06 | 2.43E-04    | 0.65                            | 7.46E-06 | 5.98E-04    |
| ENSG00000234535.1     | <i>RP11-37L2.1</i>   | LncRNA     | -0.70                       | 3.74E-06 | 2.33E-04    | -0.51                           | 5.63E-04 | 1.60E-02    |
| ENSG00000234546.2     | <i>RP3-510D11.2</i>  | LncRNA     | 0.35                        | 7.48E-04 | 1.39E-02    | 0.30                            | 2.29E-03 | 4.11E-02    |
| ENSG00000234558.1     | <i>API5P1</i>        | Pseudogene | -0.55                       | 3.44E-03 | 3.94E-02    | -0.44                           | 1.69E-02 | 1.40E-01    |
| ENSG00000234571.1     | <i>RP5-998N21.4</i>  | LncRNA     | 0.68                        | 1.17E-03 | 1.89E-02    | 0.63                            | 1.89E-03 | 3.57E-02    |
| ENSG00000234585.5     | <i>CCT6P3</i>        | Pseudogene | 0.43                        | 6.62E-07 | 5.48E-05    | 0.33                            | 7.84E-05 | 3.76E-03    |
| ENSG00000234593.1     | <i>RP4-704D23.1</i>  | LncRNA     | 0.77                        | 2.32E-03 | 3.02E-02    | 0.70                            | 4.62E-03 | 6.51E-02    |
| ENSG00000234602.6     | <i>MCIDAS</i>        | Protein    | -0.56                       | 7.74E-03 | 6.63E-02    | -0.91                           | 1.20E-05 | 8.70E-04    |
| ENSG00000234636.2     | <i>MED14OS</i>       | LncRNA     | 0.40                        | 4.91E-05 | 1.85E-03    | 0.36                            | 1.52E-04 | 6.25E-03    |
| ENSG00000234665.7     | <i>RP11-262H14.3</i> | LncRNA     | 0.96                        | 1.10E-05 | 5.65E-04    | 0.99                            | 3.03E-06 | 2.91E-04    |
| ENSG00000234685.1     | <i>NUS1P2</i>        | Pseudogene | 0.78                        | 6.34E-04 | 1.24E-02    | 0.46                            | 3.40E-02 | 2.05E-01    |
| ENSG00000234695.1     | <i>AC002076.10</i>   | LncRNA     | -0.72                       | 4.60E-03 | 4.76E-02    | -0.72                           | 3.24E-03 | 5.19E-02    |
| ENSG00000234707.2     | <i>RP11-745C15.2</i> | LncRNA     | 0.89                        | 4.20E-08 | 5.04E-06    | 0.80                            | 4.00E-07 | 5.50E-05    |
| ENSG00000234711.1     | <i>TUBB8P11</i>      | Pseudogene | 1.05                        | 7.68E-07 | 6.21E-05    | 1.04                            | 4.44E-07 | 5.94E-05    |
| ENSG00000234722.3     | <i>LINC01287</i>     | LncRNA     | 1.23                        |          |             |                                 |          |             |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000234828.6     | <i>RP11-526A4.1</i>   | LncRNA     | 1.87                        | 1.90E-13 | 6.67E-11    | -0.19                           | 4.45E-01 | 7.24E-01    |
| ENSG00000234840.1     | <i>LINC01239</i>      | LncRNA     | 0.46                        | 6.54E-03 | 5.96E-02    | 0.34                            | 4.02E-02 | 2.25E-01    |
| ENSG00000234853.2     | <i>NDUFA3P3</i>       | Pseudogene | 0.64                        | 7.50E-03 | 6.48E-02    | 0.57                            | 1.37E-02 | 1.23E-01    |
| ENSG00000234917.2     | <i>RP5-994D16.3</i>   | LncRNA     | 0.34                        | 1.24E-03 | 1.97E-02    | 0.29                            | 4.63E-03 | 6.51E-02    |
| ENSG00000234921.1     | <i>RP11-85O21.5</i>   | LncRNA     | 0.80                        | 1.66E-03 | 2.41E-02    | 0.72                            | 3.79E-03 | 5.78E-02    |
| ENSG00000234925.2     | <i>ATP5HP4</i>        | Pseudogene | 0.91                        | 1.23E-10 | 2.66E-08    | 0.92                            | 8.45E-12 | 3.48E-09    |
| ENSG00000234929.1     | <i>AC018685.1</i>     | LncRNA     | -0.49                       | 1.31E-02 | 9.23E-02    | -0.19                           | 3.27E-01 | 6.32E-01    |
| ENSG00000234964.4     | <i>FABP5P7</i>        | Pseudogene | 0.69                        | 2.93E-03 | 3.53E-02    | 0.26                            | 2.53E-01 | 5.63E-01    |
| ENSG00000235020.3     | <i>RP11-109I13.2</i>  | LncRNA     | -0.56                       | 4.65E-03 | 4.80E-02    | -0.47                           | 1.27E-02 | 1.19E-01    |
| ENSG00000235034.5     | <i>C19orf81</i>       | Protein    | -0.56                       | 1.35E-02 | 9.42E-02    | -0.45                           | 3.48E-02 | 2.07E-01    |
| ENSG00000235076.2     | <i>GAPDHPS2</i>       | Pseudogene | 0.47                        | 2.21E-03 | 2.93E-02    | 0.35                            | 1.92E-02 | 1.50E-01    |
| ENSG00000235077.1     | <i>AC073842.19</i>    | LncRNA     | 0.50                        | 5.60E-03 | 5.40E-02    | 0.43                            | 1.33E-02 | 1.21E-01    |
| ENSG00000235098.7     | <i>ANKRD65</i>        | Protein    | -0.63                       | 2.98E-07 | 2.82E-05    | -0.52                           | 1.17E-05 | 8.56E-04    |
| ENSG00000235100.3     | <i>RP11-80H5.9</i>    | LncRNA     | 0.35                        | 5.00E-03 | 5.01E-02    | 0.31                            | 8.31E-03 | 9.20E-02    |
| ENSG00000235123.4     | <i>DSCAM-AS1</i>      | LncRNA     | 1.23                        | 1.12E-06 | 8.61E-05    | 0.96                            | 1.06E-04 | 4.76E-03    |
| ENSG00000235138.1     | <i>RP11-374P20.4</i>  | LncRNA     | 0.46                        | 3.51E-03 | 3.98E-02    | 0.31                            | 4.66E-02 | 2.44E-01    |
| ENSG00000235146.2     | <i>RP5-857K21.2</i>   | LncRNA     | 1.10                        | 7.03E-06 | 3.93E-04    | 0.52                            | 2.70E-02 | NA          |
| ENSG00000235172.6     | <i>LINC01366</i>      | LncRNA     | 0.45                        | 1.08E-02 | 8.18E-02    | 0.50                            | 2.83E-03 | 4.76E-02    |
| ENSG00000235192.1     | <i>AC009495.2</i>     | LncRNA     | 0.46                        | 3.81E-04 | 8.69E-03    | 0.41                            | 8.41E-04 | 2.09E-02    |
| ENSG00000235209.1     | <i>CTA-150C2.13</i>   | LncRNA     | 0.76                        | 6.90E-04 | 1.31E-02    | 0.78                            | 3.38E-04 | 1.11E-02    |
| ENSG00000235213.1     | <i>OR6E1P</i>         | Pseudogene | -0.46                       | 3.50E-03 | 3.98E-02    | -0.35                           | 2.39E-02 | 1.69E-01    |
| ENSG00000235217.6     | <i>TSPY26P</i>        | Pseudogene | -0.36                       | 6.83E-04 | 1.31E-02    | -0.22                           | 3.00E-02 | 1.91E-01    |
| ENSG00000235237.1     | <i>RP1-151B14.6</i>   | LncRNA     | 0.54                        | 5.03E-03 | 5.03E-02    | 0.34                            | 6.56E-02 | 2.93E-01    |
| ENSG00000235238.1     | <i>SUMO2P1</i>        | Pseudogene | -0.35                       | 5.64E-03 | 5.43E-02    | -0.38                           | 1.61E-03 | 3.22E-02    |
| ENSG00000235245.1     | <i>RP11-122K13.12</i> | LncRNA     | 0.40                        | 1.26E-03 | 1.99E-02    | 0.29                            | 1.51E-02 | 1.31E-01    |
| ENSG00000235246.1     | <i>RP1-SO6.5</i>      | LncRNA     | 0.68                        | 2.96E-03 | 3.54E-02    | 0.55                            | 1.37E-02 | 1.23E-01    |
| ENSG00000235254.3     | <i>TMEM185AP1</i>     | Pseudogene | 0.90                        | 4.53E-04 | 9.85E-03    | 0.16                            | 5.11E-01 | 7.68E-01    |
| ENSG00000235257.7     | <i>ITGA9-AS1</i>      | LncRNA     | 0.21                        | 4.67E-03 | 4.81E-02    | 0.20                            | 5.41E-03 | 7.14E-02    |
| ENSG00000235263.1     | <i>RP13-392I16.1</i>  | LncRNA     | 0.89                        | 1.12E-04 | 3.45E-03    | 0.76                            | 7.99E-04 | 2.01E-02    |
| ENSG00000235272.1     | <i>FAM103A2P</i>      | Pseudogene | 1.81                        | 1.18E-15 | 5.45E-13    | 1.88                            | 9.82E-18 | 7.78E-15    |
| ENSG00000235295.1     | <i>FLJ41941</i>       | LncRNA     | 0.50                        | 1.09E-02 | 8.21E-02    | 0.56                            | 3.63E-03 | 5.60E-02    |
| ENSG00000235328.1     | <i>AC006946.12</i>    | Pseudogene | 0.49                        | 7.62E-03 | 6.55E-02    | 0.46                            | 9.58E-03 | 1.00E-01    |
| ENSG00000235330.2     | <i>RP11-165F24.2</i>  | Pseudogene | 0.31                        | 1.34E-02 | 9.41E-02    | 0.33                            | 6.44E-03 | 7.92E-02    |
| ENSG00000235349.1     | <i>RP11-561N12.6</i>  | Pseudogene | -0.58                       | 7.28E-03 | 6.36E-02    | -0.37                           | 8.25E-02 | 3.30E-01    |
| ENSG00000235351.1     | <i>AC114730.11</i>    | LncRNA     | 0.40                        | 9.11E-03 | 7.34E-02    | 0.24                            | 1.01E-01 | 3.64E-01    |
| ENSG00000235385.1     | <i>GSI-600G8.5</i>    | LncRNA     | -0.77                       | 2.35E-03 | 3.04E-02    | -0.75                           | 2.13E-03 | 3.90E-02    |
| ENSG00000235399.1     | <i>RP11-204P2.3</i>   | LncRNA     | -0.68                       | 4.73E-04 | 1.02E-02    | -0.53                           | 5.15E-03 | 6.93E-02    |
| ENSG00000235440.1     | <i>RP11-214J9.1</i>   | Pseudogene | 0.52                        | 9.27E-03 | 7.42E-02    | 0.50                            | 9.38E-03 | 9.87E-02    |
| ENSG00000235454.1     | <i>HAUS6P3</i>        | Pseudogene | 0.72                        | 1.43E-03 | 2.17E-02    | 0.69                            | 1.74E-03 | 3.40E-02    |
| ENSG00000235459.5     | <i>RPS26P31</i>       | Pseudogene | 0.55                        | 3.12E-04 | 7.53E-03    | 0.45                            | 2.68E-03 | 4.58E-02    |
| ENSG00000235475.1     | <i>LINC01372</i>      | LncRNA     | 0.35                        | 1.39E-02 | 9.63E-02    | 0.35                            | 1.01E-02 | 1.03E-01    |
| ENSG00000235481.2     | <i>UBE2R2-AS1</i>     | LncRNA     | 0.50                        | 1.49E-04 | 4.30E-03    | 0.31                            | 1.54E-02 | 1.32E-01    |
| ENSG00000235497.4     | <i>AC012506.4</i>     | LncRNA     | 0.59                        | 9.05E-03 | 7.30E-02    | 0.45                            | 4.17E-02 | 2.30E-01    |
| ENSG00000235500.2     | <i>SNX19P2</i>        | Pseudogene | -0.55                       | 5.00E-04 | 1.06E-02    | -0.57                           | 1.79E-04 | 7.07E-03    |
| ENSG00000235532.1     | <i>LINC00402</i>      | LncRNA     | 0.54                        | 1.04E-03 | 1.75E-02    | 0.64                            | 5.55E-05 | 2.89E-03    |
| ENSG00000235545.1     | <i>RP11-230B22.1</i>  | LncRNA     | 0.52                        | 3.82E-04 | 8.69E-03    | 0.46                            | 1.03E-03 | 2.39E-02    |
| ENSG00000235546.2     | <i>AC087499.5</i>     | Pseudogene | 0.80                        | 4.54E-04 | 9.86E-03    | 0.85                            | 1.31E-04 | 5.57E-03    |
| ENSG00000235555.1     | <i>SUMO1P4</i>        | Pseudogene | -0.64                       | 6.86E-03 | 6.13E-02    | -0.57                           | 1.31E-02 | 1.21E-01    |
| ENSG00000235559.1     | <i>NOP56P1</i>        | Pseudogene | 0.99                        | 4.28E-05 | 1.67E-03    | 0.97                            | 4.35E-05 | 2.39E-03    |
| ENSG00000235565.1     | <i>RP11-86H7.7</i>    | LncRNA     | -0.43                       | 1.46E-03 | 2.20E-02    | -0.40                           | 2.11E-03 | 3.88E-02    |
| ENSG00000235602.5     | <i>POU5F1P3</i>       | Pseudogene | 0.67                        | 9.97E-07 | 7.78E-05    | 0.52                            | 8.39E-05 | 3.95E-03    |
| ENSG00000235629.1     | <i>AC090952.5</i>     | LncRNA     | 0.62                        | 1.43E-03 | 2.18E-02    | 0.54                            | 3.89E-03 | 5.86E-02    |
| ENSG00000235641.4     | <i>LINC00484</i>      | LncRNA     | -0.45                       | 5.27E-03 | 5.19E-02    | -0.31                           | 4.54E-02 | 2.41E-01    |
| ENSG00000235643.1     | <i>RP1-69M21.2</i>    | LncRNA     | -0.63                       | 1.47E-02 | 9.96E-02    | -0.57                           | 2.28E-02 | 1.65E-01    |
| ENSG00000235652.6     | <i>RP11-545I5.3</i>   | LncRNA     | -0.32                       | 1.51E-03 | 2.25E-02    | -0.20                           | 3.86E-02 | 2.20E-01    |
| ENSG00000235655.3     | <i>H3F3AP4</i>        | Pseudogene | -0.75                       | 1.09E-13 | 3.93E-11    | -0.75                           | 6.29E-15 | 3.89E-12    |
| ENSG00000235687.7     | <i>LINC00993</i>      | LncRNA     | 0.97                        | 8.65E-05 | 2.83E-03    | -0.16                           | 5.14E-01 | 7.70E-01    |
| ENSG00000235688.1     | <i>AC116614.1</i>     | LncRNA     | 0.67                        | 1.11E-03 | 1.83E-02    | 0.56                            | 4.85E-03 | 6.70E-02    |
| ENSG00000235690.2     | <i>CUBBNP3</i>        | Pseudogene | -0.68                       | 7.76E-03 | 6.63E-02    | -0.59                           | 1.77E-02 | 1.44E-01    |
| ENSG00000235703.4     | <i>LINC00894</i>      | LncRNA     | 0.53                        | 2.08E-04 | 5.54E-03    | 0.31                            | 2.90E-02 | 1.88E-01    |
| ENSG00000235706.6     | <i>DICER1-AS1</i>     | LncRNA     | 0.41                        | 5.59E-04 | 1.13E-02    | 0.23                            | 4.62E-02 | 2.43E-01    |
| ENSG00000235721.1     | <i>AC013268.3</i>     | Pseudogene | 0.95                        | 3.55E-06 | 2.24E-04    | 0.78                            | 8.88E-05 | 4.11E-03    |
| ENSG00000235740.1     | <i>RP11-436I24.1</i>  | LncRNA     | 0.69                        | 2.20E-03 | 2.91E-02    | 0.63                            | 3.47E-03 | 5.45E-02    |
| ENSG00000235750.8     | <i>KIAA0040</i>       | Protein    | 0.26                        | 1.07E-02 | 8.14E-02    | 0.18                            | 7.27E-02 | 3.08E-01    |
| ENSG00000235802.1     | <i>HCFC1-AS1</i>      | LncRNA     | -0.55                       | 3.64E-03 | 4.08E-02    | -0.41                           | 2.42E-02 | 1.70E-01    |
| ENSG00000235831.5     | <i>BHLHE40-AS1</i>    | LncRNA     | -0.51                       | 2.71E-03 | 3.35E-02    | -0.52                           | 2.97E-04 | 1.01E-02    |
| ENSG00000235847.2     | <i>LDHAP7</i>         | Pseudogene | -1.02                       | 9.21E-10 | 1.65E-07    | -1.04                           | 9.80E-11 | 3.26E-08    |
| ENSG00000235881.2     | <i>AC114776.3</i>     | LncRNA     | 0.64                        | 3.44E-03 | 3.94E-02    | 0.59                            | 5.44E-03 | 7.16E-02    |
| ENSG00000235884.3     | <i>LINC00941</i>      | LncRNA     | -0.40                       | 6.82E-03 | 6.11E-02    | -0.26                           | 7.04E-02 | 3.04E-01    |
| ENSG00000235912.1     | <i>RP1-159A19.3</i>   | Pseudogene | 0.41                        | 1.95E-03 | 2.70E-02    | 0.45                            | 4.61E-04 | 1.39E-02    |
| ENSG00000235917.5     | <i>RP11-39K24.14</i>  | Pseudogene | 0.82                        | 7.04E-04 | 1.33E-02    | 0.75                            | 1.45E-03 | 3.01E-02    |
| ENSG00000235961.5     | <i>PNMA6A</i>         | Protein    | 0.79                        | 2.39E-05 | 1.05E-03    | -0.61                           | 2.43E-04 | 8.90E-03    |
| ENSG00000235978.5     | <i>AC018816.3</i>     | LncRNA     | -1.31                       | 1.08E-08 | 1.55E-06    | -1.07                           | 1.13E-07 | 1.87E-05    |
| ENSG00000235992.1     | <i>GRAMD4P2</i>       | Pseudogene | -0.87                       | 1.93E-04 | 5.25E-03    | -0.42                           | 5.13E-02 | 2.58E-01    |
| ENSG00000236015.1     | <i>AC011290.5</i>     | Pseudogene | 0.39                        | 2.73E-03 | 3.36E-02    | 0.23                            | 6.61E-02 | 2.94E-01    |
| ENSG00000236030.1     | <i>LINC01036</i>      | LncRNA     | 0.66                        | 4.42E-03 | 4.64E-02    | 0.15                            | 5.04E-01 | 7.63E-01    |
| ENSG00000236044.1     | <i>FABP5P2</i>        | Pseudogene | 0.71                        | 2.02E-03 | 2.76E-02    | 0.03                            | 8.86E-01 | 9.60E-01    |
| ENSG00000236065.2     | <i>RP1-117O3.2</i>    | LncRNA     | 0.61                        | 3.24E-03 | 3.80E-02    | 0.57                            | 4.47E-03 | 6.39E-02    |
| ENSG00000236076.1     | <i>LINC01072</i>      | LncRNA     | -0.63                       | 7.78E-03 | 6.64E-02    | -0.62                           | 7.19E-03 | 8.43E-02    |
| ENSG00000236090.2     | <i>LDHAP3</i>         | Pseudogene | -0.80                       | 9.47E-07 | 7.42E-05    | -0.85                           | 4.77E-08 | 8.88E-06    |
| ENSG00000236114.1     | <i>RP11-517P14.7</i>  | Pseudogene | 0.39                        | 6.66E-03 | 6.01E-02    | 0.34                            | 1.31E-02 | 1.20E-01    |
| ENSG00000236184.1     | <i>TCEA1P4</i>        | Pseudogene | 0.38                        | 1.51E-03 | 2.25E-02    | 0.28                            | 1.76E-02 | 1.43E-01    |
| ENSG00000236199.1     | <i>RP11-264I13.2</i>  | LncRNA     | 0.31                        | 3.07E-05 | 1.28E-03    | 0.32                            | 5.01E-06 | 4.36E-04    |
| ENSG00000236200.4     | <i>KDM4A-AS1</i>      | LncRNA     | 0.30                        | 2.07E-03 | 2.80E-02    | 0.24                            | 9.14E-03 | 9.73E-02    |
| ENSG00000236266.1     | <i>RP3-467L1.4</i>    | LncRNA     | 0.47                        | 1.05E-04 | 3.27E-03    | 0.35                            | 2.91E-03 | 4.84E-02    |
| ENSG00000236305.1     | <i>RP11-126L15.4</i>  | LncRNA     | 0.36                        | 2.95E-03 | 3.54E-02    | 0.26                            | 2.94E-02 | 1.89E-01    |
| ENSG00000236317.1     | <i>RP11-348H3.5</i>   | Pseudogene | -0.53                       | 1.36E-02 | 9.49E-02    | -0.49                           | 1.87E-02 | 1.48E-01    |
| ENSG00000236320.3     | <i>SLFN14</i>         | Protein    | 0.54                        | 9.34E-03 | 7.45E-02    | 0.44                            | 2.84E-02 | 1.86E-01    |
| ENSG00000236348.1     | <i>PSMC1P10</i>       | Pseudogene | 0.70                        | 1.18E-03 | 1.91E-02    | 0.52                            | 1.23E-02 | 1.16E-01    |
| ENSG00000236360.2     | <i>RP11-334A14.2</i>  | Pseudogene | -1.40                       | 1.27E-11 | 1.30E-09    | -1.37                           | 5.72E-12 | 2.52E-09    |
| ENSG00000236385.1     | <i>RP11-114M1.2</i>   | LncRNA     | 0.78                        | 8.70E-04 | 1.54E-02    | 0.18                            | 4.35E-01 | 7.17E-01    |
| ENSG00000236411.1     | <i>NDUFAF4P3</i>      | Pseudogene | 0.29                        | 1.26E-02 | 9.01E-02    | 0.28                            | 1.21E-02 | 1.15E-01    |
| ENSG00000236427.1     | <i>RP11-107M16.2</i>  | LncRNA     | 0.89                        | 5.84E-07 | 4.97E-05    | 0.76                            | 1.14E-05 | 8.39E-04    |
| ENSG00000236471.1     | <i>AF127577.12</i>    | LncRNA     | 0.40                        | 8.59E-03 | 7.08E-02    | 0.31                            | 3.95E-02 | 2.23E-01    |
| ENSG00000236493.2     | <i>EIF2S2P3</i>       | Pseudogene | -0.45                       | 3.81E-03 | 4.21E-02    | -0.35                           | 2.18E-02 | 1.61E-01    |
| ENSG00000236498.1     | <i>AC107081.5</i>     | LncRNA     | 0.43                        | 1.62E-03 | 2.37E-02    | 0.36                            | 6.65E-03 | 8.07E-02    |
| ENSG00000236511.1     | <i>LINC01231</i>      | LncRNA     | 0.75                        | 3.26E-03 | 3.81E-02    | 0.83                            | 7.43E-04 | 1.92E-02    |
| ENSG00000236516.1     | <i>KLF2P4</i>         | Pseudogene | 0.61                        | 5.72E-03 | 5.47E-02    | 0.45                            | 3.59E-02 | 2.11E-01    |
| ENSG00000236519.1     | <i>LINC01424</i>      | LncRNA     | 0.42                        | 5.30E-03 | 5.21E-02    | 0.29                            | 4.80E-02 | 2.49E-01    |
| ENSG00000236525.1     | <i>AC007278.2</i>     | LncRNA     | 0.79                        | 1.83E-03 | 2.57E-02    | 0.70                            | 4.83E-03 | 6.68E-02    |
| ENSG00000236532.4     | <i>AL035610.2</i>     | LncRNA     | 1.51                        | 1.98E-11 | 4.96E-09    | 0.59                            | 5.14E-03 | 6.93E-02    |
| ENSG00000236534.1     | <i>H3F3BP1</i>        | Pseudogene | -0.43                       | 3.87E-03 | 4.26E-02    | -0.43                           | 2.64E-03 | 4.53E-02    |
| ENSG00000236542.1     | <i>MED28P7</i>        | Pseudogene | 0.47                        | 1.38E-02 | 9.58E-02    | 0.27                            | 1.40E-01 | 4.27E-01    |
| ENSG00000236554.1     |                       |            |                             |          |             |                                 |          |             |

| Gene ID (GENCODE v22) | Gene symbol            | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|------------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                        |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000236816.2     | <i>ANKRD20A7P</i>      | Pseudogene | 1.05                        | 3.45E-05 | 1.41E-03    | 1.08                            | 1.22E-05 | 8.82E-04    |  |
| ENSG00000236830.5     | <i>CBR3-AS1</i>        | LncRNA     | 0.33                        | 9.79E-05 | 3.10E-03    | 0.28                            | 6.41E-04 | 1.75E-02    |  |
| ENSG00000236841.6     | <i>AC007750.5</i>      | LncRNA     | -0.73                       | 1.50E-03 | 2.24E-02    | -0.51                           | 2.07E-02 | 1.56E-01    |  |
| ENSG00000236871.5     | <i>LINC00106</i>       | LncRNA     | 0.45                        | 4.44E-03 | 4.66E-02    | 0.21                            | 1.80E-01 | 4.81E-01    |  |
| ENSG00000236969.2     | <i>GGT8P</i>           | Pseudogene | 1.70                        | 9.10E-12 | 2.50E-09    | 1.66                            | 7.82E-12 | 3.33E-09    |  |
| ENSG00000236986.5     | <i>RP11-544A12.4</i>   | LncRNA     | 0.50                        | 2.13E-03 | 2.85E-02    | 0.42                            | 8.48E-03 | 9.31E-02    |  |
| ENSG00000237001.5     | <i>WASF3-AS1</i>       | LncRNA     | 0.85                        | 1.33E-04 | 3.92E-03    | 0.80                            | 2.02E-04 | 7.75E-03    |  |
| ENSG00000237009.2     | <i>GLIS3-AS1</i>       | LncRNA     | 0.62                        | 2.66E-03 | 3.31E-02    | 0.62                            | 1.88E-03 | 3.57E-02    |  |
| ENSG00000237037.8     | <i>NDUFA6-AS1</i>      | LncRNA     | 0.20                        | 5.24E-04 | 1.09E-02    | 0.17                            | 1.88E-03 | 3.57E-02    |  |
| ENSG00000237101.1     | <i>RP11-365O16.6</i>   | LncRNA     | 0.45                        | 2.07E-03 | 2.80E-02    | 0.30                            | 3.58E-02 | 2.11E-01    |  |
| ENSG00000237188.3     | <i>RP11-337C18.8</i>   | LncRNA     | 0.24                        | 3.47E-03 | 3.96E-02    | 0.20                            | 1.03E-02 | 1.05E-01    |  |
| ENSG00000237194.1     | <i>SNAILP1</i>         | Pseudogene | 0.60                        | 3.71E-03 | 4.14E-02    | 0.51                            | 9.19E-03 | 9.76E-02    |  |
| ENSG00000237238.2     | <i>BMS1P10</i>         | Pseudogene | -0.43                       | 2.84E-03 | 3.45E-02    | -0.43                           | 1.81E-03 | 3.47E-02    |  |
| ENSG00000237280.1     | <i>RP11-96C23.9</i>    | LncRNA     | 0.63                        | 4.11E-03 | 4.42E-02    | 0.54                            | 1.13E-02 | 1.11E-01    |  |
| ENSG00000237289.8     | <i>CKMT1B</i>          | Protein    | -0.47                       | 2.10E-03 | 2.82E-02    | -0.49                           | 8.93E-04 | 2.17E-02    |  |
| ENSG00000237347.2     | <i>AC004461.4</i>      | Pseudogene | 0.51                        | 1.83E-03 | 2.57E-02    | 0.45                            | 4.28E-03 | 6.25E-02    |  |
| ENSG00000237349.1     | <i>RP5-106S122.2</i>   | Pseudogene | 0.70                        | 6.16E-03 | 5.75E-02    | 0.64                            | 1.02E-02 | NA          |  |
| ENSG00000237350.1     | <i>CDC42P6</i>         | Pseudogene | 0.83                        | 4.84E-09 | 7.56E-07    | 0.89                            | 6.98E-11 | 2.38E-08    |  |
| ENSG00000237353.5     | <i>PATE4</i>           | Protein    | -0.66                       | 7.88E-03 | 6.70E-02    | -0.47                           | 4.52E-02 | 2.41E-01    |  |
| ENSG00000237372.2     | <i>UNQ6494</i>         | LncRNA     | 0.47                        | 1.97E-03 | 2.72E-02    | 0.37                            | 1.30E-02 | 1.20E-01    |  |
| ENSG00000237399.6     | <i>PITRM1-AS1</i>      | LncRNA     | 0.33                        | 1.27E-03 | 2.00E-02    | 0.26                            | 8.43E-03 | 9.29E-02    |  |
| ENSG00000237413.4     | <i>MGC27382</i>        | LncRNA     | 0.67                        | 6.84E-03 | 6.12E-02    | 0.02                            | 9.37E-01 | 9.79E-01    |  |
| ENSG00000237415.2     | <i>NRBF2P3</i>         | Pseudogene | 0.65                        | 3.84E-03 | 4.23E-02    | 0.68                            | 1.65E-03 | 3.27E-02    |  |
| ENSG00000237419.1     | <i>RP11-885N19.6</i>   | LncRNA     | 0.61                        | 7.74E-03 | 6.63E-02    | 0.71                            | 1.34E-03 | 2.86E-02    |  |
| ENSG00000237438.5     | <i>CECR7</i>           | LncRNA     | -0.47                       | 1.43E-02 | 9.80E-02    | -0.38                           | 3.70E-02 | 2.15E-01    |  |
| ENSG00000237442.3     | <i>HNRNP1A1P57</i>     | Pseudogene | -0.98                       | 1.21E-04 | 3.64E-03    | -1.61                           | 3.51E-11 | 1.29E-08    |  |
| ENSG00000237452.2     | <i>BHMG1</i>           | Protein    | 0.67                        | 2.48E-03 | 3.16E-02    | -0.02                           | 9.28E-01 | 9.75E-01    |  |
| ENSG00000237470.3     | <i>DCLRE1CP1</i>       | Pseudogene | 1.12                        | 4.69E-07 | 4.12E-05    | 0.47                            | 2.88E-02 | 1.87E-01    |  |
| ENSG00000237481.1     | <i>RP4-803J11.2</i>    | LncRNA     | 0.56                        | 1.94E-04 | 5.26E-03    | 0.46                            | 1.47E-03 | 3.03E-02    |  |
| ENSG00000237490.3     | <i>RP13-926M18.1</i>   | Pseudogene | -0.64                       | 1.26E-02 | 9.03E-02    | -0.67                           | 7.22E-03 | 8.46E-02    |  |
| ENSG00000237513.1     | <i>RP11-325F22.2</i>   | LncRNA     | 0.46                        | 1.39E-02 | 9.63E-02    | 0.31                            | 8.27E-02 | 3.30E-01    |  |
| ENSG00000237567.1     | <i>RP3-359N14.2</i>    | LncRNA     | 0.65                        | 1.11E-02 | 8.31E-02    | 0.27                            | 2.82E-01 | 5.92E-01    |  |
| ENSG00000237604.1     | <i>AP001056.1</i>      | LncRNA     | 0.79                        | 2.72E-04 | 6.80E-03    | 0.72                            | 6.94E-04 | 1.84E-02    |  |
| ENSG00000237643.1     | <i>RP11-462G2.1</i>    | LncRNA     | -0.92                       | 3.06E-04 | 7.41E-03    | -0.43                           | 7.69E-02 | 3.18E-01    |  |
| ENSG00000237646.1     | <i>HLCS-IT1</i>        | LncRNA     | 0.66                        | 7.85E-04 | 1.44E-02    | 0.67                            | 3.64E-04 | 1.17E-02    |  |
| ENSG00000237647.7     | <i>ERICH1-AS1</i>      | LncRNA     | 0.45                        | 8.71E-03 | 7.14E-02    | 0.46                            | 5.37E-03 | 7.12E-02    |  |
| ENSG00000237672.1     | <i>KRRIP1</i>          | Pseudogene | 0.40                        | 1.08E-02 | 8.18E-02    | 0.33                            | 3.06E-02 | 1.94E-01    |  |
| ENSG00000237708.1     | <i>RP11-445O16.2</i>   | Pseudogene | 0.63                        | 6.66E-03 | 6.01E-02    | 0.53                            | 1.98E-02 | 1.52E-01    |  |
| ENSG00000237709.1     | <i>EEF1A1P28</i>       | Pseudogene | -0.48                       | 5.20E-03 | 5.14E-02    | -0.40                           | 1.63E-02 | 1.37E-01    |  |
| ENSG00000237718.2     | <i>AC009095.4</i>      | LncRNA     | 0.37                        | 5.57E-03 | 5.39E-02    | 0.24                            | 6.92E-02 | 3.01E-01    |  |
| ENSG00000237740.1     | <i>NPAP1P3</i>         | Pseudogene | 0.60                        | 6.73E-03 | 6.06E-02    | 0.62                            | 3.95E-03 | 5.92E-02    |  |
| ENSG00000237742.5     | <i>RP11-624M8.1</i>    | LncRNA     | 0.44                        | 6.33E-03 | 5.86E-02    | 0.37                            | 1.88E-02 | 1.48E-01    |  |
| ENSG00000237753.1     | <i>AC079922.3</i>      | LncRNA     | 0.42                        | 3.06E-04 | 7.42E-03    | 0.30                            | 8.98E-03 | 9.64E-02    |  |
| ENSG00000237765.5     | <i>FAM200B</i>         | Protein    | 0.16                        | 3.64E-03 | 4.08E-02    | 0.12                            | 2.02E-02 | 1.54E-01    |  |
| ENSG00000237773.4     | <i>AC003075.4</i>      | LncRNA     | -0.41                       | 1.08E-02 | 8.19E-02    | -0.34                           | 2.56E-02 | 1.76E-01    |  |
| ENSG00000237781.3     | <i>RP11-54A4.2</i>     | LncRNA     | 0.61                        | 3.15E-04 | 7.59E-03    | 0.43                            | 8.91E-03 | 9.58E-02    |  |
| ENSG00000237797.1     | <i>RP11-472N13.3</i>   | LncRNA     | 0.41                        | 4.89E-03 | 4.95E-02    | 0.23                            | 1.01E-01 | 3.65E-01    |  |
| ENSG00000237806.1     | <i>FAUP2</i>           | Pseudogene | 0.73                        | 4.08E-03 | 4.40E-02    | 0.28                            | 2.65E-01 | 5.75E-01    |  |
| ENSG00000237821.1     | <i>AC083873.4</i>      | Pseudogene | -0.30                       | 4.03E-03 | 4.37E-02    | -0.23                           | 2.03E-02 | 1.55E-01    |  |
| ENSG00000237846.1     | <i>RP11-216M21.1</i>   | Pseudogene | 1.17                        | 3.41E-07 | 3.14E-05    | 1.13                            | 4.78E-07 | 6.34E-05    |  |
| ENSG00000237872.4     | <i>POU5F1P4</i>        | Pseudogene | 0.69                        | 4.78E-04 | 1.02E-02    | 0.63                            | 9.02E-04 | 2.19E-02    |  |
| ENSG00000237877.5     | <i>LINC01473</i>       | LncRNA     | 0.30                        | 1.50E-03 | 2.24E-02    | 0.24                            | 7.02E-03 | 8.32E-02    |  |
| ENSG00000237886.1     | <i>LINC01573</i>       | LncRNA     | 0.47                        | 8.61E-04 | 1.53E-02    | 0.45                            | 9.82E-04 | 2.31E-02    |  |
| ENSG00000237923.1     | <i>XXbac-BPG27H4.8</i> | LncRNA     | 0.71                        | 5.30E-03 | 5.21E-02    | 0.74                            | 2.93E-03 | NA          |  |
| ENSG00000237940.3     | <i>AC093642.3</i>      | LncRNA     | 0.56                        | 1.15E-04 | 3.51E-03    | 0.48                            | 5.06E-04 | 1.48E-02    |  |
| ENSG00000237973.1     | <i>RP5-857K21.6</i>    | Pseudogene | 2.31                        | 6.28E-47 | 1.95E-43    | 2.35                            | 2.66E-52 | 1.50E-48    |  |
| ENSG00000237975.5     | <i>FLG-AS1</i>         | LncRNA     | 0.62                        | 1.85E-04 | 5.08E-03    | 0.54                            | 6.53E-04 | 1.76E-02    |  |
| ENSG00000237979.1     | <i>AC007389.1</i>      | Pseudogene | -0.60                       | 1.22E-02 | 8.82E-02    | -0.67                           | 3.58E-03 | 5.56E-02    |  |
| ENSG00000238000.1     | <i>RP11-274E7.2</i>    | Pseudogene | 0.48                        | 5.13E-06 | 3.03E-04    | 0.51                            | 5.41E-07 | 7.10E-05    |  |
| ENSG00000238005.2     | <i>RP11-443B7.1</i>    | LncRNA     | 0.71                        | 9.32E-06 | 4.93E-04    | 0.55                            | 4.64E-04 | 1.39E-02    |  |
| ENSG00000238018.2     | <i>AC093110.3</i>      | LncRNA     | 0.41                        | 8.63E-03 | 7.10E-02    | 0.27                            | 7.47E-02 | 3.13E-01    |  |
| ENSG00000238024.1     | <i>DDX39BP2</i>        | Pseudogene | 0.46                        | 1.47E-02 | 9.96E-02    | 0.33                            | 6.47E-02 | 2.91E-01    |  |
| ENSG00000238057.7     | <i>ZEB2-AS1</i>        | LncRNA     | 1.02                        | 1.94E-10 | 4.08E-08    | 0.15                            | 2.86E-01 | 5.97E-01    |  |
| ENSG00000238058.1     | <i>RP11-432J22.2</i>   | LncRNA     | 0.24                        | 3.47E-03 | 3.96E-02    | 0.13                            | 1.09E-01 | 3.79E-01    |  |
| ENSG00000238062.4     | <i>SPAT43-AS1</i>      | LncRNA     | 0.85                        | 1.25E-05 | 6.23E-04    | 0.75                            | 7.82E-05 | 3.76E-03    |  |
| ENSG00000238072.1     | <i>RP11-305M3.2</i>    | Pseudogene | 0.65                        | 5.96E-04 | 1.18E-02    | 0.68                            | 1.98E-04 | 7.62E-03    |  |
| ENSG00000238076.1     | <i>MRPL48P1</i>        | Pseudogene | 0.69                        | 6.71E-03 | 6.05E-02    | 0.65                            | 8.57E-03 | 9.35E-02    |  |
| ENSG00000238078.1     | <i>LINC01352</i>       | LncRNA     | 0.39                        | 4.59E-03 | 4.76E-02    | 0.27                            | 4.05E-02 | 2.26E-01    |  |
| ENSG00000238083.6     | <i>LRRRC37A2</i>       | Protein    | -0.56                       | 1.12E-07 | 1.22E-05    | -0.56                           | 2.46E-08 | 4.87E-06    |  |
| ENSG00000238105.6     | <i>GOLGA2P5</i>        | Pseudogene | 0.36                        | 8.40E-04 | 1.50E-02    | 0.29                            | 4.82E-03 | 6.68E-02    |  |
| ENSG00000238109.1     | <i>AC004893.10</i>     | Pseudogene | 0.46                        | 5.34E-03 | 5.23E-02    | 0.41                            | 1.02E-02 | 1.04E-01    |  |
| ENSG00000238121.4     | <i>LINC00426</i>       | LncRNA     | 0.43                        | 4.21E-03 | 4.50E-02    | 0.29                            | 4.64E-02 | 2.43E-01    |  |
| ENSG00000238151.1     | <i>MLLT10P1</i>        | Pseudogene | 0.36                        | 9.82E-03 | 7.68E-02    | 0.31                            | 1.87E-02 | 1.48E-01    |  |
| ENSG00000238161.1     | <i>OR7E117P</i>        | Pseudogene | 0.62                        | 3.51E-03 | 3.99E-02    | 0.62                            | 2.18E-03 | 3.96E-02    |  |
| ENSG00000238181.2     | <i>AHCYP2</i>          | Pseudogene | 0.68                        | 2.48E-05 | 1.08E-03    | 0.64                            | 4.01E-05 | 2.24E-03    |  |
| ENSG00000238217.4     | <i>AC093590.1</i>      | LncRNA     | -0.64                       | 4.93E-03 | 4.97E-02    | -0.54                           | 1.50E-02 | 1.30E-01    |  |
| ENSG00000238222.3     | <i>MKRN4P</i>          | Pseudogene | 1.25                        | 3.30E-08 | 4.13E-06    | 1.24                            | 1.73E-08 | 3.60E-06    |  |
| ENSG00000238231.2     | <i>RP11-460I13.6</i>   | Pseudogene | 0.71                        | 6.20E-07 | 5.21E-05    | 0.64                            | 3.12E-06 | 2.95E-04    |  |
| ENSG00000238232.1     | <i>RP11-95P13.2</i>    | LncRNA     | -0.78                       | 2.23E-03 | 2.94E-02    | -0.79                           | 1.38E-03 | 2.90E-02    |  |
| ENSG00000238266.1     | <i>LINC00707</i>       | LncRNA     | 0.73                        | 1.74E-03 | 2.49E-02    | 0.72                            | 1.45E-03 | 3.01E-02    |  |
| ENSG00000238272.1     | <i>RP3-436N22.3</i>    | LncRNA     | 0.63                        | 1.32E-02 | 9.29E-02    | 0.61                            | 1.44E-02 | 1.27E-01    |  |
| ENSG00000238279.1     | <i>BX470102.3</i>      | LncRNA     | 0.50                        | 6.16E-03 | 5.75E-02    | 0.36                            | 4.20E-02 | 2.31E-01    |  |
| ENSG00000238282.1     | <i>RP5-1164C1.2</i>    | LncRNA     | 0.82                        | 1.24E-03 | 1.97E-02    | 0.24                            | 3.36E-01 | 6.40E-01    |  |
| ENSG00000238363.1     | <i>SNORA13</i>         | Other      | 0.39                        | 7.91E-03 | 6.71E-02    | 0.28                            | 4.32E-02 | 2.34E-01    |  |
| ENSG00000238390.1     | <i>SNORA81</i>         | Other      | 0.45                        | 3.40E-03 | 3.90E-02    | 0.34                            | 2.34E-02 | 1.67E-01    |  |
| ENSG00000238460.1     | <i>AC068587.2</i>      | Other      | 0.55                        | 7.55E-03 | 6.51E-02    | 0.57                            | 3.99E-03 | 5.97E-02    |  |
| ENSG00000238704.1     | <i>RNU7-97P</i>        | Other      | 0.77                        | 2.15E-03 | 2.87E-02    | 0.10                            | 6.83E-01 | NA          |  |
| ENSG00000238728.1     | <i>MIR1972-1</i>       | Other      | 0.52                        | 1.13E-02 | 8.42E-02    | 0.44                            | 2.75E-02 | 1.83E-01    |  |
| ENSG00000238793.1     | <i>SNORD124</i>        | Other      | 0.48                        | 1.35E-02 | 9.44E-02    | 0.34                            | 7.07E-02 | 3.05E-01    |  |
| ENSG00000238825.1     | <i>RNU1-13P</i>        | Other      | 1.03                        | 1.99E-05 | 9.25E-04    | 0.94                            | 6.39E-05 | 3.20E-03    |  |
| ENSG00000239210.2     | <i>RPS26P55</i>        | Pseudogene | 1.05                        | 4.97E-07 | 4.32E-05    | 1.01                            | 6.90E-07 | 8.65E-05    |  |
| ENSG00000239300.4     | <i>RP11-400L8.2</i>    | LncRNA     | 0.47                        | 2.73E-05 | 1.16E-03    | 0.39                            | 2.59E-04 | 9.21E-03    |  |
| ENSG00000239335.4     | <i>LLPH-AS1</i>        | LncRNA     | -0.75                       | 3.69E-05 | 1.49E-03    | -0.69                           | 8.48E-05 | 3.97E-03    |  |
| ENSG00000239402.3     | <i>CYP4F62P</i>        | Pseudogene | 0.86                        | 5.98E-05 | 2.15E-03    | 0.61                            | 3.81E-03 | 5.80E-02    |  |
| ENSG00000239415.1     | <i>AP001469.9</i>      | LncRNA     | 0.31                        | 1.61E-03 | 2.36E-02    | 0.30                            | 1.53E-03 | 3.12E-02    |  |
| ENSG00000239468.3     | <i>RN7SL569P</i>       | Other      | 0.71                        | 3.44E-03 | 3.94E-02    | 0.52                            | 2.84E-02 | 1.86E-01    |  |
| ENSG00000239523.4     | <i>MYLK-AS1</i>        | LncRNA     | 0.56                        | 7.45E-06 | 4.13E-04    | 0.46                            | 1.13E-04 | 5.02E-03    |  |
| ENSG00000239552.2     | <i>HOXB-AS2</i>        | LncRNA     | 0.65                        | 1.01E-03 | 1.71E-02    | 0.48                            | 1.19E-02 | 1.14E-01    |  |
| ENSG00000239605.7     | <i>C2orf61</i>         | Protein    | 0.61                        | 8.67E-04 | 1.54E-02    | 0.52                            | 3.64E-03 | 5.61E-02    |  |
| ENSG00000239636.1     | <i>RP4-728D4.2</i>     | LncRNA     | 0.43                        | 5.55E-04 | 1.13E-02    | 0.30                            | 1.32E-02 | 1.21E-01    |  |
|                       |                        |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000239884.3     | <i>RN7SL608P</i>      | Other      | 0.52                        | 3.44E-05 | 1.41E-03    | 0.37                            | 2.31E-03 | 4.13E-02    |  |
| ENSG00000239899.3     | <i>RN7SL674P</i>      | Other      | 0.52                        | 2.63E-03 | 3.29E-02    | 0.55                            | 8.46E-04 | 2.09E-02    |  |
| ENSG00000239961.2     | <i>LILRA4</i>         | Protein    | 0.44                        | 1.02E-02 | 7.87E-02    | 0.34                            | 4.19E-02 | 2.31E-01    |  |
| ENSG00000240005.4     | <i>RP11-293A21.1</i>  | LncRNA     | 0.60                        | 5.44E-05 | 2.00E-03    | 0.52                            | 3.21E-04 | 1.07E-02    |  |
| ENSG00000240006.1     | <i>RP11-200A1.1</i>   | LncRNA     | -0.56                       | 9.59E-03 | 7.56E-02    | -0.61                           | 3.43E-03 | 5.41E-02    |  |
| ENSG00000240038.5     | <i>AMY2B</i>          | Protein    | 0.38                        | 1.26E-02 | 9.03E-02    | 0.26                            | 7.39E-02 | 3.11E-01    |  |
| ENSG00000240040.4     | <i>AC096579.13</i>    | LncRNA     | 0.63                        | 1.21E-02 | 8.79E-02    | 0.58                            | 1.73E-02 | 1.42E-01    |  |
| ENSG00000240053.8     | <i>LY6G5B</i>         | Protein    | 0.36                        | 4.73E-03 | 4.83E-02    | 0.14                            | 2.63E-01 | 5.74E-01    |  |
| ENSG00000240065.6     | <i>PSMB9</i>          | Protein    | 0.36                        | 5.28E-03 | 5.20E-02    | 0.28                            | 2.16E-02 | 1.60E-01    |  |
| ENSG00000240103.2     | <i>RP11-846F4.6</i>   | Pseudogene | 4.19                        | 4.00E-75 | 2.31E-71    | 0.56                            | 4.93E-03 | 6.76E-02    |  |
| ENSG00000240137.4     | <i>ERICH6-AS1</i>     | LncRNA     | 0.37                        | 5.47E-04 | 1.12E-02    | 0.37                            | 3.25E-04 | 1.08E-02    |  |
| ENSG00000240211.1     | <i>RP11-758P17.3</i>  | LncRNA     | 0.42                        | 8.28E-04 | 1.49E-02    | 0.35                            | 4.24E-03 | 6.22E-02    |  |
| ENSG00000240225.9     | <i>ZNF542P</i>        | Pseudogene | 0.24                        | 1.15E-03 | 1.87E-02    | 0.22                            | 1.32E-03 | 2.84E-02    |  |
| ENSG00000240253.4     | <i>FAR2P3</i>         | Pseudogene | 0.77                        | 2.47E-04 | 6.29E-03    | 0.54                            | 8.61E-03 | 9.38E-02    |  |
| ENSG00000240303.6     | <i>ACAD11</i>         | Protein    | 0.28                        | 1.32E-02 | 9.29E-02    | 0.17                            | 1.08E-01 | 3.77E-01    |  |
| ENSG00000240344.7     | <i>PPIL3</i>          | Protein    | -0.44                       | 3.78E-11 | 9.17E-09    | -0.45                           | 1.63E-12 | 7.70E-10    |  |
| ENSG00000240356.5     | <i>RP11-395L14.11</i> | Pseudogene | -0.39                       | 2.77E-06 | 1.84E-04    | -0.40                           | 4.53E-07 | 6.04E-05    |  |
| ENSG00000240375.1     | <i>VPS26AP1</i>       | Pseudogene | 0.66                        | 6.74E-03 | 6.06E-02    | 0.53                            | 2.59E-02 | 1.77E-01    |  |
| ENSG00000240393.1     | <i>RP11-768G7.1</i>   | Pseudogene | 0.68                        | 7.17E-03 | 6.29E-02    | 0.58                            | 1.92E-02 | 1.50E-01    |  |
| ENSG00000240399.1     | <i>RP1-228P16.1</i>   | Pseudogene | 0.60                        | 8.60E-05 | 2.82E-03    | 0.47                            | 1.54E-03 | 3.14E-02    |  |
| ENSG00000240401.7     | <i>AC012358.8</i>     | LncRNA     | 0.58                        | 1.63E-07 | 1.68E-05    | 0.59                            | 3.19E-08 | 6.11E-06    |  |
| ENSG00000240409.1     | <i>MTATP8P1</i>       | Pseudogene | 2.64                        | 1.91E-45 | 5.51E-42    | 0.08                            | 5.70E-01 | 8.05E-01    |  |
| ENSG00000240427.1     | <i>RPS26P34</i>       | Pseudogene | 4.47                        | 2.33E-73 | 1.17E-69    | 4.35                            | 2.91E-73 | 2.30E-69    |  |
| ENSG00000240452.1     | <i>RP11-567P17.1</i>  | Pseudogene | 0.64                        | 1.23E-02 | 8.86E-02    | 0.66                            | 7.69E-03 | 8.77E-02    |  |
| ENSG00000240455.2     | <i>RN7SL671P</i>      | Other      | 0.60                        | 1.13E-02 | 8.43E-02    | 0.39                            | 9.02E-02 | 3.44E-01    |  |
| ENSG00000240489.1     | <i>SETP14</i>         | Pseudogene | -0.36                       | 1.42E-03 | 2.16E-02    | -0.39                           | 4.15E-04 | 1.28E-02    |  |
| ENSG00000240509.1     | <i>RPL34P18</i>       | Pseudogene | 0.48                        | 1.47E-03 | 2.21E-02    | -0.08                           | 5.68E-01 | 8.03E-01    |  |
| ENSG00000240602.6     | <i>AADACP1</i>        | Pseudogene | 0.67                        | 6.47E-04 | 1.26E-02    | 0.72                            | 1.44E-04 | 6.03E-03    |  |
| ENSG00000240654.5     | <i>C1QTNF9</i>        | Protein    | 0.92                        | 2.19E-07 | 2.16E-05    | 0.88                            | 2.81E-07 | 4.07E-05    |  |
| ENSG00000240669.1     | <i>RP11-555K12.2</i>  | Pseudogene | -0.65                       | 1.04E-02 | 8.01E-02    | -0.62                           | 1.15E-02 | 1.12E-01    |  |
| ENSG00000240720.6     | <i>LRRD1</i>          | Protein    | 0.48                        | 2.01E-03 | 2.75E-02    | 0.39                            | 9.43E-03 | 9.91E-02    |  |
| ENSG00000240731.1     | <i>RP5-890O3.9</i>    | LncRNA     | 0.31                        | 1.27E-04 | 3.79E-03    | 0.18                            | 2.17E-02 | 1.60E-01    |  |
| ENSG00000240758.2     | <i>RP11-155G14.6</i>  | LncRNA     | 0.49                        | 2.07E-04 | 5.51E-03    | 0.35                            | 7.15E-03 | 8.41E-02    |  |
| ENSG00000240853.3     | <i>RN7SL328P</i>      | Other      | 0.62                        | 1.41E-02 | 9.73E-02    | 0.51                            | 3.71E-02 | 2.15E-01    |  |
| ENSG00000240854.1     | <i>RP11-64K7.1</i>    | Pseudogene | -0.30                       | 2.40E-04 | 6.19E-03    | -0.36                           | 4.96E-06 | 4.33E-04    |  |
| ENSG00000240864.3     | <i>IGKV1-16</i>       | Other      | 0.65                        | 4.12E-03 | 4.43E-02    | 0.59                            | 8.20E-03 | 9.13E-02    |  |
| ENSG00000240877.3     | <i>RN7SL521P</i>      | Other      | 0.42                        | 1.01E-02 | 7.83E-02    | 0.23                            | 1.45E-01 | 4.34E-01    |  |
| ENSG00000240889.1     | <i>NDUFB2-AS1</i>     | LncRNA     | 0.23                        | 9.64E-04 | 1.66E-02    | 0.13                            | 5.16E-02 | 2.59E-01    |  |
| ENSG00000240890.2     | <i>RP11-65E22.2</i>   | Pseudogene | 0.34                        | 7.06E-03 | 6.24E-02    | 0.28                            | 1.96E-02 | 1.51E-01    |  |
| ENSG00000240996.1     | <i>RP11-80H5.7</i>    | LncRNA     | 0.42                        | 5.60E-03 | 5.40E-02    | 0.38                            | 8.99E-03 | 9.64E-02    |  |
| ENSG00000241003.1     | <i>RP11-22C11.1</i>   | Pseudogene | 0.55                        | 2.67E-03 | 3.32E-02    | 0.52                            | 3.20E-03 | 5.16E-02    |  |
| ENSG00000241014.1     | <i>RP11-244H3.1</i>   | LncRNA     | 0.36                        | 2.21E-05 | 9.99E-04    | 0.26                            | 1.66E-03 | 3.28E-02    |  |
| ENSG00000241057.1     | <i>AC004985.12</i>    | Pseudogene | 0.37                        | 9.89E-04 | 1.69E-02    | 0.26                            | 1.60E-02 | 1.35E-01    |  |
| ENSG00000241061.3     | <i>RPL5P1</i>         | Pseudogene | 0.44                        | 1.15E-03 | 1.88E-02    | 0.49                            | 1.61E-04 | 6.47E-03    |  |
| ENSG00000241095.1     | <i>CYP51A1P1</i>      | Pseudogene | -0.62                       | 3.69E-03 | 4.12E-02    | -0.59                           | 4.54E-03 | 6.45E-02    |  |
| ENSG00000241146.1     | <i>RPL7P41</i>        | Pseudogene | 1.05                        | 1.19E-05 | 6.00E-04    | 0.55                            | 1.75E-02 | 1.43E-01    |  |
| ENSG00000241163.6     | <i>LINC00877</i>      | LncRNA     | 0.57                        | 1.17E-04 | 3.58E-03    | 0.25                            | 6.74E-02 | 2.98E-01    |  |
| ENSG00000241170.2     | <i>RP11-147I3.1</i>   | Pseudogene | 0.52                        | 9.87E-04 | 1.69E-02    | 0.39                            | 9.72E-03 | 1.01E-01    |  |
| ENSG00000241186.6     | <i>TDGF1</i>          | Protein    | -0.70                       | 5.10E-04 | 1.07E-02    | -0.73                           | 6.66E-05 | 3.32E-03    |  |
| ENSG00000241213.1     | <i>RP11-768G7.2</i>   | LncRNA     | 0.67                        | 7.86E-03 | 6.69E-02    | 0.20                            | 4.21E-01 | 7.07E-01    |  |
| ENSG00000241269.1     | <i>AC093620.5</i>     | LncRNA     | 0.31                        | 9.14E-03 | 7.35E-02    | 0.21                            | 6.48E-02 | 2.91E-01    |  |
| ENSG00000241288.6     | <i>RP11-379B18.5</i>  | LncRNA     | 0.32                        | 1.34E-02 | 9.39E-02    | 0.12                            | 3.58E-01 | 6.58E-01    |  |
| ENSG00000241293.1     | <i>PPATP1</i>         | Pseudogene | 0.95                        | 1.51E-04 | 4.32E-03    | 0.91                            | 1.72E-04 | 6.85E-03    |  |
| ENSG00000241322.7     | <i>CDRT1</i>          | Protein    | 0.43                        | 1.28E-02 | 9.13E-02    | 0.24                            | 1.43E-01 | 4.32E-01    |  |
| ENSG00000241361.7     | <i>SLC25A24P1</i>     | Pseudogene | 0.74                        | 3.75E-03 | 4.17E-02    | 0.66                            | 7.80E-03 | 8.86E-02    |  |
| ENSG00000241362.2     | <i>RPL36AP43</i>      | Pseudogene | 0.60                        | 2.78E-06 | 1.84E-04    | 0.37                            | 3.71E-03 | 5.69E-02    |  |
| ENSG00000241399.5     | <i>CD302</i>          | Protein    | -0.30                       | 7.86E-03 | 6.69E-02    | -0.20                           | 6.86E-02 | 3.00E-01    |  |
| ENSG00000241413.3     | <i>RN7SL441P</i>      | Other      | 0.65                        | 2.40E-03 | 3.09E-02    | 0.60                            | 4.00E-03 | 5.98E-02    |  |
| ENSG00000241490.1     | <i>RP11-553L6.2</i>   | LncRNA     | 0.72                        | 1.04E-03 | 1.75E-02    | 0.61                            | 4.48E-03 | 6.41E-02    |  |
| ENSG00000241520.1     | <i>AC098820.4</i>     | LncRNA     | 0.42                        | 3.85E-03 | 4.24E-02    | 0.39                            | 5.98E-03 | 7.58E-02    |  |
| ENSG00000241547.1     | <i>RP11-4K3_A.5</i>   | Pseudogene | 0.77                        | 1.15E-05 | 5.84E-04    | 0.82                            | 1.15E-06 | 1.32E-04    |  |
| ENSG00000241556.1     | <i>RP11-490G8.1</i>   | Pseudogene | 1.26                        | 2.14E-16 | 1.03E-13    | 0.55                            | 5.35E-05 | 2.81E-03    |  |
| ENSG00000241566.1     | <i>IGKV2D-24</i>      | Other      | 0.67                        | 6.42E-03 | 5.90E-02    | 0.46                            | 5.84E-02 | 2.76E-01    |  |
| ENSG00000241627.3     | <i>UBQLN4P1</i>       | Pseudogene | -0.46                       | 1.26E-03 | 1.99E-02    | -0.43                           | 1.87E-03 | 3.55E-02    |  |
| ENSG00000241640.2     | <i>RP11-59H7.1</i>    | Pseudogene | 0.85                        | 7.80E-04 | 1.43E-02    | 0.80                            | 1.14E-03 | 2.56E-02    |  |
| ENSG00000241651.4     | <i>RP11-214O14.1</i>  | Pseudogene | 1.92                        | 2.69E-22 | 2.41E-19    | -0.07                           | 6.88E-01 | 8.69E-01    |  |
| ENSG00000241678.1     | <i>RP11-732A19.1</i>  | Pseudogene | 0.75                        | 3.90E-04 | 8.85E-03    | 0.81                            | 7.48E-05 | 3.63E-03    |  |
| ENSG00000241717.1     | <i>VWFP1</i>          | Pseudogene | 0.93                        | 1.06E-07 | 1.16E-05    | 0.86                            | 3.17E-07 | 4.53E-05    |  |
| ENSG00000241754.1     | <i>RP11-280H21.1</i>  | LncRNA     | 1.23                        | 1.38E-06 | 1.03E-04    | 0.61                            | 1.33E-02 | 1.21E-01    |  |
| ENSG00000241755.1     | <i>IGKV1-9</i>        | Other      | 0.79                        | 3.98E-04 | 8.97E-03    | 0.55                            | 1.13E-02 | 1.11E-01    |  |
| ENSG00000241769.6     | <i>LINC00893</i>      | LncRNA     | 0.47                        | 1.61E-03 | 2.36E-02    | 0.33                            | 2.19E-02 | 1.61E-01    |  |
| ENSG00000241770.1     | <i>RP11-555M1.3</i>   | LncRNA     | 0.41                        | 7.21E-03 | 6.32E-02    | 0.26                            | 7.15E-02 | 3.06E-01    |  |
| ENSG00000241788.2     | <i>COX6B1P2</i>       | Pseudogene | 0.47                        | 1.19E-02 | 8.73E-02    | 0.32                            | 8.03E-02 | 3.25E-01    |  |
| ENSG00000241868.3     | <i>RN7SL434P</i>      | Other      | 0.74                        | 2.04E-03 | 2.77E-02    | 0.60                            | 1.06E-02 | 1.07E-01    |  |
| ENSG00000241886.1     | <i>RP11-242C19.2</i>  | LncRNA     | 0.49                        | 6.57E-03 | 5.97E-02    | 0.37                            | 3.50E-02 | 2.08E-01    |  |
| ENSG00000241945.6     | <i>PWP2</i>           | Protein    | 1.21                        | 8.08E-10 | 1.45E-07    | 1.22                            | 1.43E-10 | 4.60E-08    |  |
| ENSG00000241954.1     | <i>RP1-149A16.17</i>  | LncRNA     | 0.42                        | 1.30E-02 | 9.23E-02    | 0.35                            | 2.89E-02 | 1.88E-01    |  |
| ENSG00000242021.2     | <i>RP11-268G12.3</i>  | LncRNA     | 0.92                        | 3.29E-04 | 7.85E-03    | 0.63                            | 1.05E-02 | 1.06E-01    |  |
| ENSG00000242125.3     | <i>SNHG3</i>          | LncRNA     | 0.36                        | 1.86E-03 | 2.61E-02    | 0.26                            | 2.12E-02 | 1.58E-01    |  |
| ENSG00000242136.1     | <i>RP11-734K21.2</i>  | LncRNA     | 0.69                        | 5.37E-03 | 5.26E-02    | 0.43                            | 7.93E-02 | 3.23E-01    |  |
| ENSG00000242221.7     | <i>PSG2</i>           | Protein    | 0.72                        | 4.34E-03 | 4.58E-02    | 0.70                            | 4.26E-03 | 6.23E-02    |  |
| ENSG00000242247.9     | <i>ARFGAP3</i>        | Protein    | -0.19                       | 9.40E-03 | 7.47E-02    | -0.08                           | 2.76E-01 | 5.86E-01    |  |
| ENSG00000242294.5     | <i>STAG3L5P</i>       | Pseudogene | 0.35                        | 1.13E-02 | 8.41E-02    | 0.16                            | 2.31E-01 | 5.41E-01    |  |
| ENSG00000242317.1     | <i>RP11-875H7.5</i>   | LncRNA     | 1.52                        | 3.12E-09 | 5.06E-07    | 0.16                            | 5.13E-01 | 7.69E-01    |  |
| ENSG00000242325.1     | <i>RPS12P31</i>       | Pseudogene | 0.52                        | 2.88E-03 | 3.49E-02    | 0.55                            | 1.06E-03 | 2.44E-02    |  |
| ENSG00000242337.4     | <i>TFP1</i>           | Pseudogene | 0.60                        | 4.59E-08 | 5.41E-06    | 0.48                            | 7.19E-06 | 5.79E-04    |  |
| ENSG00000242338.5     | <i>BMS1P4</i>         | Pseudogene | 0.37                        | 8.23E-04 | 1.48E-02    | 0.31                            | 3.26E-03 | 5.22E-02    |  |
| ENSG00000242353.1     | <i>RP4-710M3.1</i>    | Pseudogene | 0.41                        | 9.13E-03 | 7.35E-02    | 0.45                            | 2.96E-03 | 4.89E-02    |  |
| ENSG00000242390.1     | <i>RPL6P9</i>         | Pseudogene | 0.60                        | 7.47E-03 | 6.47E-02    | 0.47                            | 3.29E-02 | 2.01E-01    |  |
| ENSG00000242436.3     | <i>RN7SL789P</i>      | Other      | 0.71                        | 5.02E-03 | 5.02E-02    | 0.69                            | 5.19E-03 | 6.97E-02    |  |
| ENSG00000242441.6     | <i>GTF2AIL</i>        | Protein    | -0.96                       | 1.37E-05 | 6.71E-04    | -0.86                           | 5.33E-05 | 2.80E-03    |  |
| ENSG00000242474.1     | <i>AC093627.9</i>     | LncRNA     | 0.28                        | 3.58E-04 | 8.32E-03    | 0.28                            | 2.32E-04 | 8.63E-03    |  |
| ENSG00000242498.6     | <i>ARPIN</i>          | Protein    | 0.17                        | 2.27E-03 | 2.98E-02    | 0.22                            | 1.84E-05 | 1.22E-03    |  |
| ENSG00000242510.1     | <i>NDUFB4P1</i>       | Pseudogene | 1.47                        | 8.08E-09 | 1.20E-06    | 1.48                            | 2.42E-09 | 6.03E-07    |  |
| ENSG00000242550.4     | <i>SERPINB10</i>      | Protein    | 0.85                        | 5.73E-04 | 1.15E-02    | 0.75                            | 1.77E-03 | 3.43E-02    |  |
| ENSG00000242578.1     | <i>RP11-469J4.3</i>   | LncRNA     | 0.81                        | 7.30E-05 | 2.49E-03    | -0.43                           | 3.28E-02 | 2.01E-01    |  |
| ENSG00000242580.1     | <i>IGKV1D-43</i>      | Other      | 0.69                        | 6.65E-03 | 6.01E-02    | 0.54                            | 2.77E-02 | 1.83E-01    |  |
| ENSG00000242599.6     | <i>CSAG4</i>          | Pseudogene | 0.52                        | 1.26E-03 | 1.98E-02    | 0.04                            | 7.61E-01 | NA          |  |
| ENSG00000242612.5     | <i>DEC2R2</i>         | Protein    | 0.36                        | 4.32E-04 | 9.50E-03    | 0.31                            | 1.59E-03 | 3.18E-02    |  |
| ENSG00000242636.1     | <i>RPL21P129</i>      | Pseudogene | 0.63                        | 5.00E-03 | 5.01E-02    | 0.53                            | 1.48E-02 | 1.29E-01    |  |
| ENSG00000242          |                       |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000242960.1     | <i>FTH1P23</i>        | Pseudogene | -0.26                       | 1.09E-02 | 8.22E-02    | -0.33                           | 8.49E-04 | 2.10E-02    |  |
| ENSG00000242970.2     | <i>AC068522.4</i>     | Pseudogene | 0.55                        | 3.12E-04 | 7.52E-03    | 0.47                            | 1.31E-03 | 2.82E-02    |  |
| ENSG00000243007.1     | <i>RP11-106M3.1</i>   | Pseudogene | -0.40                       | 4.10E-03 | 4.41E-02    | -0.30                           | 2.19E-02 | 1.61E-01    |  |
| ENSG00000243020.1     | <i>RPL7P39</i>        | Pseudogene | 0.52                        | 7.83E-03 | 6.67E-02    | 0.45                            | 1.69E-02 | 1.40E-01    |  |
| ENSG00000243056.1     | <i>EIF4EBP3</i>       | Protein    | 0.27                        | 1.45E-02 | 9.87E-02    | 0.24                            | 2.27E-02 | 1.64E-01    |  |
| ENSG00000243064.7     | <i>ABCC13</i>         | Pseudogene | 0.71                        | 4.08E-03 | 4.40E-02    | 0.70                            | 3.41E-03 | 5.38E-02    |  |
| ENSG00000243094.1     | <i>RP11-108A12.1</i>  | Pseudogene | 0.40                        | 5.18E-03 | 5.13E-02    | 0.33                            | 1.78E-02 | 1.44E-01    |  |
| ENSG00000243176.4     | <i>RP11-550I24.2</i>  | LncRNA     | 0.21                        | 9.48E-03 | 7.50E-02    | 0.13                            | 1.10E-01 | 3.80E-01    |  |
| ENSG00000243193.3     | <i>CTA-360L10.1</i>   | LncRNA     | 0.70                        | 1.72E-03 | 2.47E-02    | 0.68                            | 1.59E-03 | 3.19E-02    |  |
| ENSG00000243197.6     | <i>TUSC7</i>          | LncRNA     | 0.77                        | 2.56E-03 | 3.24E-02    | 0.63                            | 1.09E-02 | 1.09E-01    |  |
| ENSG00000243225.2     | <i>RP11-7F17.1</i>    | Pseudogene | 0.46                        | 1.23E-02 | 8.91E-02    | 0.50                            | 4.74E-03 | 6.60E-02    |  |
| ENSG00000243230.1     | <i>RP11-286H14.8</i>  | LncRNA     | 0.39                        | 4.72E-03 | 4.83E-02    | 0.27                            | 4.39E-02 | 2.37E-01    |  |
| ENSG00000243234.1     | <i>CTD-2583A14.1</i>  | Pseudogene | 0.62                        | 9.15E-05 | 2.95E-03    | 0.61                            | 5.63E-05 | 2.92E-03    |  |
| ENSG00000243260.3     | <i>RN7SL558P</i>      | Other      | 0.59                        | 4.64E-03 | 4.78E-02    | 0.46                            | 2.17E-02 | 1.60E-01    |  |
| ENSG00000243267.3     | <i>RN7SL614P</i>      | Other      | 0.51                        | 9.33E-03 | 7.44E-02    | 0.46                            | 1.70E-02 | 1.41E-01    |  |
| ENSG00000243273.1     | <i>RP11-166N6.2</i>   | LncRNA     | 0.75                        | 2.86E-03 | 3.47E-02    | 0.68                            | 5.84E-03 | 7.49E-02    |  |
| ENSG00000243284.1     | <i>VSIG8</i>          | Protein    | -0.50                       | 5.66E-03 | 5.44E-02    | -0.62                           | 3.65E-04 | 1.17E-02    |  |
| ENSG00000243321.3     | <i>RP11-167H9.3</i>   | LncRNA     | 0.99                        | 8.61E-05 | 2.82E-03    | 0.93                            | 1.55E-04 | 6.29E-03    |  |
| ENSG00000243323.4     | <i>PTPRVP</i>         | Pseudogene | 0.60                        | 6.25E-05 | 2.22E-03    | 0.47                            | 1.21E-03 | 2.68E-02    |  |
| ENSG00000243328.1     | <i>RP11-520P18.1</i>  | Pseudogene | 0.99                        | 1.99E-05 | 9.23E-04    | 0.98                            | 1.36E-05 | 9.60E-04    |  |
| ENSG00000243368.2     | <i>MCCC1-AS1</i>      | LncRNA     | 0.34                        | 1.07E-02 | 8.12E-02    | 0.12                            | 3.48E-01 | 6.50E-01    |  |
| ENSG00000243403.1     | <i>RP11-330L19.1</i>  | Pseudogene | 0.64                        | 3.82E-05 | 1.53E-03    | 0.56                            | 1.77E-04 | 7.02E-03    |  |
| ENSG00000243445.1     | <i>RP11-715J22.1</i>  | Pseudogene | 0.36                        | 1.22E-02 | 8.86E-02    | 0.31                            | 2.58E-02 | 1.77E-01    |  |
| ENSG00000243478.6     | <i>AOX2P</i>          | Pseudogene | 0.45                        | 9.44E-03 | 7.49E-02    | 0.38                            | 2.25E-02 | 1.63E-01    |  |
| ENSG00000243480.6     | <i>AMY2A</i>          | Protein    | 0.67                        | 8.36E-03 | 6.96E-02    | 0.62                            | 1.18E-02 | 1.14E-01    |  |
| ENSG00000243537.1     | <i>CTC-458A3.1</i>    | Pseudogene | 0.72                        | 4.73E-05 | 1.80E-03    | 0.70                            | 3.87E-05 | 2.18E-03    |  |
| ENSG00000243562.3     | <i>RN7SL838P</i>      | Other      | 0.57                        | 6.49E-03 | 5.94E-02    | 0.39                            | 5.28E-02 | 2.62E-01    |  |
| ENSG00000243566.5     | <i>UPK3B</i>          | Protein    | 0.94                        | 5.95E-10 | 1.09E-07    | 0.86                            | 3.25E-09 | 7.86E-07    |  |
| ENSG00000243660.8     | <i>ZNF487</i>         | Protein    | 0.16                        | 7.83E-03 | 6.67E-02    | 0.11                            | 4.47E-02 | 2.39E-01    |  |
| ENSG00000243696.4     | <i>RP5-966M1.6</i>    | Protein    | 0.41                        | 2.58E-03 | 3.25E-02    | 0.23                            | 8.97E-02 | 3.43E-01    |  |
| ENSG00000243701.4     | <i>LINC00883</i>      | LncRNA     | -0.49                       | 4.68E-04 | 1.01E-02    | 0.43                            | 1.77E-03 | 3.43E-02    |  |
| ENSG00000243746.1     | <i>EEFLA1P10</i>      | Pseudogene | -0.37                       | 2.71E-03 | 3.35E-02    | -0.36                           | 2.67E-03 | 4.56E-02    |  |
| ENSG00000243759.1     | <i>ST13P15</i>        | Pseudogene | -0.39                       | 2.72E-03 | 3.36E-02    | -0.31                           | 1.27E-02 | 1.19E-01    |  |
| ENSG00000243789.9     | <i>JMJD7</i>          | Protein    | 0.38                        | 3.72E-03 | 4.14E-02    | 0.36                            | 4.13E-03 | 6.11E-02    |  |
| ENSG00000243802.2     | <i>RP11-390K5.1</i>   | Pseudogene | 1.64                        | 8.58E-19 | 5.77E-16    | 1.62                            | 1.72E-19 | 1.70E-16    |  |
| ENSG00000243819.4     | <i>RN7SL832P</i>      | LncRNA     | 0.36                        | 2.91E-03 | 3.51E-02    | 0.33                            | 3.57E-03 | 5.55E-02    |  |
| ENSG00000243832.1     | <i>RP11-202A13.1</i>  | LncRNA     | 0.79                        | 1.95E-03 | 2.70E-02    | 0.76                            | 2.32E-03 | 4.13E-02    |  |
| ENSG00000243910.6     | <i>TUBA4B</i>         | Pseudogene | -0.87                       | 4.62E-04 | 1.00E-02    | -0.56                           | 1.60E-02 | 1.36E-01    |  |
| ENSG00000243927.4     | <i>MRPS6</i>          | Protein    | 0.23                        | 1.36E-03 | 2.09E-02    | -0.06                           | 3.19E-01 | 6.26E-01    |  |
| ENSG00000243970.1     | <i>PPIEL</i>          | Pseudogene | 0.31                        | 1.01E-02 | 7.84E-02    | 0.27                            | 2.02E-02 | 1.54E-01    |  |
| ENSG00000244038.8     | <i>DDOST</i>          | Protein    | -0.17                       | 3.61E-03 | 4.07E-02    | -0.10                           | 7.90E-02 | 3.22E-01    |  |
| ENSG00000244055.1     | <i>AC007566.10</i>    | LncRNA     | 0.55                        | 1.96E-06 | 1.37E-04    | 0.38                            | 8.41E-04 | 2.09E-02    |  |
| ENSG00000244063.1     | <i>AC024704.2</i>     | LncRNA     | 0.71                        | 2.14E-05 | 9.77E-04    | 0.68                            | 2.31E-05 | 1.47E-03    |  |
| ENSG00000244067.2     | <i>GSTA2</i>          | Protein    | -0.69                       | 4.33E-03 | 4.58E-02    | -0.64                           | 5.22E-03 | 7.00E-02    |  |
| ENSG00000244086.1     | <i>RPS20P35</i>       | Pseudogene | 1.78                        | 4.92E-21 | 3.96E-18    | 1.76                            | 3.89E-22 | 4.81E-19    |  |
| ENSG00000244094.1     | <i>SPRR2F</i>         | Protein    | -0.77                       | 2.11E-03 | 2.84E-02    | -0.80                           | 9.62E-04 | 2.28E-02    |  |
| ENSG00000244124.1     | <i>ATP1B3-AS1</i>     | LncRNA     | 0.63                        | 1.57E-04 | 4.45E-03    | 0.52                            | 1.17E-03 | 2.61E-02    |  |
| ENSG00000244128.4     | <i>LINC01322</i>      | LncRNA     | 1.25                        | 8.95E-07 | 7.10E-05    | 0.07                            | 7.70E-01 | 9.09E-01    |  |
| ENSG00000244137.1     | <i>RP11-99J16_A.2</i> | LncRNA     | 0.48                        | 8.87E-03 | 7.21E-02    | 0.35                            | 4.56E-02 | 2.42E-01    |  |
| ENSG00000244151.1     | <i>RP11-148K1.12</i>  | LncRNA     | 0.39                        | 3.37E-03 | 3.89E-02    | 0.17                            | 1.87E-01 | 4.90E-01    |  |
| ENSG00000244155.1     | <i>CYP4F34P</i>       | Pseudogene | 1.85                        | 5.52E-13 | 1.77E-10    | 1.67                            | 1.56E-11 | 6.25E-09    |  |
| ENSG00000244161.1     | <i>FLNB-AS1</i>       | LncRNA     | 0.47                        | 1.62E-04 | 4.57E-03    | 0.35                            | 4.09E-03 | 6.07E-02    |  |
| ENSG00000244184.1     | <i>RP11-314A20.2</i>  | LncRNA     | 0.46                        | 3.54E-04 | 8.26E-03    | 0.44                            | 4.26E-04 | 1.31E-02    |  |
| ENSG00000244255.4     | <i>XXbac-BPG116M5</i> | Protein    | -0.78                       | 1.53E-03 | 2.27E-02    | -0.52                           | 2.87E-02 | 1.87E-01    |  |
| ENSG00000244265.1     | <i>SLAH2-AS1</i>      | LncRNA     | 0.49                        | 4.17E-04 | 9.26E-03    | 0.38                            | 4.59E-03 | 6.48E-02    |  |
| ENSG00000244268.1     | <i>RP11-529G21.2</i>  | LncRNA     | 0.60                        | 2.16E-03 | 2.87E-02    | 0.51                            | 7.43E-03 | 8.60E-02    |  |
| ENSG00000244286.1     | <i>ITGB5-AS1</i>      | LncRNA     | 0.69                        | 8.16E-04 | 1.47E-02    | 0.61                            | 2.10E-03 | 3.87E-02    |  |
| ENSG00000244405.6     | <i>ETV5</i>           | Protein    | -0.44                       | 8.76E-03 | 7.16E-02    | -0.09                           | 4.80E-01 | 7.47E-01    |  |
| ENSG00000244476.2     | <i>ERVFRD-1</i>       | Protein    | 1.84                        | 7.18E-26 | 9.04E-23    | 1.91                            | 1.90E-29 | 4.18E-26    |  |
| ENSG00000244485.1     | <i>RPL18P13</i>       | Pseudogene | 0.80                        | 8.01E-05 | 2.68E-03    | -0.05                           | 7.83E-01 | 9.15E-01    |  |
| ENSG00000244502.2     | <i>HDAC11-AS1</i>     | LncRNA     | 0.43                        | 5.45E-03 | 5.31E-02    | 0.32                            | 3.20E-02 | 1.99E-01    |  |
| ENSG00000244503.1     | <i>RP11-278L15.6</i>  | Pseudogene | -0.41                       | 1.29E-02 | 9.19E-02    | -0.37                           | 1.88E-02 | 1.48E-01    |  |
| ENSG00000244515.1     | <i>KRT18P34</i>       | Pseudogene | 0.28                        | 1.28E-02 | 9.11E-02    | 0.23                            | 3.75E-02 | 2.16E-01    |  |
| ENSG00000244560.5     | <i>RP4-800G7.2</i>    | Pseudogene | 0.45                        | 5.07E-04 | 1.07E-02    | 0.22                            | 8.10E-02 | 3.27E-01    |  |
| ENSG00000244567.1     | <i>AC096772.6</i>     | LncRNA     | -0.24                       | 5.50E-04 | 1.12E-02    | -0.24                           | 3.48E-04 | 1.13E-02    |  |
| ENSG00000244582.2     | <i>RPL21P120</i>      | Pseudogene | 1.08                        | 1.30E-11 | 3.37E-09    | -0.11                           | 4.50E-01 | 7.28E-01    |  |
| ENSG00000244604.1     | <i>RP11-713H12.1</i>  | Pseudogene | 0.77                        | 1.57E-06 | 1.14E-04    | 0.68                            | 1.28E-05 | 9.15E-04    |  |
| ENSG00000244607.4     | <i>CCDC13</i>         | Protein    | -0.30                       | 8.48E-03 | 7.02E-02    | -0.34                           | 1.60E-03 | 3.20E-02    |  |
| ENSG00000244627.4     | <i>RP3-449O17.1</i>   | Pseudogene | 0.23                        | 3.99E-03 | 4.34E-02    | 0.17                            | 3.26E-02 | 2.00E-01    |  |
| ENSG00000244641.2     | <i>RPS26P43</i>       | Pseudogene | 1.47                        | 1.27E-09 | 2.19E-07    | 1.40                            | 3.14E-09 | 7.64E-07    |  |
| ENSG00000244668.1     | <i>SNRPCP3</i>        | Pseudogene | 0.31                        | 4.75E-03 | 4.85E-02    | 0.33                            | 1.80E-03 | 3.46E-02    |  |
| ENSG00000244682.6     | <i>FCGR2C</i>         | Pseudogene | 0.42                        | 6.35E-03 | 5.87E-02    | 0.20                            | 1.78E-01 | 4.78E-01    |  |
| ENSG00000244699.1     | <i>RP11-803B1.2</i>   | Pseudogene | -0.55                       | 7.38E-03 | 6.41E-02    | -0.40                           | 4.84E-02 | 2.50E-01    |  |
| ENSG00000244701.1     | <i>RP5-894A10.2</i>   | LncRNA     | 0.28                        | 9.42E-03 | 7.48E-02    | 0.16                            | 1.35E-01 | 4.20E-01    |  |
| ENSG00000244720.1     | <i>RP11-402J7.2</i>   | Pseudogene | 0.56                        | 1.13E-02 | 8.44E-02    | 0.48                            | 2.50E-02 | 1.73E-01    |  |
| ENSG00000244731.6     | <i>C4A</i>            | Protein    | -0.62                       | 4.82E-04 | 1.03E-02    | -0.65                           | 1.50E-04 | 6.19E-03    |  |
| ENSG00000244752.2     | <i>CRYBB2</i>         | Protein    | 1.13                        | 1.15E-11 | 3.04E-09    | 1.07                            | 2.72E-11 | 1.02E-08    |  |
| ENSG00000244945.1     | <i>RP11-1379J22.2</i> | LncRNA     | 0.37                        | 1.46E-03 | 2.20E-02    | 0.25                            | 2.62E-02 | 1.78E-01    |  |
| ENSG00000245017.2     | <i>RP11-181C3.1</i>   | LncRNA     | 0.45                        | 1.19E-04 | 3.62E-03    | 0.28                            | 1.28E-02 | 1.19E-01    |  |
| ENSG00000245080.5     | <i>RP11-320N21.1</i>  | LncRNA     | 0.58                        | 1.81E-03 | 2.55E-02    | 0.39                            | 3.29E-02 | 2.01E-01    |  |
| ENSG00000245105.2     | <i>A2M-AS1</i>        | LncRNA     | -0.39                       | 3.37E-06 | 2.15E-04    | -0.25                           | 2.31E-03 | 4.13E-02    |  |
| ENSG00000245148.2     | <i>ARAP1-AS2</i>      | LncRNA     | 0.40                        | 7.94E-03 | 6.72E-02    | 0.27                            | 6.15E-02 | 2.84E-01    |  |
| ENSG00000245149.3     | <i>RNF139-AS1</i>     | LncRNA     | 0.29                        | 8.12E-03 | 6.84E-02    | 0.13                            | 2.20E-01 | 5.30E-01    |  |
| ENSG00000245498.5     | <i>RP11-677M14.7</i>  | LncRNA     | 0.57                        | 6.89E-07 | 5.68E-05    | 0.50                            | 4.05E-06 | 3.62E-04    |  |
| ENSG00000245526.7     | <i>LINC00461</i>      | LncRNA     | 0.57                        | 3.67E-03 | 4.10E-02    | 0.53                            | 4.92E-03 | 6.76E-02    |  |
| ENSG00000245532.5     | <i>NEAT1</i>          | LncRNA     | 0.39                        | 6.56E-03 | 5.97E-02    | 0.21                            | 1.31E-01 | 4.13E-01    |  |
| ENSG00000245534.5     | <i>RORA-AS1</i>       | LncRNA     | -0.34                       | 6.63E-04 | 1.28E-02    | -0.31                           | 1.29E-03 | 2.79E-02    |  |
| ENSG00000245571.5     | <i>AP001258.4</i>     | LncRNA     | 0.55                        | 1.13E-06 | 8.67E-05    | 0.54                            | 4.26E-07 | 5.78E-05    |  |
| ENSG00000245614.3     | <i>DDX11-AS1</i>      | LncRNA     | 0.25                        | 1.48E-02 | 9.99E-02    | 0.13                            | 1.84E-01 | 4.87E-01    |  |
| ENSG00000245667.2     | <i>RP5-940J5.8</i>    | LncRNA     | 0.48                        | 1.45E-02 | 9.89E-02    | 0.36                            | 5.32E-02 | 2.63E-01    |  |
| ENSG00000245685.5     | <i>AFL46191.4</i>     | LncRNA     | -0.30                       | 1.22E-02 | 8.85E-02    | -0.27                           | 1.64E-02 | 1.38E-01    |  |
| ENSG00000245688.1     | <i>CTB-26E19.1</i>    | LncRNA     | 0.70                        | 6.50E-03 | 5.94E-02    | 0.59                            | 1.80E-02 | 1.45E-01    |  |
| ENSG00000245694.7     | <i>CRNDE</i>          | LncRNA     | 0.28                        | 5.79E-03 | 5.50E-02    | 0.15                            | 1.30E-01 | 4.12E-01    |  |
| ENSG00000245719.1     | <i>RP11-34F13.2</i>   | LncRNA     | -0.59                       | 1.04E-02 | 8.00E-02    | -0.61                           | 6.12E-03 | 7.69E-02    |  |
| ENSG00000245832.5     | <i>RP11-179A16.1</i>  | LncRNA     | 0.69                        | 5.23E-04 | 1.09E-02    | 0.64                            | 9.54E-04 | 2.27E-02    |  |
| ENSG00000245849.5     | <i>RAD51-AS1</i>      | LncRNA     | 0.24                        | 1.05E-02 | 8.03E-02    | 0.18                            | 5.25E-02 | 2.61E-01    |  |
| ENSG00000245888.5     | <i>FLJ21408</i>       | LncRNA     | 0.39                        | 8.20E-04 | 1.48E-02    | 0.29                            | 8.33E-03 | 9.22E-02    |  |
| ENSG00000245904.3     | <i>RP11-796E2.4</i>   | LncRNA     | 0.52                        | 2.46E-05 | 1.08E-03    | 0.40                            | 8.44E-04 | 2.09E-02    |  |
| ENSG00000245910.7     | <i>SNHG6</i>          | LncRNA     | 0.39                        | 7.32E-04 | 1.37E-02    | 0.27                            | 1.64E-02 | 1.38E-01    |  |
| ENSG00000245954.5     | <i>RP11-18H21.1</i>   | LncRNA     | 0.58                        | 1.92E-03 | 2.67E-02    | 0.41                            | 2.26E-02 |             |  |

| Gene ID (GENCODE v22) | Gene symbol    | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000246366.5     | RP11-382J12.1  | LncRNA     | 0.61                        | 1.23E-06 | 9.28E-05    | 0.46                            | 1.61E-04 | 6.47E-03    |  |
| ENSG00000246375.2     | RP11-10L7.1    | LncRNA     | 0.72                        | 3.39E-06 | 2.16E-04    | 0.73                            | 9.02E-07 | 1.08E-04    |  |
| ENSG00000246477.3     | AF131216.6     | LncRNA     | 0.38                        | 8.76E-03 | 7.16E-02    | 0.35                            | 1.18E-02 | 1.14E-01    |  |
| ENSG00000246526.2     | RP11-539L10.2  | LncRNA     | 0.55                        | 5.00E-05 | 1.88E-03    | 0.43                            | 9.93E-04 | 2.32E-02    |  |
| ENSG00000246528.3     | RP11-159H10.3  | LncRNA     | 0.34                        | 8.54E-03 | 7.06E-02    | 0.18                            | 1.53E-01 | 4.45E-01    |  |
| ENSG00000246575.2     | AC093162.5     | Pseudogene | 0.51                        | 3.59E-04 | 8.33E-03    | 0.36                            | 1.09E-02 | 1.09E-01    |  |
| ENSG00000246740.2     | PLA2G4E-AS1    | LncRNA     | 0.70                        | 3.87E-07 | 3.48E-05    | 0.65                            | 7.01E-07 | 8.73E-05    |  |
| ENSG00000246982.5     | RP1-179N16.6   | LncRNA     | 0.40                        | 1.82E-03 | 2.56E-02    | 0.16                            | 2.03E-01 | 5.10E-01    |  |
| ENSG00000247092.5     | SNHG10         | LncRNA     | 0.40                        | 8.04E-05 | 2.69E-03    | 0.26                            | 8.43E-03 | 9.29E-02    |  |
| ENSG00000247095.2     | MIR210HG       | LncRNA     | 0.48                        | 8.39E-04 | 1.50E-02    | 0.27                            | 5.24E-02 | 2.61E-01    |  |
| ENSG00000247121.5     | CTD-2260A17.2  | LncRNA     | -0.18                       | 1.04E-02 | 7.96E-02    | -0.15                           | 2.28E-02 | 1.65E-01    |  |
| ENSG00000247137.7     | RP11-727A23.5  | LncRNA     | 0.40                        | 7.85E-06 | 4.30E-04    | 0.27                            | 2.06E-03 | 3.81E-02    |  |
| ENSG00000247157.5     | LINC01252      | LncRNA     | 0.53                        | 2.30E-04 | 6.00E-03    | 0.43                            | 1.97E-03 | 3.70E-02    |  |
| ENSG00000247400.3     | DNAJC3-AS1     | LncRNA     | -0.21                       | 1.39E-02 | 9.63E-02    | -0.15                           | 7.37E-02 | 3.11E-01    |  |
| ENSG00000247556.5     | OIP5-AS1       | LncRNA     | -0.16                       | 1.08E-02 | 8.20E-02    | -0.12                           | 5.46E-02 | 2.66E-01    |  |
| ENSG00000247624.5     | CPEB2-AS1      | LncRNA     | 0.39                        | 1.03E-02 | 7.91E-02    | 0.22                            | 1.31E-01 | 4.14E-01    |  |
| ENSG00000247627.2     | MTND4P12       | Pseudogene | 0.98                        | 1.32E-05 | 6.52E-04    | 0.96                            | 1.08E-05 | 8.01E-04    |  |
| ENSG00000247679.2     | RP11-1277A3.1  | LncRNA     | 0.32                        | 4.43E-05 | 1.72E-03    | 0.25                            | 9.42E-04 | 2.25E-02    |  |
| ENSG00000247746.4     | USP51          | Protein    | 0.29                        | 4.85E-03 | 4.92E-02    | 0.32                            | 1.38E-03 | 2.91E-02    |  |
| ENSG00000247796.2     | CTD-2366F13.1  | LncRNA     | -0.24                       | 6.27E-04 | 1.23E-02    | -0.12                           | 8.88E-02 | 3.41E-01    |  |
| ENSG00000247872.2     | SPCS2P3        | Pseudogene | 0.68                        | 3.79E-03 | 4.19E-02    | 0.57                            | 1.32E-02 | 1.21E-01    |  |
| ENSG00000247911.3     | HMGNI1P12      | Pseudogene | 0.61                        | 1.33E-02 | 9.34E-02    | 0.49                            | 4.11E-02 | 2.28E-01    |  |
| ENSG00000247982.5     | LINC00926      | LncRNA     | 0.44                        | 2.26E-03 | 2.96E-02    | 0.33                            | 1.94E-02 | 1.51E-01    |  |
| ENSG00000248019.2     | FAM134-AS1     | LncRNA     | 0.56                        | 2.62E-05 | 1.13E-03    | 0.36                            | 6.31E-03 | 7.82E-02    |  |
| ENSG00000248092.6     | NNT-AS1        | LncRNA     | -0.36                       | 6.28E-06 | 3.58E-04    | -0.25                           | 1.11E-03 | 2.52E-02    |  |
| ENSG00000248138.4     | RP11-446J8.1   | LncRNA     | 0.78                        | 2.03E-03 | 2.77E-02    | 0.57                            | 2.10E-02 | 1.57E-01    |  |
| ENSG00000248165.1     | RP11-44F21.2   | LncRNA     | 0.73                        | 3.91E-03 | 4.29E-02    | 0.74                            | 2.52E-03 | 4.40E-02    |  |
| ENSG00000248206.1     | RP11-739P1.2   | LncRNA     | -0.55                       | 8.63E-03 | 7.10E-02    | -0.30                           | 1.42E-01 | 4.30E-01    |  |
| ENSG00000248235.5     | AC037459.4     | Protein    | 0.41                        | 1.40E-02 | 9.69E-02    | 0.41                            | 1.05E-02 | 1.06E-01    |  |
| ENSG00000248279.4     | CTD-2218G20.2  | LncRNA     | 1.49                        | 1.51E-09 | 2.57E-07    | 0.67                            | 4.94E-03 | 6.77E-02    |  |
| ENSG00000248290.1     | TNXA           | Pseudogene | 0.54                        | 2.53E-03 | 3.21E-02    | 0.51                            | 3.16E-03 | 5.12E-02    |  |
| ENSG00000248313.1     | CYP4F27P       | Pseudogene | 0.88                        | 2.70E-04 | 6.77E-03    | 0.70                            | 2.93E-03 | 4.86E-02    |  |
| ENSG00000248318.1     | RP11-713M15.1  | LncRNA     | 0.77                        | 8.28E-04 | 1.49E-02    | 0.50                            | 2.68E-02 | 1.80E-01    |  |
| ENSG00000248329.4     | APELA          | Protein    | 0.60                        | 8.20E-04 | 1.48E-02    | 0.55                            | 1.46E-03 | 3.02E-02    |  |
| ENSG00000248330.4     | LINC00613      | LncRNA     | 0.84                        | 1.06E-05 | 5.47E-04    | 0.32                            | 6.84E-02 | NA          |  |
| ENSG00000248356.1     | RP11-557J10.4  | LncRNA     | 0.51                        | 8.48E-04 | 1.52E-02    | 0.47                            | 1.55E-03 | 3.14E-02    |  |
| ENSG00000248363.4     | CTC-261N6.1    | LncRNA     | 0.68                        | 7.89E-04 | 1.44E-02    | 0.14                            | 4.47E-01 | 7.25E-01    |  |
| ENSG00000248385.6     | TARMI          | Protein    | 0.63                        | 1.32E-02 | 9.29E-02    | 0.04                            | 8.56E-01 | 9.48E-01    |  |
| ENSG00000248416.1     | RP11-1191J2.4  | LncRNA     | 0.67                        | 1.03E-03 | 1.74E-02    | 0.66                            | 6.72E-04 | 1.79E-02    |  |
| ENSG00000248423.1     | RP11-235P11.1  | Pseudogene | 0.64                        | 1.20E-02 | 8.74E-02    | -0.20                           | 4.16E-01 | 7.03E-01    |  |
| ENSG00000248429.4     | RP11-597D13.9  | LncRNA     | -0.65                       | 1.74E-07 | 1.77E-05    | -0.58                           | 1.33E-06 | 1.48E-04    |  |
| ENSG00000248445.4     | SEMA6A-AS1     | LncRNA     | 0.38                        | 5.27E-04 | 1.10E-02    | 0.31                            | 2.56E-03 | 4.45E-02    |  |
| ENSG00000248469.1     | RP11-826N14.2  | LncRNA     | 0.66                        | 8.46E-04 | 1.51E-02    | 0.60                            | 1.79E-03 | 3.46E-02    |  |
| ENSG00000248488.2     | PGAM4P2        | Pseudogene | 0.62                        | 8.45E-03 | 7.01E-02    | -0.30                           | 1.85E-01 | 4.87E-01    |  |
| ENSG00000248528.1     | CTC-458G6.2    | LncRNA     | -0.61                       | 3.40E-03 | 3.91E-02    | -0.32                           | 1.15E-01 | 3.88E-01    |  |
| ENSG00000248544.2     | CTB-47B11.3    | LncRNA     | 0.41                        | 6.76E-03 | 6.07E-02    | 0.36                            | 1.18E-02 | 1.14E-01    |  |
| ENSG00000248583.1     | RP11-241F15.1  | Pseudogene | 1.15                        | 1.14E-06 | 8.69E-05    | 1.05                            | 4.42E-06 | 3.89E-04    |  |
| ENSG00000248599.1     | FLJ42969       | LncRNA     | 1.17                        | 1.26E-08 | 1.78E-06    | 0.84                            | 2.96E-05 | 1.75E-03    |  |
| ENSG00000248633.1     | WRBP1          | Pseudogene | 0.66                        | 5.31E-03 | 5.21E-02    | 0.62                            | 7.59E-03 | 8.72E-02    |  |
| ENSG00000248643.5     | RBM14-RBM4     | Protein    | 0.22                        | 3.39E-04 | 8.02E-03    | 0.14                            | 1.81E-02 | 1.45E-01    |  |
| ENSG00000248677.1     | CTD-2044J15.1  | LncRNA     | 0.51                        | 2.75E-04 | 6.85E-03    | 0.34                            | 1.49E-02 | 1.30E-01    |  |
| ENSG00000248738.5     | RP11-87E22.2   | LncRNA     | 0.39                        | 1.33E-02 | 9.35E-02    | 0.62                            | 6.77E-05 | 3.36E-03    |  |
| ENSG00000248751.5     | RP1-130H16.18  | Protein    | 0.32                        | 7.39E-03 | 6.42E-02    | 0.28                            | 1.58E-02 | 1.34E-01    |  |
| ENSG00000248783.1     | RP11-308B16.2  | LncRNA     | 0.54                        | 1.17E-02 | 8.61E-02    | 0.09                            | 6.50E-01 | 8.49E-01    |  |
| ENSG00000248791.1     | CTD-2165H16.3  | Pseudogene | 0.62                        | 1.36E-03 | 2.09E-02    | 0.49                            | 8.39E-03 | 9.25E-02    |  |
| ENSG00000248807.1     | KRTAP9-12P     | Pseudogene | 0.86                        | 7.41E-04 | 1.38E-02    | 0.82                            | 9.29E-04 | 2.23E-02    |  |
| ENSG00000248822.1     | APOBEC3AP1     | Pseudogene | -0.65                       | 1.09E-02 | 8.22E-02    | -0.43                           | 8.14E-02 | 3.27E-01    |  |
| ENSG00000248837.4     | RP11-412P11.1  | LncRNA     | 1.28                        | 1.35E-08 | 1.90E-06    | -0.12                           | 5.59E-01 | NA          |  |
| ENSG00000248840.2     | RP11-357G3.2   | Pseudogene | 0.50                        | 7.94E-03 | 6.72E-02    | 0.34                            | 5.84E-02 | 2.76E-01    |  |
| ENSG00000248869.4     | RP11-138I17.1  | LncRNA     | 0.84                        | 9.84E-04 | 1.68E-02    | 0.84                            | 6.70E-04 | 1.79E-02    |  |
| ENSG00000248923.1     | MTND5P11       | Pseudogene | 0.78                        | 4.69E-06 | 2.83E-04    | 0.91                            | 2.71E-08 | 5.25E-06    |  |
| ENSG00000248955.1     | RP11-114H7.3   | Pseudogene | 1.88                        | 6.32E-14 | 2.36E-11    | 1.81                            | 5.84E-14 | 3.30E-11    |  |
| ENSG00000248986.1     | RP11-774O3.1   | LncRNA     | 0.64                        | 4.43E-03 | 4.65E-02    | 0.03                            | 8.95E-01 | 9.63E-01    |  |
| ENSG00000248988.1     | RP11-815N9.2   | Pseudogene | 0.85                        | 2.00E-07 | 2.01E-05    | 0.82                            | 1.84E-07 | 2.84E-05    |  |
| ENSG00000249022.1     | RP11-285C1.2   | LncRNA     | 0.84                        | 2.23E-04 | 5.86E-03    | 0.87                            | 8.07E-05 | 3.84E-03    |  |
| ENSG00000249047.2     | COX6B1P5       | Pseudogene | 0.50                        | 2.84E-03 | 3.45E-02    | 0.35                            | 3.40E-02 | 2.05E-01    |  |
| ENSG00000249072.1     | RP11-777B9.5   | Pseudogene | 1.34                        | 8.48E-11 | 1.92E-08    | 0.81                            | 3.78E-05 | 2.14E-03    |  |
| ENSG00000249079.1     | RP11-128IK21.3 | Pseudogene | 1.01                        | 7.22E-05 | 2.47E-03    | 0.89                            | 2.93E-04 | 1.00E-02    |  |
| ENSG00000249102.1     | CTD-2066L21.1  | LncRNA     | 1.22                        | 1.92E-06 | 1.34E-04    | 0.56                            | 2.36E-02 | 1.68E-01    |  |
| ENSG00000249106.1     | RP11-806K15.1  | LncRNA     | 1.05                        | 3.89E-05 | 1.56E-03    | 0.12                            | 6.18E-01 | 8.33E-01    |  |
| ENSG00000249116.1     | CTD-2194D22.3  | LncRNA     | 0.60                        | 7.95E-05 | 2.67E-03    | 0.45                            | 2.06E-03 | 3.81E-02    |  |
| ENSG00000249128.1     | RP11-2N5.1     | LncRNA     | 0.93                        | 2.09E-04 | 5.55E-03    | 0.89                            | 2.72E-04 | 9.59E-03    |  |
| ENSG00000249148.2     | AC006445.7     | Pseudogene | 0.46                        | 1.20E-02 | 8.74E-02    | 0.31                            | 8.41E-02 | 3.32E-01    |  |
| ENSG00000249159.5     | RP11-480D4.2   | LncRNA     | -0.44                       | 7.17E-03 | 6.29E-02    | -0.43                           | 6.28E-03 | 7.79E-02    |  |
| ENSG00000249173.4     | LINC01093      | LncRNA     | 0.54                        | 3.69E-04 | 8.50E-03    | 0.56                            | 9.68E-05 | 4.41E-03    |  |
| ENSG00000249199.1     | CTD-2139B15.5  | LncRNA     | 1.21                        | 1.36E-06 | 1.02E-04    | 0.30                            | 2.18E-01 | 5.28E-01    |  |
| ENSG00000249201.2     | CTD-3080P12.3  | LncRNA     | 0.85                        | 6.28E-05 | 2.22E-03    | 0.83                            | 5.14E-05 | 2.73E-03    |  |
| ENSG00000249203.1     | RP11-473L15.3  | LncRNA     | 0.97                        | 1.34E-04 | 3.95E-03    | 0.49                            | 4.71E-02 | NA          |  |
| ENSG00000249238.1     | BCL9P1         | Pseudogene | 0.68                        | 8.15E-03 | 6.85E-02    | 0.73                            | 3.21E-03 | 5.16E-02    |  |
| ENSG00000249242.6     | TMEM150C       | Protein    | 0.27                        | 8.51E-03 | 7.04E-02    | 0.21                            | 3.85E-02 | 2.19E-01    |  |
| ENSG00000249264.1     | EEF1A1P9       | Pseudogene | -0.38                       | 4.27E-04 | 9.41E-03    | -0.28                           | 6.72E-03 | 8.11E-02    |  |
| ENSG00000249274.1     | PDLIM1P4       | Pseudogene | -0.41                       | 6.95E-03 | 6.18E-02    | -0.44                           | 2.71E-03 | 4.60E-02    |  |
| ENSG00000249328.2     | RP11-26J3.1    | LncRNA     | 1.41                        | 3.68E-13 | 1.22E-10    | 0.14                            | 4.59E-01 | 7.34E-01    |  |
| ENSG00000249352.4     | RP11-141O11.2  | LncRNA     | 0.34                        | 6.63E-03 | 6.00E-02    | 0.40                            | 1.02E-03 | 2.37E-02    |  |
| ENSG00000249362.1     | CTD-2316B1.1   | LncRNA     | 0.58                        | 5.14E-03 | 5.10E-02    | -0.14                           | 4.73E-01 | 7.43E-01    |  |
| ENSG00000249379.1     | RP1-27K12.4    | LncRNA     | 0.85                        | 9.15E-07 | 7.23E-05    | 0.33                            | 4.81E-02 | 2.49E-01    |  |
| ENSG00000249392.1     | RP11-725D20.1  | LncRNA     | 1.22                        | 5.73E-07 | 4.89E-05    | 0.19                            | 4.27E-01 | 7.11E-01    |  |
| ENSG00000249430.1     | CTD-2231H16.1  | LncRNA     | -0.58                       | 1.61E-03 | 2.36E-02    | -0.47                           | 7.13E-03 | 8.40E-02    |  |
| ENSG00000249453.1     | RP13-497K6.1   | LncRNA     | 0.94                        | 1.38E-05 | 6.71E-04    | -0.19                           | 3.33E-01 | NA          |  |
| ENSG00000249493.1     | ANKRD20A18P    | Pseudogene | 0.66                        | 7.23E-03 | 6.33E-02    | 0.63                            | 8.99E-03 | 9.64E-02    |  |
| ENSG00000249494.4     | CTB-161M19.4   | LncRNA     | 0.65                        | 1.08E-09 | 1.90E-07    | 0.63                            | 6.06E-10 | 1.69E-07    |  |
| ENSG00000249526.1     | CTB-35F21.1    | LncRNA     | 0.71                        | 2.62E-03 | 3.28E-02    | 0.58                            | 1.11E-02 | 1.10E-01    |  |
| ENSG00000249565.2     | SERBP1P5       | Pseudogene | -0.43                       | 1.73E-04 | 4.83E-03    | -0.39                           | 4.42E-04 | 1.35E-02    |  |
| ENSG00000249581.2     | CLRN2          | Protein    | -0.62                       | 1.34E-02 | 9.39E-02    | -0.52                           | 3.01E-02 | 1.92E-01    |  |
| ENSG00000249592.4     | RP11-440L14.1  | LncRNA     | 0.25                        | 9.91E-03 | 7.73E-02    | 0.14                            | 1.23E-01 | 4.01E-01    |  |
| ENSG00000249602.1     | RP11-98D18.3   | LncRNA     | 0.31                        | 1.02E-03 | 1.72E-02    | 0.32                            | 3.27E-04 | 1.08E-02    |  |
| ENSG00000249631.4     | RP11-281P23.2  | LncRNA     | 0.54                        | 1.31E-02 | 9.24E-02    | 0.34                            | 1.05E-01 | 3.71E-01    |  |
| ENSG00000249641.2     | HOXC13-AS      | LncRNA     | 1.15                        | 3.72E-06 | 2.32E-04    | 0.99                            | 5.31E-05 | 2.80E-03    |  |
| ENSG00000249646.2     | OR7E94P        | Pseudogene | 0.56                        | 5.55E-03 | 5.37E-02    | 0.43                            | 2.79E-02 | 1.84E-01    |  |
| ENSG00000249664.1     | CTD-2227C6.2   | LncRNA     | 0.53                        | 1.03E-02 | 7.91E-02    | 0.55                            | 6.01E-03 | 7.60E-02    |  |
| ENSG00000249693.2     | THEGL          | Protein    | 0.64                        | 1.30E-03 | 2.04E-02    | 0.62                            | 1.12E-03 | 2.54E-02    |  |
| ENSG00000249717.1     | RP11-44F21.3   | LncRNA     | 0.73                        | 3.82E-04 | 8.69E-03    | 0.77                            | 1.21E-04 | 5.27E-03    |  |
| ENSG00000249736.1     | RP             |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000249786.6     | <i>EAF1-AS1</i>       | LncRNA     | 0.33                        | 2.10E-03 | 2.82E-02    | 0.23                            | 2.48E-02 | 1.73E-01    |  |
| ENSG00000249846.5     | <i>RP11-77P16.4</i>   | LncRNA     | 0.39                        | 9.66E-04 | 1.66E-02    | 0.38                            | 7.24E-04 | 1.89E-02    |  |
| ENSG00000249849.1     | <i>RP11-1101H11.1</i> | LncRNA     | 0.48                        | 1.41E-02 | 9.73E-02    | 0.48                            | 1.06E-02 | 1.07E-01    |  |
| ENSG00000249859.6     | <i>PVT1</i>           | LncRNA     | 0.53                        | 1.95E-06 | 1.36E-04    | 0.39                            | 2.57E-04 | 9.20E-03    |  |
| ENSG00000249920.2     | <i>HNRNP A1P55</i>    | Pseudogene | -0.63                       | 3.37E-03 | 3.89E-02    | -0.68                           | 9.86E-04 | 2.31E-02    |  |
| ENSG00000249923.1     | <i>XXbac-B44P24.8</i> | LncRNA     | -0.61                       | 8.13E-04 | 1.47E-02    | -0.58                           | 9.38E-04 | 2.24E-02    |  |
| ENSG00000249937.4     | <i>RP11-454P21.1</i>  | LncRNA     | 0.97                        | 6.46E-05 | 2.26E-03    | 0.81                            | 5.93E-04 | 1.65E-02    |  |
| ENSG00000249947.2     | <i>XBPI1P1</i>        | Pseudogene | 0.32                        | 4.52E-03 | 4.72E-02    | 0.24                            | 3.08E-02 | 1.95E-01    |  |
| ENSG00000249984.1     | <i>CTC-529L17.2</i>   | LncRNA     | -0.49                       | 1.46E-02 | 9.91E-02    | -0.34                           | 8.49E-02 | 3.34E-01    |  |
| ENSG00000250021.6     | <i>C15orf38-AP3S2</i> | Protein    | 0.33                        | 4.11E-03 | 4.42E-02    | 0.35                            | 1.27E-03 | 2.76E-02    |  |
| ENSG00000250033.4     | <i>SLC7A11-AS1</i>    | LncRNA     | 0.59                        | 1.83E-03 | 2.57E-02    | 0.48                            | 8.58E-03 | 9.36E-02    |  |
| ENSG00000250056.4     | <i>LINC01018</i>      | LncRNA     | -0.57                       | 1.41E-03 | 2.15E-02    | -0.31                           | 7.72E-02 | 3.19E-01    |  |
| ENSG00000250075.4     | <i>RP11-584P21.2</i>  | LncRNA     | 0.55                        | 9.16E-04 | 1.59E-02    | 0.47                            | 2.98E-03 | 4.92E-02    |  |
| ENSG00000250090.1     | <i>RP13-401N8.3</i>   | Pseudogene | -0.73                       | 4.48E-03 | 4.68E-02    | -0.73                           | 3.42E-03 | 5.39E-02    |  |
| ENSG00000250151.8     | <i>ARPC4-TTL3</i>     | Protein    | 0.34                        | 1.64E-04 | 4.61E-03    | 0.25                            | 4.01E-03 | 5.99E-02    |  |
| ENSG00000250159.5     | <i>RP11-381K20.2</i>  | LncRNA     | -0.44                       | 1.25E-02 | 8.98E-02    | -0.40                           | 1.58E-02 | 1.35E-01    |  |
| ENSG00000250174.4     | <i>MYLK-AS2</i>       | LncRNA     | 1.14                        | 1.65E-07 | 1.68E-05    | 0.95                            | 6.66E-06 | 5.48E-04    |  |
| ENSG00000250207.1     | <i>AC079776.6</i>     | Pseudogene | -0.81                       | 1.24E-03 | 1.97E-02    | -0.79                           | 1.13E-03 | 2.54E-02    |  |
| ENSG00000250220.1     | <i>RP11-692D12.1</i>  | LncRNA     | 0.31                        | 3.70E-04 | 8.51E-03    | 0.23                            | 5.67E-03 | 7.35E-02    |  |
| ENSG00000250252.1     | <i>RP11-342A1.1</i>   | LncRNA     | 1.84                        | 9.82E-17 | 5.14E-14    | 0.13                            | 5.36E-01 | NA          |  |
| ENSG00000250258.1     | <i>CTC-431G16.2</i>   | LncRNA     | 0.68                        | 8.54E-04 | 1.52E-02    | 0.68                            | 5.90E-04 | 1.65E-02    |  |
| ENSG00000250266.1     | <i>RP11-789C1.1</i>   | LncRNA     | -0.87                       | 6.89E-04 | 1.31E-02    | -0.80                           | 1.18E-03 | 2.63E-02    |  |
| ENSG00000250295.5     | <i>RP11-434I12.2</i>  | LncRNA     | 0.58                        | 1.66E-03 | 2.41E-02    | 0.48                            | 7.59E-03 | 8.72E-02    |  |
| ENSG00000250327.1     | <i>RP11-173M11.2</i>  | Pseudogene | -0.35                       | 3.13E-03 | 3.69E-02    | -0.29                           | 1.02E-02 | 1.04E-01    |  |
| ENSG00000250329.1     | <i>KDELCLIP1</i>      | Pseudogene | 0.49                        | 9.01E-03 | 7.28E-02    | 0.46                            | 9.76E-03 | 1.01E-01    |  |
| ENSG00000250342.1     | <i>SNRPCP16</i>       | Pseudogene | 1.14                        | 4.75E-07 | 4.16E-05    | 1.23                            | 2.11E-08 | 4.27E-06    |  |
| ENSG00000250346.1     | <i>EEF1GP2</i>        | Pseudogene | -0.53                       | 6.45E-03 | 5.91E-02    | -0.53                           | 4.49E-03 | 6.41E-02    |  |
| ENSG00000250348.1     | <i>RP11-466P24.6</i>  | LncRNA     | 0.86                        | 6.17E-04 | 1.22E-02    | 0.24                            | 3.21E-01 | 6.28E-01    |  |
| ENSG00000250366.2     | <i>TUNAR</i>          | LncRNA     | -1.41                       | 2.50E-08 | 3.18E-06    | -1.14                           | 2.10E-06 | 2.16E-04    |  |
| ENSG00000250397.2     | <i>RP11-1391J7.1</i>  | LncRNA     | 0.32                        | 1.17E-02 | 8.61E-02    | 0.18                            | 1.30E-01 | 4.12E-01    |  |
| ENSG00000250413.1     | <i>RP11-448G15.1</i>  | LncRNA     | 0.53                        | 7.99E-03 | 6.76E-02    | 0.69                            | 3.61E-04 | 1.16E-02    |  |
| ENSG00000250421.4     | <i>RP11-83M16.6</i>   | LncRNA     | 0.76                        | 6.65E-04 | 1.28E-02    | 0.89                            | 3.77E-05 | 2.14E-03    |  |
| ENSG00000250451.4     | <i>HOXC-AS1</i>       | LncRNA     | 1.43                        | 1.65E-09 | 2.79E-07    | 1.24                            | 8.10E-08 | 1.40E-05    |  |
| ENSG00000250455.1     | <i>RP11-648M2.1</i>   | Pseudogene | 0.65                        | 8.73E-03 | 7.15E-02    | 0.52                            | 3.18E-02 | 1.98E-01    |  |
| ENSG00000250476.1     | <i>ENPP7P9</i>        | Pseudogene | 1.42                        | 4.09E-09 | 6.56E-07    | 1.37                            | 5.27E-09 | 1.20E-06    |  |
| ENSG00000250506.5     | <i>CDK3</i>           | Protein    | 0.34                        | 8.13E-03 | 6.85E-02    | 0.23                            | 5.74E-02 | 2.73E-01    |  |
| ENSG00000250509.1     | <i>CTC-573N18.1</i>   | LncRNA     | -0.64                       | 1.26E-02 | 9.01E-02    | -0.64                           | 9.82E-03 | 1.02E-01    |  |
| ENSG00000250535.1     | <i>STK19B</i>         | Pseudogene | 0.64                        | 7.91E-03 | 6.71E-02    | 0.10                            | 6.53E-01 | 8.51E-01    |  |
| ENSG00000250563.1     | <i>KNOP1P5</i>        | Pseudogene | 0.80                        | 1.76E-03 | 2.51E-02    | 0.38                            | 1.26E-01 | NA          |  |
| ENSG00000250565.5     | <i>ATP6V1E2</i>       | Protein    | 0.16                        | 9.07E-03 | 7.32E-02    | 0.14                            | 1.84E-02 | 1.46E-01    |  |
| ENSG00000250571.5     | <i>GLI4</i>           | Protein    | 0.37                        | 3.22E-04 | 7.72E-03    | 0.25                            | 1.31E-02 | 1.21E-01    |  |
| ENSG00000250608.1     | <i>RP11-933H2.4</i>   | LncRNA     | 0.57                        | 1.82E-06 | 1.29E-04    | 0.51                            | 9.04E-06 | 7.06E-04    |  |
| ENSG00000250614.1     | <i>AC007078.4</i>     | LncRNA     | 0.58                        | 8.64E-03 | 7.10E-02    | 0.51                            | 1.73E-02 | 1.42E-01    |  |
| ENSG00000250616.2     | <i>RP11-455F5.3</i>   | LncRNA     | 0.23                        | 6.93E-03 | 6.17E-02    | 0.21                            | 1.12E-02 | 1.11E-01    |  |
| ENSG00000250658.1     | <i>RP11-138B4.1</i>   | LncRNA     | -0.69                       | 2.77E-03 | 3.40E-02    | -1.38                           | 8.22E-10 | 2.26E-07    |  |
| ENSG00000250673.1     | <i>RP11-6L6.2</i>     | LncRNA     | 0.61                        | 1.02E-03 | 1.73E-02    | 0.48                            | 7.07E-03 | 8.36E-02    |  |
| ENSG00000250678.1     | <i>CTB-161M19.1</i>   | Pseudogene | 0.76                        | 5.89E-05 | 2.12E-03    | 0.68                            | 2.26E-04 | 8.46E-03    |  |
| ENSG00000250696.4     | <i>RP11-704M14.1</i>  | LncRNA     | 0.69                        | 4.53E-03 | 4.72E-02    | -0.29                           | 1.99E-01 | NA          |  |
| ENSG00000250704.1     | <i>RP11-423J7.1</i>   | LncRNA     | 0.61                        | 3.85E-07 | 3.47E-05    | -0.03                           | 8.29E-01 | NA          |  |
| ENSG00000250705.1     | <i>CTC-470C15.1</i>   | Pseudogene | -0.61                       | 9.24E-03 | 7.40E-02    | -0.63                           | 5.40E-03 | 7.14E-02    |  |
| ENSG00000250709.1     | <i>CCDC169-SOHLF</i>  | Protein    | -0.66                       | 6.55E-03 | 5.96E-02    | -0.49                           | 4.11E-02 | 2.28E-01    |  |
| ENSG00000250712.1     | <i>RP11-366M4.14</i>  | Pseudogene | 0.94                        | 1.94E-04 | 5.26E-03    | 0.75                            | 2.44E-03 | 4.29E-02    |  |
| ENSG00000250731.1     | <i>TPM3P6</i>         | Pseudogene | -0.45                       | 2.09E-03 | 2.82E-02    | -0.26                           | 6.86E-02 | 3.00E-01    |  |
| ENSG00000250740.1     | <i>RP11-710F7.2</i>   | LncRNA     | 0.44                        | 1.25E-02 | 8.99E-02    | 0.24                            | 1.70E-01 | 4.67E-01    |  |
| ENSG00000250746.1     | <i>RP11-39C10.1</i>   | Pseudogene | -0.41                       | 9.28E-03 | 7.42E-02    | -0.35                           | 2.14E-02 | 1.59E-01    |  |
| ENSG00000250753.2     | <i>RP11-241F15.10</i> | Pseudogene | 1.03                        | 4.82E-05 | 1.82E-03    | 0.87                            | 3.79E-04 | 1.20E-02    |  |
| ENSG00000250790.4     | <i>RP11-46H11.3</i>   | LncRNA     | -0.30                       | 2.18E-03 | 2.90E-02    | -0.21                           | 2.90E-02 | 1.88E-01    |  |
| ENSG00000250822.1     | <i>CTD-2139B15.4</i>  | LncRNA     | 0.68                        | 2.69E-03 | 3.34E-02    | 0.60                            | 6.25E-03 | 7.78E-02    |  |
| ENSG00000250874.1     | <i>CTC-480C2.1</i>    | LncRNA     | 0.81                        | 5.82E-04 | 1.17E-02    | 0.11                            | 5.96E-01 | 8.20E-01    |  |
| ENSG00000250891.1     | <i>CTD-2281M20.1</i>  | LncRNA     | 0.63                        | 5.84E-04 | 1.17E-02    | 0.51                            | 4.21E-03 | 6.19E-02    |  |
| ENSG00000250900.5     | <i>CTC-338M12.6</i>   | LncRNA     | 0.45                        | 4.60E-03 | 4.76E-02    | 0.39                            | 9.42E-03 | 9.90E-02    |  |
| ENSG00000250903.7     | <i>GMD5-AS1</i>       | LncRNA     | 0.17                        | 3.97E-03 | 4.33E-02    | 0.22                            | 7.87E-05 | 3.77E-03    |  |
| ENSG00000250910.6     | <i>AC097467.2</i>     | LncRNA     | 1.31                        | 5.67E-12 | 1.63E-09    | -0.01                           | 9.63E-01 | 9.87E-01    |  |
| ENSG00000250917.1     | <i>RP4-785G19.5</i>   | LncRNA     | 0.47                        | 4.00E-04 | 9.00E-03    | 0.42                            | 1.15E-03 | 2.57E-02    |  |
| ENSG00000250933.1     | <i>GAPDHP62</i>       | Pseudogene | 1.47                        | 4.73E-13 | 1.54E-10    | 1.03                            | 6.27E-08 | 1.12E-05    |  |
| ENSG00000250948.1     | <i>RP11-1079K10.2</i> | LncRNA     | 0.44                        | 1.47E-02 | 9.96E-02    | 0.40                            | 2.13E-02 | 1.59E-01    |  |
| ENSG00000250956.1     | <i>CTB-88F18.3</i>    | Pseudogene | -0.46                       | 1.43E-02 | 9.82E-02    | -0.42                           | 1.94E-02 | 1.51E-01    |  |
| ENSG00000250959.2     | <i>GLUD1P3</i>        | Pseudogene | 0.21                        | 1.05E-02 | 8.01E-02    | 0.16                            | 3.58E-02 | 2.11E-01    |  |
| ENSG00000250971.1     | <i>RP11-696F12.1</i>  | LncRNA     | 0.64                        | 4.52E-03 | 4.72E-02    | 0.51                            | 1.95E-02 | 1.51E-01    |  |
| ENSG00000250979.1     | <i>RP11-656G20.1</i>  | Pseudogene | 1.18                        | 3.44E-07 | 3.17E-05    | 1.02                            | 5.78E-06 | 4.85E-04    |  |
| ENSG00000250982.2     | <i>RP11-159J3.1</i>   | Pseudogene | 0.85                        | 4.02E-05 | 1.60E-03    | 0.80                            | 6.20E-05 | 3.13E-03    |  |
| ENSG00000250988.6     | <i>SNHG21</i>         | LncRNA     | 0.21                        | 7.48E-03 | 6.47E-02    | 0.13                            | 8.19E-02 | 3.28E-01    |  |
| ENSG00000250990.1     | <i>AC073635.5</i>     | LncRNA     | 0.41                        | 5.59E-03 | 5.40E-02    | 0.34                            | 1.65E-02 | 1.38E-01    |  |
| ENSG00000251013.1     | <i>GAPDHP62</i>       | Pseudogene | 0.44                        | 5.22E-03 | 5.16E-02    | 0.31                            | 4.05E-02 | 2.26E-01    |  |
| ENSG00000251046.2     | <i>ZNF969P</i>        | Pseudogene | 0.75                        | 1.25E-03 | 1.97E-02    | 0.76                            | 7.01E-04 | 1.85E-02    |  |
| ENSG00000251050.1     | <i>RP11-168A11.4</i>  | Pseudogene | 0.51                        | 1.18E-03 | 1.91E-02    | 0.48                            | 1.38E-03 | 2.90E-02    |  |
| ENSG00000251061.2     | <i>RP11-789C1.2</i>   | LncRNA     | -0.60                       | 1.45E-02 | 9.87E-02    | -0.61                           | 1.07E-02 | 1.07E-01    |  |
| ENSG00000251087.3     | <i>ALG1L3P</i>        | Pseudogene | 0.61                        | 5.38E-03 | 5.26E-02    | 0.71                            | 7.84E-04 | 1.99E-02    |  |
| ENSG00000251129.1     | <i>RP11-734I18.1</i>  | LncRNA     | -0.63                       | 1.32E-02 | 9.29E-02    | -0.07                           | 7.76E-01 | 9.12E-01    |  |
| ENSG00000251136.7     | <i>RP11-37B2.1</i>    | LncRNA     | 0.29                        | 2.09E-03 | 2.82E-02    | 0.15                            | 1.18E-01 | 3.93E-01    |  |
| ENSG00000251218.1     | <i>RP11-1057B8.2</i>  | LncRNA     | 1.50                        | 2.93E-09 | 4.78E-07    | 1.34                            | 5.87E-08 | 1.06E-05    |  |
| ENSG00000251221.1     | <i>LINC01337</i>      | LncRNA     | 0.52                        | 1.43E-02 | 9.79E-02    | 0.40                            | 5.09E-02 | 2.57E-01    |  |
| ENSG00000251247.8     | <i>ZNF345</i>         | Protein    | 0.16                        | 1.02E-02 | 7.85E-02    | 0.12                            | 4.82E-02 | 2.49E-01    |  |
| ENSG00000251248.1     | <i>RP11-223C24.2</i>  | LncRNA     | 0.66                        | 8.28E-03 | 6.92E-02    | 0.61                            | 1.24E-02 | 1.17E-01    |  |
| ENSG00000251259.1     | <i>AC004069.2</i>     | LncRNA     | 0.46                        | 8.82E-04 | 1.56E-02    | 0.27                            | 3.99E-02 | 2.24E-01    |  |
| ENSG00000251281.1     | <i>CTD-2066L21.2</i>  | LncRNA     | 0.82                        | 1.21E-03 | 1.94E-02    | 0.70                            | 4.12E-03 | 6.10E-02    |  |
| ENSG00000251287.7     | <i>ALG1L2</i>         | Protein    | 0.30                        | 1.28E-02 | 9.10E-02    | 0.26                            | 2.70E-02 | 1.81E-01    |  |
| ENSG00000251297.1     | <i>TUBB7P</i>         | Pseudogene | 1.58                        | 1.78E-16 | 8.77E-14    | 1.62                            | 1.51E-18 | 1.36E-15    |  |
| ENSG00000251314.2     | <i>CTD-2337A12.1</i>  | LncRNA     | 0.33                        | 1.30E-02 | 9.20E-02    | 0.38                            | 2.45E-03 | 4.30E-02    |  |
| ENSG00000251321.1     | <i>PCAT4</i>          | LncRNA     | 0.69                        | 3.83E-03 | 4.23E-02    | 0.69                            | 3.22E-03 | 5.17E-02    |  |
| ENSG00000251330.3     | <i>CTD-2283N19.1</i>  | LncRNA     | 0.34                        | 4.07E-03 | 4.40E-02    | 0.19                            | 9.94E-02 | 3.61E-01    |  |
| ENSG00000251364.5     | <i>CTD-2516F10.2</i>  | LncRNA     | 0.29                        | 1.04E-02 | 7.99E-02    | 0.25                            | 2.10E-02 | 1.57E-01    |  |
| ENSG00000251385.2     | <i>RP11-63H19.2</i>   | Pseudogene | 0.81                        | 5.89E-04 | 1.17E-02    | 0.50                            | 2.99E-02 | 1.91E-01    |  |
| ENSG00000251432.5     | <i>RP11-420A23.1</i>  | LncRNA     | 0.49                        | 1.96E-04 | 5.31E-03    | 0.34                            | 7.96E-03 | 8.96E-02    |  |
| ENSG00000251447.1     | <i>RP11-517B11.6</i>  | Pseudogene | 0.43                        | 9.66E-03 | 7.59E-02    | 0.43                            | 6.27E-03 | 7.79E-02    |  |
| ENSG00000251455.1     | <i>RP11-164P12.3</i>  | LncRNA     | 0.63                        | 4.07E-05 | 1.61E-03    | 0.52                            | 4.60E-04 | 1.39E-02    |  |
| ENSG00000251468.2     | <i>RP11-369K16.1</i>  | Pseudogene | -0.68                       | 5.98E-04 | 1.19E-02    | -0.50                           | 9.06E-03 | 9.68E-02    |  |
| ENSG00000251474.5     | <i>RPL32P3</i>        | Pseudogene | 0.46                        | 3.39E-07 | 3.14E-05    | 0.34                            | 1.30E-04 | 5.54E-03    |  |
| ENSG00000251485.1     | <i>AC068134.10</i>    | Pseudogene | 0.44                        | 3.44E-05 | 1.41E-03    | 0.29                            | 4.54E-03 | 6.45E-02    |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000251639.2     | <i>RP11-20120.1</i>   | Pseudogene | 0.81                        | 1.03E-04 | 3.23E-03    | 0.74                            | 2.67E-04 | 9.44E-03    |  |
| ENSG00000251661.3     | <i>RP11-326C3.11</i>  | LncRNA     | 0.86                        | 5.38E-10 | 1.01E-07    | 0.86                            | 1.06E-10 | 3.47E-08    |  |
| ENSG00000251687.1     | <i>RP11-181K12.2</i>  | LncRNA     | 1.33                        | 9.18E-11 | 2.06E-08    | 0.41                            | 1.86E-02 | 1.47E-01    |  |
| ENSG00000251692.6     | <i>PTX4</i>           | Protein    | 1.07                        | 2.45E-06 | 1.66E-04    | 1.03                            | 3.01E-06 | 2.90E-04    |  |
| ENSG00000251757.1     | <i>RNU6-848P</i>      | Other      | -0.63                       | 7.88E-03 | 6.70E-02    | -0.44                           | 5.58E-02 | 2.69E-01    |  |
| ENSG00000251798.1     | <i>RNU6-863P</i>      | Other      | 0.55                        | 1.13E-02 | 8.44E-02    | 0.60                            | 4.42E-03 | 6.34E-02    |  |
| ENSG00000251835.1     | <i>RNU6ATAC32P</i>    | Other      | 0.91                        | 1.31E-04 | 3.89E-03    | 0.86                            | 2.05E-04 | 7.83E-03    |  |
| ENSG00000251867.3     | <i>RP11-48B3.5</i>    | LncRNA     | 0.38                        | 2.64E-05 | 1.14E-03    | 0.27                            | 2.06E-03 | 3.82E-02    |  |
| ENSG00000252135.1     | <i>RNVU1-2</i>        | Other      | 1.32                        | 3.37E-08 | 4.21E-06    | 1.21                            | 2.02E-07 | 3.08E-05    |  |
| ENSG00000252206.1     | <i>RNU7-40P</i>       | Other      | 0.59                        | 1.19E-03 | 1.92E-02    | 0.52                            | 3.21E-03 | 5.16E-02    |  |
| ENSG00000252222.1     | <i>RNU7-13P</i>       | Other      | 0.57                        | 1.06E-02 | 8.11E-02    | 0.61                            | 4.57E-03 | 6.47E-02    |  |
| ENSG00000252254.1     | <i>Y_RNA</i>          | Other      | 0.55                        | 9.96E-03 | 7.75E-02    | 0.47                            | 2.51E-02 | 1.74E-01    |  |
| ENSG00000252274.1     | <i>SCARNA24</i>       | Other      | -0.49                       | 5.73E-03 | 5.47E-02    | -0.50                           | 4.07E-03 | 6.04E-02    |  |
| ENSG00000252311.1     | <i>RNU1-103P</i>      | Other      | 0.43                        | 1.28E-02 | 9.13E-02    | 0.36                            | 2.81E-02 | 1.85E-01    |  |
| ENSG00000252339.1     | <i>RNU6-1061P</i>     | Other      | 0.85                        | 6.28E-04 | 1.23E-02    | 0.84                            | 4.98E-04 | 1.47E-02    |  |
| ENSG00000252361.1     | <i>RNU6-118P</i>      | Other      | 0.37                        | 1.20E-02 | 8.75E-02    | 0.26                            | 6.19E-02 | 2.85E-01    |  |
| ENSG00000252414.1     | <i>RNU6-100P</i>      | Other      | 0.56                        | 2.94E-03 | 3.53E-02    | 0.46                            | 1.13E-02 | 1.11E-01    |  |
| ENSG00000252448.1     | <i>SNORA63</i>        | Other      | 0.56                        | 5.72E-03 | 5.47E-02    | 0.54                            | 5.67E-03 | 7.35E-02    |  |
| ENSG00000252461.1     | <i>SNORA43</i>        | Other      | 0.70                        | 3.93E-04 | 8.88E-03    | 0.61                            | 1.63E-03 | 3.24E-02    |  |
| ENSG00000252481.1     | <i>SCARNA13</i>       | Other      | 0.35                        | 1.30E-02 | 9.20E-02    | 0.15                            | 2.66E-01 | 5.77E-01    |  |
| ENSG00000252516.1     | <i>RNA5SP82</i>       | Other      | 0.64                        | 4.16E-04 | 9.25E-03    | 0.45                            | 1.10E-02 | 1.10E-01    |  |
| ENSG00000252743.1     | <i>RNU6-850P</i>      | Other      | 0.47                        | 1.63E-03 | 2.38E-02    | 0.35                            | 1.71E-02 | 1.41E-01    |  |
| ENSG00000252759.1     | <i>Y_RNA</i>          | Other      | 0.68                        | 1.84E-04 | 5.06E-03    | 0.49                            | 5.13E-03 | 6.92E-02    |  |
| ENSG00000252915.1     | <i>Y_RNA</i>          | Other      | 0.49                        | 4.02E-03 | 4.37E-02    | 0.27                            | 1.03E-01 | 3.69E-01    |  |
| ENSG00000253037.1     | <i>AL109947.2</i>     | Other      | 0.66                        | 9.74E-03 | 7.63E-02    | 0.52                            | 3.69E-02 | 2.14E-01    |  |
| ENSG00000253047.1     | <i>SNORA40</i>        | Other      | 0.48                        | 3.43E-04 | 8.09E-03    | 0.29                            | 2.84E-02 | 1.86E-01    |  |
| ENSG00000253102.1     | <i>RP1-117B12.4</i>   | LncRNA     | -0.37                       | 1.17E-02 | 8.60E-02    | -0.35                           | 1.33E-02 | 1.21E-01    |  |
| ENSG00000253138.4     | <i>LINC00967</i>      | LncRNA     | 1.17                        | 1.45E-06 | 1.08E-04    | 1.09                            | 4.27E-06 | 3.79E-04    |  |
| ENSG00000253155.1     | <i>CTB-47B11.1</i>    | Pseudogene | 0.67                        | 8.08E-03 | 6.81E-02    | 0.64                            | 9.32E-03 | 9.84E-02    |  |
| ENSG00000253167.1     | <i>KLAA0196-AS1</i>   | LncRNA     | 0.53                        | 2.92E-04 | 7.15E-03    | 0.34                            | 1.55E-02 | 1.33E-01    |  |
| ENSG00000253175.1     | <i>RP11-267M23.6</i>  | Pseudogene | 0.49                        | 8.22E-03 | 6.88E-02    | 0.37                            | 4.34E-02 | 2.35E-01    |  |
| ENSG00000253177.1     | <i>RP11-100L22.1</i>  | LncRNA     | 0.72                        | 8.56E-04 | 1.53E-02    | 0.65                            | 1.94E-03 | 3.65E-02    |  |
| ENSG00000253203.5     | <i>GUSBP3</i>         | Pseudogene | -1.17                       | 1.72E-06 | 1.22E-04    | -1.21                           | 3.51E-07 | 4.95E-05    |  |
| ENSG00000253209.1     | <i>IGHV3-65</i>       | Other      | 0.63                        | 1.43E-02 | 9.82E-02    | 0.62                            | 1.25E-02 | 1.18E-01    |  |
| ENSG00000253214.1     | <i>RP11-1149M10.2</i> | LncRNA     | 0.64                        | 1.38E-03 | 2.11E-02    | 0.52                            | 6.94E-03 | 8.27E-02    |  |
| ENSG00000253228.1     | <i>NRBF2P4</i>        | Pseudogene | 1.66                        | 3.05E-12 | 9.25E-10    | 1.66                            | 7.64E-13 | 3.65E-10    |  |
| ENSG00000253239.1     | <i>IGLV1-70</i>       | Other      | 3.74                        | 2.28E-49 | 8.35E-46    | 2.79                            | 7.58E-30 | 1.88E-26    |  |
| ENSG00000253274.1     | <i>IGHV1-67</i>       | Other      | 0.69                        | 4.79E-03 | 4.87E-02    | 0.64                            | 7.08E-03 | 8.37E-02    |  |
| ENSG00000253283.1     | <i>RP11-146E23.2</i>  | Pseudogene | 1.34                        | 2.21E-10 | 4.56E-08    | 0.08                            | 6.86E-01 | 8.68E-01    |  |
| ENSG00000253284.2     | <i>RP11-282K24.3</i>  | LncRNA     | 0.54                        | 1.14E-03 | 1.87E-02    | 0.29                            | 6.28E-02 | 2.87E-01    |  |
| ENSG00000253317.1     | <i>RP11-142A23.1</i>  | LncRNA     | 0.73                        | 4.38E-03 | 4.62E-02    | 0.61                            | 1.45E-02 | 1.27E-01    |  |
| ENSG00000253320.4     | <i>KB-1507C5.2</i>    | LncRNA     | 0.41                        | 2.56E-06 | 1.72E-04    | 0.30                            | 4.65E-04 | 1.40E-02    |  |
| ENSG00000253325.1     | <i>IGHV7-34-1</i>     | Other      | 0.64                        | 1.20E-02 | 8.74E-02    | 0.62                            | 1.31E-02 | 1.21E-01    |  |
| ENSG00000253328.2     | <i>SUMO2P19</i>       | Pseudogene | 0.92                        | 3.26E-07 | 3.03E-05    | 0.73                            | 2.79E-05 | 1.69E-03    |  |
| ENSG00000253333.1     | <i>RP11-497H16.8</i>  | Pseudogene | -0.72                       | 4.91E-03 | 4.96E-02    | -0.72                           | 3.79E-03 | 5.78E-02    |  |
| ENSG00000253341.1     | <i>RP11-730G20.2</i>  | Pseudogene | -0.24                       | 7.17E-03 | 6.30E-02    | -0.24                           | 3.93E-03 | 5.90E-02    |  |
| ENSG00000253363.4     | <i>RP11-962G15.1</i>  | LncRNA     | 0.76                        | 2.38E-05 | 1.05E-03    | -0.19                           | 2.74E-01 | NA          |  |
| ENSG00000253366.3     | <i>RP11-589F5.4</i>   | Pseudogene | 0.64                        | 5.90E-03 | 5.58E-02    | 0.60                            | 7.89E-03 | 8.92E-02    |  |
| ENSG00000253369.1     | <i>RP11-1081M5.1</i>  | LncRNA     | 0.83                        | 6.94E-04 | 1.32E-02    | -0.27                           | 2.32E-01 | 5.43E-01    |  |
| ENSG00000253372.4     | <i>RP11-44N11.1</i>   | LncRNA     | 0.50                        | 1.20E-03 | 1.93E-02    | 0.44                            | 3.22E-03 | 5.17E-02    |  |
| ENSG00000253379.4     | <i>RP11-1102P16.1</i> | LncRNA     | -0.37                       | 1.22E-02 | 8.83E-02    | -0.25                           | 7.40E-02 | 3.12E-01    |  |
| ENSG00000253383.1     | <i>RP11-116B19.2</i>  | Pseudogene | 0.80                        | 8.89E-04 | 1.56E-02    | 0.09                            | 6.79E-01 | NA          |  |
| ENSG00000253404.1     | <i>AC034243.1</i>     | LncRNA     | 0.50                        | 3.49E-03 | 3.97E-02    | 0.44                            | 7.18E-03 | 8.42E-02    |  |
| ENSG00000253405.1     | <i>EVX1-AS</i>        | LncRNA     | 0.44                        | 1.24E-02 | 8.92E-02    | 0.20                            | 2.42E-01 | 5.53E-01    |  |
| ENSG00000253409.1     | <i>TRBV7-4</i>        | Other      | 0.79                        | 2.45E-04 | 6.26E-03    | 0.71                            | 6.80E-04 | 1.81E-02    |  |
| ENSG00000253417.4     | <i>RP11-109J4.1</i>   | LncRNA     | -0.65                       | 1.08E-02 | 8.18E-02    | -0.68                           | 5.86E-03 | 7.51E-02    |  |
| ENSG00000253438.2     | <i>PCAT1</i>          | LncRNA     | 1.04                        | 1.60E-08 | 2.20E-06    | 0.94                            | 1.26E-07 | 2.04E-05    |  |
| ENSG00000253460.2     | <i>IGKV2OR22-3</i>    | Other      | 0.75                        | 3.30E-03 | 3.84E-02    | 0.72                            | 3.74E-03 | 5.73E-02    |  |
| ENSG00000253475.1     | <i>RP11-110G21.2</i>  | LncRNA     | 1.01                        | 3.48E-05 | 1.42E-03    | 1.18                            | 7.94E-07 | 9.68E-05    |  |
| ENSG00000253500.4     | <i>AF121898.3</i>     | LncRNA     | 1.30                        | 1.16E-07 | 1.26E-05    | 0.24                            | 3.16E-01 | 6.24E-01    |  |
| ENSG00000253504.1     | <i>RP11-593P24.2</i>  | Pseudogene | 1.56                        | 2.54E-10 | 5.17E-08    | 1.52                            | 3.02E-10 | 9.13E-08    |  |
| ENSG00000253525.1     | <i>CTD-2114J12.1</i>  | Pseudogene | -0.66                       | 3.82E-03 | 4.22E-02    | -0.75                           | 6.49E-04 | 1.76E-02    |  |
| ENSG00000253535.4     | <i>RP11-624C23.1</i>  | LncRNA     | 0.58                        | 4.27E-03 | 4.54E-02    | 0.49                            | 1.33E-02 | 1.21E-01    |  |
| ENSG00000253576.1     | <i>GSI-5L10.1</i>     | LncRNA     | -0.72                       | 4.07E-03 | 4.40E-02    | -0.67                           | 5.60E-03 | NA          |  |
| ENSG00000253579.1     | <i>SUMO2P16</i>       | Pseudogene | 0.78                        | 2.20E-03 | 2.91E-02    | 0.77                            | 1.94E-03 | NA          |  |
| ENSG00000253593.2     | <i>RP11-157E21.1</i>  | LncRNA     | 0.64                        | 1.10E-02 | 8.26E-02    | 0.53                            | 2.95E-02 | 1.90E-01    |  |
| ENSG00000253626.3     | <i>EIF5A1.1</i>       | Protein    | -1.22                       | 7.57E-11 | 1.73E-08    | -1.26                           | 3.68E-12 | 1.66E-09    |  |
| ENSG00000253663.1     | <i>NPM1P52</i>        | Pseudogene | 0.82                        | 9.92E-04 | 1.69E-02    | 0.73                            | 2.61E-03 | 4.50E-02    |  |
| ENSG00000253664.1     | <i>RP11-401H2.1</i>   | LncRNA     | 0.70                        | 5.90E-07 | 5.01E-05    | -0.02                           | 8.82E-01 | NA          |  |
| ENSG00000253665.1     | <i>RP11-359E19.2</i>  | LncRNA     | 0.89                        | 1.12E-04 | 3.44E-03    | 0.21                            | 3.45E-01 | 6.47E-01    |  |
| ENSG00000253667.2     | <i>RP11-30L15.4</i>   | Pseudogene | 0.60                        | 2.44E-05 | 1.07E-03    | 0.47                            | 6.44E-04 | 1.75E-02    |  |
| ENSG00000253669.3     | <i>KB-1732A1.1</i>    | LncRNA     | 0.40                        | 7.84E-04 | 1.44E-02    | 0.18                            | 1.32E-01 | 4.15E-01    |  |
| ENSG00000253671.1     | <i>RP11-806O11.1</i>  | LncRNA     | 0.52                        | 1.11E-04 | 3.44E-03    | 0.37                            | 4.78E-03 | 6.65E-02    |  |
| ENSG00000253703.1     | <i>IGHV1-68</i>       | Other      | 0.81                        | 1.41E-03 | 2.15E-02    | 0.68                            | 5.92E-03 | 7.55E-02    |  |
| ENSG00000253704.1     | <i>RP11-267M23.4</i>  | LncRNA     | 0.36                        | 8.10E-04 | 1.47E-02    | 0.25                            | 1.40E-02 | 1.25E-01    |  |
| ENSG00000253709.1     | <i>IGHV1-14</i>       | Other      | 0.71                        | 5.50E-03 | 5.35E-02    | 0.65                            | 8.64E-03 | 9.40E-02    |  |
| ENSG00000253760.1     | <i>RP11-48B3.2</i>    | Pseudogene | 0.69                        | 6.34E-03 | 5.86E-02    | 0.57                            | 2.08E-02 | 1.56E-01    |  |
| ENSG00000253764.1     | <i>RP11-439C15.4</i>  | LncRNA     | 0.43                        | 8.77E-03 | 7.16E-02    | 0.41                            | 9.06E-03 | 9.68E-02    |  |
| ENSG00000253767.2     | <i>PCDHGA8</i>        | Protein    | -0.65                       | 1.33E-04 | 3.93E-03    | -0.39                           | 1.12E-02 | 1.10E-01    |  |
| ENSG00000253768.1     | <i>CTB-33O18.1</i>    | LncRNA     | 0.57                        | 1.42E-02 | 9.75E-02    | 0.45                            | 4.58E-02 | 2.42E-01    |  |
| ENSG00000253797.2     | <i>UTP14C</i>         | Protein    | -0.26                       | 2.38E-03 | 3.08E-02    | -0.14                           | 1.08E-01 | 3.76E-01    |  |
| ENSG00000253802.1     | <i>CTA-392C11.1</i>   | LncRNA     | 1.09                        | 2.02E-05 | 9.35E-04    | 0.15                            | 5.33E-01 | 7.82E-01    |  |
| ENSG00000253817.1     | <i>RP11-1134I14.6</i> | Pseudogene | 0.63                        | 9.31E-03 | 7.43E-02    | 0.63                            | 7.64E-03 | 8.74E-02    |  |
| ENSG00000253818.1     | <i>IGLV1-41</i>       | Other      | 0.79                        | 1.74E-03 | 2.48E-02    | 1.15                            | 1.81E-06 | 1.93E-04    |  |
| ENSG00000253824.1     | <i>KB-173C10.2</i>    | LncRNA     | -0.67                       | 7.32E-03 | 6.38E-02    | -0.69                           | 3.59E-03 | 5.57E-02    |  |
| ENSG00000253838.1     | <i>RP11-44K6.2</i>    | LncRNA     | 0.80                        | 8.90E-04 | 1.56E-02    | 0.75                            | 1.32E-03 | 2.84E-02    |  |
| ENSG00000253852.1     | <i>CTB-140U7.2</i>    | LncRNA     | 0.66                        | 1.34E-03 | 2.08E-02    | 0.54                            | 6.51E-03 | 7.97E-02    |  |
| ENSG00000253878.4     | <i>RP11-347C18.3</i>  | LncRNA     | 0.34                        | 2.86E-03 | 3.47E-02    | 0.25                            | 2.62E-02 | 1.78E-01    |  |
| ENSG00000253893.2     | <i>FAM85B</i>         | LncRNA     | 1.44                        | 3.33E-17 | 1.81E-14    | 1.53                            | 1.05E-20 | 1.23E-17    |  |
| ENSG00000253908.1     | <i>RP11-252I14.2</i>  | Pseudogene | 0.45                        | 1.48E-02 | 1.00E-01    | 0.35                            | 5.10E-02 | 2.57E-01    |  |
| ENSG00000253923.2     | <i>KB-1980E6.2</i>    | Pseudogene | 0.86                        | 6.45E-06 | 3.66E-04    | 0.72                            | 1.06E-04 | 4.76E-03    |  |
| ENSG00000253936.1     | <i>IGHV3-63</i>       | Other      | 0.72                        | 3.16E-03 | 3.72E-02    | 0.64                            | 6.79E-03 | 8.15E-02    |  |
| ENSG00000253939.1     | <i>RP11-44K6.3</i>    | LncRNA     | 1.18                        | 1.48E-06 | 1.09E-04    | 0.25                            | 2.91E-01 | 6.02E-01    |  |
| ENSG00000253955.1     | <i>CTB-33O18.3</i>    | LncRNA     | 2.95                        | 1.54E-67 | 6.89E-64    | 0.15                            | 2.01E-01 | 5.08E-01    |  |
| ENSG00000253972.4     | <i>RP11-4K16.2</i>    | LncRNA     | 0.79                        | 2.46E-06 | 1.67E-04    | 0.61                            | 2.15E-04 | 8.12E-03    |  |
| ENSG00000253978.1     | <i>CTB-178M22.2</i>   | LncRNA     | 0.36                        | 2.27E-03 | 2.98E-02    | 0.41                            | 2.38E-04 | 8.75E-03    |  |
| ENSG00000254017.1     | <i>IGHEP2</i>         | Other      | 0.95                        | 1.05E-05 | 5.44E-04    | 0.83                            | 7.19E-05 | 3.52E-03    |  |
| ENSG00000254018.1     | <i>RP11-785H20.1</i>  | LncRNA     | 1.10                        | 2.39E-08 | 3.08E-06    | -0.02                           | 9.10E-01 | NA          |  |
| ENSG00000254024.1     | <i>KB-1562D12.1</i>   | LncRNA     | 0.44                        | 1.16E-03 | 1.89E-02    | 0.26                            | 4.48E-02 | 2.39E-01    |  |
| ENSG00000254035.1     | <i>RP11-281O15.4</i>  | LncRNA     | -0.45                       | 2.08E-03 | 2           |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000254154.7     | <i>RP4-798P15.3</i>   | LncRNA     | 0.59                        | 9.84E-05 | 3.11E-03    | 0.46                            | 1.63E-03 | 3.24E-02    |
| ENSG00000254165.1     | <i>RP11-503E24.2</i>  | LncRNA     | 0.41                        | 2.03E-03 | 2.77E-02    | 0.22                            | 8.55E-02 | 3.35E-01    |
| ENSG00000254205.1     | <i>RP11-92K15.1</i>   | LncRNA     | 0.60                        | 6.38E-03 | 5.88E-02    | 0.55                            | 9.52E-03 | 9.97E-02    |
| ENSG00000254224.1     | <i>KB-1043D8.6</i>    | LncRNA     | 0.48                        | 6.62E-03 | 6.00E-02    | 0.41                            | 1.57E-02 | 1.34E-01    |
| ENSG00000254229.2     | <i>FAM90A12P</i>      | Pseudogene | 0.85                        | 8.70E-04 | 1.54E-02    | 0.90                            | 2.71E-04 | NA          |
| ENSG00000254231.1     | <i>CTD-228J15.1</i>   | LncRNA     | 0.60                        | 1.14E-05 | 5.78E-04    | 0.44                            | 1.14E-03 | 2.57E-02    |
| ENSG00000254248.1     | <i>RP11-320N21.2</i>  | LncRNA     | 0.65                        | 3.99E-03 | 4.34E-02    | -0.25                           | 2.63E-01 | 5.74E-01    |
| ENSG00000254258.1     | <i>RP11-398H6.1</i>   | LncRNA     | 0.71                        | 4.55E-03 | 4.74E-02    | 0.79                            | 1.19E-03 | 2.63E-02    |
| ENSG00000254266.4     | <i>RP11-594N15.2</i>  | LncRNA     | 0.52                        | 1.58E-04 | 4.49E-03    | 0.49                            | 2.31E-04 | 8.62E-03    |
| ENSG00000254269.4     | <i>CTD-228I1E23.2</i> | LncRNA     | 0.60                        | 1.14E-02 | 8.49E-02    | 0.53                            | 2.16E-02 | 1.60E-01    |
| ENSG00000254272.1     | <i>RP11-382J24.2</i>  | Pseudogene | 0.44                        | 4.14E-03 | 4.44E-02    | 0.47                            | 1.27E-03 | 2.76E-02    |
| ENSG00000254274.1     | <i>TDGF1P5</i>        | Pseudogene | 0.65                        | 1.51E-03 | 2.25E-02    | 0.13                            | 5.14E-01 | 7.69E-01    |
| ENSG00000254275.5     | <i>LINC00824</i>      | LncRNA     | 0.96                        | 1.67E-05 | 7.97E-04    | 0.03                            | 8.95E-01 | 9.63E-01    |
| ENSG00000254281.1     | <i>KB-1507C5.4</i>    | LncRNA     | 0.44                        | 4.85E-04 | 1.03E-02    | 0.33                            | 6.47E-03 | 7.94E-02    |
| ENSG00000254287.1     | <i>RP11-44K6.4</i>    | LncRNA     | 0.67                        | 5.13E-03 | 5.10E-02    | 0.53                            | 2.18E-02 | 1.61E-01    |
| ENSG00000254290.1     | <i>RP11-150O12.3</i>  | LncRNA     | -0.61                       | 1.07E-03 | 1.78E-02    | -0.57                           | 1.35E-03 | 2.87E-02    |
| ENSG00000254317.1     | <i>RP11-473O4.5</i>   | LncRNA     | 0.45                        | 3.97E-03 | 4.33E-02    | 0.30                            | 4.25E-02 | 2.32E-01    |
| ENSG00000254326.1     | <i>IGHV17-27</i>      | Other      | 0.71                        | 5.06E-03 | 5.05E-02    | 0.67                            | 6.17E-03 | 7.72E-02    |
| ENSG00000254331.1     | <i>CKS1BP7</i>        | Pseudogene | 0.60                        | 7.16E-04 | 1.35E-02    | 0.48                            | 5.27E-03 | 7.02E-02    |
| ENSG00000254349.4     | <i>FLJ39080</i>       | LncRNA     | 0.76                        | 1.14E-03 | 1.87E-02    | 0.43                            | 6.19E-02 | 2.85E-01    |
| ENSG00000254413.7     | <i>CHKB-CPT1B</i>     | Protein    | 0.45                        | 7.00E-04 | 1.33E-02    | 0.33                            | 9.98E-03 | 1.03E-01    |
| ENSG00000254419.1     | <i>RP11-261P9.4</i>   | LncRNA     | 0.49                        | 2.43E-03 | 3.12E-02    | 0.25                            | 1.08E-01 | 3.76E-01    |
| ENSG00000254433.1     | <i>RP11-677I18.3</i>  | LncRNA     | 0.41                        | 7.92E-04 | 1.45E-02    | 0.39                            | 9.57E-04 | 2.27E-02    |
| ENSG00000254440.3     | <i>PBOV1</i>          | Protein    | 0.48                        | 2.71E-03 | 3.35E-02    | 0.45                            | 3.28E-03 | 5.23E-02    |
| ENSG00000254458.1     | <i>RP11-867G23.13</i> | LncRNA     | 0.61                        | 8.78E-03 | 7.16E-02    | 0.49                            | 3.17E-02 | 1.97E-01    |
| ENSG00000254461.1     | <i>RP11-755F10.3</i>  | LncRNA     | 0.39                        | 3.10E-03 | 3.66E-02    | 0.26                            | 4.38E-02 | 2.37E-01    |
| ENSG00000254469.6     | <i>RP11-849H4.2</i>   | Protein    | 0.18                        | 3.00E-03 | 3.58E-02    | 0.15                            | 1.01E-02 | 1.03E-01    |
| ENSG00000254479.1     | <i>SLC25A1PI</i>      | Pseudogene | 0.52                        | 2.79E-03 | 3.42E-02    | 0.53                            | 1.53E-03 | 3.13E-02    |
| ENSG00000254485.4     | <i>RP11-380O24.1</i>  | LncRNA     | 0.46                        | 2.67E-05 | 1.15E-03    | 0.42                            | 7.26E-05 | 3.55E-03    |
| ENSG00000254535.3     | <i>PABPC4L</i>        | Protein    | -0.40                       | 1.61E-03 | 2.36E-02    | -0.29                           | 1.67E-02 | 1.39E-01    |
| ENSG00000254547.1     | <i>RP11-738O11.13</i> | Pseudogene | 2.47                        | 1.43E-22 | 1.31E-19    | 0.80                            | 1.12E-03 | 2.54E-02    |
| ENSG00000254556.1     | <i>AF131215.4</i>     | LncRNA     | 0.55                        | 1.06E-02 | 8.09E-02    | 0.45                            | 2.92E-02 | 1.89E-01    |
| ENSG00000254595.1     | <i>CTD-201O116.1</i>  | Pseudogene | 0.28                        | 1.65E-04 | 4.65E-03    | 0.25                            | 4.86E-04 | 1.44E-02    |
| ENSG00000254608.1     | <i>RP11-56A10.1</i>   | Pseudogene | -0.76                       | 2.98E-03 | 3.57E-02    | -0.70                           | 4.91E-03 | 6.76E-02    |
| ENSG00000254609.1     | <i>RP11-719K4.3</i>   | Pseudogene | 1.54                        | 1.13E-09 | 1.99E-07    | 1.46                            | 2.77E-09 | 6.76E-07    |
| ENSG00000254638.1     | <i>RP11-356J5.4</i>   | LncRNA     | 0.76                        | 2.30E-03 | 3.00E-02    | 0.66                            | 6.65E-03 | 8.07E-02    |
| ENSG00000254653.1     | <i>RP11-702F3.1</i>   | LncRNA     | 0.63                        | 9.18E-03 | 7.37E-02    | 0.50                            | 3.20E-02 | 1.99E-01    |
| ENSG00000254654.1     | <i>AC068858.1</i>     | LncRNA     | 0.66                        | 6.72E-03 | 6.05E-02    | 0.53                            | 2.74E-02 | 1.83E-01    |
| ENSG00000254676.1     | <i>RP11-727A23.4</i>  | LncRNA     | 0.31                        | 1.25E-02 | 8.99E-02    | 0.21                            | 8.55E-02 | 3.35E-01    |
| ENSG00000254682.1     | <i>RP11-660L16.2</i>  | LncRNA     | -0.63                       | 4.09E-08 | 4.94E-06    | -0.66                           | 2.69E-09 | 6.66E-07    |
| ENSG00000254689.1     | <i>RP11-354A14.1</i>  | LncRNA     | 0.71                        | 1.38E-05 | 6.71E-04    | 0.65                            | 3.67E-05 | 2.09E-03    |
| ENSG00000254722.1     | <i>FAM8A2P</i>        | Pseudogene | 0.91                        | 8.59E-05 | 2.82E-03    | 0.19                            | 3.91E-01 | NA          |
| ENSG00000254756.1     | <i>RP11-867G23.12</i> | LncRNA     | 0.64                        | 1.07E-03 | 1.79E-02    | 0.48                            | 1.15E-02 | 1.12E-01    |
| ENSG00000254757.1     | <i>RP13-726E6.1</i>   | LncRNA     | 0.53                        | 2.12E-03 | 2.85E-02    | 0.53                            | 1.33E-03 | 2.84E-02    |
| ENSG00000254777.4     | <i>AC022182.1</i>     | LncRNA     | 0.46                        | 5.76E-03 | 5.49E-02    | 0.61                            | 1.44E-04 | 6.03E-03    |
| ENSG00000254786.1     | <i>RP11-142C4.5</i>   | Pseudogene | 0.43                        | 2.23E-03 | 2.94E-02    | 0.43                            | 1.15E-03 | 2.57E-02    |
| ENSG00000254802.1     | <i>AC022182.3</i>     | LncRNA     | 0.45                        | 1.20E-02 | 8.74E-02    | 0.33                            | 5.33E-02 | 2.63E-01    |
| ENSG00000254815.4     | <i>RP11-496I9.1</i>   | LncRNA     | 0.49                        | 4.00E-03 | 4.35E-02    | 0.10                            | 5.54E-01 | 7.95E-01    |
| ENSG00000254833.1     | <i>RP11-50B3.2</i>    | LncRNA     | 0.59                        | 2.27E-03 | 2.98E-02    | 0.43                            | 2.18E-02 | 1.61E-01    |
| ENSG00000254838.5     | <i>GVN1P1</i>         | Pseudogene | 0.39                        | 1.28E-02 | 9.14E-02    | 0.38                            | 1.27E-02 | 1.19E-01    |
| ENSG00000254854.1     | <i>CTD-2523D13.2</i>  | LncRNA     | 0.53                        | 4.70E-06 | 2.83E-04    | 0.49                            | 1.23E-05 | 8.86E-04    |
| ENSG00000254860.4     | <i>TMEM9B-AS1</i>     | LncRNA     | 0.44                        | 1.35E-05 | 6.61E-04    | 0.35                            | 4.16E-04 | 1.29E-02    |
| ENSG00000254862.4     | <i>RP11-159H22.2</i>  | LncRNA     | 0.34                        | 1.52E-03 | 2.27E-02    | 0.33                            | 1.28E-03 | 2.77E-02    |
| ENSG00000254866.2     | <i>DEFB109P3</i>      | Pseudogene | 0.64                        | 2.08E-04 | 5.53E-03    | 0.64                            | 1.29E-04 | 5.50E-03    |
| ENSG00000254917.1     | <i>OR7E15P</i>        | Pseudogene | 1.08                        | 1.55E-05 | 7.52E-04    | -0.15                           | 5.31E-01 | 7.81E-01    |
| ENSG00000254941.1     | <i>RP11-677M14.5</i>  | Pseudogene | 0.59                        | 2.29E-07 | 2.24E-05    | 0.55                            | 4.08E-07 | 5.59E-05    |
| ENSG00000254951.6     | <i>RP11-494M8.4</i>   | LncRNA     | -0.54                       | 9.56E-03 | 7.54E-02    | -0.50                           | 1.36E-02 | 1.23E-01    |
| ENSG00000254952.1     | <i>AP001257.1</i>     | LncRNA     | 0.87                        | 3.50E-04 | 8.20E-03    | 0.83                            | 5.22E-04 | 1.52E-02    |
| ENSG00000254967.5     | <i>RP11-680F20.6</i>  | LncRNA     | -0.68                       | 1.69E-03 | 2.44E-02    | -0.94                           | 1.00E-05 | 7.56E-04    |
| ENSG00000254973.1     | <i>RP11-429J17.7</i>  | LncRNA     | 1.10                        | 6.31E-18 | 3.74E-15    | 0.84                            | 4.39E-11 | 1.52E-08    |
| ENSG00000254984.1     | <i>FTLP6</i>          | Pseudogene | 0.57                        | 1.39E-02 | 9.64E-02    | 0.47                            | 3.69E-02 | 2.14E-01    |
| ENSG00000254988.1     | <i>CTD-2547H18.1</i>  | LncRNA     | -1.11                       | 1.71E-06 | 1.22E-04    | -1.19                           | 1.12E-07 | 1.86E-05    |
| ENSG00000254990.4     | <i>RP11-108O10.2</i>  | LncRNA     | 0.97                        | 4.95E-10 | 9.54E-08    | 0.81                            | 9.54E-08 | 1.62E-05    |
| ENSG00000255002.1     | <i>CTD-2509G16.2</i>  | LncRNA     | 0.60                        | 1.40E-02 | 9.68E-02    | 0.60                            | 1.21E-02 | 1.15E-01    |
| ENSG00000255031.4     | <i>RP11-802E16.3</i>  | LncRNA     | 0.47                        | 5.71E-04 | 1.15E-02    | 0.33                            | 1.34E-02 | 1.22E-01    |
| ENSG00000255036.4     | <i>RP11-23J9.4</i>    | LncRNA     | 0.56                        | 6.69E-06 | 3.77E-04    | 0.42                            | 5.16E-04 | 1.50E-02    |
| ENSG00000255050.1     | <i>RP11-661A12.9</i>  | LncRNA     | 0.62                        | 3.59E-03 | 4.05E-02    | 0.14                            | 5.00E-01 | 7.61E-01    |
| ENSG00000255071.2     | <i>SAA2-SAA4</i>      | Protein    | -0.98                       | 9.74E-05 | 3.09E-03    | -0.74                           | 2.14E-03 | 3.90E-02    |
| ENSG00000255080.1     | <i>RP11-1082L8.3</i>  | LncRNA     | -0.49                       | 8.32E-03 | 6.94E-02    | -0.39                           | 2.72E-02 | 1.82E-01    |
| ENSG00000255089.1     | <i>RP11-326C3.10</i>  | LncRNA     | 0.89                        | 3.79E-04 | 8.65E-03    | 0.79                            | 1.20E-03 | 2.66E-02    |
| ENSG00000255107.1     | <i>RP11-159H10.1</i>  | Pseudogene | 0.63                        | 3.43E-03 | 3.93E-02    | 0.47                            | 2.66E-02 | 1.80E-01    |
| ENSG00000255109.4     | <i>CTD-2572N17.1</i>  | LncRNA     | 0.69                        | 7.34E-03 | 6.40E-02    | 0.59                            | 1.73E-02 | 1.42E-01    |
| ENSG00000255159.1     | <i>RP11-318C2.1</i>   | LncRNA     | 0.70                        | 6.52E-04 | 1.26E-02    | 0.70                            | 4.26E-04 | 1.31E-02    |
| ENSG00000255176.1     | <i>AP002954.3</i>     | LncRNA     | 0.52                        | 2.11E-03 | 2.84E-02    | 0.34                            | 4.03E-02 | 2.25E-01    |
| ENSG00000255182.2     | <i>CTD-2517M22.14</i> | LncRNA     | 0.63                        | 4.95E-05 | 1.86E-03    | 0.34                            | 2.86E-02 | 1.87E-01    |
| ENSG00000255213.1     | <i>NPM1P35</i>        | Pseudogene | -0.58                       | 3.30E-03 | 3.84E-02    | -0.55                           | 3.61E-03 | 5.59E-02    |
| ENSG00000255246.1     | <i>RP11-179A16.2</i>  | LncRNA     | 0.93                        | 1.70E-04 | 4.76E-03    | 0.92                            | 1.24E-04 | 5.38E-03    |
| ENSG00000255250.1     | <i>CTD-2005H7.2</i>   | LncRNA     | 0.50                        | 1.35E-03 | 2.08E-02    | 0.51                            | 6.90E-04 | 1.83E-02    |
| ENSG00000255262.3     | <i>TCEB2P2</i>        | Pseudogene | 1.50                        | 1.05E-11 | 2.82E-09    | 0.19                            | 2.59E-01 | 5.70E-01    |
| ENSG00000255292.5     | <i>AP002884.2</i>     | Protein    | 0.48                        | 8.88E-03 | 7.21E-02    | 0.36                            | 4.29E-02 | 2.33E-01    |
| ENSG00000255298.2     | <i>OR8G5</i>          | Protein    | 0.85                        | 7.53E-04 | 1.40E-02    | 0.19                            | 4.36E-01 | 7.18E-01    |
| ENSG00000255299.4     | <i>RP11-655C2.3</i>   | LncRNA     | 0.90                        | 1.23E-04 | 3.72E-03    | 0.10                            | 6.77E-01 | 8.63E-01    |
| ENSG00000255339.5     | <i>RP11-411B6.6</i>   | Protein    | 0.51                        | 7.54E-04 | 1.40E-02    | 0.36                            | 1.58E-02 | 1.34E-01    |
| ENSG00000255353.1     | <i>RP11-382M14.1</i>  | Pseudogene | 0.98                        | 3.34E-06 | 2.14E-04    | -0.02                           | 9.08E-01 | 9.67E-01    |
| ENSG00000255358.1     | <i>RP11-567O18.1</i>  | Pseudogene | 0.82                        | 1.46E-04 | 4.22E-03    | 0.76                            | 2.47E-04 | 8.99E-03    |
| ENSG00000255381.1     | <i>AP001258.5</i>     | Pseudogene | 0.70                        | 3.79E-04 | 8.65E-03    | 0.64                            | 7.69E-04 | 1.96E-02    |
| ENSG00000255439.5     | <i>RP11-196G11.1</i>  | Protein    | 0.49                        | 2.70E-04 | 6.77E-03    | 0.44                            | 6.49E-04 | 1.76E-02    |
| ENSG00000255450.1     | <i>CTD-2063L20.1</i>  | Pseudogene | -0.44                       | 1.16E-02 | 8.56E-02    | -0.45                           | 6.96E-03 | 8.28E-02    |
| ENSG00000255451.1     | <i>RP11-58K22.1</i>   | LncRNA     | 0.46                        | 8.44E-06 | 4.53E-04    | 0.05                            | 6.34E-01 | NA          |
| ENSG00000255479.1     | <i>RP11-672A2.6</i>   | LncRNA     | 0.63                        | 4.88E-03 | 4.94E-02    | 0.48                            | 2.69E-02 | 1.81E-01    |
| ENSG00000255495.1     | <i>AC145124.2</i>     | LncRNA     | -0.55                       | 2.41E-04 | 6.19E-03    | -0.43                           | 2.75E-03 | 4.66E-02    |
| ENSG00000255533.1     | <i>RP11-326C3.4</i>   | Pseudogene | 0.69                        | 6.94E-03 | 6.18E-02    | 0.57                            | 2.14E-02 | 1.59E-01    |
| ENSG00000255562.2     | <i>UNC93B6</i>        | Pseudogene | 0.78                        | 3.31E-04 | 7.87E-03    | 0.72                            | 5.49E-04 | 1.57E-02    |
| ENSG00000255569.1     | <i>TRAV1-1</i>        | Other      | 0.57                        | 2.70E-03 | 3.35E-02    | 0.58                            | 1.53E-03 | 3.13E-02    |
| ENSG00000255582.1     | <i>OR10G2</i>         | Protein    | 0.78                        | 8.05E-04 | 1.46E-02    | 0.48                            | 3.36E-02 | 2.03E-01    |
| ENSG00000255633.4     | <i>MTRNR2L9</i>       | Protein    | 0.57                        | 1.59E-03 | 2.35E-02    | 0.21                            | 2.20E-01 | 5.30E-01    |
| ENSG00000255693.1     | <i>RP11-766N7.3</i>   | LncRNA     | 0.68                        | 1.82E-05 | 8.59E-04    | 0.58                            | 1.55E-04 | 6.29E-03    |
| ENSG00000255717.5     | <i>SNHG1</i>          | LncRNA     | 0.40                        | 4.97E-05 | 1.87E-03    | 0.22                            | 2.07E-02 | 1.56E-01    |
| ENSG00000255753.1     | <i>RP11-22B23.2</i>   | Pseudogene | 0.63                        | 5.67E-03 | 5.44E-02    | 0.47                            | 3.33E-02 | 2.02E-01    |
| ENSG00000255823.2     | <i>MTRNR2L8</i>       | Protein    | 0.55                        | 3.40E-04 | 8.04E-03    | 0.55                            | 1.92E-04 | 7.47E-03    |
| ENSG00000255837.1     | <i>TAS2R20</i>        | Protein    | 0.47                        | 1.91E-04 | 5.20E-03    | 0.35                            | 3.80E-03 | 5.78E-02    |
| ENSG00000255857.4     | <i>PXN-AS1</i>        | LncRNA     | 0.34                        | 6.15E-05 | 2.19E-03    | 0.29                            | 3.60E-   |             |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |           |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------------|------------|-----------------------------|-----------|-------------|---------------------------------|----------|-------------|--|
|                       |                       |            | effect size                 | p value   | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000256043.2     | <i>CTSO</i>           | Protein    | -0.22                       | 6.15E-03  | 5.74E-02    | -0.10                           | 1.88E-01 | 4.91E-01    |  |
| ENSG00000256056.1     | <i>RP11-709A23.2</i>  | Pseudogene | 0.56                        | 6.17E-03  | 5.75E-02    | 0.57                            | 3.88E-03 | 5.84E-02    |  |
| ENSG00000256108.1     | <i>RP13-672B3.5</i>   | Pseudogene | 0.77                        | 6.27E-04  | 1.23E-02    | 0.62                            | 4.56E-03 | 6.47E-02    |  |
| ENSG00000256128.4     | <i>LINC00944</i>      | LncRNA     | 0.88                        | 1.88E-06  | 1.33E-04    | 0.76                            | 2.13E-05 | 1.38E-03    |  |
| ENSG00000256148.1     | <i>RP11-809N8.5</i>   | Pseudogene | 4.97                        | 1.34E-130 | 5.42E-126   | 1.94                            | 1.70E-29 | 3.97E-26    |  |
| ENSG00000256150.1     | <i>RP11-885B4.1</i>   | LncRNA     | 0.82                        | 1.13E-03  | 1.86E-02    | 0.76                            | 1.98E-03 | 3.70E-02    |  |
| ENSG00000256223.4     | <i>ZNF10</i>          | Protein    | 0.21                        | 2.77E-03  | 3.40E-02    | 0.19                            | 4.16E-03 | 6.13E-02    |  |
| ENSG00000256238.1     | <i>RP11-473N11.2</i>  | Pseudogene | -0.33                       | 5.50E-03  | 5.35E-02    | -0.35                           | 1.85E-03 | 3.53E-02    |  |
| ENSG00000256250.1     | <i>RP11-989F5.1</i>   | LncRNA     | 0.87                        | 1.02E-04  | 3.22E-03    | 0.63                            | 4.02E-03 | 6.00E-02    |  |
| ENSG00000256257.1     | <i>CACNA1C-IT2</i>    | LncRNA     | -0.61                       | 8.76E-03  | 7.16E-02    | -0.61                           | 6.07E-03 | 7.65E-02    |  |
| ENSG00000256269.5     | <i>HMBS</i>           | Protein    | 0.23                        | 4.83E-03  | 4.90E-02    | 0.21                            | 8.49E-03 | 9.31E-02    |  |
| ENSG00000256276.1     | <i>RP5-916L7.2</i>    | LncRNA     | 0.59                        | 2.33E-03  | 3.03E-02    | 0.42                            | 2.57E-02 | 1.76E-01    |  |
| ENSG00000256280.1     | <i>RP11-466C23.5</i>  | Pseudogene | 0.49                        | 1.30E-03  | 2.03E-02    | 0.38                            | 8.73E-03 | 9.46E-02    |  |
| ENSG00000256293.2     | <i>RP11-114F3.2</i>   | Pseudogene | 1.04                        | 1.13E-06  | 8.67E-05    | 0.99                            | 1.88E-06 | 2.00E-04    |  |
| ENSG00000256299.1     | <i>RP11-989F5.3</i>   | LncRNA     | 1.11                        | 3.46E-06  | 2.19E-04    | 0.96                            | 4.46E-05 | 2.44E-03    |  |
| ENSG00000256321.4     | <i>RP11-153K16.1</i>  | LncRNA     | 3.23                        | 1.80E-36  | 4.26E-33    | 0.39                            | 1.12E-01 | 3.83E-01    |  |
| ENSG00000256340.7     | <i>ABCC6P1</i>        | Pseudogene | 0.71                        | 5.84E-05  | 2.12E-03    | 0.68                            | 7.25E-05 | 3.55E-03    |  |
| ENSG00000256347.1     | <i>OR8R1P</i>         | Pseudogene | 0.67                        | 8.45E-03  | 7.01E-02    | 0.64                            | 1.03E-02 | 1.05E-01    |  |
| ENSG00000256379.1     | <i>TRAV8-5</i>        | Other      | -0.72                       | 8.60E-04  | 1.53E-02    | -0.66                           | 1.61E-03 | 3.22E-02    |  |
| ENSG00000256394.2     | <i>ASIC5</i>          | Protein    | -0.78                       | 1.49E-03  | 2.23E-02    | -0.77                           | 1.36E-03 | 2.88E-02    |  |
| ENSG00000256427.1     | <i>RP11-118B22.4</i>  | LncRNA     | 0.51                        | 1.11E-02  | 8.35E-02    | 0.47                            | 1.47E-02 | 1.29E-01    |  |
| ENSG00000256433.2     | <i>RP1-102E24.8</i>   | LncRNA     | 0.52                        | 1.97E-05  | 9.16E-04    | 0.39                            | 7.94E-04 | 2.00E-02    |  |
| ENSG00000256458.1     | <i>RP11-363J17.1</i>  | LncRNA     | 0.61                        | 1.12E-02  | 8.36E-02    | 0.62                            | 8.00E-03 | 8.98E-02    |  |
| ENSG00000256481.1     | <i>RP11-21A7A.4</i>   | LncRNA     | 0.71                        | 3.57E-04  | 8.32E-03    | 0.68                            | 3.57E-04 | 1.15E-02    |  |
| ENSG00000256525.5     | <i>POLG2</i>          | Protein    | 0.18                        | 1.20E-02  | 8.73E-02    | 0.08                            | 2.21E-01 | 5.32E-01    |  |
| ENSG00000256576.2     | <i>RP13-977J11.2</i>  | LncRNA     | 0.32                        | 4.67E-03  | 4.81E-02    | 0.31                            | 3.49E-03 | 5.46E-02    |  |
| ENSG00000256582.1     | <i>RP11-75L1.1</i>    | LncRNA     | 1.00                        | 2.23E-05  | 1.00E-03    | 0.94                            | 3.83E-05 | 2.16E-03    |  |
| ENSG00000256591.4     | <i>RP11-286N22.8</i>  | Protein    | 0.31                        | 1.12E-05  | 5.73E-04    | 0.23                            | 5.44E-04 | 1.56E-02    |  |
| ENSG00000256597.2     | <i>FLJ37505</i>       | LncRNA     | 1.07                        | 4.88E-06  | 2.91E-04    | -0.05                           | 8.27E-01 | NA          |  |
| ENSG00000256612.6     | <i>CYP2B7P</i>        | Pseudogene | 1.12                        | 4.95E-12  | 1.45E-09    | 0.31                            | 3.41E-02 | 2.05E-01    |  |
| ENSG00000256618.2     | <i>MTRNR2L1</i>       | Protein    | -1.79                       | 2.15E-12  | 6.56E-10    | -1.66                           | 1.75E-11 | 6.86E-09    |  |
| ENSG00000256632.3     | <i>RP13-672B3.2</i>   | Protein    | 0.65                        | 4.51E-04  | 9.83E-03    | 0.83                            | 2.51E-06 | 2.51E-04    |  |
| ENSG00000256670.1     | <i>RP11-338E21.1</i>  | LncRNA     | 0.54                        | 8.61E-03  | 7.09E-02    | 0.56                            | 4.47E-03 | 6.39E-02    |  |
| ENSG00000256682.2     | <i>TAS2R12</i>        | Pseudogene | 0.52                        | 7.73E-04  | 1.43E-02    | 0.56                            | 1.42E-04 | 5.96E-03    |  |
| ENSG00000256720.1     | <i>RP11-436I9.6</i>   | Pseudogene | 0.57                        | 4.46E-03  | 4.67E-02    | 0.52                            | 6.69E-03 | 8.09E-02    |  |
| ENSG00000256751.4     | <i>PLBD1-AS1</i>      | LncRNA     | -0.49                       | 6.13E-03  | 5.73E-02    | -0.35                           | 4.19E-02 | 2.31E-01    |  |
| ENSG00000256826.1     | <i>AC138744.2</i>     | Pseudogene | 0.73                        | 4.21E-04  | 9.31E-03    | 0.64                            | 1.48E-03 | 3.04E-02    |  |
| ENSG00000256894.1     | <i>RP11-283G6.3</i>   | LncRNA     | -0.47                       | 1.74E-03  | 2.48E-02    | -0.51                           | 4.19E-04 | 1.29E-02    |  |
| ENSG00000256940.1     | <i>RP11-783K16.5</i>  | LncRNA     | -0.33                       | 1.32E-02  | 9.29E-02    | -0.41                           | 1.46E-03 | 3.03E-02    |  |
| ENSG00000256948.1     | <i>RP11-598F7.3</i>   | LncRNA     | 0.86                        | 1.23E-05  | 6.14E-04    | -0.16                           | 3.89E-01 | 6.84E-01    |  |
| ENSG00000256967.1     | <i>RP11-273B20.1</i>  | LncRNA     | 0.33                        | 7.55E-03  | 6.51E-02    | 0.23                            | 5.44E-02 | 2.66E-01    |  |
| ENSG00000256982.1     | <i>CTD-2555A7.2</i>   | LncRNA     | 0.63                        | 1.49E-04  | 4.31E-03    | 0.77                            | 1.96E-06 | 2.07E-04    |  |
| ENSG00000257002.1     | <i>AP000438.2</i>     | LncRNA     | 0.56                        | 1.10E-04  | 3.40E-03    | 0.48                            | 6.04E-04 | 1.67E-02    |  |
| ENSG00000257016.1     | <i>SLC25A39P2</i>     | Pseudogene | 0.62                        | 1.29E-02  | 9.19E-02    | 0.65                            | 6.54E-03 | 7.99E-02    |  |
| ENSG00000257022.1     | <i>RP11-729I10.2</i>  | LncRNA     | -0.67                       | 9.30E-03  | 7.43E-02    | -0.63                           | 1.15E-02 | 1.12E-01    |  |
| ENSG00000257038.1     | <i>RP11-800A3.7</i>   | LncRNA     | -0.32                       | 4.82E-03  | 4.90E-02    | -0.26                           | 1.60E-02 | 1.35E-01    |  |
| ENSG00000257057.1     | <i>C11orf97</i>       | LncRNA     | -0.64                       | 1.23E-02  | 8.87E-02    | -0.49                           | 4.93E-02 | 2.52E-01    |  |
| ENSG00000257135.4     | <i>RP11-320M2.1</i>   | LncRNA     | 0.58                        | 1.80E-06  | 1.27E-04    | 0.61                            | 2.28E-07 | 3.43E-05    |  |
| ENSG00000257162.5     | <i>MED15P6</i>        | Pseudogene | 0.80                        | 1.14E-03  | 1.87E-02    | -0.21                           | 3.77E-01 | 6.73E-01    |  |
| ENSG00000257176.2     | <i>RP11-996F15.2</i>  | LncRNA     | 0.79                        | 2.20E-10  | 4.56E-08    | 0.73                            | 7.22E-10 | 2.00E-07    |  |
| ENSG00000257178.3     | <i>RP11-357H14.16</i> | LncRNA     | 0.78                        | 1.31E-03  | 2.04E-02    | 0.59                            | 1.31E-02 | 1.21E-01    |  |
| ENSG00000257194.2     | <i>RP11-567C2.1</i>   | LncRNA     | 0.63                        | 1.52E-03  | 2.26E-02    | 0.48                            | 1.20E-02 | 1.14E-01    |  |
| ENSG00000257210.1     | <i>NACAP3</i>         | Pseudogene | 0.68                        | 1.24E-04  | 3.72E-03    | 0.58                            | 6.50E-04 | 1.76E-02    |  |
| ENSG00000257222.1     | <i>RP11-554E23.4</i>  | LncRNA     | 0.45                        | 6.49E-04  | 1.26E-02    | 0.28                            | 2.82E-02 | 1.85E-01    |  |
| ENSG00000257242.5     | <i>C12orf79</i>       | Protein    | 1.06                        | 2.03E-08  | 2.69E-06    | 0.92                            | 7.56E-07 | 9.24E-05    |  |
| ENSG00000257252.4     | <i>RP11-486A14.2</i>  | LncRNA     | 0.45                        | 7.86E-03  | 6.69E-02    | 0.37                            | 2.46E-02 | 1.72E-01    |  |
| ENSG00000257261.4     | <i>RP11-96H19.1</i>   | LncRNA     | -0.30                       | 9.00E-04  | 1.57E-02    | -0.32                           | 2.32E-04 | 8.64E-03    |  |
| ENSG00000257322.4     | <i>RP11-511B23.2</i>  | LncRNA     | 0.59                        | 9.05E-04  | 1.58E-02    | 0.45                            | 8.64E-03 | 9.40E-02    |  |
| ENSG00000257354.2     | <i>RP11-631N16.2</i>  | LncRNA     | 0.30                        | 4.09E-03  | 4.40E-02    | 0.18                            | 8.19E-02 | 3.28E-01    |  |
| ENSG00000257379.1     | <i>RP11-793H13.8</i>  | LncRNA     | 0.50                        | 1.41E-04  | 4.12E-03    | 0.48                            | 1.35E-04 | 5.71E-03    |  |
| ENSG00000257407.1     | <i>RP11-1028N23.4</i> | LncRNA     | 0.59                        | 1.37E-02  | 9.53E-02    | 0.58                            | 1.31E-02 | 1.20E-01    |  |
| ENSG00000257434.1     | <i>RP11-81K13.1</i>   | LncRNA     | -1.02                       | 5.14E-06  | 3.03E-04    | -1.03                           | 1.90E-06 | 2.01E-04    |  |
| ENSG00000257453.1     | <i>RP11-290L1.3</i>   | LncRNA     | 0.60                        | 6.36E-03  | 5.88E-02    | 0.55                            | 9.57E-03 | 1.00E-01    |  |
| ENSG00000257464.1     | <i>RP11-161H23.8</i>  | Pseudogene | -0.79                       | 3.73E-04  | 8.57E-03    | -0.68                           | 1.58E-03 | 3.18E-02    |  |
| ENSG00000257495.4     | <i>KRT73-AS1</i>      | LncRNA     | 0.92                        | 2.36E-04  | 6.11E-03    | 0.76                            | 1.86E-03 | 3.55E-02    |  |
| ENSG00000257513.6     | <i>NPIPBP1</i>        | Pseudogene | 0.97                        | 3.17E-07  | 2.97E-05    | 0.93                            | 3.66E-07 | 5.10E-05    |  |
| ENSG00000257524.4     | <i>RP11-203J24.9</i>  | LncRNA     | 0.37                        | 7.76E-03  | 6.63E-02    | 0.21                            | 1.12E-01 | 3.84E-01    |  |
| ENSG00000257550.1     | <i>RP11-793H13.3</i>  | LncRNA     | 0.88                        | 4.35E-06  | 2.64E-04    | 0.80                            | 1.55E-05 | 1.07E-03    |  |
| ENSG00000257595.2     | <i>RP3-473L9.4</i>    | LncRNA     | 0.56                        | 1.31E-03  | 2.04E-02    | 0.47                            | 5.17E-03 | 6.96E-02    |  |
| ENSG00000257596.1     | <i>RP11-968A15.2</i>  | LncRNA     | 0.49                        | 8.95E-04  | 1.57E-02    | 0.35                            | 1.27E-02 | 1.19E-01    |  |
| ENSG00000257599.1     | <i>OYCHI-AS1</i>      | LncRNA     | -0.73                       | 1.56E-03  | 2.31E-02    | -0.34                           | 1.08E-01 | 3.77E-01    |  |
| ENSG00000257613.1     | <i>LINC01481</i>      | LncRNA     | 0.56                        | 5.94E-05  | 2.13E-03    | 0.42                            | 1.82E-03 | 3.49E-02    |  |
| ENSG00000257621.6     | <i>PSMA3-AS1</i>      | LncRNA     | 0.17                        | 5.27E-03  | 5.19E-02    | 0.12                            | 4.68E-02 | 2.45E-01    |  |
| ENSG00000257636.5     | <i>RP11-1103G16.1</i> | LncRNA     | 1.17                        | 3.18E-06  | 2.05E-04    | 0.30                            | 2.06E-01 | NA          |  |
| ENSG00000257663.1     | <i>RP11-1100L3.7</i>  | LncRNA     | 0.70                        | 5.39E-04  | 1.11E-02    | 0.65                            | 8.84E-04 | 2.16E-02    |  |
| ENSG00000257698.1     | <i>RP11-620J15.3</i>  | LncRNA     | 0.27                        | 3.99E-03  | 4.34E-02    | 0.24                            | 6.61E-03 | 8.04E-02    |  |
| ENSG00000257718.1     | <i>RP11-396F22.1</i>  | LncRNA     | 0.56                        | 7.71E-04  | 1.42E-02    | 0.07                            | 6.71E-01 | 8.60E-01    |  |
| ENSG00000257726.1     | <i>RP11-116D17.1</i>  | LncRNA     | 0.61                        | 9.84E-03  | 7.69E-02    | 0.55                            | 1.50E-02 | 1.30E-01    |  |
| ENSG00000257737.1     | <i>RP11-341G23.2</i>  | LncRNA     | -0.62                       | 1.44E-02  | 9.86E-02    | -0.61                           | 1.30E-02 | 1.20E-01    |  |
| ENSG00000257769.1     | <i>CTB-193M12.1</i>   | LncRNA     | 0.68                        | 3.85E-03  | 4.24E-02    | 0.59                            | 9.84E-03 | 1.02E-01    |  |
| ENSG00000257781.1     | <i>RP11-110L15.1</i>  | LncRNA     | 0.45                        | 4.84E-03  | 4.90E-02    | 0.43                            | 4.83E-03 | 6.68E-02    |  |
| ENSG00000257817.1     | <i>RP4-601P9.2</i>    | LncRNA     | 0.55                        | 9.95E-04  | 1.70E-02    | 0.46                            | 4.15E-03 | 6.12E-02    |  |
| ENSG00000257847.1     | <i>LSM3P2</i>         | Pseudogene | 0.85                        | 7.78E-04  | 1.43E-02    | -0.43                           | 8.47E-02 | 3.33E-01    |  |
| ENSG00000257859.1     | <i>CASC18</i>         | LncRNA     | 0.40                        | 1.44E-02  | 9.83E-02    | 0.49                            | 1.78E-03 | 3.45E-02    |  |
| ENSG00000257864.1     | <i>RP11-46I1.2</i>    | Pseudogene | 0.64                        | 8.89E-03  | 7.22E-02    | 0.62                            | 8.52E-03 | 9.33E-02    |  |
| ENSG00000257872.1     | <i>RP11-453D16.2</i>  | Pseudogene | 0.69                        | 7.09E-03  | 6.25E-02    | 0.68                            | 6.23E-03 | 7.76E-02    |  |
| ENSG00000257890.1     | <i>RP11-114F10.2</i>  | LncRNA     | 0.53                        | 8.34E-03  | 6.95E-02    | 0.44                            | 2.37E-02 | 1.68E-01    |  |
| ENSG00000257894.2     | <i>RP1-78O14.1</i>    | LncRNA     | -0.39                       | 2.85E-03  | 3.47E-02    | -0.45                           | 4.47E-04 | 1.36E-02    |  |
| ENSG00000257950.3     | <i>P2RX5-TAX1BP3</i>  | Protein    | 0.18                        | 1.45E-02  | 9.87E-02    | 0.16                            | 2.34E-02 | 1.67E-01    |  |
| ENSG00000257954.1     | <i>RP11-161H23.10</i> | Pseudogene | 0.42                        | 1.32E-02  | 9.29E-02    | 0.27                            | 9.79E-02 | 3.58E-01    |  |
| ENSG00000257956.1     | <i>NOP56P3</i>        | Pseudogene | 0.95                        | 5.55E-06  | 3.22E-04    | 0.94                            | 3.87E-06 | 3.51E-04    |  |
| ENSG00000258027.2     | <i>NFIP7</i>          | Pseudogene | 0.76                        | 2.25E-03  | 2.96E-02    | -0.07                           | 7.71E-01 | 9.09E-01    |  |
| ENSG00000258038.4     | <i>CTD-2384A14.1</i>  | LncRNA     | 1.16                        | 5.48E-06  | 3.20E-04    | 0.72                            | 3.59E-03 | 5.57E-02    |  |
| ENSG00000258065.1     | <i>RP11-30H9.1</i>    | Pseudogene | 0.46                        | 1.30E-02  | 9.22E-02    | 0.03                            | 8.40E-01 | 9.41E-01    |  |
| ENSG00000258144.1     | <i>RP11-554L12.1</i>  | LncRNA     | 1.31                        | 1.97E-08  | 2.63E-06    | 1.31                            | 6.67E-09 | 1.50E-06    |  |
| ENSG00000258203.4     | <i>RP1-228P16.3</i>   | LncRNA     | -0.68                       | 5.89E-03  | 5.57E-02    | -0.68                           | 4.40E-03 | 6.34E-02    |  |
| ENSG00000258204.1     | <i>RP11-90E9.1</i>    | Pseudogene | -0.76                       | 2.95E-03  | 3.54E-02    | -0.71                           | 3.82E-03 | 5.80E-02    |  |
| ENSG00000258244.1     | <i>OSTFIP1</i>        | Pseudogene | -0.63                       | 1.27E-02  | 9.08E-02    | -0.61                           | 1.30E-02 | 1.20E-01    |  |
| ENSG00000258273.1     | <i>RP11-370I10.4</i>  | Pseudogene | 0.69                        | 1.55E-03  | 2.30E-02</  |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000258380.1     | <i>RP11-33N16.2</i>  | LncRNA     | 0.62                        | 1.20E-02 | 8.76E-02    | 0.57                            | 1.76E-02 | 1.43E-01    |  |
| ENSG00000258388.6     | <i>PPT2-EGFL8</i>    | Protein    | 0.36                        | 2.43E-04 | 6.22E-03    | 0.22                            | 1.76E-02 | 1.43E-01    |  |
| ENSG00000258427.3     | <i>RBMS8</i>         | Pseudogene | 0.51                        | 3.04E-04 | 7.38E-03    | 0.53                            | 6.70E-05 | 3.33E-03    |  |
| ENSG00000258443.1     | <i>RP3-41A15.11</i>  | LncRNA     | 0.36                        | 4.40E-03 | 4.63E-02    | 0.37                            | 1.74E-03 | 3.40E-02    |  |
| ENSG00000258461.4     | <i>RP11-164J13.1</i> | LncRNA     | 0.36                        | 9.69E-03 | 7.61E-02    | 0.27                            | 4.97E-02 | 2.53E-01    |  |
| ENSG00000258465.5     | <i>RP11-574F21.3</i> | Protein    | 0.32                        | 2.21E-03 | 2.93E-02    | 0.30                            | 2.63E-03 | 4.52E-02    |  |
| ENSG00000258466.4     | <i>RP11-1012A1.4</i> | Protein    | -0.43                       | 4.57E-03 | 4.75E-02    | -0.33                           | 2.21E-02 | 1.62E-01    |  |
| ENSG00000258488.2     | <i>RP11-467L19.8</i> | Pseudogene | 0.84                        | 1.03E-03 | 1.74E-02    | 0.82                            | 9.04E-04 | 2.19E-02    |  |
| ENSG00000258490.1     | <i>RP11-862P13.1</i> | LncRNA     | 0.61                        | 1.27E-02 | 9.08E-02    | 0.65                            | 6.46E-03 | 7.93E-02    |  |
| ENSG00000258525.1     | <i>RP11-829H16.3</i> | LncRNA     | -0.56                       | 1.02E-03 | 1.73E-02    | -0.44                           | 7.61E-03 | 8.72E-02    |  |
| ENSG00000258527.1     | <i>ASB9P1</i>        | Pseudogene | 1.41                        | 1.48E-12 | 4.57E-10    | 0.84                            | 1.67E-05 | 1.13E-03    |  |
| ENSG00000258545.4     | <i>RP4-755D9.1</i>   | LncRNA     | 0.60                        | 4.66E-05 | 1.78E-03    | 0.62                            | 1.12E-05 | 8.24E-04    |  |
| ENSG00000258546.1     | <i>CENPUP2</i>       | Pseudogene | 0.68                        | 6.64E-03 | 6.01E-02    | 0.61                            | 1.20E-02 | 1.15E-01    |  |
| ENSG00000258564.1     | <i>ORAN1P</i>        | Pseudogene | 0.64                        | 1.21E-02 | 8.79E-02    | 0.68                            | 6.22E-03 | 7.76E-02    |  |
| ENSG00000258602.1     | <i>RP11-7F17.7</i>   | LncRNA     | 0.73                        | 6.28E-04 | 1.23E-02    | 0.77                            | 1.66E-04 | 6.67E-03    |  |
| ENSG00000258603.3     | <i>RP3-41A15.10</i>  | LncRNA     | 0.37                        | 1.36E-02 | 9.51E-02    | 0.44                            | 2.27E-03 | 4.07E-02    |  |
| ENSG00000258608.1     | <i>DNAJC19P9</i>     | Pseudogene | -0.41                       | 1.43E-02 | 9.82E-02    | -0.44                           | 6.66E-03 | 8.07E-02    |  |
| ENSG00000258630.1     | <i>RP11-725G5.2</i>  | LncRNA     | 0.45                        | 2.73E-03 | 3.37E-02    | 0.52                            | 3.84E-04 | 1.21E-02    |  |
| ENSG00000258638.2     | <i>RP11-395B20.2</i> | Pseudogene | -0.71                       | 5.00E-03 | 5.01E-02    | -0.71                           | 3.61E-03 | 5.58E-02    |  |
| ENSG00000258643.4     | <i>BCL2L2-PABPN1</i> | Protein    | 0.63                        | 2.82E-07 | 2.69E-05    | 0.41                            | 7.92E-04 | 2.00E-02    |  |
| ENSG00000258647.4     | <i>LINC00930</i>     | LncRNA     | 1.21                        | 3.21E-11 | 7.89E-09    | 1.13                            | 1.63E-10 | 5.08E-08    |  |
| ENSG00000258653.3     | <i>RP5-1021120.4</i> | Protein    | 0.45                        | 2.95E-03 | 3.54E-02    | 0.43                            | 3.22E-03 | 5.17E-02    |  |
| ENSG00000258674.5     | <i>CTC-260F20.3</i>  | Protein    | 0.30                        | 2.29E-03 | 2.99E-02    | 0.23                            | 1.56E-02 | 1.34E-01    |  |
| ENSG00000258676.4     | <i>RP11-386M24.3</i> | LncRNA     | 0.82                        | 1.81E-05 | 8.56E-04    | 0.68                            | 3.03E-04 | 1.03E-02    |  |
| ENSG00000258693.1     | <i>RP11-436M15.3</i> | LncRNA     | 0.72                        | 5.06E-03 | 5.05E-02    | 0.63                            | 1.17E-02 | NA          |  |
| ENSG00000258701.1     | <i>LINC00638</i>     | LncRNA     | -0.33                       | 2.17E-03 | 2.89E-02    | -0.32                           | 1.74E-03 | 3.41E-02    |  |
| ENSG00000258725.1     | <i>PRC1-AS1</i>      | LncRNA     | 0.72                        | 1.74E-08 | 2.37E-06    | 0.56                            | 5.72E-06 | 4.83E-04    |  |
| ENSG00000258727.1     | <i>RP11-66N24.3</i>  | LncRNA     | 0.54                        | 8.19E-05 | 2.72E-03    | 0.42                            | 1.78E-03 | 3.44E-02    |  |
| ENSG00000258730.1     | <i>ITPK1-AS1</i>     | LncRNA     | 0.67                        | 2.24E-03 | 2.95E-02    | 0.57                            | 6.91E-03 | 8.25E-02    |  |
| ENSG00000258733.4     | <i>CTD-2341M24.1</i> | LncRNA     | 0.43                        | 2.82E-03 | 3.44E-02    | 0.25                            | 7.75E-02 | 3.19E-01    |  |
| ENSG00000258734.2     | <i>RP11-112J1.3</i>  | Pseudogene | -0.29                       | 5.08E-03 | 5.06E-02    | -0.24                           | 1.65E-02 | 1.38E-01    |  |
| ENSG00000258738.1     | <i>RP11-73E17.2</i>  | LncRNA     | -0.24                       | 1.46E-04 | 4.23E-03    | -0.19                           | 1.66E-03 | 3.28E-02    |  |
| ENSG00000258741.3     | <i>RP11-386M24.4</i> | Pseudogene | 0.38                        | 1.03E-02 | 7.90E-02    | 0.38                            | 8.80E-03 | 9.50E-02    |  |
| ENSG00000258789.1     | <i>RP11-507K2.3</i>  | LncRNA     | -0.44                       | 2.31E-04 | 6.01E-03    | -0.33                           | 4.78E-03 | 6.65E-02    |  |
| ENSG00000258790.1     | <i>KIAA0391</i>      | Protein    | 0.36                        | 6.00E-03 | 5.64E-02    | 0.31                            | 1.30E-02 | 1.20E-01    |  |
| ENSG00000258793.1     | <i>RP11-404P21.3</i> | LncRNA     | 0.81                        | 7.72E-04 | 1.43E-02    | 0.70                            | 2.84E-03 | 4.77E-02    |  |
| ENSG00000258819.1     | <i>RP11-7F17.3</i>   | LncRNA     | -0.46                       | 4.58E-03 | 4.76E-02    | -0.36                           | 2.21E-02 | 1.62E-01    |  |
| ENSG00000258829.1     | <i>CTD-2243E23.1</i> | LncRNA     | 0.97                        | 2.62E-05 | 1.13E-03    | 0.66                            | 2.13E-03 | 3.90E-02    |  |
| ENSG00000258839.2     | <i>MC1R</i>          | Protein    | 0.58                        | 5.61E-06 | 3.24E-04    | 0.42                            | 6.56E-04 | 1.76E-02    |  |
| ENSG00000258847.1     | <i>CTD-2014B16.3</i> | LncRNA     | 0.56                        | 3.25E-04 | 7.78E-03    | 0.49                            | 9.14E-04 | 2.21E-02    |  |
| ENSG00000258875.4     | <i>CTD-2547L24.3</i> | LncRNA     | 0.55                        | 6.54E-05 | 2.29E-03    | 0.50                            | 1.57E-04 | 6.37E-03    |  |
| ENSG00000258884.1     | <i>CTD-3035D6.2</i>  | LncRNA     | 0.98                        | 6.94E-07 | 5.71E-05    | 0.64                            | 8.50E-04 | 2.10E-02    |  |
| ENSG00000258890.5     | <i>CEP95</i>         | Protein    | 0.25                        | 3.75E-04 | 8.58E-03    | 0.17                            | 1.15E-02 | 1.12E-01    |  |
| ENSG00000258904.1     | <i>RP11-638I2.2</i>  | LncRNA     | 0.39                        | 6.53E-03 | 5.96E-02    | 0.27                            | 5.87E-02 | 2.77E-01    |  |
| ENSG00000258926.1     | <i>RP11-47I22.1</i>  | LncRNA     | 0.43                        | 1.36E-02 | 9.50E-02    | 0.46                            | 6.11E-03 | 7.69E-02    |  |
| ENSG00000258932.4     | <i>CTD-3006G17.2</i> | Pseudogene | 0.86                        | 7.23E-04 | 1.36E-02    | 0.83                            | 7.29E-04 | 1.89E-02    |  |
| ENSG00000258948.2     | <i>KRT8P1</i>        | Pseudogene | -0.70                       | 2.47E-03 | 3.16E-02    | -0.62                           | 6.01E-03 | 7.60E-02    |  |
| ENSG00000258957.1     | <i>RP11-363J20.1</i> | LncRNA     | 0.34                        | 2.92E-03 | 3.52E-02    | 0.29                            | 8.02E-03 | 8.99E-02    |  |
| ENSG00000258984.4     | <i>UBE2F-SCLY</i>    | Protein    | 0.46                        | 7.06E-04 | 1.34E-02    | 0.31                            | 1.84E-02 | 1.47E-01    |  |
| ENSG00000258998.1     | <i>RP11-398E10.1</i> | LncRNA     | -0.94                       | 5.66E-05 | 2.07E-03    | -0.73                           | 1.29E-03 | 2.79E-02    |  |
| ENSG00000259016.1     | <i>CTD-2335L22.6</i> | Pseudogene | 0.67                        | 4.71E-03 | 4.83E-02    | 0.11                            | 6.16E-01 | NA          |  |
| ENSG00000259020.3     | <i>RP11-529H20.3</i> | Pseudogene | -0.35                       | 1.73E-03 | 2.48E-02    | -0.42                           | 7.16E-05 | 3.52E-03    |  |
| ENSG00000259023.2     | <i>LINC00524</i>     | LncRNA     | -0.53                       | 1.17E-02 | 8.60E-02    | -0.41                           | 4.30E-02 | 2.34E-01    |  |
| ENSG00000259045.1     | <i>RP11-320M16.1</i> | Pseudogene | 0.55                        | 2.05E-03 | 2.79E-02    | 0.61                            | 3.83E-04 | 1.21E-02    |  |
| ENSG00000259056.1     | <i>DUXAPI1</i>       | Pseudogene | 0.60                        | 4.96E-03 | 4.99E-02    | 0.52                            | 1.17E-02 | 1.13E-01    |  |
| ENSG00000259065.1     | <i>RP5-1021120.1</i> | LncRNA     | -0.42                       | 1.25E-04 | 3.73E-03    | -0.43                           | 4.72E-05 | 2.55E-03    |  |
| ENSG00000259081.1     | <i>RP11-488C13.6</i> | LncRNA     | 0.42                        | 3.44E-03 | 3.93E-02    | 0.28                            | 4.21E-02 | 2.31E-01    |  |
| ENSG00000259083.1     | <i>RP11-407N17.4</i> | LncRNA     | 0.33                        | 5.56E-03 | 5.38E-02    | 0.19                            | 9.82E-02 | 3.59E-01    |  |
| ENSG00000259099.2     | <i>RP11-348M3.2</i>  | Pseudogene | 0.81                        | 1.38E-03 | 2.11E-02    | 0.80                            | 1.15E-03 | 2.58E-02    |  |
| ENSG00000259113.1     | <i>RP11-406H23.2</i> | LncRNA     | 0.52                        | 2.13E-03 | 2.85E-02    | 0.45                            | 5.66E-03 | 7.34E-02    |  |
| ENSG00000259120.2     | <i>SMIM6</i>         | Protein    | -0.69                       | 2.22E-03 | 2.93E-02    | -0.75                           | 7.10E-04 | 1.86E-02    |  |
| ENSG00000259151.2     | <i>CAP2P1</i>        | Pseudogene | 1.03                        | 1.92E-08 | 2.57E-06    | 0.87                            | 1.08E-06 | 1.27E-04    |  |
| ENSG00000259161.2     | <i>CTD-2017C7.3</i>  | Pseudogene | 0.84                        | 1.01E-03 | 1.71E-02    | 0.23                            | 3.54E-01 | 6.55E-01    |  |
| ENSG00000259163.1     | <i>RP11-1078H9.5</i> | LncRNA     | 0.47                        | 3.56E-03 | 4.02E-02    | 0.55                            | 4.07E-04 | 1.27E-02    |  |
| ENSG00000259169.1     | <i>GNRHR2P1</i>      | Pseudogene | 1.05                        | 5.53E-06 | 3.22E-04    | 0.99                            | 1.06E-05 | 7.89E-04    |  |
| ENSG00000259188.4     | <i>CTD-2647E9.3</i>  | LncRNA     | 0.59                        | 8.64E-03 | 7.10E-02    | 0.50                            | 2.26E-02 | 1.64E-01    |  |
| ENSG00000259232.2     | <i>RP11-349G13.1</i> | Pseudogene | 0.58                        | 1.15E-02 | 8.50E-02    | 0.42                            | 5.97E-02 | 2.79E-01    |  |
| ENSG00000259238.1     | <i>RP11-361D15.2</i> | LncRNA     | 0.61                        | 1.18E-04 | 3.59E-03    | 0.59                            | 1.04E-04 | 4.68E-03    |  |
| ENSG00000259268.1     | <i>AC007950.1</i>    | LncRNA     | 0.74                        | 7.47E-04 | 1.39E-02    | 0.57                            | 7.73E-03 | 8.80E-02    |  |
| ENSG00000259295.5     | <i>CSPG4P12</i>      | Pseudogene | -0.72                       | 7.28E-08 | 8.34E-06    | -0.69                           | 7.17E-08 | 1.26E-05    |  |
| ENSG00000259305.4     | <i>ZHX1-C8orf76</i>  | Protein    | 0.54                        | 2.71E-06 | 1.80E-04    | 0.41                            | 2.53E-04 | 9.14E-03    |  |
| ENSG00000259314.1     | <i>CTD-3065B20.3</i> | LncRNA     | 0.49                        | 2.04E-04 | 5.44E-03    | 0.46                            | 2.45E-04 | 8.95E-03    |  |
| ENSG00000259321.1     | <i>RP11-468E2.5</i>  | LncRNA     | 0.38                        | 1.96E-03 | 2.71E-02    | 0.23                            | 6.00E-02 | 2.80E-01    |  |
| ENSG00000259332.2     | <i>ST20-MTHFS</i>    | Protein    | 0.54                        | 8.01E-04 | 1.46E-02    | 0.44                            | 4.12E-03 | 6.10E-02    |  |
| ENSG00000259337.4     | <i>IGHV1OR15-2</i>   | Other      | 0.69                        | 4.63E-03 | 4.78E-02    | 0.59                            | 1.21E-02 | 1.15E-01    |  |
| ENSG00000259365.1     | <i>RP11-424I19.1</i> | LncRNA     | 1.00                        | 6.67E-05 | 2.33E-03    | 0.91                            | 1.86E-04 | 7.26E-03    |  |
| ENSG00000259402.1     | <i>RP11-30K9.4</i>   | LncRNA     | 0.59                        | 3.67E-03 | 4.11E-02    | 0.52                            | 7.99E-03 | 8.97E-02    |  |
| ENSG00000259407.1     | <i>RP11-158M2.3</i>  | LncRNA     | 0.47                        | 9.80E-05 | 3.10E-03    | 0.32                            | 6.40E-03 | 7.89E-02    |  |
| ENSG00000259408.2     | <i>RP11-3D4.3</i>    | LncRNA     | 0.36                        | 5.08E-03 | 5.06E-02    | 0.32                            | 9.20E-03 | 9.77E-02    |  |
| ENSG00000259416.2     | <i>RP11-158M2.5</i>  | LncRNA     | 0.60                        | 9.73E-05 | 3.09E-03    | 0.41                            | 6.44E-03 | 7.92E-02    |  |
| ENSG00000259420.4     | <i>RP11-307C19.2</i> | LncRNA     | -0.59                       | 5.46E-03 | 5.32E-02    | -0.50                           | 1.58E-02 | 1.35E-01    |  |
| ENSG00000259423.2     | <i>RP11-265N7.2</i>  | LncRNA     | 0.58                        | 6.19E-03 | 5.76E-02    | 0.41                            | 4.51E-02 | 2.40E-01    |  |
| ENSG00000259441.2     | <i>MRPL15P1</i>      | Pseudogene | 0.60                        | 4.77E-03 | 4.86E-02    | 0.59                            | 4.34E-03 | 6.30E-02    |  |
| ENSG00000259444.1     | <i>RP11-736N17.8</i> | LncRNA     | 0.59                        | 1.08E-02 | 8.19E-02    | 0.62                            | 5.76E-03 | 7.42E-02    |  |
| ENSG00000259446.4     | <i>RP11-489D6.2</i>  | LncRNA     | -0.86                       | 7.00E-05 | 2.41E-03    | -0.83                           | 6.46E-05 | 3.23E-03    |  |
| ENSG00000259449.1     | <i>NIFKP8</i>        | Pseudogene | 0.94                        | 2.42E-04 | 6.21E-03    | 0.88                            | 3.68E-04 | 1.18E-02    |  |
| ENSG00000259459.4     | <i>RP11-321G12.1</i> | LncRNA     | 0.79                        | 2.98E-06 | 1.94E-04    | 0.72                            | 8.03E-06 | 6.37E-04    |  |
| ENSG00000259471.1     | <i>LINC01169</i>     | LncRNA     | 0.71                        | 7.93E-04 | 1.45E-02    | 0.52                            | 1.19E-02 | 1.14E-01    |  |
| ENSG00000259474.1     | <i>RP11-650L12.1</i> | LncRNA     | 0.56                        | 1.34E-02 | 9.41E-02    | 0.56                            | 1.13E-02 | 1.11E-01    |  |
| ENSG00000259479.5     | <i>SORD2P</i>        | Pseudogene | 1.33                        | 5.58E-20 | 4.09E-17    | 1.40                            | 7.87E-24 | 1.20E-20    |  |
| ENSG00000259495.2     | <i>RP11-210M15.2</i> | LncRNA     | -0.31                       | 7.67E-03 | 6.58E-02    | -0.20                           | 7.91E-02 | 3.22E-01    |  |
| ENSG00000259500.1     | <i>KRT8P24</i>       | Pseudogene | -0.54                       | 5.92E-03 | 5.59E-02    | -0.51                           | 7.30E-03 | 8.50E-02    |  |
| ENSG00000259502.1     | <i>RP11-643G16.3</i> | Pseudogene | 1.05                        | 9.10E-19 | 6.02E-16    | 1.05                            | 1.80E-20 | 1.98E-17    |  |
| ENSG00000259511.1     | <i>UBE2Q2L</i>       | Protein    | 0.62                        | 2.22E-03 | 2.93E-02    | 0.57                            | 3.60E-03 | 5.58E-02    |  |
| ENSG00000259515.1     | <i>RP11-365N19.2</i> | LncRNA     | 0.37                        | 6.50E-03 | 5.94E-02    | 0.23                            | 8.37E-02 | 3.32E-01    |  |
| ENSG00000259522.2     | <i>RP11-468E2.2</i>  | Protein    | 0.38                        | 1.37E-03 | 2.11E-02    | 0.36                            | 1.54E-03 | 3.14E-02    |  |
| ENSG00000259529.1     | <i>RP11-468E2.4</i>  | Protein    | 0.57                        | 1.11E-06 | 8.55E-05    | 0.39                            | 5.91E-04 | 1.65E-02    |  |
| ENSG00000259532.1     | <i>RP11-138H8.2</i>  | LncRNA     | 0.56                        | 1.08E-02 | 8.16E-02    | 0.51                            | 1.71E-02 | 1.41E-01    |  |
| ENSG00000259536.4     | <i>RP11-111A22.1</i> | LncRNA     |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol    | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000259605.3     | AC074212.5     | LncRNA     | 0.36                        | 1.08E-02 | 8.18E-02    | 0.27                            | 5.19E-02 | 2.60E-01    |  |
| ENSG00000259612.1     | EEF1A1P22      | Pseudogene | -0.36                       | 6.00E-03 | 5.64E-02    | -0.30                           | 1.53E-02 | 1.32E-01    |  |
| ENSG00000259628.1     | RP11-467H10.2  | LncRNA     | 0.51                        | 4.34E-03 | 4.58E-02    | 0.40                            | 2.15E-02 | 1.60E-01    |  |
| ENSG00000259630.2     | CTD-2262B20.1  | Pseudogene | 0.43                        | 1.16E-02 | 8.57E-02    | 0.38                            | 2.04E-02 | 1.55E-01    |  |
| ENSG00000259635.1     | AC100830.3     | LncRNA     | 0.33                        | 9.09E-03 | 7.33E-02    | 0.24                            | 5.30E-02 | 2.63E-01    |  |
| ENSG00000259641.4     | PCAT29         | LncRNA     | 0.41                        | 4.52E-03 | 4.71E-02    | 0.30                            | 2.93E-02 | 1.89E-01    |  |
| ENSG00000259648.1     | RP11-643G16.4  | Pseudogene | 0.76                        | 4.37E-08 | 5.19E-06    | 0.74                            | 2.74E-08 | 5.29E-06    |  |
| ENSG00000259654.1     | RP11-245C17.2  | LncRNA     | 0.53                        | 4.71E-03 | 4.83E-02    | 0.58                            | 1.14E-03 | 2.57E-02    |  |
| ENSG00000259656.1     | RP11-325E5.1   | LncRNA     | -0.80                       | 4.78E-04 | 1.02E-02    | -0.37                           | 7.27E-02 | 3.08E-01    |  |
| ENSG00000259680.5     | RP11-812E19.9  | Protein    | 0.94                        | 1.87E-04 | 5.11E-03    | 0.90                            | 2.26E-04 | 8.46E-03    |  |
| ENSG00000259685.2     | CTD-2315E11.1  | LncRNA     | 0.74                        | 1.07E-05 | 5.49E-04    | 0.72                            | 9.35E-06 | 7.21E-04    |  |
| ENSG00000259728.4     | LINC00933      | Pseudogene | -0.39                       | 3.08E-05 | 1.28E-03    | -0.37                           | 4.17E-05 | 2.30E-03    |  |
| ENSG00000259737.5     | RP11-475A13.1  | LncRNA     | 0.68                        | 1.20E-03 | 1.93E-02    | 0.85                            | 3.28E-05 | 1.91E-03    |  |
| ENSG00000259746.1     | HSPE1P3        | Pseudogene | 0.34                        | 6.29E-03 | 5.83E-02    | 0.25                            | 3.77E-02 | 2.17E-01    |  |
| ENSG00000259756.1     | RP11-625H11.2  | LncRNA     | 0.79                        | 1.90E-03 | 2.65E-02    | 0.03                            | 8.92E-01 | 9.62E-01    |  |
| ENSG00000259767.1     | RP11-90B9.2    | LncRNA     | 0.45                        | 4.10E-03 | 4.41E-02    | 0.36                            | 1.69E-02 | 1.40E-01    |  |
| ENSG00000259780.3     | RP11-304L19.12 | LncRNA     | 0.62                        | 2.51E-03 | 3.19E-02    | 0.41                            | 4.13E-02 | 2.29E-01    |  |
| ENSG00000259781.1     | RP11-673C5.1   | Pseudogene | 0.35                        | 6.06E-07 | 5.12E-05    | 0.40                            | 3.77E-09 | 8.84E-07    |  |
| ENSG00000259782.2     | CTD-2270L9.2   | LncRNA     | 0.43                        | 1.37E-02 | 9.55E-02    | 0.47                            | 5.52E-03 | 7.22E-02    |  |
| ENSG00000259820.1     | AC083843.1     | LncRNA     | 0.54                        | 1.82E-05 | 8.59E-04    | 0.33                            | 8.24E-03 | 9.16E-02    |  |
| ENSG00000259823.4     | LYPD8          | Protein    | 0.66                        | 9.66E-03 | 7.59E-02    | 0.22                            | 3.68E-01 | 6.67E-01    |  |
| ENSG00000259826.1     | RP11-467D6.1   | LncRNA     | 0.25                        | 3.92E-03 | 4.29E-02    | 0.20                            | 1.90E-02 | 1.49E-01    |  |
| ENSG00000259845.1     | HERC2P10       | Pseudogene | 0.52                        | 2.10E-03 | 2.83E-02    | 0.38                            | 1.94E-02 | 1.51E-01    |  |
| ENSG00000259865.1     | RP11-488L18.10 | LncRNA     | 0.33                        | 8.97E-04 | 1.57E-02    | 0.23                            | 1.78E-02 | 1.44E-01    |  |
| ENSG00000259869.1     | AL022344.7     | LncRNA     | 0.43                        | 1.46E-02 | 9.94E-02    | 0.38                            | 2.63E-02 | 1.78E-01    |  |
| ENSG00000259883.1     | EHD4-AS1       | LncRNA     | 0.43                        | 3.83E-03 | 4.23E-02    | 0.30                            | 3.50E-02 | 2.08E-01    |  |
| ENSG00000259916.1     | RP11-407P15.2  | Protein    | 0.53                        | 1.40E-02 | 9.68E-02    | 0.38                            | 6.88E-02 | 3.00E-01    |  |
| ENSG00000259917.1     | HNRNP1P2       | Pseudogene | -0.30                       | 7.22E-04 | 1.36E-02    | -0.28                           | 8.50E-04 | 2.10E-02    |  |
| ENSG00000259922.1     | RP11-322D14.1  | Pseudogene | 0.73                        | 4.08E-03 | 4.40E-02    | 0.61                            | 1.28E-02 | 1.19E-01    |  |
| ENSG00000259926.1     | RP11-44F14.5   | LncRNA     | 0.56                        | 5.16E-03 | 5.12E-02    | 0.00                            | 9.83E-01 | 9.94E-01    |  |
| ENSG00000259937.2     | RP11-438D14.2  | LncRNA     | -0.79                       | 7.73E-04 | 1.43E-02    | -0.67                           | 3.18E-03 | 5.13E-02    |  |
| ENSG00000259940.2     | CTD-3203P2.1   | LncRNA     | 0.33                        | 2.47E-03 | 3.16E-02    | 0.29                            | 7.11E-03 | 8.39E-02    |  |
| ENSG00000259943.1     | RP1-39G22.7    | LncRNA     | 0.25                        | 2.87E-04 | 7.06E-03    | 0.23                            | 5.42E-04 | 1.56E-02    |  |
| ENSG00000259947.1     | XX-DJ76P10_A.2 | LncRNA     | 0.83                        | 6.33E-04 | 1.24E-02    | 0.30                            | 1.96E-01 | NA          |  |
| ENSG00000259974.2     | LINC00261      | LncRNA     | -0.87                       | 2.84E-04 | 7.01E-03    | -0.68                           | 2.85E-03 | 4.77E-02    |  |
| ENSG00000259976.1     | RP11-553L6.5   | LncRNA     | -0.23                       | 4.08E-03 | 4.40E-02    | -0.18                           | 1.91E-02 | 1.50E-01    |  |
| ENSG00000260005.5     | AC027601.1     | LncRNA     | 0.41                        | 8.97E-04 | 1.57E-02    | 0.25                            | 3.73E-02 | 2.16E-01    |  |
| ENSG00000260011.2     | RP13-20L14.1   | LncRNA     | 0.70                        | 3.13E-05 | 1.30E-03    | 0.56                            | 5.11E-04 | 1.49E-02    |  |
| ENSG00000260017.1     | RP11-1035H13.2 | LncRNA     | 0.52                        | 4.30E-03 | 4.56E-02    | 0.45                            | 9.58E-03 | 1.00E-01    |  |
| ENSG00000260022.1     | LA16c-306A4.1  | LncRNA     | 0.45                        | 9.65E-05 | 3.08E-03    | 0.35                            | 1.65E-03 | 3.27E-02    |  |
| ENSG00000260057.4     | LINC01571      | LncRNA     | -0.67                       | 7.49E-03 | 6.48E-02    | -0.62                           | 1.17E-02 | 1.13E-01    |  |
| ENSG00000260064.1     | RP11-18F14.4   | LncRNA     | 0.50                        | 1.18E-02 | 8.67E-02    | 0.55                            | 4.14E-03 | 6.12E-02    |  |
| ENSG00000260077.1     | RP11-254F7.2   | LncRNA     | -0.32                       | 3.91E-04 | 8.86E-03    | -0.38                           | 9.95E-06 | 7.54E-04    |  |
| ENSG00000260083.1     | MIR762HG       | LncRNA     | 0.24                        | 3.04E-03 | 3.62E-02    | 0.19                            | 1.78E-02 | 1.44E-01    |  |
| ENSG00000260088.1     | RP11-92G12.3   | LncRNA     | 0.71                        | 9.21E-05 | 2.96E-03    | 0.55                            | 2.17E-03 | 3.95E-02    |  |
| ENSG00000260105.5     | AOC4P          | Pseudogene | 0.42                        | 5.37E-03 | 5.26E-02    | 0.43                            | 3.03E-03 | 4.98E-02    |  |
| ENSG00000260118.1     | RP6-201G10.2   | LncRNA     | 0.93                        | 4.58E-15 | 2.00E-12    | 0.89                            | 4.03E-15 | 2.53E-12    |  |
| ENSG00000260121.1     | RP5-1142A6.9   | LncRNA     | 0.42                        | 1.24E-03 | 1.97E-02    | 0.23                            | 7.54E-02 | 3.15E-01    |  |
| ENSG00000260136.4     | CTD-2270L9.4   | LncRNA     | 0.33                        | 6.48E-04 | 1.26E-02    | 0.32                            | 4.80E-04 | 1.43E-02    |  |
| ENSG00000260145.1     | RP11-322D14.2  | LncRNA     | 0.55                        | 1.25E-02 | 8.98E-02    | 0.38                            | 7.75E-02 | 3.19E-01    |  |
| ENSG00000260157.3     | CH17-53B9.2    | Pseudogene | -0.77                       | 2.30E-03 | 3.00E-02    | -0.70                           | 4.68E-03 | 6.55E-02    |  |
| ENSG00000260166.1     | RP11-863P13.6  | LncRNA     | -0.79                       | 2.22E-03 | 2.93E-02    | -0.80                           | 1.23E-03 | 2.70E-02    |  |
| ENSG00000260174.1     | CTD-2022H16.3  | Pseudogene | -0.40                       | 6.05E-03 | 5.68E-02    | -0.35                           | 1.34E-02 | 1.22E-01    |  |
| ENSG00000260179.1     | RP5-902P8.12   | LncRNA     | 0.42                        | 3.95E-03 | 4.32E-02    | 0.27                            | 5.02E-02 | 2.55E-01    |  |
| ENSG00000260185.1     | RP11-432I5.6   | LncRNA     | 0.70                        | 1.75E-03 | 2.49E-02    | 0.67                            | 1.84E-03 | 3.52E-02    |  |
| ENSG00000260186.4     | RP11-481J2.2   | LncRNA     | -0.54                       | 1.38E-02 | 9.57E-02    | -0.42                           | 4.91E-02 | 2.52E-01    |  |
| ENSG00000260197.1     | RP11-424G14.1  | LncRNA     | 0.25                        | 1.01E-02 | 7.81E-02    | 0.24                            | 9.99E-03 | 1.03E-01    |  |
| ENSG00000260228.4     | RP11-483P21.2  | LncRNA     | -0.47                       | 6.27E-03 | 5.82E-02    | -0.28                           | 9.38E-02 | 3.50E-01    |  |
| ENSG00000260229.1     | RP11-391L3.5   | Pseudogene | 1.08                        | 6.01E-09 | 9.17E-07    | 0.09                            | 6.00E-01 | 8.22E-01    |  |
| ENSG00000260230.2     | FRRS1L         | Protein    | -0.48                       | 3.25E-03 | 3.80E-02    | -0.52                           | 9.17E-04 | 2.21E-02    |  |
| ENSG00000260233.3     | SSSCA1-AS1     | LncRNA     | 0.22                        | 8.82E-03 | 7.19E-02    | 0.08                            | 3.49E-01 | 6.51E-01    |  |
| ENSG00000260236.1     | RP11-708J19.1  | LncRNA     | 0.28                        | 5.62E-03 | 5.41E-02    | 0.19                            | 5.46E-02 | 2.66E-01    |  |
| ENSG00000260244.1     | RP11-588K22.2  | LncRNA     | -0.36                       | 3.78E-04 | 8.64E-03    | -0.25                           | 1.01E-02 | 1.04E-01    |  |
| ENSG00000260246.1     | AC000032.2     | LncRNA     | 1.01                        | 7.85E-05 | 2.64E-03    | 1.06                            | 1.93E-05 | 1.27E-03    |  |
| ENSG00000260261.1     | RP11-480A16.1  | LncRNA     | 0.38                        | 4.45E-03 | 4.67E-02    | 0.17                            | 1.84E-01 | 4.87E-01    |  |
| ENSG00000260265.1     | RP11-44F21.5   | LncRNA     | -0.55                       | 6.65E-03 | 6.01E-02    | -0.42                           | 3.53E-02 | 2.09E-01    |  |
| ENSG00000260276.2     | RP11-77H9.2    | LncRNA     | 0.36                        | 3.70E-05 | 1.49E-03    | 0.34                            | 5.84E-05 | 2.99E-03    |  |
| ENSG00000260300.4     | RP11-505K9.4   | Protein    | 0.43                        | 2.72E-05 | 1.16E-03    | 0.43                            | 1.20E-05 | 8.70E-04    |  |
| ENSG00000260306.1     | RP11-645C24.5  | LncRNA     | -0.75                       | 1.63E-05 | 7.81E-04    | -0.77                           | 4.75E-06 | 4.15E-04    |  |
| ENSG00000260316.2     | LA16c-306A4.2  | LncRNA     | 0.52                        | 1.03E-03 | 1.74E-02    | 0.42                            | 6.23E-03 | 7.76E-02    |  |
| ENSG00000260317.1     | RP11-48B3.4    | LncRNA     | 0.38                        | 5.53E-04 | 1.13E-02    | 0.30                            | 5.35E-03 | 7.10E-02    |  |
| ENSG00000260318.1     | COX6CP1        | Pseudogene | 0.86                        | 2.26E-04 | 5.91E-03    | 0.86                            | 1.54E-04 | 6.29E-03    |  |
| ENSG00000260337.3     | RP11-386M24.6  | LncRNA     | 1.02                        | 3.35E-10 | 6.68E-08    | 0.85                            | 9.33E-08 | 1.59E-05    |  |
| ENSG00000260339.1     | HEXA-AS1       | LncRNA     | -0.46                       | 5.22E-03 | 5.16E-02    | -0.28                           | 7.80E-02 | 3.20E-01    |  |
| ENSG00000260361.1     | CTD-2313J17.5  | LncRNA     | 0.38                        | 1.09E-03 | 1.81E-02    | 0.29                            | 8.27E-03 | 9.18E-02    |  |
| ENSG00000260368.1     | RP11-521I2.3   | LncRNA     | 0.54                        | 4.77E-04 | 1.02E-02    | 0.26                            | 8.68E-02 | 3.37E-01    |  |
| ENSG00000260382.1     | RP11-540B6.2   | Pseudogene | 0.82                        | 5.94E-04 | 1.18E-02    | 0.65                            | 5.23E-03 | 7.00E-02    |  |
| ENSG00000260394.2     | LA16c-313D11.9 | LncRNA     | 0.48                        | 1.93E-03 | 2.68E-02    | 0.25                            | 9.83E-02 | 3.59E-01    |  |
| ENSG00000260423.1     | RP13-735L24.1  | LncRNA     | 0.41                        | 1.17E-02 | 8.61E-02    | 0.18                            | 2.58E-01 | 5.69E-01    |  |
| ENSG00000260426.1     | RP5-912I13.1   | LncRNA     | -0.97                       | 1.43E-04 | 4.15E-03    | -0.92                           | 1.86E-04 | 7.26E-03    |  |
| ENSG00000260448.4     | LCMT1-AS1      | LncRNA     | 0.62                        | 8.64E-08 | 9.70E-06    | 0.62                            | 2.60E-08 | 5.10E-06    |  |
| ENSG00000260459.2     | FTLPI4         | Pseudogene | -0.38                       | 3.99E-03 | 4.34E-02    | -0.33                           | 1.00E-02 | 1.03E-01    |  |
| ENSG00000260460.1     | RP11-284F21.8  | LncRNA     | 0.58                        | 8.44E-03 | 7.01E-02    | 0.60                            | 5.27E-03 | 7.02E-02    |  |
| ENSG00000260475.1     | RP11-85A1.3    | LncRNA     | 0.39                        | 6.05E-03 | 5.67E-02    | 0.31                            | 2.26E-02 | 1.64E-01    |  |
| ENSG00000260484.1     | RP11-1081M5.2  | LncRNA     | 1.20                        | 5.19E-07 | 4.49E-05    | 0.10                            | 6.47E-01 | 8.48E-01    |  |
| ENSG00000260493.1     | RP11-219B4.7   | LncRNA     | 0.57                        | 4.06E-04 | 9.11E-03    | 0.39                            | 1.30E-02 | 1.20E-01    |  |
| ENSG00000260500.1     | CTD-3193O13.1  | LncRNA     | 0.55                        | 7.33E-05 | 2.50E-03    | 0.41                            | 2.36E-03 | 4.19E-02    |  |
| ENSG00000260518.1     | BMS1P8         | Pseudogene | 0.67                        | 6.98E-03 | 6.20E-02    | -0.41                           | 7.45E-02 | 3.13E-01    |  |
| ENSG00000260519.1     | RP11-109E24.2  | LncRNA     | 0.35                        | 1.15E-02 | 8.49E-02    | 0.26                            | 5.40E-02 | 2.65E-01    |  |
| ENSG00000260565.5     | CTD-2270P14.1  | LncRNA     | 0.36                        | 6.40E-04 | 1.25E-02    | 0.21                            | 4.13E-02 | 2.29E-01    |  |
| ENSG00000260581.1     | CTB-113P19.4   | LncRNA     | 0.67                        | 8.78E-04 | 1.55E-02    | 0.38                            | 5.50E-02 | 2.67E-01    |  |
| ENSG00000260599.1     | CTC-457E21.1   | LncRNA     | 0.63                        | 1.43E-02 | 9.82E-02    | 0.20                            | 4.29E-01 | 7.13E-01    |  |
| ENSG00000260644.5     | HERC2P5        | Pseudogene | 0.71                        | 3.04E-03 | 3.62E-02    | 0.16                            | 5.01E-01 | 7.62E-01    |  |
| ENSG00000260661.1     | RP11-152L20.3  | LncRNA     | 0.87                        | 1.02E-04 | 3.21E-03    | 0.75                            | 5.52E-04 | 1.58E-02    |  |
| ENSG00000260671.2     | RP11-278A23.2  | LncRNA     | 0.59                        | 4.29E-03 | 4.55E-02    | 0.51                            | 1.11E-02 | 1.10E-01    |  |
| ENSG00000260672.1     | RP11-1006G14.1 | LncRNA     | 0.46                        | 6.13E-03 | 5.73E-02    | 0.39                            | 1.50E-02 | 1.31E-01    |  |
| ENSG00000260679.1     | RP11-643C9.2   | LncRNA     | 1.28                        | 3.14E-08 | 3.94E-06    | 0.04                            | 8.48E-01 | 9.45E-01    |  |
| ENSG00000260680.1     | RP11-80F22.1   | Pseudogene | -0.72                       | 3.68E-03 | 4.11E-02    | -0.67                           | 4.92E-03 | 6.76E-02    |  |
| ENSG00000260685.1     | RP11-326L17.1  | Pseudogene | 1.03                        | 2.60E-07 | 2.51E-05    | 1.09                            | 1.70E-08 | 3.57E-06    |  |
| ENSG00000260691.4     | ANKRD20A1      | Protein    | 0.80                        | 5.23E-06 | 3.07E-04    | 0.88                            | 2.12E-07 | 3.22E-05    |  |
| ENSG00000260698.1     | RP11-439E19.9  | LncRNA     | 0.40                        | 5.69E-04 | 1.15E-02    | 0.33                            | 3.19E-03 | 5.15E-02    |  |
| ENSG00000260708.1     | CTA-29F11.1    | L          |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000260751.2     | <i>CTD-2196E14.6</i>  | LncRNA     | 0.42                        | 3.94E-04 | 8.91E-03    | 0.25                            | 3.07E-02 | 1.94E-01    |
| ENSG00000260760.1     | <i>PWRN3</i>          | LncRNA     | 0.81                        | 1.34E-03 | 2.07E-02    | 0.32                            | 1.81E-01 | NA          |
| ENSG00000260773.1     | <i>RP11-352G18.2</i>  | LncRNA     | 0.33                        | 1.25E-02 | 8.99E-02    | 0.21                            | 8.93E-02 | 3.42E-01    |
| ENSG00000260774.1     | <i>CTD-2083E4.4</i>   | LncRNA     | 0.31                        | 9.77E-04 | 1.67E-02    | 0.23                            | 1.18E-02 | 1.13E-01    |
| ENSG00000260776.4     | <i>RP11-114H24.2</i>  | Pseudogene | -0.58                       | 9.70E-03 | 7.61E-02    | -0.58                           | 7.54E-03 | 8.68E-02    |
| ENSG00000260793.2     | <i>RP5-882C2.2</i>    | LncRNA     | 0.33                        | 6.32E-03 | 5.85E-02    | 0.20                            | 8.53E-02 | 3.34E-01    |
| ENSG00000260796.1     | <i>RP11-1348G14.5</i> | LncRNA     | 0.38                        | 1.22E-02 | 8.84E-02    | 0.20                            | 1.63E-01 | 4.58E-01    |
| ENSG00000260806.1     | <i>RP11-872J21.3</i>  | LncRNA     | 0.37                        | 1.68E-03 | 2.43E-02    | 0.26                            | 2.01E-02 | 1.53E-01    |
| ENSG00000260807.5     | <i>RP11-161M6.2</i>   | LncRNA     | 0.41                        | 4.24E-03 | 4.52E-02    | 0.11                            | 4.33E-01 | 7.15E-01    |
| ENSG00000260808.1     | <i>CTD-2007I18.5</i>  | LncRNA     | 0.38                        | 4.99E-03 | 5.01E-02    | 0.22                            | 9.80E-02 | 3.58E-01    |
| ENSG00000260844.2     | <i>RP11-578F21.9</i>  | Pseudogene | 0.49                        | 8.84E-03 | 7.20E-02    | 0.39                            | 3.46E-02 | 2.07E-01    |
| ENSG00000260865.1     | <i>CTA-331F8.1</i>    | Pseudogene | 0.76                        | 1.14E-03 | 1.87E-02    | 0.64                            | 4.80E-03 | 6.66E-02    |
| ENSG00000260870.1     | <i>RP11-358M11.4</i>  | Pseudogene | 0.69                        | 5.21E-03 | 5.14E-02    | 0.70                            | 3.78E-03 | 5.76E-02    |
| ENSG00000260876.4     | <i>LINC01229</i>      | LncRNA     | 0.77                        | 2.28E-06 | 1.57E-04    | 0.93                            | 4.34E-09 | 1.01E-06    |
| ENSG00000260877.1     | <i>RP11-211G23.2</i>  | LncRNA     | 0.90                        | 3.21E-04 | 7.70E-03    | 0.77                            | 1.56E-03 | 3.16E-02    |
| ENSG00000260886.1     | <i>TAT-AS1</i>        | LncRNA     | 0.46                        | 9.62E-03 | 7.57E-02    | 0.42                            | 1.46E-02 | 1.28E-01    |
| ENSG00000260899.1     | <i>RP11-2C24.4</i>    | LncRNA     | 0.42                        | 9.83E-04 | 1.68E-02    | 0.28                            | 2.48E-02 | 1.72E-01    |
| ENSG00000260911.2     | <i>RP11-196G11.2</i>  | LncRNA     | 0.48                        | 2.77E-03 | 3.40E-02    | 0.41                            | 7.49E-03 | 8.63E-02    |
| ENSG00000260912.1     | <i>RP11-363E7.4</i>   | LncRNA     | 0.36                        | 8.95E-05 | 2.91E-03    | 0.38                            | 1.44E-05 | 1.00E-03    |
| ENSG00000260917.1     | <i>RP11-57H14.4</i>   | LncRNA     | -0.30                       | 1.88E-03 | 2.63E-02    | -0.28                           | 2.55E-03 | 4.44E-02    |
| ENSG00000260923.4     | <i>AC137934.1</i>     | LncRNA     | -0.54                       | 3.32E-04 | 7.88E-03    | -0.56                           | 9.36E-05 | 4.29E-03    |
| ENSG00000260924.2     | <i>LINC01311</i>      | LncRNA     | 0.35                        | 1.26E-02 | 9.01E-02    | 0.24                            | 7.47E-02 | 3.13E-01    |
| ENSG00000260932.1     | <i>RP11-483P21.6</i>  | LncRNA     | 0.90                        | 3.21E-07 | 3.00E-05    | 0.96                            | 1.82E-08 | 3.76E-06    |
| ENSG00000260951.1     | <i>RP5-978I12.1</i>   | LncRNA     | -0.68                       | 7.84E-03 | 6.68E-02    | -0.68                           | 6.15E-03 | 7.71E-02    |
| ENSG00000260988.1     | <i>RP11-285A1.1</i>   | LncRNA     | 0.39                        | 9.14E-03 | 7.35E-02    | 0.35                            | 1.51E-02 | 1.31E-01    |
| ENSG00000260992.1     | <i>DOCK9-AS2</i>      | LncRNA     | 0.25                        | 8.45E-03 | 7.01E-02    | 0.23                            | 1.01E-02 | 1.04E-01    |
| ENSG00000261052.4     | <i>SULT1A3</i>        | Protein    | 0.47                        | 8.77E-03 | 7.16E-02    | 0.38                            | 2.70E-02 | 1.81E-01    |
| ENSG00000261089.1     | <i>RP11-435I10.3</i>  | Pseudogene | 0.52                        | 1.56E-03 | 2.31E-02    | 0.39                            | 1.53E-02 | 1.32E-01    |
| ENSG00000261097.1     | <i>LINC00563</i>      | LncRNA     | 0.88                        | 3.14E-05 | 1.30E-03    | 0.89                            | 1.29E-05 | 9.15E-04    |
| ENSG00000261101.2     | <i>RP4-545K15.5</i>   | LncRNA     | 0.43                        | 1.88E-04 | 5.14E-03    | 0.47                            | 2.36E-05 | 1.50E-03    |
| ENSG00000261104.1     | <i>RP11-734K21.5</i>  | LncRNA     | 0.84                        | 4.73E-04 | 1.02E-02    | 0.06                            | 8.02E-01 | 9.24E-01    |
| ENSG00000261105.4     | <i>LMO7-AS1</i>       | LncRNA     | 0.58                        | 9.47E-04 | 1.64E-02    | 0.55                            | 1.21E-03 | 2.66E-02    |
| ENSG00000261113.1     | <i>RP11-141O15.1</i>  | LncRNA     | 0.51                        | 2.60E-03 | 3.26E-02    | 0.56                            | 6.48E-04 | 1.76E-02    |
| ENSG00000261115.4     | <i>TMEM178B</i>       | Protein    | -0.33                       | 1.91E-03 | 2.66E-02    | -0.20                           | 5.52E-02 | 2.68E-01    |
| ENSG00000261126.6     | <i>RP11-795F19.1</i>  | LncRNA     | 0.36                        | 1.51E-03 | 2.26E-02    | 0.30                            | 6.01E-03 | 7.60E-02    |
| ENSG00000261131.1     | <i>RP11-93O14.2</i>   | LncRNA     | 0.41                        | 1.82E-03 | 2.56E-02    | 0.33                            | 9.14E-03 | 9.74E-02    |
| ENSG00000261136.1     | <i>RP11-37C7.3</i>    | LncRNA     | 0.37                        | 7.91E-03 | 6.71E-02    | 0.25                            | 6.13E-02 | 2.84E-01    |
| ENSG00000261140.1     | <i>RP11-20I23.6</i>   | LncRNA     | 0.48                        | 5.76E-03 | 5.48E-02    | 0.42                            | 1.32E-02 | 1.21E-01    |
| ENSG00000261159.1     | <i>RP11-723O4.9</i>   | LncRNA     | 0.63                        | 2.51E-05 | 1.09E-03    | 0.46                            | 1.55E-03 | 3.14E-02    |
| ENSG00000261189.1     | <i>RP3-512B11.3</i>   | LncRNA     | 0.38                        | 5.44E-04 | 1.11E-02    | 0.26                            | 1.49E-02 | 1.30E-01    |
| ENSG00000261193.1     | <i>RP11-863P13.5</i>  | LncRNA     | -0.76                       | 2.46E-03 | 3.15E-02    | -0.83                           | 6.47E-04 | 1.76E-02    |
| ENSG00000261207.1     | <i>LAI6c-361A3.3</i>  | LncRNA     | 0.45                        | 3.32E-03 | 3.86E-02    | 0.31                            | 3.43E-02 | 2.06E-01    |
| ENSG00000261220.2     | <i>RP11-629O1.2</i>   | LncRNA     | 0.41                        | 1.05E-02 | 8.01E-02    | 0.24                            | 1.28E-01 | 4.11E-01    |
| ENSG00000261239.5     | <i>ANKRD26P1</i>      | Pseudogene | 0.83                        | 8.62E-04 | 1.53E-02    | 0.75                            | 2.00E-03 | 3.74E-02    |
| ENSG00000261257.1     | <i>RP11-673E11.2</i>  | LncRNA     | 0.78                        | 4.25E-04 | 9.38E-03    | 0.52                            | 1.72E-02 | 1.42E-01    |
| ENSG00000261303.4     | <i>RP11-160C18.2</i>  | Pseudogene | 0.70                        | 6.03E-03 | 5.66E-02    | 0.57                            | 1.92E-02 | 1.50E-01    |
| ENSG00000261318.1     | <i>RP11-653J6.1</i>   | LncRNA     | 0.42                        | 1.36E-02 | 9.51E-02    | 0.35                            | 3.11E-02 | 1.96E-01    |
| ENSG00000261338.2     | <i>RP11-378A13.1</i>  | LncRNA     | -0.24                       | 2.13E-03 | 2.85E-02    | -0.18                           | 2.01E-02 | 1.53E-01    |
| ENSG00000261349.1     | <i>RP3-463N24.5</i>   | Pseudogene | 0.83                        | 1.40E-05 | 6.82E-04    | 0.82                            | 8.09E-06 | 6.41E-04    |
| ENSG00000261351.2     | <i>CTD-3185P2.1</i>   | LncRNA     | 0.19                        | 1.08E-02 | 8.19E-02    | 0.18                            | 1.37E-02 | 1.23E-01    |
| ENSG00000261353.1     | <i>CTA-14H9.5</i>     | LncRNA     | -0.37                       | 6.37E-03 | 5.88E-02    | -0.21                           | 1.14E-01 | 3.87E-01    |
| ENSG00000261360.1     | <i>CTD-2165H16.4</i>  | LncRNA     | 0.38                        | 3.91E-03 | 4.29E-02    | 0.27                            | 3.59E-02 | 2.11E-01    |
| ENSG00000261369.1     | <i>RP11-474B12.1</i>  | LncRNA     | 0.60                        | 1.22E-02 | 8.85E-02    | 0.50                            | 3.38E-02 | 2.04E-01    |
| ENSG00000261377.4     | <i>PDCD6IPP2</i>      | Pseudogene | -0.72                       | 1.11E-04 | 3.43E-03    | -0.83                           | 4.01E-06 | 3.61E-04    |
| ENSG00000261379.1     | <i>RP11-395N3.1</i>   | LncRNA     | 0.78                        | 4.13E-04 | 9.21E-03    | 0.48                            | 2.48E-02 | 1.72E-01    |
| ENSG00000261416.1     | <i>RP11-455F5.5</i>   | LncRNA     | 0.50                        | 4.04E-03 | 4.38E-02    | 0.36                            | 3.34E-02 | 2.03E-01    |
| ENSG00000261418.1     | <i>RP11-529J17.3</i>  | Pseudogene | -0.65                       | 1.11E-02 | 8.31E-02    | -0.65                           | 8.59E-03 | 9.37E-02    |
| ENSG00000261426.1     | <i>AC144833.1</i>     | LncRNA     | 0.64                        | 1.93E-03 | 2.68E-02    | 0.53                            | 8.78E-03 | 9.48E-02    |
| ENSG00000261433.1     | <i>CTC-297N7.1</i>    | LncRNA     | 0.66                        | 4.44E-05 | 1.72E-03    | 0.56                            | 2.55E-04 | 9.19E-03    |
| ENSG00000261456.4     | <i>TUBB8</i>          | Protein    | 1.19                        | 1.76E-15 | 8.05E-13    | 1.09                            | 2.98E-14 | 1.76E-11    |
| ENSG00000261457.3     | <i>AC002519.6</i>     | Pseudogene | 0.56                        | 3.78E-03 | 4.19E-02    | 0.65                            | 5.58E-04 | 1.59E-02    |
| ENSG00000261467.2     | <i>RP11-731K22.1</i>  | LncRNA     | 0.81                        | 1.08E-04 | 3.36E-03    | 0.74                            | 2.57E-04 | 9.20E-03    |
| ENSG00000261468.1     | <i>RP11-1024P17.1</i> | LncRNA     | 0.33                        | 4.05E-03 | 4.39E-02    | 0.30                            | 4.90E-03 | 6.74E-02    |
| ENSG00000261480.1     | <i>RP11-578F21.6</i>  | LncRNA     | 0.94                        | 1.69E-04 | 4.72E-03    | 0.56                            | 2.11E-02 | 1.58E-01    |
| ENSG00000261489.1     | <i>CTD-2515H24.3</i>  | LncRNA     | 0.47                        | 8.79E-03 | 7.17E-02    | 0.51                            | 3.39E-03 | 5.36E-02    |
| ENSG00000261490.1     | <i>RP11-448G15.3</i>  | LncRNA     | 0.37                        | 6.31E-03 | 5.85E-02    | 0.31                            | 1.78E-02 | 1.44E-01    |
| ENSG00000261499.2     | <i>CH17-260O16.1</i>  | Pseudogene | -0.62                       | 3.76E-04 | 8.60E-03    | -0.64                           | 1.47E-04 | 6.09E-03    |
| ENSG00000261512.2     | <i>RP11-46D6.1</i>    | LncRNA     | -0.37                       | 9.11E-05 | 2.94E-03    | -0.42                           | 3.98E-06 | 3.58E-04    |
| ENSG00000261526.2     | <i>CTB-31O20.2</i>    | LncRNA     | 0.33                        | 9.64E-04 | 1.66E-02    | 0.23                            | 1.77E-02 | 1.44E-01    |
| ENSG00000261543.1     | <i>RP11-665J16.1</i>  | LncRNA     | 0.58                        | 1.37E-02 | 9.52E-02    | 0.46                            | 4.34E-02 | 2.35E-01    |
| ENSG00000261570.1     | <i>RP11-744I24.2</i>  | LncRNA     | 0.60                        | 4.88E-04 | 1.04E-02    | 0.46                            | 5.76E-03 | 7.42E-02    |
| ENSG00000261578.1     | <i>RP11-21L23.2</i>   | LncRNA     | 0.42                        | 1.14E-04 | 3.51E-03    | 0.36                            | 6.53E-04 | 1.76E-02    |
| ENSG00000261583.1     | <i>CTD-2385L22.1</i>  | LncRNA     | 0.74                        | 3.63E-03 | 4.08E-02    | 0.11                            | 6.58E-01 | 8.53E-01    |
| ENSG00000261603.1     | <i>PRSS46</i>         | Protein    | 0.65                        | 2.39E-03 | 3.08E-02    | 0.64                            | 1.87E-03 | 3.56E-02    |
| ENSG00000261606.4     | <i>RP11-414J4.2</i>   | LncRNA     | 0.58                        | 3.90E-03 | 4.28E-02    | 0.45                            | 1.87E-02 | 1.48E-01    |
| ENSG00000261609.3     | <i>GAN</i>            | Protein    | -0.22                       | 9.16E-03 | 7.36E-02    | -0.19                           | 1.57E-02 | 1.34E-01    |
| ENSG00000261610.1     | <i>AP000265.1</i>     | LncRNA     | 0.62                        | 1.01E-03 | 1.71E-02    | 0.49                            | 7.26E-03 | 8.49E-02    |
| ENSG00000261611.5     | <i>AC010547.9</i>     | Protein    | 0.48                        | 5.69E-03 | 5.45E-02    | 0.29                            | 8.75E-02 | 3.38E-01    |
| ENSG00000261632.1     | <i>RP11-390D11.1</i>  | LncRNA     | 0.54                        | 9.83E-03 | 7.68E-02    | 0.40                            | 4.94E-02 | 2.53E-01    |
| ENSG00000261652.2     | <i>C15orf65</i>       | Protein    | 0.27                        | 3.36E-03 | 3.88E-02    | 0.30                            | 5.33E-04 | 1.54E-02    |
| ENSG00000261663.1     | <i>RP11-304L19.11</i> | LncRNA     | 0.34                        | 1.48E-03 | 2.22E-02    | 0.26                            | 1.07E-02 | 1.08E-01    |
| ENSG00000261667.1     | <i>RP11-520P18.5</i>  | Protein    | -0.58                       | 1.00E-02 | 7.77E-02    | -0.59                           | 1.15E-02 | 1.12E-01    |
| ENSG00000261685.2     | <i>RP11-401P9.4</i>   | LncRNA     | -0.47                       | 2.21E-03 | 2.92E-02    | -0.42                           | 4.83E-03 | 6.68E-02    |
| ENSG00000261701.5     | <i>HPR</i>            | Protein    | 2.44                        | 1.32E-23 | 1.40E-20    | 2.82                            | 1.42E-32 | 4.33E-29    |
| ENSG00000261704.2     | <i>IGHV1OR16-1</i>    | Other      | 0.63                        | 1.36E-02 | 9.51E-02    | 0.53                            | 3.39E-02 | 2.05E-01    |
| ENSG00000261707.1     | <i>RP11-264M12.2</i>  | LncRNA     | 0.42                        | 7.04E-03 | 6.22E-02    | 0.46                            | 2.23E-03 | 4.02E-02    |
| ENSG00000261713.5     | <i>SSTR5-AS1</i>      | LncRNA     | -0.70                       | 1.93E-03 | 2.67E-02    | -0.54                           | 1.18E-02 | 1.14E-01    |
| ENSG00000261732.1     | <i>LAI6c-431H6.6</i>  | Protein    | 0.37                        | 7.85E-03 | 6.68E-02    | 0.47                            | 4.74E-04 | 1.41E-02    |
| ENSG00000261744.1     | <i>RP11-21B21.4</i>   | LncRNA     | 0.40                        | 1.22E-02 | 8.82E-02    | 0.29                            | 6.03E-02 | 2.81E-01    |
| ENSG00000261758.1     | <i>RP11-102M11.2</i>  | LncRNA     | -0.63                       | 3.39E-03 | 3.90E-02    | -0.61                           | 1.65E-03 | 3.27E-02    |
| ENSG00000261761.3     | <i>RP11-103J17.2</i>  | LncRNA     | 0.67                        | 2.58E-03 | 3.25E-02    | 0.19                            | 3.77E-01 | 6.73E-01    |
| ENSG00000261766.1     | <i>RP11-22P6.2</i>    | LncRNA     | 0.59                        | 1.64E-07 | 1.68E-05    | 0.43                            | 8.29E-05 | 3.91E-03    |
| ENSG00000261777.4     | <i>RP11-529K1.2</i>   | LncRNA     | 0.41                        | 8.79E-06 | 4.70E-04    | 0.45                            | 2.47E-07 | 3.70E-05    |
| ENSG00000261797.1     | <i>RP11-744I24.3</i>  | LncRNA     | 0.54                        | 5.33E-03 | 5.23E-02    | 0.54                            | 3.93E-03 | 5.90E-02    |
| ENSG00000261812.4     | <i>TUBB8P7</i>        | Pseudogene | 1.04                        | 1.81E-13 | 6.41E-11    | 1.00                            | 1.10E-13 | 5.88E-11    |
| ENSG00000261824.5     | <i>LINC00662</i>      | LncRNA     | 0.29                        | 5.86E-03 | 5.56E-02    | 0.28                            | 5.27E-03 | 7.02E-02    |
| ENSG00000261839.1     | <i>RP1-265C24.8</i>   | LncRNA     | 0.39                        | 3.75E-03 | 4.17E-02    | 0.37                            | 4.14E-03 | 6.12E-02    |
| ENSG00000261840.2     | <i>RP11-146F11.1</i>  | LncRNA     | 0.32                        | 6.24E-03 | 5.80E-02    | 0.20                            | 7.29E-02 | 3.09E-01    |
| ENSG00000261864.1     | <i>RP11-67A1.2</i>    | LncRNA     | 0.45                        | 1.10E-02 | 8.27E-02    | 0.44                            | 8.49E-03 | 9.31E-02    |
| ENSG00000261884.2     | <i>CTC-479C5.12</i>   | Protein    | 0.40                        | 1.26E-03 | 1.98E-02    | 0.32                            | 6.60E-03 | 8.04E-02    |
| ENSG00000261971.5     | <i>MMP25-AS1</i>      | LncRNA     | 0.29                        | 1.14E-03 | 1.86E-02    | 0.17                            | 5.56E-02 | 2.69E-01    |
| ENSG00000261996.1     | <i>CTC-281F24.1</i>   | LncRNA     | 0.                          |          |             |                                 |          |             |

| Gene ID (GENCODE v22) | Gene symbol   | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |           |             |
|-----------------------|---------------|------------|-----------------------------|----------|-------------|---------------------------------|-----------|-------------|
|                       |               |            | effect size                 | p value  | adj p value | effect size                     | p value   | adj p value |
| ENSG00000262188.1     | RP11-333N14.4 | LncRNA     | 0.83                        | 7.42E-07 | 6.03E-05    | 0.62                            | 1.73E-04  | 6.88E-03    |
| ENSG00000262198.1     | RP11-124N19.3 | LncRNA     | 0.61                        | 1.13E-02 | 8.44E-02    | 0.29                            | 1.85E-01  | 4.88E-01    |
| ENSG00000262202.4     | RP11-160E2.6  | LncRNA     | -1.00                       | 2.22E-05 | 9.99E-04    | -1.02                           | 9.12E-06  | 7.08E-04    |
| ENSG00000262304.1     | TRPV1         | Protein    | 0.35                        | 7.33E-03 | 6.39E-02    | 0.33                            | 7.93E-03  | 8.95E-02    |
| ENSG00000262312.2     | LAI6c-390H2.4 | LncRNA     | 0.51                        | 6.88E-04 | 1.31E-02    | 0.36                            | 1.42E-02  | 1.26E-01    |
| ENSG00000262333.1     | HNRNPAP16     | Pseudogene | 0.27                        | 2.31E-03 | 3.01E-02    | 0.17                            | 4.52E-02  | 2.40E-01    |
| ENSG00000262370.4     | RP11-473M20.9 | LncRNA     | 0.45                        | 7.66E-04 | 1.42E-02    | 0.26                            | 4.26E-02  | 2.33E-01    |
| ENSG00000262445.3     | CTD-2545H1.2  | LncRNA     | 0.46                        | 9.63E-03 | 7.58E-02    | 0.30                            | 7.85E-02  | 3.21E-01    |
| ENSG00000262519.1     | TXNP4         | Pseudogene | 0.54                        | 2.70E-03 | 3.35E-02    | 0.54                            | 1.71E-03  | 3.35E-02    |
| ENSG00000262539.1     | RP11-259G18.3 | Pseudogene | -1.04                       | 6.56E-06 | 3.72E-04    | -1.01                           | 6.72E-06  | 5.51E-04    |
| ENSG00000262585.1     | RP11-353N14.5 | LncRNA     | 0.53                        | 6.60E-03 | 5.98E-02    | 0.32                            | 9.08E-02  | 3.45E-01    |
| ENSG00000262636.1     | CTD-3088G3.4  | Pseudogene | 0.71                        | 6.44E-05 | 2.26E-03    | 0.56                            | 1.03E-03  | 2.38E-02    |
| ENSG00000262652.1     | RP13-638C3.2  | LncRNA     | 0.38                        | 9.35E-03 | 7.46E-02    | 0.23                            | 1.07E-01  | 3.76E-01    |
| ENSG00000262691.1     | CTC-277H1.7   | LncRNA     | 0.48                        | 1.28E-05 | 6.36E-04    | 0.43                            | 5.77E-05  | 2.96E-03    |
| ENSG00000262700.1     | RP11-266L9.3  | Pseudogene | 0.48                        | 9.90E-03 | 7.72E-02    | 0.41                            | 2.05E-02  | 1.55E-01    |
| ENSG00000262728.4     | RP11-1000B6.8 | LncRNA     | 0.31                        | 2.06E-03 | 2.80E-02    | 0.28                            | 3.85E-03  | 5.81E-02    |
| ENSG00000262766.1     | RP11-196G11.4 | LncRNA     | 0.34                        | 6.74E-03 | 6.06E-02    | 0.25                            | 3.68E-02  | 2.14E-01    |
| ENSG00000262772.1     | RP11-353N14.2 | LncRNA     | 0.60                        | 7.26E-05 | 2.48E-03    | 0.35                            | 1.95E-02  | 1.51E-01    |
| ENSG00000262823.1     | RP13-580F15.2 | LncRNA     | -0.53                       | 5.31E-03 | 5.21E-02    | -0.58                           | 1.07E-03  | 2.46E-02    |
| ENSG00000262833.1     | RP11-28G8.1   | LncRNA     | 0.61                        | 8.25E-03 | 6.90E-02    | 0.55                            | 1.41E-02  | 1.26E-01    |
| ENSG00000262870.1     | CYCSP40       | Pseudogene | 0.66                        | 2.39E-03 | 3.08E-02    | 0.50                            | 1.81E-02  | 1.46E-01    |
| ENSG00000262877.4     | RP11-1055B8.4 | LncRNA     | -0.48                       | 3.83E-03 | 4.23E-02    | 0.32                            | 4.79E-02  | 2.49E-01    |
| ENSG00000262884.1     | CTD-3060P21.1 | LncRNA     | -0.39                       | 1.02E-02 | 7.85E-02    | -0.28                           | 5.42E-02  | 2.65E-01    |
| ENSG00000262902.1     | RP11-750B16.1 | Pseudogene | 4.23                        | 2.34E-94 | 2.36E-90    | 4.22                            | 5.72E-100 | 7.55E-96    |
| ENSG00000262903.1     | RP11-235E17.6 | LncRNA     | 0.56                        | 2.58E-05 | 1.12E-03    | 0.35                            | 6.93E-03  | 8.27E-02    |
| ENSG00000263002.6     | ZNF234        | Protein    | 0.16                        | 3.90E-03 | 4.28E-02    | 0.13                            | 1.70E-02  | 1.41E-01    |
| ENSG00000263015.1     | RP5-1029F21.3 | LncRNA     | -0.80                       | 1.75E-03 | 2.49E-02    | -0.72                           | 3.53E-03  | 5.51E-02    |
| ENSG00000263032.2     | RP11-396B14.2 | LncRNA     | 0.48                        | 1.09E-03 | 1.81E-02    | 0.42                            | 2.63E-03  | 4.52E-02    |
| ENSG00000263041.1     | RP11-355F22.1 | LncRNA     | 0.63                        | 1.17E-02 | 8.60E-02    | 0.67                            | 5.92E-03  | 7.55E-02    |
| ENSG00000263065.1     | AF001548.6    | LncRNA     | -0.46                       | 6.66E-03 | 6.01E-02    | -0.25                           | 1.21E-01  | 3.98E-01    |
| ENSG00000263080.1     | RP11-485G7.5  | LncRNA     | 0.61                        | 3.39E-04 | 8.02E-03    | 0.41                            | 1.53E-02  | 1.32E-01    |
| ENSG00000263082.1     | CTD-2034I21.2 | LncRNA     | -0.88                       | 5.85E-04 | 1.17E-02    | -0.79                           | 1.41E-03  | 2.94E-02    |
| ENSG00000263120.1     | RP5-1107A17.4 | LncRNA     | 0.51                        | 3.30E-03 | 3.84E-02    | 0.45                            | 7.11E-03  | 8.39E-02    |
| ENSG00000263126.1     | CTC-479C5.10  | LncRNA     | 0.30                        | 1.15E-02 | 8.49E-02    | 0.17                            | 1.35E-01  | 4.20E-01    |
| ENSG00000263167.1     | RP11-149I9.2  | LncRNA     | 0.60                        | 3.89E-03 | 4.27E-02    | 0.46                            | 2.12E-02  | 1.58E-01    |
| ENSG00000263220.1     | RP11-420A6.2  | LncRNA     | 0.48                        | 1.59E-03 | 2.35E-02    | 0.47                            | 1.24E-03  | 2.71E-02    |
| ENSG00000263276.1     | RP11-96D1.10  | LncRNA     | 0.30                        | 1.74E-03 | 2.48E-02    | 0.31                            | 5.33E-04  | 1.54E-02    |
| ENSG00000263326.1     | RP11-266L9.6  | Pseudogene | 0.41                        | 8.41E-03 | 6.99E-02    | 0.35                            | 1.92E-02  | 1.50E-01    |
| ENSG00000263335.1     | AF001548.5    | LncRNA     | -0.26                       | 5.30E-03 | 5.20E-02    | -0.24                           | 6.57E-03  | 8.02E-02    |
| ENSG00000263345.1     | RP1-59D14.5   | LncRNA     | 0.38                        | 5.34E-03 | 5.24E-02    | 0.23                            | 7.92E-02  | 3.22E-01    |
| ENSG00000263400.5     | TMEM220-AS1   | LncRNA     | 0.41                        | 9.96E-03 | 7.75E-02    | 0.42                            | 5.73E-03  | 7.40E-02    |
| ENSG00000263429.3     | LINC00675     | LncRNA     | 0.53                        | 7.11E-03 | 6.26E-02    | -0.27                           | 1.57E-01  | 4.50E-01    |
| ENSG00000263508.4     | RP11-963H4.3  | LncRNA     | 0.59                        | 1.50E-04 | 4.32E-03    | 0.61                            | 3.84E-05  | 2.17E-03    |
| ENSG00000263531.1     | RP13-753N3.1  | LncRNA     | 0.59                        | 5.37E-04 | 1.11E-02    | 0.58                            | 3.25E-04  | 1.08E-02    |
| ENSG00000263597.1     | MIR3936       | Other      | 0.28                        | 2.26E-03 | 2.96E-02    | 0.29                            | 7.90E-04  | 2.00E-02    |
| ENSG00000263606.1     | RP11-737O24.3 | Pseudogene | 0.57                        | 4.48E-04 | 9.76E-03    | -0.04                           | 7.97E-01  | 9.21E-01    |
| ENSG00000263624.1     | RP11-45M22.3  | LncRNA     | 0.67                        | 4.26E-04 | 9.41E-03    | 0.61                            | 8.55E-04  | 2.11E-02    |
| ENSG00000263627.1     | PPP4R1-AS1    | LncRNA     | 0.38                        | 1.45E-02 | 9.87E-02    | 0.29                            | 4.94E-02  | 2.53E-01    |
| ENSG00000263639.4     | MSMB          | Protein    | -0.55                       | 6.36E-03 | 5.87E-02    | -0.34                           | 7.90E-02  | 3.22E-01    |
| ENSG00000263681.1     | MIR3197       | Other      | 0.61                        | 2.34E-03 | 3.04E-02    | 0.58                            | 3.05E-03  | 5.00E-02    |
| ENSG00000263742.1     | MIR3165       | Other      | 1.30                        | 1.03E-07 | 1.14E-05    | 0.02                            | 9.30E-01  | 9.76E-01    |
| ENSG00000263753.5     | LINC00667     | LncRNA     | 0.14                        | 1.06E-02 | 8.10E-02    | 0.17                            | 1.28E-03  | 2.78E-02    |
| ENSG00000263934.3     | SNORD3A       | Other      | 0.74                        | 3.33E-04 | 7.89E-03    | 0.59                            | 2.96E-03  | 4.89E-02    |
| ENSG00000264010.1     | MIR429        | Other      | 0.63                        | 1.37E-03 | 2.11E-02    | 0.65                            | 6.66E-04  | 1.79E-02    |
| ENSG00000264016.2     | CTC-297N7.9   | LncRNA     | 0.45                        | 6.16E-03 | 5.75E-02    | 0.47                            | 2.63E-03  | 4.53E-02    |
| ENSG00000264044.1     | RP11-192H23.7 | LncRNA     | 0.45                        | 1.10E-02 | 8.26E-02    | 0.37                            | 3.10E-02  | 1.95E-01    |
| ENSG00000264049.1     | MIR4737       | Other      | -0.50                       | 4.47E-04 | 9.74E-03    | -0.51                           | 1.68E-04  | 6.73E-03    |
| ENSG00000264057.1     | RP11-583F2.1  | Pseudogene | 0.38                        | 1.24E-02 | 8.93E-02    | 0.26                            | 8.02E-02  | 3.25E-01    |
| ENSG00000264067.1     | RP11-401O9.3  | LncRNA     | 0.85                        | 2.91E-04 | 7.15E-03    | 0.82                            | 3.23E-04  | 1.07E-02    |
| ENSG00000264070.1     | DND1P1        | Pseudogene | -0.24                       | 9.64E-03 | 7.59E-02    | -0.20                           | 2.42E-02  | 1.70E-01    |
| ENSG00000264080.1     | CTD-2015H3.1  | LncRNA     | 0.62                        | 1.10E-03 | 1.82E-02    | 0.12                            | 4.73E-01  | NA          |
| ENSG00000264148.1     | RP11-848P1.7  | Pseudogene | 0.50                        | 7.20E-06 | 4.00E-04    | 0.49                            | 2.89E-06  | 2.81E-04    |
| ENSG00000264176.1     | MAGO12P       | Pseudogene | 0.39                        | 5.05E-03 | 5.04E-02    | 0.40                            | 3.08E-03  | 5.03E-02    |
| ENSG00000264187.1     | RP11-45M22.4  | Protein    | 0.47                        | 3.75E-04 | 8.58E-03    | 0.35                            | 5.37E-03  | 7.12E-02    |
| ENSG00000264235.4     | RP13-270P17.1 | LncRNA     | 0.34                        | 8.90E-04 | 1.56E-02    | 0.21                            | 3.89E-02  | 2.21E-01    |
| ENSG00000264290.1     | RP11-6813.4   | LncRNA     | 0.40                        | 3.06E-03 | 3.63E-02    | 0.28                            | 3.13E-02  | 1.96E-01    |
| ENSG00000264343.4     | NOTCH2NL      | Protein    | 0.66                        | 3.43E-08 | 4.26E-06    | 0.68                            | 2.71E-09  | 6.66E-07    |
| ENSG00000264370.1     | MIR3125       | Other      | 0.63                        | 9.68E-03 | 7.60E-02    | -0.17                           | 4.54E-01  | 7.30E-01    |
| ENSG00000264425.1     | MIR4653       | Other      | 0.81                        | 2.17E-07 | 2.15E-05    | 0.56                            | 2.19E-04  | 8.28E-03    |
| ENSG00000264456.1     | RP11-848P1.2  | LncRNA     | 0.40                        | 8.16E-07 | 6.54E-05    | 0.39                            | 4.30E-07  | 5.82E-05    |
| ENSG00000264468.1     | MIR4520-1     | Other      | 0.48                        | 9.16E-03 | 7.36E-02    | 0.43                            | 1.66E-02  | 1.39E-01    |
| ENSG00000264514.1     | RP11-720L2.4  | LncRNA     | 0.47                        | 1.06E-02 | 8.08E-02    | 0.50                            | 4.42E-03  | 6.35E-02    |
| ENSG00000264522.4     | OTUD7B        | Protein    | -0.15                       | 5.44E-03 | 5.31E-02    | -0.13                           | 1.35E-02  | 1.23E-01    |
| ENSG00000264535.1     | AC093788.1    | Other      | 0.48                        | 1.39E-02 | 9.64E-02    | 0.47                            | 1.21E-02  | 1.15E-01    |
| ENSG00000264539.1     | MIR548AR      | Other      | 0.81                        | 6.08E-05 | 2.17E-03    | 0.70                            | 3.11E-04  | 1.04E-02    |
| ENSG00000264589.1     | MAPT-AS1      | LncRNA     | -0.70                       | 3.96E-03 | 4.33E-02    | -0.30                           | 1.85E-01  | 4.87E-01    |
| ENSG00000264592.2     | RN7SL131P     | Other      | 0.73                        | 4.05E-03 | 4.39E-02    | 0.77                            | 1.82E-03  | 3.49E-02    |
| ENSG00000264660.2     | RP11-381P6.1  | LncRNA     | 0.80                        | 8.77E-05 | 2.87E-03    | 0.26                            | 1.88E-01  | 4.91E-01    |
| ENSG00000264668.1     | ZFP41         | Protein    | 0.50                        | 3.26E-04 | 7.78E-03    | 0.38                            | 4.27E-03  | 6.24E-02    |
| ENSG00000264707.1     | L3MBTL4-AS1   | LncRNA     | 0.37                        | 4.59E-03 | 4.76E-02    | 0.15                            | 2.66E-01  | 5.76E-01    |
| ENSG00000264727.1     | RP11-680C21.1 | LncRNA     | -0.51                       | 8.84E-04 | 1.56E-02    | -0.47                           | 1.37E-03  | 2.89E-02    |
| ENSG00000264772.4     | RP11-186B7.4  | LncRNA     | 0.28                        | 1.48E-02 | 9.99E-02    | 0.28                            | 1.34E-02  | 1.22E-01    |
| ENSG00000264932.3     | CTD-2104P17.2 | LncRNA     | 0.44                        | 1.40E-02 | 9.68E-02    | 0.38                            | 2.52E-02  | 1.74E-01    |
| ENSG00000264964.1     | RP11-888D10.3 | LncRNA     | 0.31                        | 7.35E-03 | 6.40E-02    | 0.31                            | 5.24E-03  | 7.01E-02    |
| ENSG00000264968.1     | RP11-387H17.4 | LncRNA     | 0.69                        | 9.16E-07 | 7.23E-05    | 0.67                            | 6.22E-07  | 8.00E-05    |
| ENSG00000264991.1     | AP001205.1    | Other      | 0.56                        | 2.44E-04 | 6.23E-03    | 0.36                            | 1.66E-02  | 1.39E-01    |
| ENSG00000265000.1     | RP11-453A12.1 | LncRNA     | 0.66                        | 1.00E-02 | 7.79E-02    | 0.57                            | 2.15E-02  | NA          |
| ENSG00000265010.1     | RP11-661C3.2  | LncRNA     | 0.44                        | 2.01E-03 | 2.76E-02    | 0.36                            | 8.57E-03  | 9.35E-02    |
| ENSG00000265062.1     | AL133228.1    | Other      | 0.71                        | 5.48E-03 | 5.34E-02    | 0.73                            | 3.22E-03  | NA          |
| ENSG00000265096.1     | C1QTNF1-AS1   | LncRNA     | 0.84                        | 1.09E-04 | 3.38E-03    | 0.75                            | 3.71E-04  | 1.18E-02    |
| ENSG00000265136.1     | RP13-638C3.6  | Pseudogene | 0.49                        | 1.20E-03 | 1.93E-02    | 0.47                            | 1.05E-03  | 2.43E-02    |
| ENSG00000265174.1     | CTD-2124B20.3 | LncRNA     | 1.04                        | 1.00E-05 | 5.24E-04    | 0.22                            | 3.20E-01  | NA          |
| ENSG00000265185.4     | SNORD3B-1     | Other      | 1.86                        | 6.65E-17 | 3.53E-14    | 1.75                            | 6.98E-16  | 4.85E-13    |
| ENSG00000265194.1     | RP11-70L8.4   | LncRNA     | 0.37                        | 6.47E-03 | 5.92E-02    | 0.31                            | 2.04E-02  | 1.55E-01    |
| ENSG00000265218.1     | RP11-927P21.1 | LncRNA     | -0.86                       | 6.63E-07 | 5.48E-05    | -0.89                           | 1.03E-07  | 1.73E-05    |
| ENSG00000265261.1     | RP11-162A12.3 | Pseudogene | 0.56                        | 5.77E-03 | 5.49E-02    | 0.67                            | 6.46E-04  | 1.76E-02    |
| ENSG00000265298.1     | RP13-104F24.3 | Pseudogene | 0.43                        | 1.84E-04 | 5.06E-03    | 0.30                            | 8.04E-03  | 9.01E-02    |
| ENSG00000265349.1     | RP11-55L4.2   | LncRNA     | 0.48                        | 7.95E-03 | 6.73E-02    | 0.41                            | 2.01E-02  | 1.53E-01    |
| ENSG00000265366.5     | GLUD1P7       | Pseudogene | 0.39                        | 5.04E-04 | 1.06E-02    | 0.34                            | 1.75E-03  | 3.41E-02    |
| ENSG00000265399.1     | RP13-270P17.2 | LncRNA     | -0.29                       | 7.06E-04 | 1.34E-02    | -0.25                           | 2.05E-03  | 3.80E-02    |
| ENSG00000265451.1     | RP11-204L24.2 | LncRNA     | 0.35                        | 1.21E-02 | 8.81E-02    | 0.37                            | 5.32E-03  | 7.07E-02    |
| ENSG00000265462.1     | MIR3680-2     | Other      | 0.65                        | 7.74E-03 | 6.63E-02    | 0.58                            | 1.38E-02  | 1.24E-01    |
| ENSG00000265479.4     | DTX2P1-UPK3BP | LncRNA     | 0.41                        | 5.75E-05 | 2.09E-03    | 0.28                            | 4.34E-03  | 6.30E-02    |
| ENSG00000265519.1     | CTD-3157E16.1 | LncRNA     | -0.43                       | 6.80E-04 | 1.30E-02    | -0.34                           | 6.12E-03  | 7.69E-02    |
| ENSG00000265531.2     | FCGR1C        | Pseudogene | 0.64                        | 1.61E-04 | 4.54E-03    | 0.50                            | 2.22E-03  | 4.01E-02    |
| ENSG00000265574.1     | WDR45BP1      | Pseudogene | -1.06                       | 2.87E-06 | 1.89E-04    | -1.09                           | 7.04E-07  |             |

| Gene ID (GENCODE v22) | Gene symbol          | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                      |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000265636.1     | <i>AC100787.1</i>    | Other      | 0.95                        | 1.45E-04 | 4.22E-03    | 0.86                            | 4.56E-04 | 1.38E-02    |  |
| ENSG00000265638.1     | <i>AC005702.3</i>    | Other      | 0.82                        | 1.20E-06 | 9.12E-05    | 0.83                            | 2.65E-07 | 3.92E-05    |  |
| ENSG00000265692.1     | <i>RP13-516M14.4</i> | LncRNA     | 0.42                        | 6.48E-03 | 5.92E-02    | 0.23                            | 1.28E-01 | 4.11E-01    |  |
| ENSG00000265717.1     | <i>RP11-94B19.7</i>  | LncRNA     | 0.87                        | 6.88E-04 | 1.31E-02    | 0.04                            | 8.85E-01 | 9.59E-01    |  |
| ENSG00000265743.1     | <i>RP11-848P1.3</i>  | LncRNA     | 0.31                        | 2.77E-03 | 3.40E-02    | 0.07                            | 5.24E-01 | 7.77E-01    |  |
| ENSG00000265750.1     | <i>RP11-799B12.4</i> | LncRNA     | 0.42                        | 4.42E-04 | 9.65E-03    | 0.30                            | 1.08E-02 | 1.08E-01    |  |
| ENSG00000265753.2     | <i>RN7SL444P</i>     | Other      | 0.59                        | 3.09E-03 | 3.66E-02    | 0.48                            | 1.25E-02 | 1.18E-01    |  |
| ENSG00000265787.1     | <i>CYP4F35P</i>      | LncRNA     | 0.73                        | 3.07E-04 | 7.43E-03    | 0.71                            | 3.13E-04 | 1.05E-02    |  |
| ENSG00000265798.5     | <i>RP11-271K11.5</i> | Pseudogene | 0.38                        | 1.62E-04 | 4.57E-03    | 0.30                            | 1.85E-03 | 3.53E-02    |  |
| ENSG00000265808.3     | <i>SEC22B</i>        | Protein    | -0.19                       | 2.50E-03 | 3.19E-02    | -0.15                           | 1.37E-02 | 1.23E-01    |  |
| ENSG00000265907.1     | <i>RP11-737O24.2</i> | LncRNA     | 1.45                        | 5.37E-10 | 1.01E-07    | -0.04                           | 8.47E-01 | 9.44E-01    |  |
| ENSG00000265917.1     | <i>MIR3685</i>       | Other      | 0.42                        | 7.74E-04 | 1.43E-02    | 0.25                            | 4.62E-02 | 2.43E-01    |  |
| ENSG00000265942.2     | <i>RN7SL577P</i>     | Other      | 0.82                        | 1.39E-03 | 2.12E-02    | 0.72                            | 3.84E-03 | NA          |  |
| ENSG00000265944.1     | <i>LINC01387</i>     | LncRNA     | 1.00                        | 8.12E-05 | 2.70E-03    | 0.29                            | 2.35E-01 | NA          |  |
| ENSG00000265972.4     | <i>TXNIP</i>         | Protein    | -0.30                       | 1.09E-03 | 1.81E-02    | -0.23                           | 7.38E-03 | 8.56E-02    |  |
| ENSG00000265975.1     | <i>CTB-4116.2</i>    | LncRNA     | 0.38                        | 1.09E-02 | 8.20E-02    | 0.30                            | 3.62E-02 | 2.12E-01    |  |
| ENSG00000266053.2     | <i>NDUVF2-AS1</i>    | LncRNA     | 0.23                        | 2.27E-03 | 2.98E-02    | 0.15                            | 3.79E-02 | 2.18E-01    |  |
| ENSG00000266066.1     | <i>POLRMT1P</i>      | Pseudogene | 0.39                        | 1.25E-02 | 9.01E-02    | 0.38                            | 1.17E-02 | 1.13E-01    |  |
| ENSG00000266075.2     | <i>RN7SL574P</i>     | Other      | 0.34                        | 2.92E-03 | 3.52E-02    | 0.29                            | 8.54E-03 | 9.34E-02    |  |
| ENSG00000266171.1     | <i>RP11-769O8.1</i>  | LncRNA     | 0.46                        | 5.50E-03 | 5.35E-02    | 0.34                            | 3.13E-02 | 1.96E-01    |  |
| ENSG00000266239.2     | <i>AL513327.1</i>    | Other      | 0.45                        | 6.85E-03 | 6.12E-02    | 0.32                            | 5.01E-02 | 2.55E-01    |  |
| ENSG00000266338.5     | <i>NBPF15</i>        | Protein    | -0.33                       | 9.76E-03 | 7.64E-02    | -0.23                           | 5.89E-02 | 2.77E-01    |  |
| ENSG00000266340.1     | <i>RP11-848P1.4</i>  | LncRNA     | 0.86                        | 9.40E-06 | 4.95E-04    | 0.82                            | 1.05E-05 | 7.87E-04    |  |
| ENSG00000266347.2     | <i>AC068641.1</i>    | Other      | 0.52                        | 3.45E-03 | 3.94E-02    | 0.42                            | 1.44E-02 | 1.27E-01    |  |
| ENSG00000266369.1     | <i>RP11-344E13.4</i> | LncRNA     | 0.73                        | 3.38E-03 | 3.89E-02    | -0.05                           | 8.39E-01 | 9.41E-01    |  |
| ENSG00000266379.5     | <i>RP11-640N20.8</i> | Pseudogene | -0.64                       | 1.15E-02 | 8.52E-02    | -0.59                           | 1.56E-02 | 1.33E-01    |  |
| ENSG00000266412.4     | <i>NCO44</i>         | Protein    | -0.20                       | 9.21E-03 | 7.39E-02    | -0.07                           | 3.17E-01 | 6.24E-01    |  |
| ENSG00000266501.1     | <i>RP11-766H1.1</i>  | Pseudogene | 0.47                        | 7.57E-03 | 6.52E-02    | 0.35                            | 3.75E-02 | 2.16E-01    |  |
| ENSG00000266521.1     | <i>RP11-650P15.1</i> | LncRNA     | 0.56                        | 4.94E-03 | 4.97E-02    | 0.64                            | 9.80E-04 | 2.31E-02    |  |
| ENSG00000266522.1     | <i>RP11-805F19.4</i> | Pseudogene | -0.38                       | 1.33E-02 | 9.35E-02    | -0.39                           | 7.97E-03 | 8.96E-02    |  |
| ENSG00000266553.2     | <i>RN7SL356P</i>     | Other      | 0.64                        | 7.37E-03 | 6.41E-02    | 0.68                            | 3.42E-03 | 5.39E-02    |  |
| ENSG00000266579.1     | <i>RP1-71H19.2</i>   | LncRNA     | 0.92                        | 2.89E-06 | 1.90E-04    | 0.93                            | 9.96E-07 | 1.18E-04    |  |
| ENSG00000266644.1     | <i>RP11-927P21.2</i> | LncRNA     | -0.58                       | 4.43E-03 | 4.65E-02    | -0.70                           | 3.70E-04 | 1.18E-02    |  |
| ENSG00000266651.1     | <i>RP11-138I1.3</i>  | LncRNA     | 0.46                        | 2.60E-03 | 3.26E-02    | 0.25                            | 9.39E-02 | 3.51E-01    |  |
| ENSG00000266676.1     | <i>MIR4297</i>       | Other      | 0.58                        | 4.29E-03 | 4.55E-02    | 0.53                            | 6.96E-03 | 8.28E-02    |  |
| ENSG00000266701.1     | <i>AC005702.4</i>    | Other      | 0.91                        | 3.52E-08 | 4.34E-06    | 1.00                            | 2.31E-10 | 7.09E-08    |  |
| ENSG00000266714.5     | <i>MYO15B</i>        | Pseudogene | 0.46                        | 1.01E-03 | 1.71E-02    | 0.36                            | 7.30E-03 | 8.50E-02    |  |
| ENSG00000266729.4     | <i>DSG1-AS1</i>      | LncRNA     | 0.50                        | 1.02E-02 | 7.90E-02    | 0.33                            | 8.94E-02 | 3.42E-01    |  |
| ENSG00000266733.4     | <i>TBC1D29</i>       | Protein    | 0.44                        | 1.34E-02 | 9.37E-02    | 0.35                            | 3.90E-02 | 2.21E-01    |  |
| ENSG00000266750.1     | <i>MIR4645</i>       | Other      | 0.86                        | 4.88E-05 | 1.84E-03    | 0.80                            | 9.10E-05 | 4.19E-03    |  |
| ENSG00000266786.1     | <i>LGALS9DP</i>      | Pseudogene | 0.77                        | 2.31E-03 | 3.00E-02    | 0.30                            | 2.24E-01 | 5.34E-01    |  |
| ENSG00000266835.4     | <i>LINC01540</i>     | LncRNA     | 0.48                        | 9.36E-03 | 7.46E-02    | 0.34                            | 5.84E-02 | 2.76E-01    |  |
| ENSG00000266910.1     | <i>CTC-448F2.6</i>   | Pseudogene | 0.26                        | 5.75E-03 | 5.48E-02    | 0.25                            | 6.47E-03 | 7.94E-02    |  |
| ENSG00000266916.4     | <i>ZNFX793-AS1</i>   | LncRNA     | 0.23                        | 9.92E-03 | 7.73E-02    | 0.22                            | 8.39E-03 | 9.25E-02    |  |
| ENSG00000266918.1     | <i>RP11-798G7.8</i>  | LncRNA     | -0.56                       | 8.88E-03 | 7.22E-02    | -0.61                           | 3.49E-03 | 5.46E-02    |  |
| ENSG00000266944.1     | <i>AC005262.4</i>    | Pseudogene | 0.59                        | 4.98E-04 | 1.05E-02    | 0.49                            | 2.63E-03 | 4.53E-02    |  |
| ENSG00000266957.1     | <i>RP11-49K24.4</i>  | LncRNA     | 0.56                        | 1.46E-03 | 2.20E-02    | 0.48                            | 5.02E-03 | 6.84E-02    |  |
| ENSG00000266969.1     | <i>RP11-773H22.4</i> | LncRNA     | 0.34                        | 1.07E-02 | 8.16E-02    | 0.25                            | 5.59E-02 | 2.70E-01    |  |
| ENSG00000266975.1     | <i>FARSA-AS1</i>     | LncRNA     | 0.78                        | 1.00E-05 | 5.22E-04    | 0.64                            | 1.56E-04 | 6.35E-03    |  |
| ENSG00000266992.1     | <i>DHX40P1</i>       | Pseudogene | 1.08                        | 8.34E-07 | 6.65E-05    | 1.06                            | 6.21E-07 | 8.00E-05    |  |
| ENSG00000266994.1     | <i>RP11-127I20.7</i> | LncRNA     | 0.49                        | 1.28E-02 | 9.12E-02    | 0.29                            | 1.25E-01 | 4.05E-01    |  |
| ENSG00000267002.1     | <i>RP11-242D8.1</i>  | LncRNA     | 0.25                        | 7.13E-03 | 6.27E-02    | 0.21                            | 1.73E-02 | 1.42E-01    |  |
| ENSG00000267055.1     | <i>RP11-486P11.1</i> | LncRNA     | 1.77                        | 3.72E-13 | 1.22E-10    | 0.62                            | 8.91E-03 | 9.58E-02    |  |
| ENSG00000267078.1     | <i>RP11-666A8.9</i>  | LncRNA     | 0.68                        | 1.68E-03 | 2.43E-02    | 0.65                            | 1.95E-03 | 3.66E-02    |  |
| ENSG00000267091.1     | <i>CTBP2P7</i>       | Pseudogene | 0.46                        | 1.06E-02 | 8.11E-02    | 0.24                            | 1.85E-01 | 4.87E-01    |  |
| ENSG00000267092.2     | <i>CTB-25B13.9</i>   | LncRNA     | 0.60                        | 4.09E-04 | 9.15E-03    | 0.45                            | 6.54E-03 | 7.99E-02    |  |
| ENSG00000267119.1     | <i>RPL10P15</i>      | Pseudogene | 1.04                        | 5.49E-13 | 1.77E-10    | 1.04                            | 4.82E-14 | 2.77E-11    |  |
| ENSG00000267120.3     | <i>AD000671.6</i>    | Protein    | 0.57                        | 2.75E-04 | 6.85E-03    | 0.53                            | 4.45E-04 | 1.36E-02    |  |
| ENSG00000267131.1     | <i>RP11-332H18.5</i> | LncRNA     | 0.44                        | 7.11E-03 | 6.26E-02    | 0.29                            | 6.28E-02 | 2.87E-01    |  |
| ENSG00000267147.2     | <i>CTC-548K16.1</i>  | LncRNA     | 0.57                        | 9.28E-03 | 7.42E-02    | 0.46                            | 3.06E-02 | 1.94E-01    |  |
| ENSG00000267163.1     | <i>AC084219.3</i>    | LncRNA     | 0.37                        | 9.46E-03 | 7.49E-02    | 0.24                            | 8.16E-02 | 3.28E-01    |  |
| ENSG00000267174.4     | <i>CTC-510F12.4</i>  | LncRNA     | 0.36                        | 6.25E-03 | 5.81E-02    | 0.35                            | 6.82E-03 | 8.18E-02    |  |
| ENSG00000267185.1     | <i>PTP4A2P1</i>      | Pseudogene | 0.50                        | 1.60E-05 | 7.69E-04    | 0.47                            | 2.12E-05 | 1.37E-03    |  |
| ENSG00000267192.1     | <i>AC006116.12</i>   | LncRNA     | 0.43                        | 1.39E-03 | 2.12E-02    | 0.38                            | 3.31E-03 | 5.27E-02    |  |
| ENSG00000267198.1     | <i>RP11-798G7.6</i>  | LncRNA     | -0.42                       | 6.22E-03 | 5.78E-02    | -0.44                           | 2.98E-03 | 4.92E-02    |  |
| ENSG00000267199.1     | <i>RP11-861E21.2</i> | LncRNA     | 0.50                        | 1.27E-03 | 1.99E-02    | 0.27                            | 7.73E-02 | 3.19E-01    |  |
| ENSG00000267212.1     | <i>CTD-2659N19.9</i> | LncRNA     | 0.54                        | 8.83E-03 | 7.20E-02    | 0.47                            | 1.89E-02 | 1.49E-01    |  |
| ENSG00000267219.1     | <i>AC010504.2</i>    | LncRNA     | 0.25                        | 2.25E-03 | 2.96E-02    | 0.15                            | 5.75E-02 | 2.73E-01    |  |
| ENSG00000267244.4     | <i>CTB-31O20.4</i>   | LncRNA     | 0.35                        | 8.28E-03 | 6.92E-02    | 0.19                            | 1.33E-01 | 4.17E-01    |  |
| ENSG00000267258.1     | <i>CTC-448F2.3</i>   | Pseudogene | 0.65                        | 4.37E-04 | 9.56E-03    | 0.54                            | 2.45E-03 | 4.31E-02    |  |
| ENSG00000267277.1     | <i>CTD-2342J14.6</i> | LncRNA     | 0.29                        | 1.87E-04 | 5.11E-03    | 0.27                            | 2.45E-04 | 8.94E-03    |  |
| ENSG00000267280.4     | <i>TBX2-AS1</i>      | LncRNA     | 0.53                        | 5.63E-04 | 1.14E-02    | 0.49                            | 9.97E-04 | 2.33E-02    |  |
| ENSG00000267287.1     | <i>RP11-567M16.1</i> | LncRNA     | 0.36                        | 6.12E-03 | 5.72E-02    | 0.25                            | 4.43E-02 | 2.38E-01    |  |
| ENSG00000267289.1     | <i>CTD-2623N2.11</i> | LncRNA     | 0.63                        | 4.01E-05 | 1.60E-03    | 0.58                            | 7.80E-05 | 3.76E-03    |  |
| ENSG00000267308.1     | <i>AC004510.3</i>    | LncRNA     | 0.74                        | 2.16E-05 | 9.82E-04    | 0.64                            | 1.36E-04 | 5.74E-03    |  |
| ENSG00000267345.1     | <i>CTD-2293H3.2</i>  | LncRNA     | 0.31                        | 7.04E-03 | 6.22E-02    | 0.17                            | 1.17E-01 | 3.92E-01    |  |
| ENSG00000267348.2     | <i>CTB-179K24.3</i>  | LncRNA     | 0.23                        | 9.88E-03 | 7.71E-02    | 0.22                            | 8.21E-03 | 9.14E-02    |  |
| ENSG00000267354.1     | <i>RP11-749H17.2</i> | LncRNA     | -0.68                       | 8.12E-03 | 6.84E-02    | -0.65                           | 9.40E-03 | 9.89E-02    |  |
| ENSG00000267372.2     | <i>AC005330.2</i>    | LncRNA     | 0.54                        | 3.02E-03 | 3.60E-02    | 0.57                            | 1.05E-03 | 2.42E-02    |  |
| ENSG00000267374.1     | <i>RP11-244M2.1</i>  | LncRNA     | 0.50                        | 4.34E-03 | 4.58E-02    | 0.26                            | 1.40E-01 | 4.27E-01    |  |
| ENSG00000267383.5     | <i>CTC-260E6.6</i>   | LncRNA     | 0.43                        | 1.29E-02 | 9.17E-02    | 0.38                            | 2.12E-02 | 1.58E-01    |  |
| ENSG00000267397.1     | <i>RP11-873E20.1</i> | LncRNA     | 0.34                        | 5.70E-03 | 5.46E-02    | 0.30                            | 1.05E-02 | 1.06E-01    |  |
| ENSG00000267419.1     | <i>CTC-559E9.6</i>   | LncRNA     | 0.23                        | 7.04E-05 | 2.42E-03    | 0.23                            | 2.05E-05 | 1.34E-03    |  |
| ENSG00000267429.1     | <i>AC006116.15</i>   | LncRNA     | 0.48                        | 5.53E-04 | 1.13E-02    | 0.39                            | 3.35E-03 | 5.31E-02    |  |
| ENSG00000267457.1     | <i>RP5-837J1.4</i>   | LncRNA     | 0.77                        | 7.84E-06 | 4.30E-04    | 0.75                            | 5.73E-06 | 4.83E-04    |  |
| ENSG00000267480.1     | <i>RP11-703I16.1</i> | LncRNA     | -0.28                       | 1.54E-03 | 2.29E-02    | -0.19                           | 2.62E-02 | 1.78E-01    |  |
| ENSG00000267508.4     | <i>ZNFX285</i>       | Protein    | 0.23                        | 4.67E-04 | 1.01E-02    | 0.21                            | 9.15E-04 | 2.21E-02    |  |
| ENSG00000267523.1     | <i>CTD-2537I9.12</i> | LncRNA     | 0.43                        | 2.28E-03 | 2.98E-02    | 0.22                            | 1.18E-01 | 3.94E-01    |  |
| ENSG00000267533.1     | <i>RP11-815J4.7</i>  | Pseudogene | 0.56                        | 2.16E-05 | 9.82E-04    | 0.46                            | 2.72E-04 | 9.59E-03    |  |
| ENSG00000267565.1     | <i>CTC-559E9.8</i>   | LncRNA     | -0.25                       | 1.54E-03 | 2.29E-02    | -0.25                           | 7.39E-04 | 1.91E-02    |  |
| ENSG00000267571.1     | <i>AC104532.4</i>    | LncRNA     | 0.31                        | 1.24E-02 | 8.95E-02    | 0.24                            | 3.77E-02 | 2.17E-01    |  |
| ENSG00000267573.1     | <i>KRT8P5</i>        | Pseudogene | -0.51                       | 4.51E-03 | 4.71E-02    | -0.44                           | 1.07E-02 | 1.08E-01    |  |
| ENSG00000267577.1     | <i>CTD-2587H24.5</i> | LncRNA     | -0.76                       | 3.21E-03 | 3.77E-02    | -0.74                           | 2.89E-03 | 4.83E-02    |  |
| ENSG00000267587.1     | <i>RP11-687F6.4</i>  | Pseudogene | 0.89                        | 2.90E-05 | 1.22E-03    | 0.93                            | 6.84E-06 | 5.60E-04    |  |
| ENSG00000267594.5     | <i>CYP4F24P</i>      | Pseudogene | 0.50                        | 1.33E-02 | 9.37E-02    | 0.31                            | 1.19E-01 | 3.95E-01    |  |
| ENSG00000267595.1     | <i>RP11-242D8.2</i>  | Pseudogene | 0.41                        | 5.41E-03 | 5.29E-02    | 0.26                            | 6.23E-02 | 2.86E-01    |  |
| ENSG00000267606.1     | <i>AC006116.21</i>   | LncRNA     | 0.50                        | 7.57E-04 | 1.40E-02    | 0.47                            | 9.48E-04 | 2.26E-02    |  |
| ENSG00000267610.2     | <i>AC007787.2</i>    | LncRNA     | 0.52                        | 7.69E-03 | 6.60E-02    | 0.45                            | 1.63E-02 | 1.37E-01    |  |
| ENSG00000267612.1     | <i>CTD-3116E22.7</i> | LncRNA     | 0.41                        | 5.99E-03 | 5.64E-02    | 0.49                            |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000267719.1     | <i>HP09025</i>        | LncRNA     | -0.46                       | 9.98E-03 | 7.76E-02    | -0.36                           | 3.81E-02 | 2.18E-01    |  |
| ENSG00000267781.1     | <i>SLC25A36P1</i>     | Pseudogene | 0.32                        | 1.27E-02 | 9.05E-02    | 0.28                            | 2.60E-02 | 1.77E-01    |  |
| ENSG00000267855.4     | <i>NDUFA7</i>         | Protein    | 0.23                        | 1.16E-02 | 8.53E-02    | 0.22                            | 1.18E-02 | 1.14E-01    |  |
| ENSG00000267857.2     | <i>RP5-1023B2.1</i>   | LncRNA     | 0.76                        | 2.03E-03 | 2.77E-02    | 0.73                            | 2.27E-03 | 4.07E-02    |  |
| ENSG00000267858.4     | <i>MZF1-AS1</i>       | LncRNA     | 0.25                        | 2.35E-03 | 3.05E-02    | 0.13                            | 1.00E-01 | 3.62E-01    |  |
| ENSG00000267890.1     | <i>CTD-2126E3.4</i>   | LncRNA     | -0.78                       | 7.79E-04 | 1.43E-02    | -0.52                           | 1.87E-02 | 1.48E-01    |  |
| ENSG00000267896.1     | <i>AC018766.4</i>     | LncRNA     | 0.33                        | 3.91E-03 | 4.29E-02    | 0.28                            | 9.61E-03 | 1.00E-01    |  |
| ENSG00000267919.1     | <i>RP11-236I23.3</i>  | LncRNA     | 0.55                        | 9.96E-03 | 7.75E-02    | 0.34                            | 1.05E-01 | 3.71E-01    |  |
| ENSG00000267939.1     | <i>CTD-2325M2.1</i>   | LncRNA     | 0.31                        | 3.46E-03 | 3.95E-02    | 0.28                            | 4.66E-03 | 6.54E-02    |  |
| ENSG00000267968.1     | <i>AC011523.2</i>     | LncRNA     | 0.44                        | 1.27E-02 | 9.09E-02    | 0.31                            | 7.22E-02 | 3.08E-01    |  |
| ENSG00000267980.1     | <i>AC007292.6</i>     | LncRNA     | 0.37                        | 1.34E-03 | 2.07E-02    | 0.32                            | 4.14E-03 | 6.12E-02    |  |
| ENSG00000267986.1     | <i>AC130469.2</i>     | LncRNA     | 0.50                        | 7.43E-03 | 6.44E-02    | 0.40                            | 2.61E-02 | 1.78E-01    |  |
| ENSG00000267990.1     | <i>CTD-3187F8.15</i>  | Pseudogene | 0.56                        | 1.45E-02 | 9.90E-02    | 0.47                            | 3.51E-02 | 2.08E-01    |  |
| ENSG00000268030.1     | <i>AC005253.2</i>     | LncRNA     | 0.25                        | 1.46E-02 | 9.91E-02    | 0.11                            | 2.78E-01 | 5.89E-01    |  |
| ENSG00000268036.1     | <i>AC007228.8</i>     | Pseudogene | 0.58                        | 1.96E-03 | 2.70E-02    | 0.54                            | 2.61E-03 | 4.51E-02    |  |
| ENSG00000268041.1     | <i>CTD-2575K13.6</i>  | Pseudogene | 0.40                        | 5.32E-03 | 5.22E-02    | 0.26                            | 5.65E-02 | 2.71E-01    |  |
| ENSG00000268078.1     | <i>RP11-805I24.4</i>  | LncRNA     | 0.72                        | 1.33E-03 | 2.06E-02    | 0.61                            | 4.77E-03 | 6.64E-02    |  |
| ENSG00000268088.1     | <i>AC093063.2</i>     | Pseudogene | 0.97                        | 4.83E-06 | 2.90E-04    | 0.76                            | 2.32E-04 | 8.63E-03    |  |
| ENSG00000268089.2     | <i>GABRQ</i>          | Protein    | -0.87                       | 1.64E-05 | 7.84E-04    | -0.44                           | 2.82E-02 | 1.85E-01    |  |
| ENSG00000268181.3     | <i>RP11-73B2.7</i>    | LncRNA     | 0.66                        | 2.65E-03 | 3.31E-02    | 0.68                            | 1.27E-03 | 2.76E-02    |  |
| ENSG00000268182.4     | <i>SMIM17</i>         | Protein    | 0.65                        | 1.14E-06 | 8.71E-05    | 0.53                            | 4.72E-05 | 2.55E-03    |  |
| ENSG00000268222.1     | <i>EEF1A1P7</i>       | Pseudogene | -0.40                       | 1.60E-03 | 2.36E-02    | -0.33                           | 6.87E-03 | 8.22E-02    |  |
| ENSG00000268230.4     | <i>CTD-2619J13.8</i>  | LncRNA     | 0.31                        | 1.47E-02 | 9.96E-02    | 0.15                            | 2.33E-01 | 5.43E-01    |  |
| ENSG00000268279.3     | <i>RP11-434D12.1</i>  | Protein    | 0.35                        | 8.43E-03 | 7.00E-02    | 0.15                            | 2.38E-01 | 5.48E-01    |  |
| ENSG00000268401.1     | <i>CTC-344H19.4</i>   | LncRNA     | 0.47                        | 3.35E-03 | 3.87E-02    | 0.36                            | 1.87E-02 | 1.48E-01    |  |
| ENSG00000268439.4     | <i>RP3-461F17.3</i>   | Protein    | 0.25                        | 1.08E-02 | 8.18E-02    | 0.19                            | 4.64E-02 | 2.43E-01    |  |
| ENSG00000268471.4     | <i>DKFZP434J0714</i>  | LncRNA     | 0.22                        | 7.76E-03 | 6.63E-02    | 0.17                            | 3.48E-02 | 2.07E-01    |  |
| ENSG00000268499.1     | <i>CTB-102L5.8</i>    | LncRNA     | 0.46                        | 4.55E-03 | 4.73E-02    | 0.38                            | 1.52E-02 | 1.32E-01    |  |
| ENSG00000268533.1     | <i>AC004076.7</i>     | Protein    | 0.46                        | 2.98E-03 | 3.56E-02    | 0.38                            | 1.08E-02 | 1.08E-01    |  |
| ENSG00000268583.1     | <i>CTC-453G23.8</i>   | LncRNA     | 0.35                        | 1.11E-02 | 8.30E-02    | 0.30                            | 2.13E-02 | 1.59E-01    |  |
| ENSG00000268584.1     | <i>RP11-464F9.20</i>  | LncRNA     | 0.30                        | 4.76E-03 | 4.85E-02    | 0.24                            | 1.64E-02 | 1.38E-01    |  |
| ENSG00000268620.1     | <i>AC078899.4</i>     | Pseudogene | 0.51                        | 1.32E-02 | 9.30E-02    | 0.49                            | 1.35E-02 | 1.23E-01    |  |
| ENSG00000268738.2     | <i>HSFX2</i>          | Protein    | -0.68                       | 8.17E-03 | 6.86E-02    | -0.63                           | 1.09E-02 | 1.09E-01    |  |
| ENSG00000268812.3     | <i>RP1-102K2.8</i>    | LncRNA     | 0.55                        | 2.83E-03 | 3.44E-02    | 0.40                            | 2.50E-02 | 1.73E-01    |  |
| ENSG00000268864.3     | <i>CTB-167G5.6</i>    | Pseudogene | 0.90                        | 3.52E-06 | 2.22E-04    | 0.79                            | 2.85E-05 | 1.71E-03    |  |
| ENSG00000268869.4     | <i>ESPNP</i>          | Pseudogene | 0.71                        | 1.60E-03 | 2.36E-02    | 0.55                            | 1.17E-02 | 1.13E-01    |  |
| ENSG00000268883.2     | <i>PNMA6B</i>         | Pseudogene | -1.42                       | 3.47E-08 | 4.31E-06    | -1.39                           | 2.20E-08 | 4.40E-06    |  |
| ENSG00000268884.1     | <i>CTD-2550O8.7</i>   | Pseudogene | 0.44                        | 6.34E-03 | 5.86E-02    | 0.30                            | 4.91E-02 | 2.52E-01    |  |
| ENSG00000268916.4     | <i>CSAG3</i>          | Pseudogene | 1.12                        | 5.47E-06 | 3.20E-04    | 0.51                            | 3.30E-02 | 2.01E-01    |  |
| ENSG00000268945.1     | <i>CTD-2192J16.26</i> | LncRNA     | 0.47                        | 8.87E-04 | 1.56E-02    | 0.34                            | 1.29E-02 | 1.19E-01    |  |
| ENSG00000268947.1     | <i>AD000684.2</i>     | LncRNA     | 0.41                        | 1.78E-03 | 2.52E-02    | 0.23                            | 7.13E-02 | 3.06E-01    |  |
| ENSG00000268970.1     | <i>CTD-3099C6.11</i>  | LncRNA     | 0.33                        | 1.94E-05 | 9.07E-04    | 0.34                            | 3.43E-06 | 3.19E-04    |  |
| ENSG00000268996.3     | <i>MAN1B1-AS1</i>     | LncRNA     | 0.25                        | 1.09E-02 | 8.22E-02    | 0.21                            | 2.88E-02 | 1.87E-01    |  |
| ENSG00000269019.1     | <i>AC005932.1</i>     | LncRNA     | 0.45                        | 1.49E-03 | 2.24E-02    | 0.35                            | 1.15E-02 | 1.12E-01    |  |
| ENSG00000269025.2     | <i>CTC-457E21.5</i>   | Pseudogene | 2.32                        | 7.79E-22 | 6.68E-19    | 1.47                            | 4.99E-10 | NA          |  |
| ENSG00000269028.3     | <i>MTRNR2L12</i>      | Protein    | 1.18                        | 1.22E-10 | 2.66E-08    | 0.55                            | 5.42E-04 | 1.56E-02    |  |
| ENSG00000269054.1     | <i>CTD-2619J13.3</i>  | LncRNA     | 0.27                        | 2.81E-03 | 3.43E-02    | 0.28                            | 1.23E-03 | 2.71E-02    |  |
| ENSG00000269191.1     | <i>AC005387.2</i>     | LncRNA     | 0.34                        | 1.31E-02 | 9.27E-02    | 0.24                            | 6.60E-02 | 2.94E-01    |  |
| ENSG00000269210.2     | <i>RP11-173C1.1</i>   | LncRNA     | -0.43                       | 1.40E-02 | 9.68E-02    | -0.17                           | 2.57E-01 | 5.68E-01    |  |
| ENSG00000269220.1     | <i>LINC00528</i>      | LncRNA     | 0.40                        | 9.98E-03 | 7.76E-02    | 0.23                            | 1.26E-01 | 4.07E-01    |  |
| ENSG00000269300.1     | <i>CTD-2529P6.3</i>   | LncRNA     | 0.51                        | 4.69E-03 | 4.81E-02    | 0.41                            | 1.96E-02 | 1.51E-01    |  |
| ENSG00000269321.1     | <i>CTC-453G23.4</i>   | LncRNA     | 0.61                        | 1.35E-02 | 9.42E-02    | 0.49                            | 3.93E-02 | 2.22E-01    |  |
| ENSG00000269353.1     | <i>AC092071.1</i>     | LncRNA     | 0.62                        | 1.45E-02 | 9.89E-02    | 0.01                            | 9.53E-01 | 9.84E-01    |  |
| ENSG00000269374.1     | <i>CTB-50E14.5</i>    | Pseudogene | -0.50                       | 4.35E-06 | 2.64E-04    | -0.48                           | 5.22E-06 | 4.50E-04    |  |
| ENSG00000269378.1     | <i>ITGB1P1</i>        | Pseudogene | -0.47                       | 3.62E-04 | 8.39E-03    | -0.44                           | 5.03E-04 | 1.48E-02    |  |
| ENSG00000269386.4     | <i>RAB11B-AS1</i>     | LncRNA     | 0.27                        | 5.89E-03 | 5.57E-02    | 0.28                            | 2.75E-03 | 4.66E-02    |  |
| ENSG00000269480.1     | <i>CTD-3032J10.3</i>  | LncRNA     | 0.57                        | 4.16E-03 | 4.46E-02    | 0.46                            | 1.50E-02 | 1.30E-01    |  |
| ENSG00000269483.1     | <i>AC006272.1</i>     | LncRNA     | 0.59                        | 4.49E-05 | 1.73E-03    | 0.51                            | 2.36E-04 | 8.71E-03    |  |
| ENSG00000269545.1     | <i>CTD-3138B18.4</i>  | Protein    | 0.67                        | 2.31E-03 | 3.01E-02    | 0.63                            | 2.96E-03 | 4.89E-02    |  |
| ENSG00000269693.1     | <i>CTD-2192J16.20</i> | Protein    | -0.28                       | 7.71E-04 | 1.42E-02    | -0.24                           | 2.90E-03 | 4.84E-02    |  |
| ENSG00000269889.1     | <i>RP11-816J6.3</i>   | LncRNA     | 0.59                        | 5.56E-06 | 3.22E-04    | 0.44                            | 4.56E-04 | 1.38E-02    |  |
| ENSG00000269890.1     | <i>RP5-1139B12.2</i>  | LncRNA     | -0.38                       | 3.97E-03 | 4.34E-02    | -0.25                           | 5.12E-02 | 2.58E-01    |  |
| ENSG00000269899.1     | <i>RP11-589N15.2</i>  | LncRNA     | 0.43                        | 8.12E-04 | 1.47E-02    | 0.29                            | 1.85E-02 | 1.47E-01    |  |
| ENSG00000269919.1     | <i>RP1-134E15.3</i>   | LncRNA     | 0.63                        | 1.08E-03 | 1.80E-02    | 0.62                            | 9.27E-04 | 2.23E-02    |  |
| ENSG00000269937.1     | <i>RP11-20I23.8</i>   | LncRNA     | 0.61                        | 1.21E-03 | 1.94E-02    | 0.60                            | 1.07E-03 | 2.46E-02    |  |
| ENSG00000269949.1     | <i>RP11-738E22.3</i>  | LncRNA     | 0.34                        | 8.93E-03 | 7.24E-02    | 0.33                            | 7.40E-03 | 8.58E-02    |  |
| ENSG00000269956.1     | <i>MKNK1-AS1</i>      | LncRNA     | 0.42                        | 3.36E-03 | 3.88E-02    | 0.30                            | 2.77E-02 | 1.84E-01    |  |
| ENSG00000269967.1     | <i>RP11-84A19.4</i>   | LncRNA     | 0.51                        | 4.10E-03 | 4.41E-02    | 0.39                            | 2.28E-02 | 1.65E-01    |  |
| ENSG00000269978.1     | <i>RP11-338N10.3</i>  | LncRNA     | 0.55                        | 1.75E-03 | 2.49E-02    | 0.32                            | 6.00E-02 | 2.80E-01    |  |
| ENSG00000269985.1     | <i>RP1-232P20.1</i>   | LncRNA     | 0.39                        | 1.39E-03 | 2.12E-02    | 0.42                            | 2.44E-04 | 8.92E-03    |  |
| ENSG00000269989.1     | <i>RP11-635N19.3</i>  | LncRNA     | 0.66                        | 9.08E-03 | 7.32E-02    | 0.29                            | 2.44E-01 | 5.55E-01    |  |
| ENSG00000269994.1     | <i>RP11-276H19.2</i>  | LncRNA     | -0.95                       | 4.45E-05 | 1.72E-03    | -0.82                           | 2.34E-04 | 8.67E-03    |  |
| ENSG00000270002.1     | <i>RP11-93H12.4</i>   | LncRNA     | 0.76                        | 2.92E-03 | 3.52E-02    | 0.70                            | 4.83E-03 | NA          |  |
| ENSG00000270015.1     | <i>RP11-540B6.6</i>   | LncRNA     | 0.22                        | 4.35E-03 | 4.59E-02    | 0.18                            | 1.28E-02 | 1.19E-01    |  |
| ENSG00000270024.4     | <i>C8orf44-SGK3</i>   | Protein    | 0.37                        | 6.96E-03 | 6.19E-02    | 0.25                            | 5.60E-02 | 2.70E-01    |  |
| ENSG00000270036.1     | <i>RP11-685G9.4</i>   | LncRNA     | 0.66                        | 4.61E-03 | 4.76E-02    | 0.64                            | 5.15E-03 | 6.93E-02    |  |
| ENSG00000270069.1     | <i>MIR222HG</i>       | LncRNA     | 0.47                        | 7.89E-03 | 6.71E-02    | 0.43                            | 1.18E-02 | 1.13E-01    |  |
| ENSG00000270083.1     | <i>RP1-257I20.14</i>  | LncRNA     | 0.23                        | 1.41E-02 | 9.71E-02    | 0.17                            | 5.76E-02 | 2.74E-01    |  |
| ENSG00000270093.1     | <i>AP000473.8</i>     | LncRNA     | 0.72                        | 4.02E-06 | 2.48E-04    | 0.51                            | 7.87E-04 | 1.99E-02    |  |
| ENSG00000270116.1     | <i>AP001429.1</i>     | LncRNA     | 0.35                        | 1.13E-02 | 8.42E-02    | 0.30                            | 2.62E-02 | 1.78E-01    |  |
| ENSG00000270133.1     | <i>CTC-303L1.2</i>    | LncRNA     | 0.44                        | 9.36E-03 | 7.46E-02    | 0.30                            | 6.85E-02 | 3.00E-01    |  |
| ENSG00000270147.1     | <i>RP11-646I6.6</i>   | LncRNA     | 0.36                        | 1.22E-02 | 8.86E-02    | 0.27                            | 5.27E-02 | 2.62E-01    |  |
| ENSG00000270179.1     | <i>RP11-159N11.4</i>  | LncRNA     | 0.33                        | 8.79E-04 | 1.55E-02    | 0.39                            | 3.94E-05 | 2.21E-03    |  |
| ENSG00000270212.1     | <i>CTD-2540B15.12</i> | LncRNA     | 0.74                        | 1.90E-03 | 2.64E-02    | 0.61                            | 8.28E-03 | 9.19E-02    |  |
| ENSG00000270299.1     | <i>RP5-850E9.3</i>    | Protein    | 0.45                        | 7.95E-04 | 1.45E-02    | 0.36                            | 4.60E-03 | 6.49E-02    |  |
| ENSG00000270307.1     | <i>MTATP6P2</i>       | Pseudogene | 1.37                        | 2.47E-14 | 9.58E-12    | 1.00                            | 3.53E-09 | 8.32E-07    |  |
| ENSG00000270326.1     | <i>RP5-874C20.6</i>   | Pseudogene | -0.73                       | 1.92E-04 | 5.22E-03    | -0.79                           | 2.84E-05 | 1.71E-03    |  |
| ENSG00000270343.1     | <i>UNGP3</i>          | Pseudogene | 0.59                        | 7.05E-03 | 6.23E-02    | 0.48                            | 2.26E-02 | 1.64E-01    |  |
| ENSG00000270362.1     | <i>HMGN3-AS1</i>      | LncRNA     | -0.23                       | 2.60E-03 | 3.26E-02    | -0.15                           | 3.73E-02 | 2.16E-01    |  |
| ENSG00000270379.4     | <i>HEATR9</i>         | Protein    | 0.64                        | 2.67E-04 | 6.72E-03    | 0.44                            | 9.60E-03 | 1.00E-01    |  |
| ENSG00000270388.1     | <i>RP11-475J5.8</i>   | Pseudogene | 2.25                        | 3.13E-30 | 5.48E-27    | 2.17                            | 3.27E-30 | 8.64E-27    |  |
| ENSG00000270411.1     | <i>RP13-379L11.3</i>  | Pseudogene | 0.66                        | 8.24E-03 | 6.90E-02    | 0.60                            | 1.25E-02 | 1.17E-01    |  |
| ENSG00000270424.1     | <i>RP11-1348G14.6</i> | Pseudogene | 0.61                        | 5.62E-03 | 5.42E-02    | 0.41                            | 5.32E-02 | 2.63E-01    |  |
| ENSG00000270426.1     | <i>RP11-326I11.5</i>  | LncRNA     | 0.45                        | 2.10E-04 | 5.58E-03    | 0.31                            | 8.55E-03 | 9.34E-02    |  |
| ENSG00000270482.1     | <i>RP11-131L12.2</i>  | LncRNA     | 0.32                        | 7.39E-03 | 6.42E-02    | 0.32                            | 5.03E-03 | 6.85E-02    |  |
| ENSG00000270533.2     | <i>bP-2120IH5.1</i>   | Pseudogene | 1.59                        | 1.17E-16 | 6.04E-14    | -0.12                           | 4.94E-01 | 7.57E-01    |  |
| ENSG00000270578.1     | <i>RP11-712B9.5</i>   | Pseudogene | 0.49                        | 8.91E-03 | 7.23E-02    | 0.42                            | 2.24E-02 | 1.63E-01    |  |
| ENSG00000270607.1     | <i>RP11-359E10.1</i>  | LncRNA     | -0.39                       | 5.52E-03 | 5.36E-02    | -0.42                           | 1.91E-03 | 3.61E-02    |  |
| ENSG00000270617.1     | <i>URGCP-MRPS24</i>   | Protein    | 0.36                        | 7.52E-   |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol            | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|------------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                        |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000270806.1     | <i>C17orf50</i>        | Protein    | 0.63                        | 3.51E-04 | 8.21E-03    | 0.68                            | 7.16E-05 | 3.52E-03    |  |
| ENSG00000270808.1     | <i>RP11-574K11.27</i>  | Pseudogene | 0.44                        | 1.08E-02 | 8.18E-02    | 0.29                            | 7.81E-02 | 3.20E-01    |  |
| ENSG00000270878.1     | <i>CTD-230E22.5</i>    | Pseudogene | 0.42                        | 1.45E-03 | 2.20E-02    | 0.29                            | 2.16E-02 | 1.60E-01    |  |
| ENSG00000270894.1     | <i>AC015849.13</i>     | LncRNA     | 0.46                        | 1.31E-02 | 9.26E-02    | 0.39                            | 2.88E-02 | 1.87E-01    |  |
| ENSG00000270906.1     | <i>RP11-475J5.6</i>    | Pseudogene | 0.59                        | 3.62E-04 | 8.39E-03    | 0.70                            | 1.26E-05 | 9.01E-04    |  |
| ENSG00000270966.1     | <i>RP11-62H7.3</i>     | Pseudogene | 0.43                        | 4.73E-03 | 4.84E-02    | 0.48                            | 8.46E-04 | 2.09E-02    |  |
| ENSG00000271057.1     | <i>RP11-747H12.7</i>   | Pseudogene | 0.65                        | 5.91E-03 | 5.58E-02    | 0.67                            | 3.41E-03 | 5.39E-02    |  |
| ENSG00000271098.1     | <i>IMMP1LP3</i>        | Pseudogene | 0.61                        | 1.48E-02 | 9.99E-02    | 0.53                            | 2.93E-02 | NA          |  |
| ENSG00000271105.1     | <i>SCML2P2</i>         | Pseudogene | 0.46                        | 4.20E-03 | 4.49E-02    | 0.40                            | 9.13E-03 | 9.73E-02    |  |
| ENSG00000271119.1     | <i>CTD-2012J19.3</i>   | LncRNA     | 0.40                        | 2.60E-03 | 3.26E-02    | 0.28                            | 2.86E-02 | 1.87E-01    |  |
| ENSG00000271138.1     | <i>IGLV1VOR22-1</i>    | Other      | -1.31                       | 8.34E-09 | 1.23E-06    | -1.25                           | 1.40E-08 | 2.96E-06    |  |
| ENSG00000271141.1     | <i>RP11-171I2.4</i>    | LncRNA     | 0.38                        | 9.65E-03 | 7.59E-02    | 0.36                            | 1.16E-02 | 1.13E-01    |  |
| ENSG00000271161.1     | <i>BOLA2P2</i>         | Pseudogene | 0.55                        | 1.52E-04 | 4.34E-03    | 0.39                            | 5.55E-03 | 7.24E-02    |  |
| ENSG00000271181.1     | <i>CTA-221G9.10</i>    | Pseudogene | 0.68                        | 5.94E-04 | 1.18E-02    | 0.51                            | 7.05E-03 | 8.35E-02    |  |
| ENSG00000271207.1     | <i>RP11-475J5.5</i>    | Pseudogene | 0.62                        | 6.61E-04 | 1.28E-02    | 0.63                            | 3.77E-04 | 1.20E-02    |  |
| ENSG00000271321.1     | <i>CTAGE6</i>          | Protein    | 1.08                        | 2.03E-05 | 9.37E-04    | 1.01                            | 4.14E-05 | 2.30E-03    |  |
| ENSG00000271335.4     | <i>RP11-324I22.4</i>   | LncRNA     | 0.33                        | 2.01E-03 | 2.76E-02    | 0.28                            | 6.53E-03 | 7.99E-02    |  |
| ENSG00000271369.1     | <i>RP11-350D17.3</i>   | Pseudogene | 1.12                        | 4.33E-09 | 6.90E-07    | 0.21                            | 2.41E-01 | 5.51E-01    |  |
| ENSG00000271377.1     | <i>RP11-331I1.3</i>    | Pseudogene | 0.60                        | 6.05E-04 | 1.20E-02    | 0.71                            | 2.74E-05 | 1.67E-03    |  |
| ENSG00000271387.1     | <i>RP11-382D12.2</i>   | LncRNA     | 0.59                        | 4.43E-05 | 1.72E-03    | 0.39                            | 6.19E-03 | 7.74E-02    |  |
| ENSG00000271392.1     | <i>RP1-161P9.5</i>     | LncRNA     | 0.58                        | 2.45E-03 | 3.14E-02    | 0.59                            | 1.21E-03 | 2.68E-02    |  |
| ENSG00000271401.1     | <i>RP11-171I2.3</i>    | LncRNA     | 0.44                        | 1.37E-02 | 9.52E-02    | 0.39                            | 2.42E-02 | 1.70E-01    |  |
| ENSG00000271427.1     | <i>RP11-188D8.1</i>    | LncRNA     | 0.46                        | 1.71E-03 | 2.46E-02    | 0.28                            | 5.21E-02 | 2.61E-01    |  |
| ENSG00000271440.1     | <i>RP11-373N24.2</i>   | Pseudogene | 0.69                        | 1.97E-03 | 2.72E-02    | 0.57                            | 8.16E-03 | 9.09E-02    |  |
| ENSG00000271452.1     | <i>RP11-342K6.2</i>    | LncRNA     | -0.44                       | 6.26E-06 | 3.58E-04    | -0.39                           | 3.76E-05 | 2.13E-03    |  |
| ENSG00000271503.4     | <i>CCL5</i>            | Protein    | 0.38                        | 1.20E-02 | 8.73E-02    | 0.30                            | 3.94E-02 | 2.22E-01    |  |
| ENSG00000271533.1     | <i>RP3-368A4.6</i>     | LncRNA     | 0.38                        | 7.82E-04 | 1.44E-02    | 0.25                            | 1.92E-02 | 1.50E-01    |  |
| ENSG00000271543.1     | <i>RP11-692M12.5</i>   | Pseudogene | 0.79                        | 6.83E-05 | 2.37E-03    | 0.70                            | 2.94E-04 | 1.01E-02    |  |
| ENSG00000271553.1     | <i>RP11-274B21.10</i>  | LncRNA     | 0.36                        | 5.69E-03 | 5.45E-02    | 0.28                            | 2.95E-02 | 1.90E-01    |  |
| ENSG00000271555.1     | <i>CTD-3214K23.1</i>   | LncRNA     | 0.58                        | 1.26E-04 | 3.75E-03    | 0.42                            | 3.88E-03 | 5.85E-02    |  |
| ENSG00000271576.1     | <i>RP11-486G15.2</i>   | LncRNA     | 0.38                        | 1.66E-03 | 2.41E-02    | 0.27                            | 1.98E-02 | 1.52E-01    |  |
| ENSG00000271579.1     | <i>RP11-116D17.3</i>   | LncRNA     | 0.58                        | 6.39E-04 | 1.25E-02    | 0.61                            | 1.82E-04 | 7.16E-03    |  |
| ENSG00000271664.1     | <i>RP4-800G7.3</i>     | Pseudogene | 0.36                        | 1.18E-02 | 8.67E-02    | 0.23                            | 9.29E-02 | 3.49E-01    |  |
| ENSG00000271725.1     | <i>RP11-761I4.4</i>    | LncRNA     | 0.45                        | 6.52E-03 | 5.95E-02    | 0.44                            | 5.25E-03 | 7.02E-02    |  |
| ENSG00000271732.1     | <i>RP5-1182A14.5</i>   | LncRNA     | 1.32                        | 2.46E-09 | 4.07E-07    | 1.24                            | 8.24E-09 | 1.81E-06    |  |
| ENSG00000271751.1     | <i>RP11-110I1.14</i>   | LncRNA     | 0.46                        | 2.22E-04 | 5.84E-03    | 0.53                            | 8.65E-06 | 6.78E-04    |  |
| ENSG00000271754.1     | <i>RP3-337H4.9</i>     | LncRNA     | 0.48                        | 1.21E-04 | 3.66E-03    | 0.37                            | 1.81E-03 | 3.47E-02    |  |
| ENSG00000271757.1     | <i>RP11-111M22.5</i>   | LncRNA     | 0.44                        | 8.38E-03 | 6.97E-02    | 0.37                            | 2.20E-02 | 1.62E-01    |  |
| ENSG00000271771.1     | <i>RP11-1250I15.3</i>  | LncRNA     | 0.60                        | 8.46E-03 | 7.02E-02    | 0.48                            | 3.23E-02 | 2.00E-01    |  |
| ENSG00000271789.1     | <i>RP5-1112D6.7</i>    | LncRNA     | 0.31                        | 1.01E-02 | 7.82E-02    | 0.27                            | 1.90E-02 | 1.49E-01    |  |
| ENSG00000271795.1     | <i>CTC-251D13.1</i>    | LncRNA     | 0.56                        | 4.71E-04 | 1.01E-02    | 0.35                            | 2.39E-02 | 1.69E-01    |  |
| ENSG00000271810.4     | <i>RP11-426L16.10</i>  | Protein    | 0.56                        | 3.51E-03 | 3.99E-02    | 0.33                            | 7.39E-02 | 3.11E-01    |  |
| ENSG00000271828.1     | <i>CTD-2310F14.1</i>   | LncRNA     | 0.25                        | 1.27E-02 | 9.05E-02    | 0.30                            | 1.98E-03 | 3.70E-02    |  |
| ENSG00000271862.1     | <i>RP11-343L5.2</i>    | LncRNA     | 0.31                        | 4.53E-03 | 4.72E-02    | 0.23                            | 3.19E-02 | 1.98E-01    |  |
| ENSG00000271868.1     | <i>RP11-1293J14.1</i>  | LncRNA     | -0.37                       | 1.97E-04 | 5.31E-03    | -0.28                           | 4.19E-03 | 6.17E-02    |  |
| ENSG00000271869.1     | <i>RP11-51J9.5</i>     | LncRNA     | 0.38                        | 6.95E-03 | 6.18E-02    | 0.34                            | 1.28E-02 | 1.19E-01    |  |
| ENSG00000271870.1     | <i>RP11-97C16.1</i>    | LncRNA     | 0.45                        | 3.45E-04 | 8.11E-03    | 0.33                            | 6.76E-03 | 8.13E-02    |  |
| ENSG00000271880.1     | <i>AGAP11</i>          | LncRNA     | 0.75                        | 6.69E-05 | 2.33E-03    | 0.73                            | 5.34E-05 | 2.81E-03    |  |
| ENSG00000271889.1     | <i>RP11-493E12.1</i>   | LncRNA     | 0.43                        | 8.44E-03 | 7.01E-02    | 0.31                            | 4.83E-02 | 2.50E-01    |  |
| ENSG00000271892.1     | <i>CTD-2228A4.1</i>    | LncRNA     | 0.78                        | 2.02E-03 | 2.76E-02    | 0.08                            | 7.49E-01 | 8.99E-01    |  |
| ENSG00000271895.2     | <i>RP4-635E18.8</i>    | LncRNA     | 0.35                        | 7.01E-04 | 1.33E-02    | 0.27                            | 7.16E-03 | 8.42E-02    |  |
| ENSG00000271911.1     | <i>RP11-532F6.5</i>    | LncRNA     | -0.45                       | 8.79E-03 | 7.17E-02    | -0.43                           | 9.93E-03 | 1.03E-01    |  |
| ENSG00000271917.1     | <i>RP11-506Q24.2</i>   | LncRNA     | 0.61                        | 9.00E-03 | 7.28E-02    | 0.58                            | 1.02E-02 | 1.04E-01    |  |
| ENSG00000271952.1     | <i>RP11-245G13.2</i>   | LncRNA     | -0.77                       | 9.96E-04 | 1.70E-02    | -0.58                           | 1.02E-02 | 1.04E-01    |  |
| ENSG00000271959.1     | <i>CTD-3064M3.7</i>    | LncRNA     | 0.81                        | 1.36E-05 | 6.65E-04    | 0.66                            | 2.36E-04 | 8.71E-03    |  |
| ENSG00000271966.1     | <i>RP11-7F18.2</i>     | LncRNA     | 0.40                        | 5.74E-04 | 1.15E-02    | 0.26                            | 1.90E-02 | 1.49E-01    |  |
| ENSG00000271983.1     | <i>RP11-28H5.2</i>     | LncRNA     | 0.61                        | 6.65E-05 | 2.32E-03    | 0.54                            | 2.68E-04 | 9.46E-03    |  |
| ENSG00000272002.1     | <i>RP11-557L19.1</i>   | LncRNA     | 0.46                        | 1.24E-03 | 1.97E-02    | 0.36                            | 9.27E-03 | 9.81E-02    |  |
| ENSG00000272010.1     | <i>CTD-3025N20.3</i>   | LncRNA     | 0.50                        | 6.01E-05 | 2.16E-03    | 0.44                            | 2.66E-04 | 9.42E-03    |  |
| ENSG00000272037.1     | <i>KB-431C1.5</i>      | LncRNA     | 0.46                        | 1.24E-04 | 3.72E-03    | 0.27                            | 1.98E-02 | 1.52E-01    |  |
| ENSG00000272068.1     | <i>RP11-284F21.9</i>   | LncRNA     | -0.57                       | 7.00E-03 | 6.21E-02    | -0.51                           | 9.09E-03 | 9.71E-02    |  |
| ENSG00000272088.1     | <i>RP11-168F9.2</i>    | LncRNA     | 0.46                        | 2.80E-03 | 3.42E-02    | 0.35                            | 1.67E-02 | 1.39E-01    |  |
| ENSG00000272100.1     | <i>RP11-155O18.6</i>   | LncRNA     | 0.49                        | 1.32E-03 | 2.05E-02    | 0.33                            | 2.30E-02 | 1.65E-01    |  |
| ENSG00000272109.1     | <i>CTD-2260A17.3</i>   | LncRNA     | 0.73                        | 4.48E-05 | 1.73E-03    | 0.64                            | 2.25E-04 | 8.45E-03    |  |
| ENSG00000272129.1     | <i>RP11-250B2.6</i>    | LncRNA     | -0.33                       | 2.42E-04 | 6.21E-03    | -0.26                           | 2.69E-03 | 4.58E-02    |  |
| ENSG00000272140.2     | <i>RP11-574K11.29</i>  | LncRNA     | 0.24                        | 1.09E-02 | 8.22E-02    | 0.21                            | 2.04E-02 | 1.55E-01    |  |
| ENSG00000272145.1     | <i>NFYC-AS1</i>        | LncRNA     | 0.35                        | 1.06E-03 | 1.77E-02    | 0.24                            | 2.06E-02 | 1.56E-01    |  |
| ENSG00000272146.4     | <i>RP11-755B10.4</i>   | LncRNA     | 0.35                        | 5.17E-03 | 5.13E-02    | 0.28                            | 2.05E-02 | 1.55E-01    |  |
| ENSG00000272150.4     | <i>NBPF25P</i>         | Pseudogene | 0.26                        | 7.07E-03 | 6.24E-02    | 0.21                            | 2.23E-02 | 1.63E-01    |  |
| ENSG00000272153.1     | <i>RP1-286D6.5</i>     | LncRNA     | 0.28                        | 3.17E-03 | 3.73E-02    | 0.19                            | 3.59E-02 | 2.11E-01    |  |
| ENSG00000272186.1     | <i>RP11-110I1.13</i>   | LncRNA     | 0.31                        | 9.90E-03 | 7.72E-02    | 0.30                            | 9.16E-03 | 9.75E-02    |  |
| ENSG00000272195.1     | <i>RP11-156E8.1</i>    | LncRNA     | -0.47                       | 4.40E-04 | 9.61E-03    | -0.53                           | 3.32E-05 | 1.93E-03    |  |
| ENSG00000272217.1     | <i>XXbac-BPG157A11</i> | LncRNA     | 0.44                        | 2.97E-03 | 3.55E-02    | 0.40                            | 4.54E-03 | 6.45E-02    |  |
| ENSG00000272221.1     | <i>XXbac-BPG181B2</i>  | LncRNA     | -0.44                       | 5.31E-04 | 1.10E-02    | -0.28                           | 2.53E-02 | 1.74E-01    |  |
| ENSG00000272240.1     | <i>RP5-855D21.1</i>    | LncRNA     | 0.38                        | 2.26E-03 | 2.97E-02    | 0.26                            | 2.82E-02 | 1.85E-01    |  |
| ENSG00000272243.4     | <i>RP11-554D15.3</i>   | LncRNA     | 0.66                        | 9.50E-03 | 7.51E-02    | 0.12                            | 6.33E-01 | 8.41E-01    |  |
| ENSG00000272277.1     | <i>RP1-40E16.12</i>    | LncRNA     | 0.50                        | 2.88E-04 | 7.08E-03    | 0.40                            | 2.43E-03 | 4.28E-02    |  |
| ENSG00000272279.1     | <i>RP11-157J24.2</i>   | LncRNA     | -0.49                       | 5.86E-03 | 5.56E-02    | -0.41                           | 1.71E-02 | 1.41E-01    |  |
| ENSG00000272282.1     | <i>RP11-222K16.2</i>   | LncRNA     | 0.41                        | 9.36E-03 | 7.46E-02    | 0.23                            | 1.47E-01 | 4.36E-01    |  |
| ENSG00000272293.1     | <i>RP11-91J19.3</i>    | LncRNA     | 0.42                        | 1.77E-04 | 4.91E-03    | 0.36                            | 7.28E-04 | 1.89E-02    |  |
| ENSG00000272305.4     | <i>RP11-894J14.5</i>   | Protein    | 0.29                        | 1.27E-04 | 3.78E-03    | 0.26                            | 4.22E-04 | 1.30E-02    |  |
| ENSG00000272367.1     | <i>CTC-428H11.2</i>    | LncRNA     | 0.53                        | 6.05E-05 | 2.16E-03    | 0.50                            | 8.66E-05 | 4.02E-03    |  |
| ENSG00000272382.1     | <i>CTD-2035E11.4</i>   | LncRNA     | 0.58                        | 9.14E-05 | 2.95E-03    | 0.55                            | 1.15E-04 | 5.08E-03    |  |
| ENSG00000272402.1     | <i>RP1-30M3.6</i>      | LncRNA     | 0.28                        | 3.12E-04 | 7.52E-03    | 0.30                            | 6.00E-05 | 3.05E-03    |  |
| ENSG00000272411.1     | <i>RP11-44B19.1</i>    | LncRNA     | 0.54                        | 4.79E-04 | 1.02E-02    | 0.51                            | 6.85E-04 | 1.82E-02    |  |
| ENSG00000272425.1     | <i>RP11-363E6.4</i>    | LncRNA     | 0.60                        | 1.36E-03 | 2.09E-02    | 0.47                            | 8.66E-03 | 9.41E-02    |  |
| ENSG00000272426.1     | <i>RP11-108A9.6</i>    | LncRNA     | 0.55                        | 6.04E-03 | 5.67E-02    | 0.39                            | 4.15E-02 | 2.29E-01    |  |
| ENSG00000272430.1     | <i>RP11-38L15.8</i>    | LncRNA     | -0.44                       | 1.27E-03 | 2.00E-02    | -0.46                           | 4.14E-04 | 1.28E-02    |  |
| ENSG00000272432.1     | <i>RP3-465N24.6</i>    | LncRNA     | 0.48                        | 3.89E-04 | 8.82E-03    | 0.38                            | 3.33E-03 | 5.29E-02    |  |
| ENSG00000272463.1     | <i>RP11-532F6.3</i>    | LncRNA     | -0.43                       | 8.36E-04 | 1.50E-02    | -0.33                           | 7.14E-03 | 8.40E-02    |  |
| ENSG00000272472.1     | <i>RP11-95G17.2</i>    | LncRNA     | 0.70                        | 1.01E-03 | 1.72E-02    | 0.16                            | 4.39E-01 | 7.20E-01    |  |
| ENSG00000272482.1     | <i>RP11-474O21.5</i>   | LncRNA     | -0.49                       | 6.72E-04 | 1.29E-02    | -0.56                           | 5.27E-05 | 2.78E-03    |  |
| ENSG00000272486.1     | <i>RP11-532M24.1</i>   | LncRNA     | 0.80                        | 1.97E-13 | 6.85E-11    | 0.70                            | 1.80E-11 | 6.99E-09    |  |
| ENSG00000272502.1     | <i>RP11-713M15.2</i>   | LncRNA     | 0.74                        | 9.38E-05 | 3.01E-03    | 0.09                            | 6.28E-01 | 8.38E-01    |  |
| ENSG00000272508.1     | <i>RP11-96C23.14</i>   | LncRNA     | 0.80                        | 2.85E-05 | 1.20E-03    | 0.76                            | 3.71E-05 | 2.11E-03    |  |
| ENSG00000272509.1     | <i>RP11-347C18.5</i>   | LncRNA     | 0.37                        | 7.32E-04 | 1.37E-02    | 0.30                            | 5.51E-03 | 7.21E-02    |  |
| ENSG00000272511.1     | <i>RP11-180N14.1</i>   | LncRNA     | -0.36                       | 1.04E-02 | 8.01E-02    | -0.42                           | 1.76E-03 | 3.43E-02    |  |
| ENSG00000272518.1     | <i>RP11-26J3.3</i>     | LncRNA     |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol      | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                  |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000272630.1     | RP11-344N10.5    | LncRNA     | 0.56                        | 5.51E-09 | 8.55E-07    | 0.40                            | 1.64E-05 | 1.11E-03    |
| ENSG00000272647.1     | GS1-259H13.10    | Protein    | -0.47                       | 1.25E-02 | 8.98E-02    | -0.41                           | 2.20E-02 | 1.62E-01    |
| ENSG00000272668.1     | RP11-190A12.8    | LncRNA     | -0.80                       | 1.17E-05 | 5.93E-04    | -0.77                           | 1.10E-05 | 8.18E-04    |
| ENSG00000272674.3     | PCDHB16          | Protein    | -0.54                       | 1.67E-03 | 2.42E-02    | -0.58                           | 4.79E-04 | 1.43E-02    |
| ENSG00000272677.1     | RP11-127B20.3    | LncRNA     | 0.45                        | 5.64E-04 | 1.14E-02    | 0.33                            | 9.06E-03 | 9.68E-02    |
| ENSG00000272690.4     | RP11-803B1.8     | LncRNA     | 0.39                        | 1.08E-03 | 1.80E-02    | 0.45                            | 1.17E-04 | 5.15E-03    |
| ENSG00000272692.1     | RP11-399K21.14   | LncRNA     | 0.67                        | 1.75E-09 | 2.94E-07    | 0.71                            | 3.54E-11 | 1.29E-08    |
| ENSG00000272702.1     | RP11-44N22.3     | LncRNA     | 0.42                        | 6.93E-03 | 6.18E-02    | 0.25                            | 1.07E-01 | 3.75E-01    |
| ENSG00000272720.1     | CTA-228A9.3      | LncRNA     | 0.47                        | 2.03E-03 | 2.76E-02    | 0.42                            | 4.31E-03 | 6.28E-02    |
| ENSG00000272732.1     | RP5-1159O4.2     | LncRNA     | 0.41                        | 7.63E-03 | 6.56E-02    | 0.38                            | 1.02E-02 | 1.04E-01    |
| ENSG00000272733.1     | KB-208E9.1       | LncRNA     | 0.43                        | 6.85E-03 | 6.13E-02    | 0.31                            | 4.41E-02 | 2.38E-01    |
| ENSG00000272734.1     | ADIRF-AS1        | LncRNA     | 0.41                        | 6.09E-03 | 5.71E-02    | 0.45                            | 1.88E-03 | 3.57E-02    |
| ENSG00000272746.1     | RP11-53B2.6      | LncRNA     | -0.59                       | 3.84E-04 | 8.73E-03    | -0.71                           | 8.69E-06 | 6.80E-04    |
| ENSG00000272750.1     | RP11-378J18.8    | LncRNA     | 0.25                        | 4.40E-03 | 4.63E-02    | 0.16                            | 5.44E-02 | 2.66E-01    |
| ENSG00000272752.4     | STAG3L5P-PVRIG   | Protein    | 0.35                        | 3.28E-03 | 3.82E-02    | 0.21                            | 7.34E-02 | 3.10E-01    |
| ENSG00000272755.1     | RP11-326G21.1    | LncRNA     | -0.62                       | 3.02E-03 | 3.60E-02    | -0.71                           | 4.18E-04 | 1.29E-02    |
| ENSG00000272779.1     | LL22NC03-80A10.  | Pseudogene | -0.32                       | 3.12E-10 | 6.33E-08    | -0.31                           | 1.23E-10 | 3.98E-08    |
| ENSG00000272783.1     | RP13-1016M1.2    | LncRNA     | -0.51                       | 1.36E-02 | 9.48E-02    | -0.55                           | 5.88E-03 | 7.51E-02    |
| ENSG00000272787.1     | KB-226F1.2       | LncRNA     | 0.67                        | 2.70E-06 | 1.80E-04    | 0.61                            | 9.29E-06 | 7.19E-04    |
| ENSG00000272795.1     | RP11-602N24.3    | LncRNA     | 0.46                        | 2.18E-03 | 2.90E-02    | 0.34                            | 1.79E-02 | 1.45E-01    |
| ENSG00000272798.1     | CTA-390C10.9     | LncRNA     | -0.92                       | 4.23E-05 | 1.66E-03    | -0.84                           | 1.22E-04 | 5.32E-03    |
| ENSG00000272799.1     | RP11-474N24.6    | LncRNA     | 0.52                        | 1.31E-04 | 3.88E-03    | 0.46                            | 4.10E-04 | 1.27E-02    |
| ENSG00000272804.2     | KRTAP10-7        | Protein    | 0.60                        | 7.79E-03 | 6.65E-02    | 0.13                            | 5.54E-01 | NA          |
| ENSG00000272808.2     | RP11-66B24.7     | LncRNA     | 1.04                        | 8.56E-15 | 3.52E-12    | 0.93                            | 4.87E-13 | 2.41E-10    |
| ENSG00000272823.1     | RP11-295M18.6    | LncRNA     | 0.48                        | 1.90E-03 | 2.65E-02    | 0.41                            | 5.81E-03 | 7.47E-02    |
| ENSG00000272824.1     | RP6-74O6.6       | LncRNA     | 1.44                        | 1.25E-20 | 9.72E-18    | 1.30                            | 3.34E-18 | 2.87E-15    |
| ENSG00000272825.1     | LL21NC02-1C16.2  | LncRNA     | 0.33                        | 3.50E-03 | 3.98E-02    | 0.36                            | 9.55E-04 | 2.27E-02    |
| ENSG00000272827.1     | RP11-445P19.3    | LncRNA     | 1.14                        | 1.65E-06 | 1.20E-04    | -0.01                           | 9.68E-01 | 9.89E-01    |
| ENSG00000272829.1     | XXbac-B135H6.18  | LncRNA     | 0.41                        | 5.79E-04 | 1.16E-02    | 0.32                            | 5.01E-03 | 6.83E-02    |
| ENSG00000272834.1     | RP5-1042K10.13   | LncRNA     | 0.90                        | 1.10E-09 | 1.94E-07    | 0.83                            | 3.32E-09 | 7.93E-07    |
| ENSG00000272836.1     | RP3-402G11.27    | LncRNA     | 0.27                        | 9.51E-03 | 7.51E-02    | 0.20                            | 4.31E-02 | 2.34E-01    |
| ENSG00000272843.1     | RP11-313P13.5    | LncRNA     | 0.40                        | 8.86E-03 | 7.21E-02    | 0.20                            | 1.85E-01 | 4.87E-01    |
| ENSG00000272853.1     | RP11-398C13.6    | LncRNA     | 0.36                        | 1.71E-03 | 2.46E-02    | 0.37                            | 9.79E-04 | 2.31E-02    |
| ENSG00000272854.1     | RP4-593H12.1     | LncRNA     | 0.50                        | 2.93E-04 | 7.17E-03    | 0.42                            | 1.79E-03 | 3.45E-02    |
| ENSG00000272861.1     | RP11-332H14.1    | LncRNA     | -0.32                       | 4.29E-03 | 4.55E-02    | -0.26                           | 1.95E-02 | 1.51E-01    |
| ENSG00000272864.1     | RP11-17E13.2     | LncRNA     | 0.39                        | 1.44E-02 | 9.83E-02    | 0.49                            | 1.37E-03 | 2.89E-02    |
| ENSG00000272871.1     | RP11-408A13.4    | LncRNA     | 0.35                        | 6.05E-03 | 5.68E-02    | 0.31                            | 1.09E-02 | 1.09E-01    |
| ENSG00000272888.4     | LINC01578        | LncRNA     | 0.23                        | 8.72E-04 | 1.55E-02    | 0.21                            | 1.82E-03 | 3.49E-02    |
| ENSG00000272894.4     | RP5-1159O4.1     | LncRNA     | 0.59                        | 9.15E-05 | 2.95E-03    | 0.50                            | 5.27E-04 | 1.53E-02    |
| ENSG00000272899.2     | RP11-309L24.4    | LncRNA     | 0.44                        | 1.24E-04 | 3.72E-03    | 0.20                            | 7.92E-02 | 3.22E-01    |
| ENSG00000272906.1     | RP11-533E19.7    | LncRNA     | 0.40                        | 4.43E-03 | 4.65E-02    | 0.27                            | 5.12E-02 | 2.58E-01    |
| ENSG00000272911.1     | RP11-74E22.6     | LncRNA     | 0.58                        | 1.20E-03 | 1.93E-02    | 0.45                            | 8.91E-03 | 9.58E-02    |
| ENSG00000272916.4     | RP11-574K11.31   | Protein    | 0.50                        | 1.26E-05 | 6.28E-04    | 0.35                            | 1.64E-03 | 3.26E-02    |
| ENSG00000272931.1     | RP5-943J3.2      | LncRNA     | 0.35                        | 3.06E-03 | 3.64E-02    | 0.31                            | 6.50E-03 | 7.97E-02    |
| ENSG00000272941.1     | RP11-134L10.1    | LncRNA     | 0.43                        | 2.45E-04 | 6.25E-03    | 0.32                            | 5.49E-03 | 7.19E-02    |
| ENSG00000272942.1     | CTA-246H3.12     | LncRNA     | -0.76                       | 4.66E-04 | 1.01E-02    | -0.70                           | 8.28E-04 | 2.07E-02    |
| ENSG00000272949.1     | RP11-514P8.8     | LncRNA     | 0.85                        | 7.35E-05 | 2.50E-03    | 0.81                            | 8.13E-05 | 3.86E-03    |
| ENSG00000272968.4     | RBAK-RBAKDN      | Protein    | 0.46                        | 1.57E-03 | 2.33E-02    | 0.35                            | 1.21E-02 | 1.15E-01    |
| ENSG00000272977.1     | CTA-390C10.10    | LncRNA     | -0.94                       | 1.54E-20 | 1.17E-17    | -0.90                           | 1.46E-20 | 1.66E-17    |
| ENSG00000272979.1     | RP11-647K16.1    | LncRNA     | 0.39                        | 2.08E-03 | 2.81E-02    | 0.32                            | 9.17E-03 | 9.75E-02    |
| ENSG00000272994.1     | RP11-332H14.2    | LncRNA     | 0.27                        | 5.74E-03 | 5.48E-02    | 0.14                            | 1.45E-01 | 4.34E-01    |
| ENSG00000273004.1     | GS1-279B7.2      | LncRNA     | -0.33                       | 8.54E-03 | 7.06E-02    | -0.29                           | 1.44E-02 | 1.27E-01    |
| ENSG00000273009.1     | RP11-352G9.1     | LncRNA     | 0.66                        | 7.24E-05 | 2.48E-03    | 0.67                            | 2.66E-05 | 1.63E-03    |
| ENSG00000273010.1     | RP11-96K19.5     | LncRNA     | 0.34                        | 2.52E-03 | 3.20E-02    | 0.22                            | 4.63E-02 | 2.43E-01    |
| ENSG00000273013.1     | CTD-2002J20.1    | LncRNA     | 0.42                        | 1.63E-03 | 2.38E-02    | 0.38                            | 3.05E-03 | 5.00E-02    |
| ENSG00000273014.1     | RP11-225B17.2    | LncRNA     | -0.24                       | 9.19E-03 | 7.37E-02    | -0.16                           | 6.65E-02 | 2.95E-01    |
| ENSG00000273024.4     | INTS4P2          | Pseudogene | 0.34                        | 3.81E-03 | 4.21E-02    | 0.30                            | 6.76E-03 | 8.13E-02    |
| ENSG00000273036.2     | FAM95C           | LncRNA     | 0.38                        | 7.43E-03 | 6.44E-02    | 0.29                            | 3.40E-02 | 2.05E-01    |
| ENSG00000273038.2     | RP11-479G22.8    | LncRNA     | -0.26                       | 2.62E-03 | 3.28E-02    | -0.30                           | 3.06E-04 | 1.04E-02    |
| ENSG00000273055.1     | CTB-13F3.1       | LncRNA     | 0.45                        | 2.45E-04 | 6.25E-03    | 0.37                            | 1.95E-03 | 3.67E-02    |
| ENSG00000273056.1     | RP11-77E14.2     | LncRNA     | 0.55                        | 2.02E-03 | 2.76E-02    | 0.36                            | 3.68E-02 | 2.14E-01    |
| ENSG00000273058.2     | RP11-385F5.5     | LncRNA     | 0.40                        | 7.52E-05 | 2.55E-03    | 0.37                            | 1.20E-04 | 5.26E-03    |
| ENSG00000273062.1     | RP11-428K3.1     | LncRNA     | 0.40                        | 6.53E-03 | 5.96E-02    | 0.37                            | 9.42E-03 | 9.90E-02    |
| ENSG00000273073.1     | RP11-109E12.1    | LncRNA     | 0.91                        | 2.25E-07 | 2.20E-05    | 0.85                            | 6.50E-07 | 8.20E-05    |
| ENSG00000273076.1     | RP3-508I15.22    | LncRNA     | 0.51                        | 1.66E-04 | 4.68E-03    | 0.45                            | 6.08E-04 | 1.68E-02    |
| ENSG00000273096.1     | RP3-508I15.20    | LncRNA     | 0.39                        | 4.86E-03 | 4.92E-02    | 0.35                            | 9.02E-03 | 9.65E-02    |
| ENSG00000273136.4     | NBPf26           | Protein    | -0.36                       | 6.95E-03 | 6.18E-02    | -0.39                           | 2.10E-03 | 3.87E-02    |
| ENSG00000273137.1     | RP3-402G11.28    | LncRNA     | 0.37                        | 6.69E-04 | 1.29E-02    | 0.28                            | 6.97E-03 | 8.29E-02    |
| ENSG00000273139.1     | XXbac-B444P24.14 | LncRNA     | 0.48                        | 1.11E-03 | 1.83E-02    | 0.35                            | 1.44E-02 | 1.27E-01    |
| ENSG00000273148.1     | RP5-1068E13.7    | LncRNA     | 0.30                        | 9.66E-03 | 7.59E-02    | 0.18                            | 9.69E-02 | 3.56E-01    |
| ENSG00000273151.1     | RP11-449P15.2    | LncRNA     | 0.43                        | 2.95E-03 | 3.54E-02    | 0.16                            | 2.64E-01 | 5.75E-01    |
| ENSG00000273154.2     | RP4-583P15.15    | Protein    | 0.41                        | 4.21E-04 | 9.31E-03    | 0.26                            | 2.14E-02 | 1.59E-01    |
| ENSG00000273179.1     | RP11-20I20.4     | LncRNA     | 0.60                        | 3.88E-03 | 4.27E-02    | 0.38                            | 5.74E-02 | 2.73E-01    |
| ENSG00000273183.1     | RP11-5C23.2      | LncRNA     | 0.32                        | 1.61E-03 | 2.37E-02    | 0.27                            | 5.90E-03 | 7.54E-02    |
| ENSG00000273186.1     | RP11-339B21.10   | LncRNA     | 0.49                        | 5.57E-04 | 1.13E-02    | 0.44                            | 1.24E-03 | 2.71E-02    |
| ENSG00000273243.1     | CTA-217C2.2      | LncRNA     | 1.14                        | 9.13E-20 | 6.57E-17    | 0.99                            | 3.55E-16 | 2.60E-13    |
| ENSG00000273249.1     | LL09NC01-25I82.  | LncRNA     | 0.36                        | 5.08E-03 | 5.06E-02    | 0.28                            | 2.53E-02 | 1.74E-01    |
| ENSG00000273287.2     | CTA-268H5.14     | LncRNA     | 0.45                        | 3.57E-03 | 4.03E-02    | 0.29                            | 5.06E-02 | 2.56E-01    |
| ENSG00000273306.1     | RP11-527J8.1     | LncRNA     | 0.42                        | 4.32E-06 | 2.64E-04    | 0.39                            | 8.32E-06 | 6.57E-04    |
| ENSG00000273319.1     | RP11-138A9.2     | LncRNA     | 0.49                        | 2.02E-03 | 2.76E-02    | 0.39                            | 1.11E-02 | 1.10E-01    |
| ENSG00000273328.4     | RP11-141M3.6     | LncRNA     | 1.35                        | 2.23E-13 | 7.62E-11    | 0.38                            | 1.90E-02 | 1.49E-01    |
| ENSG00000273329.1     | RP11-448A19.1    | LncRNA     | 0.27                        | 1.70E-03 | 2.44E-02    | 0.16                            | 4.87E-02 | 2.51E-01    |
| ENSG00000273333.2     | XXbac-BPG300A11. | LncRNA     | 0.55                        | 5.13E-04 | 1.08E-02    | 0.43                            | 5.12E-03 | 6.91E-02    |
| ENSG00000273335.1     | RP11-61L19.2     | LncRNA     | -0.78                       | 6.87E-04 | 1.31E-02    | -0.28                           | 1.74E-01 | 4.72E-01    |
| ENSG00000273340.1     | MICE             | Pseudogene | 0.47                        | 1.54E-03 | 2.29E-02    | 0.42                            | 3.37E-03 | 5.33E-02    |
| ENSG00000273341.1     | RP5-899E9.1      | LncRNA     | 0.59                        | 6.89E-05 | 2.38E-03    | 0.41                            | 4.61E-03 | 6.51E-02    |
| ENSG00000273344.1     | PAXIP1-AS1       | LncRNA     | 0.22                        | 3.46E-03 | 3.95E-02    | 0.13                            | 6.18E-02 | 2.85E-01    |
| ENSG00000273345.4     | CTD-2410N18.4    | LncRNA     | 0.41                        | 8.93E-03 | 7.24E-02    | 0.35                            | 2.20E-02 | 1.62E-01    |
| ENSG00000273356.1     | RP11-804H8.6     | LncRNA     | 0.26                        | 8.93E-03 | 7.24E-02    | 0.14                            | 1.45E-01 | 4.34E-01    |
| ENSG00000273381.1     | RP11-305L7.7     | LncRNA     | 0.47                        | 2.01E-04 | 5.39E-03    | 0.35                            | 4.61E-03 | 6.51E-02    |
| ENSG00000273384.1     | RP5-1098D14.1    | LncRNA     | 0.71                        | 2.90E-04 | 7.13E-03    | 0.25                            | 1.88E-01 | 4.91E-01    |
| ENSG00000273387.1     | RP3-412A9.16     | LncRNA     | -0.37                       | 2.73E-03 | 3.37E-02    | -0.25                           | 3.65E-02 | 2.13E-01    |
| ENSG00000273389.1     | RP13-514E23.2    | LncRNA     | 0.70                        | 4.11E-04 | 9.17E-03    | 0.70                            | 2.42E-04 | 8.87E-03    |
| ENSG00000273391.1     | RP11-634H22.1    | LncRNA     | 0.47                        | 1.16E-04 | 3.56E-03    | 0.36                            | 2.09E-03 | 3.85E-02    |
| ENSG00000273402.1     | RP5-855D21.2     | LncRNA     | 0.37                        | 8.92E-03 | 7.23E-02    | 0.28                            | 4.07E-02 | 2.27E-01    |
| ENSG00000273419.1     | RP4-751H13.7     | LncRNA     | 0.46                        | 3.88E-04 | 8.81E-03    | 0.33                            | 1.01E-02 | 1.04E-01    |
| ENSG00000273447.1     | AC004067.5       | LncRNA     | 0.27                        | 1.47E-02 | 9.99E-02    | 0.17                            | 1.19E-01 | 3.95E-01    |
| ENSG00000273448.1     | RP11-166O4.6     | LncRNA     | 0.60                        | 5.99E-07 | 5.07E-05    | 0.48                            | 2.95E-05 | 1.75E-03    |
| ENSG00000273449.1     | RP11-218F10.3    | LncRNA     | 0.34                        | 1.32E-02 | 9.29E-02    | 0.25                            | 6.22E-02 | 2.86E-01    |
| ENSG00000273450.1     | RP11-76P2.4      | LncRNA     | 0.64                        | 1.30E-05 | 6.42E-04    | 0.59                            | 2.49E-05 | 1.55E-03    |
| ENSG00000273478.1     | RP11-465N4.5     | LncRNA     | 0.22                        | 1.36E-02 | 9.48E-02    | 0.15                            | 9.48E-02 | 3.53E-01    |
| ENSG00000273485.1     | RP11-225H22.7    | LncRNA     | 0.68                        | 5.94E-04 | 1.18E-02    | 0.56                            | 3.08E-03 | 5.02E-02    |
| ENSG00000273489.1     | RP11-180C16.1    | LncRNA     | 0.49                        | 1.56E-04 | 4.43E-03    | 0.46                            | 1.98E-04 | 7.62E-03    |
| ENSG00000273513.1     | TBC1D3K          | Protein    | 1.41                        | 3.73E-08 | 4.55E-06    | 1.30                            | 1.45E-07 | 2.30E-05    |
| ENSG00000273557.1     | CTD-2024         |            |                             |          |             |                                 |          |             |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |
| ENSG00000273615.1     | <i>RP11-1136G4.2</i>  | LncRNA     | -0.68                       | 1.68E-03 | 2.43E-02    | -0.82                           | 9.06E-05 | 4.18E-03    |
| ENSG00000273619.1     | <i>RP5-908M14.9</i>   | LncRNA     | 0.34                        | 9.65E-03 | 7.59E-02    | 0.29                            | 2.29E-02 | 1.65E-01    |
| ENSG00000273687.1     | <i>RP5-837J1.6</i>    | LncRNA     | 0.60                        | 2.66E-05 | 1.14E-03    | 0.56                            | 4.23E-05 | 2.33E-03    |
| ENSG00000273720.1     | <i>RP11-613E4.4</i>   | Pseudogene | 0.82                        | 1.71E-04 | 4.77E-03    | 0.87                            | 3.25E-05 | 1.89E-03    |
| ENSG00000273749.3     | <i>CYFIP1</i>         | Protein    | -0.17                       | 2.64E-03 | 3.30E-02    | -0.15                           | 4.65E-03 | 6.54E-02    |
| ENSG00000273760.1     | <i>CH17-360D5.3</i>   | LncRNA     | 1.55                        | 5.92E-14 | 2.23E-11    | 1.51                            | 3.37E-14 | 1.96E-11    |
| ENSG00000273767.1     | <i>ZNRD1-AS1.2</i>    | Other      | 0.60                        | 9.10E-03 | 7.34E-02    | 0.53                            | 1.81E-02 | 1.45E-01    |
| ENSG00000273816.1     | <i>RP11-85B7.5</i>    | LncRNA     | 0.58                        | 2.14E-03 | 2.85E-02    | 0.51                            | 4.67E-03 | 6.55E-02    |
| ENSG00000273819.1     | <i>ENPP7P7</i>        | Pseudogene | 0.54                        | 2.60E-03 | 3.27E-02    | 0.40                            | 2.22E-02 | 1.62E-01    |
| ENSG00000273840.1     | <i>AL078471.5</i>     | LncRNA     | 0.55                        | 9.71E-04 | 1.67E-02    | 0.09                            | 5.29E-01 | 7.80E-01    |
| ENSG00000273872.1     | <i>AF254982.3</i>     | Pseudogene | 0.76                        | 4.41E-05 | 1.71E-03    | 0.18                            | 3.00E-01 | NA          |
| ENSG00000273874.1     | <i>MIR6859-2</i>      | Other      | -0.77                       | 2.63E-03 | 3.29E-02    | -0.83                           | 8.57E-04 | 2.11E-02    |
| ENSG00000273890.1     | <i>RP11-603J24.21</i> | LncRNA     | 0.50                        | 6.36E-04 | 1.24E-02    | 0.50                            | 3.59E-04 | 1.16E-02    |
| ENSG00000273891.1     | <i>RP11-500G22.5</i>  | LncRNA     | 0.38                        | 3.76E-05 | 1.52E-03    | 0.33                            | 1.94E-04 | 7.53E-03    |
| ENSG00000273951.1     | <i>RP4-620E11.8</i>   | LncRNA     | 0.25                        | 8.45E-03 | 7.01E-02    | 0.27                            | 3.32E-03 | 5.27E-02    |
| ENSG00000273980.1     | <i>RP13-491I5.6</i>   | LncRNA     | 0.55                        | 6.05E-04 | 1.20E-02    | 0.47                            | 2.18E-03 | 3.96E-02    |
| ENSG00000273983.1     | <i>HIST1H3G</i>       | Protein    | 0.83                        | 1.23E-04 | 3.72E-03    | 0.74                            | 4.09E-04 | 1.27E-02    |
| ENSG00000273989.1     | <i>RP11-425D17.2</i>  | LncRNA     | 0.46                        | 4.06E-03 | 4.39E-02    | 0.43                            | 5.05E-03 | 6.86E-02    |
| ENSG00000274049.3     | <i>INO80B-WBP1</i>    | Protein    | 0.67                        | 7.59E-06 | 4.19E-04    | 0.60                            | 3.25E-05 | 1.89E-03    |
| ENSG00000274051.1     | <i>uc_338</i>         | Other      | 0.36                        | 1.07E-02 | 8.12E-02    | 0.20                            | 1.47E-01 | 4.36E-01    |
| ENSG00000274068.1     | <i>RP11-475E11.9</i>  | Protein    | -0.52                       | 8.39E-03 | 6.98E-02    | -0.50                           | 7.98E-03 | 8.97E-02    |
| ENSG00000274080.1     | <i>CTA-315H11.2</i>   | LncRNA     | 0.48                        | 1.10E-02 | 8.27E-02    | 0.29                            | 1.15E-01 | 3.88E-01    |
| ENSG00000274114.1     | <i>CTC-281F24.3</i>   | Pseudogene | 0.37                        | 1.11E-02 | 8.30E-02    | 0.23                            | 1.06E-01 | 3.73E-01    |
| ENSG00000274180.1     | <i>NATD1</i>          | Protein    | -0.32                       | 7.01E-06 | 3.93E-04    | -0.23                           | 7.32E-04 | 1.90E-02    |
| ENSG00000274209.3     | <i>ANTXR1</i>         | Protein    | 0.58                        | 3.38E-03 | 3.89E-02    | 0.45                            | 1.92E-02 | 1.50E-01    |
| ENSG00000274272.1     | <i>RP11-44M6.7</i>    | LncRNA     | 0.35                        | 1.64E-03 | 2.39E-02    | 0.34                            | 1.68E-03 | 3.31E-02    |
| ENSG00000274295.1     | <i>RP11-1081M5.3</i>  | Pseudogene | 0.83                        | 7.49E-04 | 1.39E-02    | 0.21                            | 3.55E-01 | 6.56E-01    |
| ENSG00000274297.1     | <i>RP11-138H8.8</i>   | LncRNA     | 0.41                        | 7.44E-03 | 6.45E-02    | 0.41                            | 5.70E-03 | 7.38E-02    |
| ENSG00000274308.1     | <i>RP11-19G24.1</i>   | Pseudogene | 0.50                        | 1.13E-02 | 8.43E-02    | 0.26                            | 1.83E-01 | 4.85E-01    |
| ENSG00000274312.1     | <i>RP11-167B3.2</i>   | LncRNA     | -0.57                       | 1.01E-02 | 7.82E-02    | -0.41                           | 5.35E-02 | 2.64E-01    |
| ENSG00000274328.1     | <i>RP11-239C9.1</i>   | Pseudogene | 0.71                        | 5.72E-03 | 5.47E-02    | 0.73                            | 3.41E-03 | NA          |
| ENSG00000274356.1     | <i>RP11-216L13.21</i> | Pseudogene | 0.51                        | 5.00E-03 | 5.01E-02    | 0.26                            | 1.39E-01 | 4.26E-01    |
| ENSG00000274363.1     | <i>RP11-104O19.4</i>  | LncRNA     | 0.49                        | 2.57E-03 | 3.25E-02    | 0.46                            | 3.12E-03 | 5.06E-02    |
| ENSG00000274373.1     | <i>RP13-714J12.1</i>  | LncRNA     | 0.68                        | 4.03E-04 | 9.07E-03    | 0.64                            | 2.51E-04 | 9.10E-03    |
| ENSG00000274376.3     | <i>ADAMTS7P1</i>      | Pseudogene | 0.67                        | 2.52E-05 | 1.09E-03    | 0.56                            | 2.94E-04 | 1.01E-02    |
| ENSG00000274386.3     | <i>RP5-994D16.11</i>  | LncRNA     | 0.61                        | 3.38E-05 | 1.39E-03    | 0.38                            | 7.27E-03 | 8.49E-02    |
| ENSG00000274391.3     | <i>TPTE</i>           | Protein    | 0.74                        | 2.57E-04 | 6.50E-03    | -0.18                           | 3.20E-01 | 6.27E-01    |
| ENSG00000274419.3     | <i>TBC1D3D</i>        | Protein    | 1.07                        | 2.15E-05 | 9.79E-04    | 1.04                            | 1.79E-05 | 1.19E-03    |
| ENSG00000274421.1     | <i>RP11-386J22.3</i>  | LncRNA     | 0.52                        | 8.13E-03 | 6.84E-02    | 0.58                            | 2.17E-03 | 3.94E-02    |
| ENSG00000274487.1     | <i>CH17-431G21.1</i>  | Pseudogene | 1.19                        | 7.99E-22 | 6.71E-19    | 1.18                            | 1.57E-23 | 2.22E-20    |
| ENSG00000274499.1     | <i>RP11-403B2.10</i>  | Pseudogene | 0.69                        | 7.37E-03 | 6.41E-02    | 0.33                            | 1.80E-01 | 4.81E-01    |
| ENSG00000274512.3     | <i>TBC1D3L</i>        | Protein    | -0.81                       | 2.34E-05 | 1.04E-03    | -0.87                           | 2.70E-06 | 2.66E-04    |
| ENSG00000274541.1     | <i>RP1-62D2.4</i>     | Pseudogene | 0.74                        | 2.61E-03 | 3.28E-02    | 0.60                            | 1.24E-02 | 1.17E-01    |
| ENSG00000274569.1     | <i>RP11-121C6.4</i>   | Pseudogene | 0.71                        | 1.88E-03 | 2.62E-02    | 0.62                            | 4.88E-03 | 6.72E-02    |
| ENSG00000274578.1     | <i>RP11-430E17.1</i>  | LncRNA     | 0.67                        | 8.98E-03 | 7.27E-02    | 0.57                            | 2.21E-02 | 1.62E-01    |
| ENSG00000274598.1     | <i>RP11-423G4.10</i>  | LncRNA     | 0.78                        | 5.08E-04 | 1.07E-02    | 0.68                            | 1.97E-03 | 3.70E-02    |
| ENSG00000274602.3     | <i>PI4KAP1</i>        | Pseudogene | 0.40                        | 4.94E-03 | 4.98E-02    | 0.24                            | 7.70E-02 | 3.18E-01    |
| ENSG00000274615.1     | <i>CH17-258A22.4</i>  | Pseudogene | 0.68                        | 1.50E-04 | 4.32E-03    | 0.58                            | 7.54E-04 | 1.94E-02    |
| ENSG00000274649.1     | <i>CTD-2311B13.10</i> | Pseudogene | 0.71                        | 5.40E-03 | 5.28E-02    | 0.22                            | 3.74E-01 | 6.71E-01    |
| ENSG00000274653.1     | <i>RP11-347C12.11</i> | LncRNA     | 0.23                        | 1.17E-02 | 8.59E-02    | 0.16                            | 7.15E-02 | 3.06E-01    |
| ENSG00000274686.1     | <i>Metazoa_SRP</i>    | Other      | 0.56                        | 7.35E-03 | 6.40E-02    | 0.52                            | 1.03E-02 | 1.05E-01    |
| ENSG00000274717.1     | <i>RP1-47A17.1</i>    | Pseudogene | 0.54                        | 9.44E-04 | 1.64E-02    | 0.42                            | 7.12E-03 | 8.39E-02    |
| ENSG00000274719.1     | <i>RP11-86K22.2</i>   | LncRNA     | -0.51                       | 5.71E-03 | 5.46E-02    | -0.46                           | 8.76E-03 | 9.47E-02    |
| ENSG00000274736.3     | <i>CCL23</i>          | Protein    | -0.52                       | 3.15E-03 | 3.71E-02    | -0.43                           | 1.20E-02 | 1.15E-01    |
| ENSG00000274752.1     | <i>TRBV12-3</i>       | Other      | 0.59                        | 5.28E-03 | 5.19E-02    | 0.40                            | 4.86E-02 | 2.50E-01    |
| ENSG00000274767.1     | <i>AC131056.3</i>     | LncRNA     | 1.51                        | 1.51E-16 | 7.72E-14    | 1.41                            | 1.45E-15 | 9.89E-13    |
| ENSG00000274775.1     | <i>RP1-274L7.4</i>    | Pseudogene | 0.65                        | 5.25E-03 | 5.17E-02    | -0.46                           | 4.63E-02 | 2.43E-01    |
| ENSG00000274869.1     | <i>RP11-195B21.3</i>  | Pseudogene | 0.55                        | 1.15E-02 | 8.52E-02    | 0.65                            | 2.35E-03 | 4.17E-02    |
| ENSG00000274898.1     | <i>AC001226.7</i>     | LncRNA     | 0.53                        | 5.63E-04 | 1.14E-02    | 0.41                            | 5.50E-03 | 7.20E-02    |
| ENSG00000274944.3     | <i>RP5-864K19.6</i>   | Protein    | 0.29                        | 1.37E-02 | 9.53E-02    | 0.18                            | 1.11E-01 | 3.82E-01    |
| ENSG00000274949.1     | <i>RP5-1009E24.9</i>  | LncRNA     | -0.55                       | 5.95E-03 | 5.61E-02    | -0.56                           | 3.85E-03 | 5.82E-02    |
| ENSG00000274987.1     | <i>RP11-295I5.3</i>   | LncRNA     | 0.29                        | 2.53E-03 | 3.21E-02    | 0.27                            | 2.76E-03 | 4.67E-02    |
| ENSG00000275005.1     | <i>RP11-234G16.5</i>  | LncRNA     | 0.65                        | 2.02E-04 | 5.42E-03    | 0.65                            | 1.22E-04 | 5.30E-03    |
| ENSG00000275022.1     | <i>MIR6753</i>        | Other      | 0.74                        | 3.82E-04 | 8.70E-03    | 0.57                            | 4.52E-03 | 6.44E-02    |
| ENSG00000275056.1     | <i>RP11-127I20.8</i>  | LncRNA     | 0.42                        | 4.57E-03 | 4.75E-02    | 0.38                            | 8.70E-03 | 9.44E-02    |
| ENSG00000275147.1     | <i>RP11-324D17.3</i>  | LncRNA     | -0.77                       | 2.07E-03 | 2.80E-02    | -0.76                           | 1.75E-03 | 3.41E-02    |
| ENSG00000275158.1     | <i>TRBV12-5</i>       | Other      | 0.82                        | 3.69E-04 | 8.50E-03    | 0.64                            | 4.29E-03 | 6.25E-02    |
| ENSG00000275180.1     | <i>RP11-631N16.4</i>  | LncRNA     | 0.37                        | 1.13E-02 | 8.43E-02    | 0.28                            | 5.06E-02 | 2.56E-01    |
| ENSG00000275207.1     | <i>MIR6740</i>        | Other      | 0.63                        | 5.03E-03 | 5.03E-02    | 0.48                            | 2.87E-02 | 1.87E-01    |
| ENSG00000275212.1     | <i>RP3-446N13.5</i>   | LncRNA     | 0.76                        | 1.07E-03 | 1.78E-02    | 0.61                            | 6.69E-03 | 8.09E-02    |
| ENSG00000275248.1     | <i>RP11-40E6.2</i>    | LncRNA     | 0.78                        | 4.70E-04 | 1.01E-02    | 0.59                            | 7.25E-03 | 8.48E-02    |
| ENSG00000275342.3     | <i>SGK223</i>         | Protein    | 0.31                        | 2.70E-03 | 3.35E-02    | 0.25                            | 1.38E-02 | 1.24E-01    |
| ENSG00000275401.1     | <i>RP4-564F22.7</i>   | LncRNA     | 0.65                        | 2.83E-05 | 1.19E-03    | 0.56                            | 1.85E-04 | 7.26E-03    |
| ENSG00000275413.1     | <i>CTC-529I10.1</i>   | LncRNA     | 0.40                        | 2.85E-03 | 3.47E-02    | 0.36                            | 5.40E-03 | 7.14E-02    |
| ENSG00000275418.1     | <i>RP11-126O1.6</i>   | LncRNA     | 0.71                        | 3.63E-03 | 4.08E-02    | 0.63                            | 7.32E-03 | 8.52E-02    |
| ENSG00000275437.1     | <i>RP5-908M14.10</i>  | LncRNA     | 0.34                        | 5.13E-03 | 5.10E-02    | 0.22                            | 6.37E-02 | 2.89E-01    |
| ENSG00000275441.1     | <i>RP11-666O2.2</i>   | LncRNA     | 0.42                        | 1.57E-03 | 2.33E-02    | 0.24                            | 6.32E-02 | 2.88E-01    |
| ENSG00000275450.1     | <i>RP11-4L24.3</i>    | LncRNA     | -0.58                       | 3.26E-03 | 3.81E-02    | -0.67                           | 4.98E-04 | 1.47E-02    |
| ENSG00000275454.1     | <i>CTD-2026K11.4</i>  | LncRNA     | 0.26                        | 2.34E-03 | 3.03E-02    | 0.21                            | 1.07E-02 | 1.07E-01    |
| ENSG00000275464.2     | <i>CH507-9B2.5</i>    | Protein    | -0.90                       | 1.27E-11 | 3.30E-09    | -0.92                           | 4.69E-13 | 2.35E-10    |
| ENSG00000275476.1     | <i>RP11-996F15.4</i>  | LncRNA     | 0.98                        | 9.29E-11 | 2.07E-08    | 0.95                            | 7.37E-11 | 2.50E-08    |
| ENSG00000275491.1     | <i>RP5-1009E24.8</i>  | LncRNA     | -0.53                       | 8.07E-03 | 6.81E-02    | -0.57                           | 2.82E-03 | 4.75E-02    |
| ENSG00000275494.1     | <i>RP11-266L9.8</i>   | LncRNA     | 0.61                        | 4.03E-06 | 2.48E-04    | 0.56                            | 9.83E-06 | 7.51E-04    |
| ENSG00000275532.1     | <i>CTB-58E17.3</i>    | LncRNA     | 0.24                        | 5.93E-03 | 5.60E-02    | 0.18                            | 3.09E-02 | 1.95E-01    |
| ENSG00000275541.1     | <i>AC118465.1</i>     | Other      | 0.75                        | 1.86E-03 | 2.61E-02    | 0.74                            | 1.55E-03 | 3.14E-02    |
| ENSG00000275576.1     | <i>RP5-836N17.4</i>   | LncRNA     | 0.53                        | 1.37E-03 | 2.11E-02    | 0.51                            | 1.27E-03 | 2.76E-02    |
| ENSG00000275601.1     | <i>AC011330.13</i>    | LncRNA     | -0.37                       | 1.44E-03 | 2.18E-02    | -0.40                           | 2.97E-04 | 1.01E-02    |
| ENSG00000275632.1     | <i>RP5-967N21.11</i>  | LncRNA     | 0.27                        | 1.36E-02 | 9.51E-02    | 0.32                            | 2.97E-03 | 4.90E-02    |
| ENSG00000275700.3     | <i>AATF</i>           | Protein    | -0.13                       | 8.04E-03 | 6.79E-02    | -0.16                           | 1.02E-03 | 2.38E-02    |
| ENSG00000275741.1     | <i>RP11-40E6.1</i>    | LncRNA     | 0.64                        | 3.24E-03 | 3.80E-02    | 0.50                            | 1.71E-02 | 1.41E-01    |
| ENSG00000275778.1     | <i>PRH1-PRR4</i>      | Protein    | 0.50                        | 8.52E-05 | 2.81E-03    | 0.49                            | 4.78E-05 | 2.57E-03    |
| ENSG00000275811.1     | <i>HTRIDP1</i>        | Pseudogene | 0.75                        | 5.67E-04 | 1.14E-02    | 0.76                            | 3.08E-04 | 1.04E-02    |
| ENSG00000275833.1     | <i>RP11-479O9.3</i>   | Pseudogene | 0.52                        | 6.53E-04 | 1.26E-02    | 0.37                            | 1.13E-02 | 1.11E-01    |
| ENSG00000275875.1     | <i>RP11-613E4.5</i>   | Pseudogene | 1.36                        | 1.60E-08 | 2.20E-06    | 1.41                            | 1.41E-09 | 3.71E-07    |
| ENSG00000275888.1     | <i>RP13-516M14.10</i> | LncRNA     | 0.49                        | 3.34E-04 | 7.92E-03    | 0.33                            | 1.13E-02 | 1.11E-01    |
| ENSG00000275895.3     | <i>U2AF1</i>          | Protein    | 0.55                        | 6.76E-03 | 6.07E-02    | 0.42                            | 3.35E-02 | 2.03E-01    |
| ENSG00000275896.3     | <i>PRSS3P2</i>        | Pseudogene | -1.23                       | 8.12E-07 | 6.52E-05    | -1.26                           | 1.24E-07 | 2.03E-05    |
| ENSG00000275897.1     | <i>RP11-94C24.13</i>  | LncRNA     | 0.36                        | 6.57E-03 | 5.97E-02    | 0.24                            | 6.07E-02 | 2.82E-01    |
| ENSG00000275936.1     | <i>RP1-278C19.8</i>   | LncRNA     | 0.50                        | 5.63E-03 | 5.42E-02    | 0.32                            | 6.85E-02 | 3.00E-01    |
| ENSG00000275981.1     | <i>EGOT</i>           | Other      | 0.63                        | 1.01E-02 | 7.83E-02    | 0.53                            | 2.41E-02 | 1.70E-01    |
| ENSG00000276070.3     | <i>CCL4L1</i>         | Protein    | 1.02                        | 2.21E-08 | 2.87E-06    | 0.80                            | 6.50E-06 | 5.39E-04    |
| ENSG00000276075.1     | <i>CTD-2012K14.8</i>  | LncRNA     | 0.44                        | 9.93E-04 | 1.69E-02    | 0.43                            | 7.92E-04 | 2.00E-02    |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000276171.1     | <i>AC114498.1</i>     | Other      | 0.52                        | 1.13E-02 | 8.44E-02    | 0.15                            | 4.58E-01 | 7.33E-01    |  |
| ENSG00000276188.1     | <i>RP11-173P15.10</i> | LncRNA     | 0.41                        | 2.30E-03 | 3.00E-02    | 0.37                            | 4.68E-03 | 6.56E-02    |  |
| ENSG00000276261.1     | <i>RP11-1060J15.9</i> | LncRNA     | 0.38                        | 1.79E-03 | 2.53E-02    | 0.45                            | 1.25E-04 | 5.40E-03    |  |
| ENSG00000276272.1     | <i>RP11-121C6.5</i>   | LncRNA     | 0.86                        | 2.03E-07 | 2.03E-05    | 0.68                            | 2.38E-05 | 1.51E-03    |  |
| ENSG00000276291.3     | <i>RP11-87H9.2</i>    | Pseudogene | 0.17                        | 4.19E-03 | 4.48E-02    | 0.12                            | 3.42E-02 | 2.05E-01    |  |
| ENSG00000276308.1     | <i>RP11-116D17.4</i>  | LncRNA     | 0.76                        | 1.57E-03 | 2.33E-02    | 0.81                            | 5.74E-04 | 1.62E-02    |  |
| ENSG00000276309.1     | <i>TSK</i>            | Other      | 0.59                        | 7.39E-03 | 6.42E-02    | 0.53                            | 1.29E-02 | 1.20E-01    |  |
| ENSG00000276338.1     | <i>AC133555.1</i>     | Other      | 0.87                        | 6.89E-04 | 1.31E-02    | 0.50                            | 4.48E-02 | 2.39E-01    |  |
| ENSG00000276380.1     | <i>UBE2NL</i>         | Pseudogene | -0.56                       | 1.18E-02 | 8.63E-02    | -0.53                           | 1.37E-02 | 1.24E-01    |  |
| ENSG00000276384.1     | <i>RP11-186B7.7</i>   | LncRNA     | 0.41                        | 8.53E-03 | 7.05E-02    | 0.35                            | 2.02E-02 | 1.54E-01    |  |
| ENSG00000276445.1     | <i>LLNLR-268E12.1</i> | LncRNA     | 0.44                        | 3.72E-03 | 4.14E-02    | 0.37                            | 1.16E-02 | 1.13E-01    |  |
| ENSG00000276517.1     | <i>AL133243.2</i>     | LncRNA     | 0.22                        | 4.33E-03 | 4.57E-02    | 0.22                            | 3.17E-03 | 5.12E-02    |  |
| ENSG00000276520.1     | <i>W12-2118C23.2</i>  | Pseudogene | 0.68                        | 5.08E-03 | 5.06E-02    | -0.19                           | 4.20E-01 | 7.06E-01    |  |
| ENSG00000276533.1     | <i>RP11-139H15.5</i>  | LncRNA     | 0.65                        | 1.84E-04 | 5.06E-03    | 0.72                            | 1.85E-05 | 1.23E-03    |  |
| ENSG00000276547.1     | <i>PCDHGB5</i>        | Protein    | -0.49                       | 3.49E-03 | 3.97E-02    | -0.40                           | 1.24E-02 | 1.17E-01    |  |
| ENSG00000276564.1     | <i>CTA-276F8.1</i>    | LncRNA     | 0.42                        | 7.71E-04 | 1.43E-02    | 0.18                            | 1.54E-01 | 4.46E-01    |  |
| ENSG00000276566.1     | <i>IGKV1D-13</i>      | Other      | 1.45                        | 7.12E-09 | 1.07E-06    | 1.41                            | 6.92E-09 | 1.55E-06    |  |
| ENSG00000276570.1     | <i>CTD-2587H24.14</i> | LncRNA     | 0.20                        | 5.98E-03 | 5.63E-02    | 0.16                            | 2.14E-02 | 1.59E-01    |  |
| ENSG00000276591.1     | <i>GXYLT1P5</i>       | Pseudogene | 1.08                        | 2.14E-05 | 9.79E-04    | 1.03                            | 2.98E-05 | 1.76E-03    |  |
| ENSG00000276597.1     | <i>TRBV11-3</i>       | Other      | 0.63                        | 8.16E-03 | 6.86E-02    | 0.56                            | 1.52E-02 | 1.32E-01    |  |
| ENSG00000276641.1     | <i>MIR6769A</i>       | Other      | 0.69                        | 6.34E-04 | 1.24E-02    | 0.48                            | 1.45E-02 | 1.28E-01    |  |
| ENSG00000276644.3     | <i>DACH1</i>          | Protein    | -0.36                       | 1.69E-03 | 2.44E-02    | -0.28                           | 1.35E-02 | 1.22E-01    |  |
| ENSG00000276704.1     | <i>RP11-128N14.4</i>  | LncRNA     | 0.48                        | 1.50E-03 | 2.24E-02    | 0.46                            | 1.33E-03 | 2.85E-02    |  |
| ENSG00000276742.1     | <i>RP11-500G22.4</i>  | LncRNA     | 0.50                        | 5.36E-03 | 5.25E-02    | 0.49                            | 5.15E-03 | 6.93E-02    |  |
| ENSG00000276810.1     | <i>RP11-19G24.2</i>   | Pseudogene | 0.54                        | 2.73E-03 | 3.37E-02    | 0.46                            | 7.29E-03 | 8.50E-02    |  |
| ENSG00000276832.1     | <i>RP11-187C18.4</i>  | Pseudogene | 0.57                        | 4.90E-03 | 4.96E-02    | 0.45                            | 2.24E-02 | 1.63E-01    |  |
| ENSG00000276842.1     | <i>RP11-713N11.6</i>  | LncRNA     | 0.52                        | 4.01E-04 | 9.03E-03    | 0.48                            | 6.69E-04 | 1.79E-02    |  |
| ENSG00000276855.1     | <i>CTD-3157E16.2</i>  | LncRNA     | -0.41                       | 2.59E-04 | 6.53E-03    | -0.31                           | 4.19E-03 | 6.17E-02    |  |
| ENSG00000276883.1     | <i>AL137852.1</i>     | Other      | 0.80                        | 1.82E-03 | 2.56E-02    | 0.69                            | 5.32E-03 | NA          |  |
| ENSG00000276926.1     | <i>MIR6797</i>        | Other      | 0.42                        | 8.89E-03 | 7.22E-02    | 0.33                            | 3.24E-02 | 2.00E-01    |  |
| ENSG00000276934.1     | <i>RP11-231E4.5</i>   | LncRNA     | 0.80                        | 1.99E-08 | 2.65E-06    | 0.71                            | 2.60E-07 | 3.86E-05    |  |
| ENSG00000276953.1     | <i>TRBV12-4</i>       | Other      | 0.58                        | 2.42E-03 | 3.11E-02    | 0.47                            | 1.12E-02 | 1.10E-01    |  |
| ENSG00000276957.1     | <i>RP11-29B2.6</i>    | LncRNA     | 0.51                        | 1.21E-03 | 1.94E-02    | 0.39                            | 9.49E-03 | 9.95E-02    |  |
| ENSG00000276972.1     | <i>RP11-116D17.5</i>  | LncRNA     | 0.58                        | 6.76E-03 | 6.07E-02    | 0.59                            | 4.45E-03 | 6.37E-02    |  |
| ENSG00000276988.1     | <i>Metazoa_SRP</i>    | Other      | 0.42                        | 2.91E-03 | 3.51E-02    | 0.29                            | 3.00E-02 | 1.91E-01    |  |
| ENSG00000277010.1     | <i>RP11-616M22.12</i> | LncRNA     | -0.66                       | 2.81E-04 | 6.95E-03    | -0.49                           | 5.27E-03 | 7.02E-02    |  |
| ENSG00000277022.1     | <i>RP3-453C12.15</i>  | LncRNA     | -0.79                       | 5.29E-05 | 1.96E-03    | -0.40                           | 3.94E-02 | 2.22E-01    |  |
| ENSG00000277054.1     | <i>AL122127.2</i>     | Other      | 0.65                        | 3.84E-03 | 4.23E-02    | 0.60                            | 5.64E-03 | 7.33E-02    |  |
| ENSG00000277087.1     | <i>RP5-1116H23.6</i>  | LncRNA     | 0.71                        | 1.36E-03 | 2.09E-02    | 0.74                            | 5.45E-04 | 1.56E-02    |  |
| ENSG00000277128.1     | <i>RP11-146E13.4</i>  | LncRNA     | -0.63                       | 8.58E-03 | 7.08E-02    | -0.79                           | 7.72E-04 | 1.97E-02    |  |
| ENSG00000277135.1     | <i>RP11-327J17.9</i>  | LncRNA     | 0.46                        | 3.31E-03 | 3.85E-02    | 0.43                            | 4.17E-03 | 6.14E-02    |  |
| ENSG00000277142.1     | <i>LINC00235</i>      | LncRNA     | 0.36                        | 2.30E-03 | 3.00E-02    | 0.18                            | 1.11E-01 | 3.82E-01    |  |
| ENSG00000277150.1     | <i>F8A3</i>           | Protein    | 0.55                        | 4.45E-03 | 4.67E-02    | 0.32                            | 9.04E-02 | 3.44E-01    |  |
| ENSG00000277170.1     | <i>RP11-295D4.4</i>   | LncRNA     | 0.40                        | 2.09E-03 | 2.82E-02    | 0.34                            | 6.76E-03 | 8.13E-02    |  |
| ENSG00000277200.1     | <i>RP11-74E22.8</i>   | LncRNA     | -0.57                       | 3.85E-03 | 4.24E-02    | -0.46                           | 8.47E-03 | 9.30E-02    |  |
| ENSG00000277203.1     | <i>F8A1</i>           | Protein    | -0.95                       | 7.01E-18 | 4.04E-15    | -0.93                           | 1.37E-18 | 1.26E-15    |  |
| ENSG00000277215.1     | <i>SPANXA2-OT1</i>    | LncRNA     | -0.58                       | 6.91E-03 | 6.16E-02    | -0.52                           | 1.34E-02 | 1.22E-01    |  |
| ENSG00000277232.2     | <i>GTSE1-AS1</i>      | LncRNA     | -0.73                       | 5.60E-11 | 1.31E-08    | -0.64                           | 2.28E-09 | 5.76E-07    |  |
| ENSG00000277235.1     | <i>RP4-550H1.7</i>    | LncRNA     | 0.47                        | 5.32E-03 | 5.22E-02    | 0.36                            | 2.63E-02 | 1.78E-01    |  |
| ENSG00000277245.1     | <i>RP11-48G14.3</i>   | LncRNA     | 0.53                        | 3.79E-05 | 1.53E-03    | 0.51                            | 3.39E-05 | 1.96E-03    |  |
| ENSG00000277299.1     | <i>RP11-837J7.4</i>   | LncRNA     | 0.45                        | 4.31E-03 | 4.57E-02    | 0.29                            | 5.58E-02 | 2.69E-01    |  |
| ENSG00000277382.1     | <i>RP11-318A15.8</i>  | LncRNA     | 0.78                        | 3.58E-04 | 8.32E-03    | 0.68                            | 1.27E-03 | 2.76E-02    |  |
| ENSG00000277383.1     | <i>CTD-3001H11.2</i>  | LncRNA     | 0.40                        | 1.21E-02 | 8.79E-02    | 0.25                            | 1.09E-01 | 3.78E-01    |  |
| ENSG00000277402.1     | <i>MIR6891</i>        | Other      | 0.76                        | 2.88E-03 | 3.49E-02    | 0.68                            | 6.33E-03 | NA          |  |
| ENSG00000277425.1     | <i>RP5-1116H23.3</i>  | LncRNA     | 0.44                        | 1.84E-03 | 2.58E-02    | 0.35                            | 1.10E-02 | 1.10E-01    |  |
| ENSG00000277449.1     | <i>CEBPF-AS1</i>      | LncRNA     | 0.26                        | 1.71E-03 | 2.45E-02    | 0.26                            | 9.26E-04 | 2.23E-02    |  |
| ENSG00000277511.1     | <i>CTD-2095E4.5</i>   | LncRNA     | 0.46                        | 3.75E-04 | 8.59E-03    | 0.29                            | 2.25E-02 | 1.64E-01    |  |
| ENSG00000277548.1     | <i>RP11-139H15.6</i>  | LncRNA     | 0.24                        | 1.32E-02 | 9.32E-02    | 0.33                            | 4.62E-04 | 1.39E-02    |  |
| ENSG00000277579.1     | <i>CTC-268N12.3</i>   | LncRNA     | 0.63                        | 7.73E-03 | 6.62E-02    | 0.58                            | 1.15E-02 | 1.12E-01    |  |
| ENSG00000277589.1     | <i>RP11-333J10.3</i>  | LncRNA     | 0.47                        | 1.27E-03 | 2.00E-02    | 0.41                            | 3.66E-03 | 5.64E-02    |  |
| ENSG00000277621.1     | <i>RP11-597M12.2</i>  | LncRNA     | 0.47                        | 1.47E-02 | 9.96E-02    | 0.43                            | 1.82E-02 | 1.46E-01    |  |
| ENSG00000277654.3     | <i>RP11-255M2.3</i>   | LncRNA     | -0.95                       | 1.39E-04 | 4.08E-03    | -0.91                           | 1.65E-04 | 6.64E-03    |  |
| ENSG00000277693.1     | <i>AP003900.6</i>     | LncRNA     | 0.59                        | 6.01E-03 | 5.65E-02    | -0.03                           | 8.97E-01 | NA          |  |
| ENSG00000277728.1     | <i>RP11-143K11.7</i>  | LncRNA     | 0.31                        | 9.66E-03 | 7.59E-02    | 0.25                            | 3.12E-02 | 1.96E-01    |  |
| ENSG00000277737.2     | <i>FP325317.1</i>     | Protein    | 0.57                        | 3.72E-03 | 4.14E-02    | 0.68                            | 4.04E-04 | 1.26E-02    |  |
| ENSG00000277758.3     | <i>SYT15</i>          | Protein    | 0.45                        | 1.90E-03 | 2.64E-02    | 0.38                            | 6.64E-03 | 8.06E-02    |  |
| ENSG00000277759.1     | <i>MIR6719</i>        | Other      | 0.84                        | 1.60E-04 | 4.53E-03    | -0.05                           | 8.25E-01 | 9.34E-01    |  |
| ENSG00000277778.1     | <i>PGM5P2</i>         | LncRNA     | 0.32                        | 2.02E-03 | 2.76E-02    | 0.36                            | 3.72E-04 | 1.19E-02    |  |
| ENSG00000277831.1     | <i>RP11-269C23.5</i>  | LncRNA     | -0.49                       | 1.29E-02 | 9.15E-02    | -0.40                           | 3.40E-02 | 2.05E-01    |  |
| ENSG00000277855.1     | <i>RP11-154H23.4</i>  | LncRNA     | -0.86                       | 5.17E-05 | 1.93E-03    | -0.72                           | 7.87E-05 | 3.77E-03    |  |
| ENSG00000277882.1     | <i>RP11-122G18.9</i>  | Pseudogene | 0.76                        | 2.67E-03 | 3.32E-02    | 0.75                            | 2.30E-03 | 4.12E-02    |  |
| ENSG00000277938.1     | <i>RP5-965G21.3</i>   | LncRNA     | 0.80                        | 1.26E-17 | 7.04E-15    | 0.88                            | 1.54E-22 | 1.97E-19    |  |
| ENSG00000278000.1     | <i>AC139100.4</i>     | LncRNA     | 0.39                        | 1.08E-02 | 8.20E-02    | 0.32                            | 3.34E-02 | 2.03E-01    |  |
| ENSG00000278022.1     | <i>RP11-35O15.2</i>   | LncRNA     | 0.51                        | 7.08E-03 | 6.24E-02    | 0.57                            | 1.70E-03 | 3.34E-02    |  |
| ENSG00000278090.1     | <i>RP11-6O2.2</i>     | LncRNA     | 0.57                        | 7.81E-05 | 2.63E-03    | 0.51                            | 2.34E-04 | 8.68E-03    |  |
| ENSG00000278095.1     | <i>RP11-283G6.6</i>   | LncRNA     | 0.78                        | 9.98E-04 | 1.70E-02    | 0.61                            | 7.72E-03 | 8.79E-02    |  |
| ENSG00000278126.1     | <i>RP11-454E5.4</i>   | LncRNA     | 0.38                        | 5.62E-07 | 4.81E-05    | 0.37                            | 2.82E-07 | 4.07E-05    |  |
| ENSG00000278130.1     | <i>RP11-424E7.6</i>   | Pseudogene | 0.89                        | 4.10E-04 | 9.17E-03    | 0.90                            | 2.47E-04 | 8.99E-03    |  |
| ENSG00000278143.1     | <i>NF1P4</i>          | Pseudogene | -0.68                       | 7.64E-03 | 6.57E-02    | -0.29                           | 2.38E-01 | 5.48E-01    |  |
| ENSG00000278175.2     | <i>GLIDR</i>          | LncRNA     | -0.21                       | 1.07E-02 | 8.15E-02    | -0.19                           | 1.27E-02 | 1.19E-01    |  |
| ENSG00000278184.1     | <i>RP11-597A11.10</i> | Pseudogene | 0.63                        | 1.16E-02 | 8.53E-02    | -0.24                           | 3.16E-01 | 6.24E-01    |  |
| ENSG00000278185.1     | <i>RP11-153F5.7</i>   | LncRNA     | 0.38                        | 1.39E-03 | 2.12E-02    | 0.41                            | 3.04E-04 | 1.03E-02    |  |
| ENSG00000278195.1     | <i>SSTR3</i>          | Protein    | 0.73                        | 7.98E-04 | 1.46E-02    | 0.68                            | 1.44E-03 | 3.00E-02    |  |
| ENSG00000278231.1     | <i>RP5-906C1.1</i>    | LncRNA     | 0.40                        | 1.34E-02 | 9.38E-02    | 0.38                            | 1.41E-02 | 1.25E-01    |  |
| ENSG00000278238.1     | <i>RP11-245D16.4</i>  | LncRNA     | 0.38                        | 2.93E-03 | 3.53E-02    | 0.49                            | 8.35E-05 | 3.93E-03    |  |
| ENSG00000278239.1     | <i>AC020956.3</i>     | LncRNA     | 0.66                        | 9.46E-03 | 7.49E-02    | 0.16                            | 5.12E-01 | 7.68E-01    |  |
| ENSG00000278275.1     | <i>RP11-55J15.2</i>   | Pseudogene | 0.75                        | 2.07E-03 | 2.80E-02    | 0.59                            | 1.27E-02 | 1.19E-01    |  |
| ENSG00000278292.1     | <i>RFPLA4P6</i>       | Pseudogene | -0.78                       | 6.70E-05 | 2.33E-03    | -0.73                           | 1.07E-04 | 4.77E-03    |  |
| ENSG00000278350.1     | <i>AC091849.1</i>     | Other      | 0.42                        | 1.10E-02 | 8.26E-02    | 0.36                            | 2.20E-02 | 1.61E-01    |  |
| ENSG00000278383.1     | <i>RP4-694B14.8</i>   | LncRNA     | 0.41                        | 4.85E-05 | 1.84E-03    | 0.39                            | 6.07E-05 | 3.07E-03    |  |
| ENSG00000278416.1     | <i>PMS2L2</i>         | Pseudogene | 0.98                        | 1.03E-06 | 8.03E-05    | 0.87                            | 7.19E-06 | 5.79E-04    |  |
| ENSG00000278420.1     | <i>MIR6819</i>        | Other      | 0.59                        | 3.63E-03 | 4.08E-02    | 0.45                            | 2.23E-02 | 1.63E-01    |  |
| ENSG00000278463.1     | <i>HIST1H2AB</i>      | Protein    | -0.59                       | 5.97E-03 | 5.63E-02    | -0.66                           | 1.43E-03 | 2.98E-02    |  |
| ENSG00000278472.1     | <i>RP11-74D7.3</i>    | LncRNA     | -1.27                       | 1.56E-17 | 8.63E-15    | -1.24                           | 6.44E-18 | 5.32E-15    |  |
| ENSG00000278491.1     | <i>AL360074.1</i>     | Other      | 0.68                        | 8.16E-03 | 6.86E-02    | 0.67                            | 7.39E-03 | NA          |  |
| ENSG00000278505.3     | <i>C17orf78</i>       | Protein    | 2.00                        | 5.61E-30 | 9.42E-27    | 0.17                            | 2.23E-01 | 5.33E-01    |  |
| ENSG00000278513.1     | <i>RP11-123C21.3</i>  | Pseudogene | 0.67                        | 7.79E-03 | 6.65E-02    | 0.61                            | 1.32E-02 | 1.21E-01    |  |
| ENSG00000278518.1     | <i>RP11-108K14.12</i> | LncRNA     | -0.57                       | 6.57E-03 | 5.97E-02    | -0.55                           | 6.55E-03 | 8.01E-02    |  |
| ENSG00000278558.3     | <i>TMEM191B</i>       | Protein    | 0.57                        | 4.59E-03 | 4.76E-02    | 0.49                            | 1.15E-02 | 1.12E-01    |  |
| EN                    |                       |            |                             |          |             |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol            | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|------------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                        |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000278665.1     | <i>RP11-666O2.4</i>    | Pseudogene | -0.68                       | 4.00E-03 | 4.35E-02    | -0.78                           | 7.19E-04 | 1.88E-02    |  |
| ENSG00000278683.1     | <i>RP11-132A1.6</i>    | Pseudogene | 0.58                        | 3.76E-03 | 4.17E-02    | 0.57                            | 3.18E-03 | 5.13E-02    |  |
| ENSG00000278727.1     | <i>AC000403.4</i>      | LncRNA     | -0.33                       | 9.12E-03 | 7.35E-02    | -0.40                           | 1.10E-03 | 2.49E-02    |  |
| ENSG00000278730.1     | <i>RP11-147L13.11</i>  | LncRNA     | -0.11                       | 6.82E-03 | 6.11E-02    | -0.10                           | 1.05E-02 | 1.06E-01    |  |
| ENSG00000278743.1     | <i>RP11-707G18.1</i>   | LncRNA     | 0.57                        | 5.11E-04 | 1.07E-02    | 0.34                            | 3.50E-02 | 2.08E-01    |  |
| ENSG00000278765.1     | <i>RP5-890E16.5</i>    | LncRNA     | 0.28                        | 1.27E-03 | 2.00E-02    | 0.27                            | 1.12E-03 | 2.52E-02    |  |
| ENSG00000278766.2     | <i>AC159540.2</i>      | LncRNA     | -0.86                       | 8.02E-04 | 1.46E-02    | -0.85                           | 6.51E-04 | 1.76E-02    |  |
| ENSG00000278771.1     | <i>Metazoa_SRP</i>     | Other      | 0.98                        | 2.53E-06 | 1.71E-04    | 0.45                            | 1.89E-02 | 1.48E-01    |  |
| ENSG00000278824.1     | <i>RP11-1315F8.2</i>   | Pseudogene | 0.66                        | 8.90E-03 | 7.23E-02    | 0.54                            | 2.72E-02 | 1.82E-01    |  |
| ENSG00000278832.1     | <i>AC005071.2</i>      | Other      | 0.85                        | 6.39E-05 | 2.25E-03    | 0.71                            | 6.24E-04 | 1.71E-02    |  |
| ENSG00000278840.1     | <i>RP11-345N11.1</i>   | LncRNA     | -0.44                       | 5.93E-03 | 5.60E-02    | -0.47                           | 2.14E-03 | 3.90E-02    |  |
| ENSG00000278857.1     | <i>IGKV1D-12</i>       | Other      | 1.31                        | 1.47E-07 | 1.53E-05    | 1.19                            | 8.97E-07 | 1.08E-04    |  |
| ENSG00000278867.1     | <i>RP11-640N20.4</i>   | LncRNA     | 0.44                        | 1.22E-05 | 6.13E-04    | 0.31                            | 1.58E-03 | 3.18E-02    |  |
| ENSG00000278875.1     | <i>CTC-439O9.1</i>     | LncRNA     | 0.42                        | 1.18E-02 | 8.62E-02    | 0.27                            | 9.24E-02 | 3.48E-01    |  |
| ENSG00000278882.1     | <i>AC253572.1</i>      | Protein    | -1.00                       | 1.85E-11 | 4.66E-09    | -1.05                           | 3.46E-13 | 1.78E-10    |  |
| ENSG00000278888.1     | <i>AC090154.1</i>      | Protein    | 0.36                        | 1.44E-02 | 9.85E-02    | 0.20                            | 1.76E-01 | 4.75E-01    |  |
| ENSG00000278899.1     | <i>AL358852.1</i>      | Protein    | 0.25                        | 9.37E-03 | 7.46E-02    | 0.25                            | 8.29E-03 | 9.19E-02    |  |
| ENSG00000278909.1     | <i>RP11-401P9.7</i>    | LncRNA     | -0.65                       | 8.36E-03 | 6.96E-02    | -0.60                           | 1.08E-02 | 1.08E-01    |  |
| ENSG00000278912.1     | <i>CTD-2196E14.8</i>   | LncRNA     | 0.99                        | 6.43E-05 | 2.26E-03    | 0.29                            | 2.37E-01 | 5.47E-01    |  |
| ENSG00000278931.1     | <i>bP-2189O9.2</i>     | Pseudogene | 0.85                        | 3.94E-05 | 1.57E-03    | 0.82                            | 4.32E-05 | 2.37E-03    |  |
| ENSG00000278932.2     | <i>bP-21264C1.2</i>    | LncRNA     | 0.59                        | 1.30E-05 | 6.41E-04    | 0.55                            | 2.46E-05 | 1.54E-03    |  |
| ENSG00000278949.1     | <i>RP11-46H11.11</i>   | LncRNA     | 0.33                        | 1.09E-02 | 8.20E-02    | 0.25                            | 4.21E-02 | 2.31E-01    |  |
| ENSG00000278958.1     | <i>RP11-313L6.2</i>    | LncRNA     | 0.86                        | 2.09E-04 | 5.56E-03    | 0.24                            | 2.64E-01 | 5.75E-01    |  |
| ENSG00000278965.1     | <i>RP11-39H3.2</i>     | LncRNA     | 0.50                        | 7.18E-03 | 6.30E-02    | 0.61                            | 6.47E-04 | 1.76E-02    |  |
| ENSG00000278967.1     | <i>RP5-849H19.3</i>    | LncRNA     | 0.65                        | 5.85E-03 | 5.55E-02    | 0.67                            | 2.95E-03 | 4.88E-02    |  |
| ENSG00000278983.1     | <i>RP11-426J5.3</i>    | LncRNA     | -1.24                       | 4.91E-11 | 1.16E-08    | -1.15                           | 2.64E-10 | 8.03E-08    |  |
| ENSG00000278999.1     | <i>AC008985.1</i>      | LncRNA     | 0.50                        | 2.53E-03 | 3.21E-02    | 0.46                            | 4.29E-03 | 6.26E-02    |  |
| ENSG00000279068.1     | <i>CH17-140K24.5</i>   | Protein    | -0.55                       | 6.98E-03 | 6.20E-02    | -0.63                           | 1.47E-03 | 3.03E-02    |  |
| ENSG00000279078.1     | <i>SNDI1-IT1</i>       | LncRNA     | 0.58                        | 2.55E-03 | 3.23E-02    | 0.47                            | 1.16E-02 | 1.12E-01    |  |
| ENSG00000279096.1     | <i>AL356289.1</i>      | Protein    | 0.66                        | 1.02E-02 | 7.88E-02    | 0.29                            | 2.49E-01 | 5.60E-01    |  |
| ENSG00000279110.1     | <i>CTA-243E7.1</i>     | LncRNA     | 0.34                        | 9.38E-03 | 7.46E-02    | 0.22                            | 8.12E-02 | 3.27E-01    |  |
| ENSG00000279121.1     | <i>RP11-83B20.5</i>    | LncRNA     | 0.69                        | 3.32E-03 | 3.86E-02    | 0.67                            | 3.25E-03 | 5.20E-02    |  |
| ENSG00000279127.1     | <i>RP3-442L6.4</i>     | LncRNA     | 0.87                        | 5.59E-04 | 1.13E-02    | 0.52                            | 3.28E-02 | 2.01E-01    |  |
| ENSG00000279141.2     | <i>LINC01451</i>       | LncRNA     | 0.58                        | 1.74E-03 | 2.48E-02    | 0.65                            | 2.84E-04 | 9.83E-03    |  |
| ENSG00000279145.1     | <i>RP11-547D13.1</i>   | LncRNA     | -0.37                       | 2.81E-03 | 3.43E-02    | -0.24                           | 4.52E-02 | 2.41E-01    |  |
| ENSG00000279170.1     | <i>RP1-199J3.6</i>     | LncRNA     | 0.36                        | 9.20E-03 | 7.38E-02    | 0.48                            | 3.51E-04 | 1.14E-02    |  |
| ENSG00000279174.1     | <i>RP11-1099M24.9</i>  | LncRNA     | 0.56                        | 8.89E-04 | 1.56E-02    | 0.42                            | 9.45E-03 | 9.92E-02    |  |
| ENSG00000279182.1     | <i>XX-C00717C0072L</i> | LncRNA     | 0.50                        | 1.68E-03 | 2.43E-02    | 0.24                            | 1.25E-01 | 4.05E-01    |  |
| ENSG00000279196.1     | <i>RP11-107Z43.3</i>   | LncRNA     | 0.81                        | 3.91E-12 | 1.17E-09    | 0.69                            | 1.05E-09 | 2.82E-07    |  |
| ENSG00000279200.1     | <i>RP11-524F11.3</i>   | LncRNA     | 0.53                        | 1.88E-03 | 2.63E-02    | 0.38                            | 1.97E-02 | 1.52E-01    |  |
| ENSG00000279220.1     | <i>GPRI-AS</i>         | LncRNA     | 1.21                        | 2.27E-06 | 1.57E-04    | -0.42                           | 9.09E-02 | 3.45E-01    |  |
| ENSG00000279227.1     | <i>AC009303.2</i>      | LncRNA     | -0.31                       | 3.15E-03 | 3.71E-02    | -0.35                           | 4.33E-04 | 1.33E-02    |  |
| ENSG00000279249.1     | <i>RP11-491F9.3</i>    | LncRNA     | 0.64                        | 1.25E-02 | 8.98E-02    | 0.05                            | 8.54E-01 | 9.47E-01    |  |
| ENSG00000279265.1     | <i>AC000123.3</i>      | LncRNA     | 0.28                        | 3.40E-03 | 3.91E-02    | 0.22                            | 1.63E-02 | 1.37E-01    |  |
| ENSG00000279267.1     | <i>RP11-395L14.18</i>  | LncRNA     | -0.56                       | 2.32E-06 | 1.59E-04    | -0.50                           | 1.01E-05 | 7.66E-04    |  |
| ENSG00000279281.1     | <i>RP11-226M10.3</i>   | LncRNA     | 1.36                        | 5.63E-10 | 1.04E-07    | 1.36                            | 1.53E-10 | 4.80E-08    |  |
| ENSG00000279283.1     | <i>RP11-417L19.5</i>   | LncRNA     | 0.54                        | 1.70E-04 | 4.76E-03    | 0.48                            | 6.11E-04 | 1.69E-02    |  |
| ENSG00000279296.1     | <i>RP11-609D21.3</i>   | LncRNA     | 0.56                        | 6.05E-03 | 5.68E-02    | 0.34                            | 8.76E-02 | 3.39E-01    |  |
| ENSG00000279311.1     | <i>RP11-170K4.2</i>    | LncRNA     | -0.40                       | 6.39E-03 | 5.89E-02    | -0.36                           | 9.92E-03 | 1.02E-01    |  |
| ENSG00000279312.1     | <i>RP3-331H24.7</i>    | LncRNA     | 0.45                        | 1.04E-03 | 1.75E-02    | 0.44                            | 9.24E-04 | 2.22E-02    |  |
| ENSG00000279317.1     | <i>AC006994.3</i>      | Protein    | 0.56                        | 6.23E-03 | 5.79E-02    | 0.49                            | 1.35E-02 | 1.22E-01    |  |
| ENSG00000279322.1     | <i>RP4-738P15.6</i>    | LncRNA     | 0.32                        | 5.75E-03 | 5.48E-02    | 0.38                            | 5.38E-04 | 1.55E-02    |  |
| ENSG00000279325.1     | <i>RP11-24H2.3</i>     | LncRNA     | -0.80                       | 1.81E-03 | 2.56E-02    | -0.75                           | 2.45E-03 | 4.30E-02    |  |
| ENSG00000279331.1     | <i>RBM12B-AS1</i>      | LncRNA     | 0.33                        | 8.31E-03 | 6.93E-02    | 0.18                            | 1.47E-01 | 4.36E-01    |  |
| ENSG00000279342.1     | <i>AP000866.1</i>      | Protein    | 0.43                        | 8.95E-04 | 1.57E-02    | 0.32                            | 9.82E-03 | 1.02E-01    |  |
| ENSG00000279345.1     | <i>RP3-522J7.7</i>     | LncRNA     | 0.48                        | 1.03E-03 | 1.74E-02    | 0.27                            | 5.36E-02 | 2.64E-01    |  |
| ENSG00000279347.1     | <i>RP11-851I7.2</i>    | LncRNA     | 0.45                        | 7.83E-03 | 6.67E-02    | 0.18                            | 2.80E-01 | 5.91E-01    |  |
| ENSG00000279375.1     | <i>CH17-140K24.6</i>   | LncRNA     | -0.49                       | 7.26E-03 | 6.35E-02    | -0.49                           | 5.64E-03 | 7.33E-02    |  |
| ENSG00000279398.1     | <i>RP3-429G5.5</i>     | LncRNA     | -0.62                       | 8.56E-03 | 7.07E-02    | -0.60                           | 8.44E-03 | 9.29E-02    |  |
| ENSG00000279418.1     | <i>LINC00244</i>       | LncRNA     | -0.92                       | 7.75E-06 | 4.25E-04    | -0.81                           | 4.68E-05 | 2.54E-03    |  |
| ENSG00000279432.1     | <i>RP11-135N5.3</i>    | LncRNA     | 0.46                        | 8.91E-04 | 1.56E-02    | 0.38                            | 4.20E-03 | 6.18E-02    |  |
| ENSG00000279433.1     | <i>RP11-4B16.1</i>     | LncRNA     | 0.63                        | 2.60E-04 | 6.54E-03    | 0.48                            | 3.62E-03 | 5.59E-02    |  |
| ENSG00000279434.1     | <i>RP11-85K15.3</i>    | LncRNA     | 0.20                        | 7.19E-03 | 6.31E-02    | 0.18                            | 1.08E-02 | 1.08E-01    |  |
| ENSG00000279481.1     | <i>RP11-181K12.1</i>   | LncRNA     | 0.66                        | 1.97E-04 | 5.32E-03    | 0.30                            | 4.50E-02 | 2.40E-01    |  |
| ENSG00000279483.1     | <i>RPL41</i>           | Protein    | 0.30                        | 4.15E-03 | 4.45E-02    | 0.29                            | 4.04E-03 | 6.02E-02    |  |
| ENSG00000279516.1     | <i>FAM230C</i>         | LncRNA     | 0.87                        | 4.12E-05 | 1.62E-03    | 0.23                            | 2.33E-01 | NA          |  |
| ENSG00000279518.1     | <i>AC083843.4</i>      | LncRNA     | 0.63                        | 4.15E-05 | 1.63E-03    | 0.44                            | 3.31E-03 | 5.27E-02    |  |
| ENSG00000279529.1     | <i>CTD-3222D19.8</i>   | LncRNA     | 0.27                        | 1.13E-02 | 8.44E-02    | 0.18                            | 8.79E-02 | 3.39E-01    |  |
| ENSG00000279579.2     | <i>bP-2189O9.3</i>     | LncRNA     | 1.15                        | 9.58E-07 | 7.50E-05    | 0.97                            | 2.23E-05 | 1.43E-03    |  |
| ENSG00000279582.1     | <i>SC22CB-109E1.1</i>  | LncRNA     | 0.59                        | 2.13E-03 | 2.85E-02    | 0.11                            | 5.64E-01 | 8.01E-01    |  |
| ENSG00000279605.1     | <i>RP11-661A12.8</i>   | LncRNA     | 0.38                        | 5.63E-03 | 5.43E-02    | 0.31                            | 2.01E-02 | 1.53E-01    |  |
| ENSG00000279608.1     | <i>RP11-182N22.9</i>   | LncRNA     | 0.39                        | 5.64E-03 | 5.43E-02    | 0.23                            | 8.69E-02 | 3.37E-01    |  |
| ENSG00000279622.1     | <i>RP11-254F19.4</i>   | LncRNA     | -0.44                       | 8.43E-03 | 7.01E-02    | -0.22                           | 1.85E-01 | 4.88E-01    |  |
| ENSG00000279637.1     | <i>RP11-196B3.1</i>    | LncRNA     | 0.77                        | 8.70E-04 | 1.54E-02    | 0.69                            | 2.21E-03 | 3.99E-02    |  |
| ENSG00000279654.1     | <i>AL135745.1</i>      | Protein    | -0.51                       | 1.13E-02 | 8.43E-02    | -0.60                           | 2.13E-03 | 3.90E-02    |  |
| ENSG00000279656.1     | <i>RP11-298I3.6</i>    | LncRNA     | -1.42                       | 1.29E-19 | 9.13E-17    | -1.48                           | 1.03E-22 | 1.36E-19    |  |
| ENSG00000279663.1     | <i>AC104623.1</i>      | Pseudogene | 0.59                        | 1.19E-02 | 8.73E-02    | 0.47                            | 4.30E-02 | 2.34E-01    |  |
| ENSG00000279667.1     | <i>RP11-656D10.7</i>   | LncRNA     | 0.39                        | 3.21E-03 | 3.76E-02    | 0.27                            | 3.32E-02 | 2.02E-01    |  |
| ENSG00000279679.1     | <i>RP11-278J6.5</i>    | LncRNA     | 0.75                        | 3.14E-03 | 3.70E-02    | 0.65                            | 8.05E-03 | 9.01E-02    |  |
| ENSG00000279689.1     | <i>RP11-574K11.32</i>  | LncRNA     | 0.20                        | 1.14E-02 | 8.47E-02    | 0.16                            | 3.54E-02 | 2.09E-01    |  |
| ENSG00000279692.1     | <i>RP11-1055B8.1</i>   | LncRNA     | 0.88                        | 5.16E-07 | 4.47E-05    | 0.60                            | 7.27E-04 | 1.89E-02    |  |
| ENSG00000279699.1     | <i>RP1-102K2.9</i>     | LncRNA     | 0.68                        | 6.41E-07 | 5.36E-05    | 0.59                            | 7.05E-06 | 5.73E-04    |  |
| ENSG00000279745.1     | <i>AL365202.1</i>      | Protein    | -0.66                       | 9.29E-03 | 7.42E-02    | 0.22                            | 3.70E-01 | 6.68E-01    |  |
| ENSG00000279748.1     | <i>CTD-3222D19.9</i>   | LncRNA     | 0.42                        | 1.10E-03 | 1.82E-02    | 0.33                            | 6.80E-03 | 8.15E-02    |  |
| ENSG00000279762.2     | <i>RP11-227G15.12</i>  | LncRNA     | 0.45                        | 2.41E-03 | 3.10E-02    | 0.29                            | 4.75E-02 | 2.47E-01    |  |
| ENSG00000279765.2     | <i>RP11-437B10.1</i>   | Protein    | 0.42                        | 1.41E-04 | 4.12E-03    | 0.37                            | 5.08E-04 | 1.49E-02    |  |
| ENSG00000279766.1     | <i>RP11-642A1.2</i>    | LncRNA     | 0.47                        | 2.03E-03 | 2.77E-02    | 0.38                            | 1.05E-02 | 1.06E-01    |  |
| ENSG00000279770.1     | <i>LINC00552</i>       | LncRNA     | 0.78                        | 5.54E-04 | 1.13E-02    | 0.72                            | 1.11E-03 | 2.51E-02    |  |
| ENSG00000279771.1     | <i>AP000997.3</i>      | LncRNA     | 0.66                        | 2.29E-03 | 2.99E-02    | 0.49                            | 1.98E-02 | 1.52E-01    |  |
| ENSG00000279778.1     | <i>RP11-60A14.1</i>    | LncRNA     | 1.31                        | 5.26E-10 | 1.00E-07    | 0.46                            | 2.11E-02 | 1.58E-01    |  |
| ENSG00000279786.1     | <i>CTD-2014D20.1</i>   | LncRNA     | -0.51                       | 6.96E-03 | 6.18E-02    | -0.49                           | 7.10E-03 | 8.39E-02    |  |
| ENSG00000279789.1     | <i>CTD-2574D22.3</i>   | LncRNA     | 0.35                        | 4.98E-03 | 5.00E-02    | 0.17                            | 1.57E-01 | 4.50E-01    |  |
| ENSG00000279800.1     | <i>ABBA01017803.1</i>  | Pseudogene | -0.46                       | 8.59E-03 | 7.08E-02    | -0.43                           | 9.99E-03 | 1.03E-01    |  |
| ENSG00000279807.1     | <i>CTC-510F12.3</i>    | LncRNA     | 0.40                        | 8.21E-03 | 6.88E-02    | 0.26                            | 7.22E-02 | 3.08E-01    |  |
| ENSG00000279821.1     | <i>RP11-1334A24.5</i>  | LncRNA     | 0.41                        | 3.79E-03 | 4.19E-02    | 0.39                            | 3.76E-03 | 5.75E-02    |  |
| ENSG00000279827.1     | <i>RP11-886P16.10</i>  | LncRNA     | 0.72                        | 7.95E-05 | 2.67E-03    | 0.57                            | 1.24E-03 | 2.71E-02    |  |
| ENSG00000279845.1     | <i>RP11-6L6.4</i>      | LncRNA     | 0.46                        | 3.69E-03 | 4.12E-02    | 0.45                            | 3.42E-03 | 5.39E-02    |  |
| ENSG00000279861.1     | <i>RP11-43N16.4</i>    | LncRNA     | 0.36                        | 4.32E-03 | 4.57E-      |                                 |          |             |  |

| Gene ID (GENCODE v22) | Gene symbol           | Gene type  | Adjust for clinical factors |          |             | Not adjust for clinical factors |          |             |  |
|-----------------------|-----------------------|------------|-----------------------------|----------|-------------|---------------------------------|----------|-------------|--|
|                       |                       |            | effect size                 | p value  | adj p value | effect size                     | p value  | adj p value |  |
| ENSG00000279976.1     | <i>RP11-243M5.4</i>   | LncRNA     | 0.63                        | 1.39E-02 | 9.62E-02    | 0.61                            | 1.35E-02 | 1.22E-01    |  |
| ENSG00000280018.2     | <i>CH507-154B10.2</i> | LncRNA     | -0.83                       | 1.05E-05 | 5.41E-04    | -0.72                           | 7.65E-05 | 3.70E-03    |  |
| ENSG00000280035.1     | <i>RP11-10J21.2</i>   | LncRNA     | 0.56                        | 1.31E-03 | 2.04E-02    | 0.44                            | 8.82E-03 | 9.51E-02    |  |
| ENSG00000280042.1     | <i>RP11-71H17.8</i>   | LncRNA     | 0.51                        | 3.56E-03 | 4.03E-02    | 0.51                            | 2.40E-03 | 4.24E-02    |  |
| ENSG00000280043.1     | <i>RP11-1281K21.8</i> | LncRNA     | 0.64                        | 9.91E-03 | 7.72E-02    | 0.56                            | 1.82E-02 | 1.46E-01    |  |
| ENSG00000280067.1     | <i>CTD-2600H12.2</i>  | LncRNA     | 0.32                        | 1.36E-02 | 9.48E-02    | 0.20                            | 1.03E-01 | 3.68E-01    |  |
| ENSG00000280071.2     | <i>CH507-9B2.3</i>    | Protein    | -0.97                       | 3.91E-12 | 1.17E-09    | -1.00                           | 6.61E-14 | 3.64E-11    |  |
| ENSG00000280077.1     | <i>RP11-87H9.4</i>    | LncRNA     | 0.27                        | 6.50E-03 | 5.94E-02    | 0.15                            | 1.19E-01 | 3.96E-01    |  |
| ENSG00000280081.2     | <i>MGC39584</i>       | LncRNA     | 0.72                        | 1.64E-03 | 2.39E-02    | 0.17                            | 4.40E-01 | 7.20E-01    |  |
| ENSG00000280087.1     | <i>CTB-129P6.7</i>    | LncRNA     | 0.45                        | 6.30E-03 | 5.84E-02    | 0.33                            | 3.88E-02 | 2.21E-01    |  |
| ENSG00000280119.1     | <i>AC093642.1</i>     | LncRNA     | 0.64                        | 5.45E-06 | 3.19E-04    | 0.52                            | 1.03E-04 | 4.67E-03    |  |
| ENSG00000280135.1     | <i>RP1-47M23.3</i>    | LncRNA     | 0.66                        | 5.46E-04 | 1.12E-02    | 0.55                            | 2.79E-03 | 4.71E-02    |  |
| ENSG00000280140.1     | <i>RP11-597D13.2</i>  | LncRNA     | 1.32                        | 1.32E-11 | 3.38E-09    | -0.01                           | 9.59E-01 | 9.86E-01    |  |
| ENSG00000280143.1     | <i>AP000892.6</i>     | LncRNA     | -0.45                       | 2.72E-03 | 3.36E-02    | -0.34                           | 1.98E-02 | 1.52E-01    |  |
| ENSG00000280153.1     | <i>RP11-876N24.3</i>  | LncRNA     | 0.31                        | 6.35E-03 | 5.87E-02    | 0.20                            | 6.67E-02 | 2.96E-01    |  |
| ENSG00000280162.1     | <i>RP11-314N13.9</i>  | LncRNA     | 0.64                        | 3.32E-04 | 7.88E-03    | 0.54                            | 1.79E-03 | 3.45E-02    |  |
| ENSG00000280182.1     | <i>RP11-626G3.1</i>   | LncRNA     | 0.44                        | 9.94E-03 | 7.74E-02    | 0.38                            | 2.20E-02 | 1.61E-01    |  |
| ENSG00000280188.1     | <i>AC005477.1</i>     | Protein    | 1.06                        | 5.11E-06 | 3.02E-04    | -0.01                           | 9.72E-01 | NA          |  |
| ENSG00000280190.1     | <i>RP11-319G9.1</i>   | LncRNA     | -0.71                       | 5.86E-03 | 5.56E-02    | -0.71                           | 4.07E-03 | 6.04E-02    |  |
| ENSG00000280195.1     | <i>XX-FW83563B9.5</i> | LncRNA     | 0.72                        | 1.21E-13 | 4.33E-11    | 0.68                            | 2.52E-13 | 1.33E-10    |  |
| ENSG00000280207.1     | <i>RP11-423H2.4</i>   | LncRNA     | 0.47                        | 7.29E-03 | 6.37E-02    | 0.48                            | 3.97E-03 | 5.94E-02    |  |
| ENSG00000280208.1     | <i>RP11-341D18.4</i>  | Pseudogene | 0.55                        | 1.01E-02 | 7.84E-02    | 0.60                            | 4.31E-03 | 6.28E-02    |  |
| ENSG00000280212.1     | <i>RP11-49K24.3</i>   | LncRNA     | 0.60                        | 2.51E-04 | 6.36E-03    | 0.52                            | 1.00E-03 | 2.34E-02    |  |
| ENSG00000280237.1     | <i>MIR4697HG</i>      | LncRNA     | -0.37                       | 2.20E-03 | 2.92E-02    | -0.25                           | 3.21E-02 | 1.99E-01    |  |
| ENSG00000280254.1     | <i>RP11-81A22.4</i>   | LncRNA     | 0.25                        | 7.56E-03 | 6.52E-02    | 0.21                            | 1.72E-02 | 1.42E-01    |  |
| ENSG00000280266.1     | <i>RP11-331D5.2</i>   | LncRNA     | 0.59                        | 7.50E-03 | 6.48E-02    | 0.55                            | 9.98E-03 | 1.03E-01    |  |
| ENSG00000280316.1     | <i>AL365181.2</i>     | Protein    | 0.30                        | 4.14E-04 | 9.23E-03    | 0.34                            | 2.46E-05 | 1.54E-03    |  |
| ENSG00000280323.1     | <i>AC035303.12</i>    | LncRNA     | -0.78                       | 2.57E-05 | 1.11E-03    | -0.66                           | 1.88E-04 | 7.33E-03    |  |
| ENSG00000280339.1     | <i>RP11-736K20.4</i>  | LncRNA     | -0.27                       | 3.66E-03 | 4.10E-02    | -0.27                           | 2.20E-03 | 3.97E-02    |  |
| ENSG00000280353.1     | <i>CTC-453G23.7</i>   | LncRNA     | 0.45                        | 7.76E-03 | 6.63E-02    | 0.39                            | 1.54E-02 | 1.32E-01    |  |
| ENSG00000280354.1     | <i>RP11-83B20.4</i>   | LncRNA     | 0.68                        | 4.80E-03 | 4.88E-02    | 0.63                            | 7.86E-03 | 8.90E-02    |  |
| ENSG00000280370.1     | <i>CTA-342B11.3</i>   | LncRNA     | 0.45                        | 4.76E-03 | 4.85E-02    | 0.48                            | 1.79E-03 | 3.45E-02    |  |
| ENSG00000280376.1     | <i>RP11-93O14.3</i>   | LncRNA     | 0.61                        | 8.21E-03 | 6.88E-02    | 0.48                            | 3.19E-02 | 1.98E-01    |  |
| ENSG00000280383.1     | <i>CTA-941F9.10</i>   | LncRNA     | 0.44                        | 2.41E-04 | 6.20E-03    | 0.30                            | 9.95E-03 | 1.03E-01    |  |
| ENSG00000280399.1     | <i>RP11-80P20.3</i>   | LncRNA     | 0.39                        | 2.81E-03 | 3.43E-02    | 0.24                            | 5.61E-02 | 2.70E-01    |  |
| ENSG00000280407.2     | <i>RP13-516M14.8</i>  | LncRNA     | 0.39                        | 1.23E-02 | 8.91E-02    | 0.22                            | 1.37E-01 | 4.23E-01    |  |
| ENSG00000280413.1     | <i>KB-1674E1.1</i>    | LncRNA     | 0.45                        | 1.09E-02 | 8.24E-02    | 0.44                            | 8.66E-03 | 9.41E-02    |  |
| ENSG00000280418.1     | <i>AC007326.10</i>    | LncRNA     | 0.66                        | 9.48E-03 | 7.51E-02    | 0.70                            | 4.58E-03 | 6.47E-02    |  |
| ENSG00000280422.1     | <i>RP11-155D18.13</i> | LncRNA     | -0.45                       | 3.56E-03 | 4.02E-02    | -0.27                           | 7.21E-02 | 3.08E-01    |  |
| ENSG00000280424.1     | <i>CITF22-92A6.2</i>  | LncRNA     | 0.47                        | 7.91E-03 | 6.71E-02    | 0.05                            | 7.55E-01 | 9.02E-01    |  |
| ENSG00000280429.1     | <i>AF001548.3</i>     | LncRNA     | -0.57                       | 2.51E-03 | 3.19E-02    | -0.39                           | 3.16E-02 | 1.97E-01    |  |
| ENSG00000280432.1     | <i>AP000962.1</i>     | LncRNA     | 0.56                        | 7.68E-03 | 6.59E-02    | 0.39                            | 5.78E-02 | 2.74E-01    |  |
| ENSG00000280486.1     | <i>LLNLR-307A6.1</i>  | LncRNA     | 0.46                        | 1.34E-02 | 9.39E-02    | 0.29                            | 1.13E-01 | 3.85E-01    |  |
| ENSG00000280537.1     | <i>RP11-33O4.2</i>    | Protein    | 0.48                        | 1.62E-03 | 2.37E-02    | 0.25                            | 9.68E-02 | 3.56E-01    |  |
| ENSG00000280605.1     | <i>AP001107.1</i>     | Other      | 0.48                        | 1.79E-03 | 2.53E-02    | 0.25                            | 9.84E-02 | 3.59E-01    |  |
| ENSG00000280608.1     | <i>AL137229.1</i>     | Other      | 0.56                        | 7.55E-03 | 6.51E-02    | 0.56                            | 5.27E-03 | 7.02E-02    |  |
| ENSG00000280620.1     | <i>SCAANT1</i>        | LncRNA     | 0.49                        | 4.12E-03 | 4.42E-02    | 0.36                            | 3.26E-02 | 2.01E-01    |  |
| ENSG00000280639.1     | <i>RP11-96C21.2</i>   | LncRNA     | 0.47                        | 5.07E-03 | 5.06E-02    | 0.35                            | 3.10E-02 | 1.95E-01    |  |
| ENSG00000280649.1     | <i>AC245100.1</i>     | Protein    | 0.30                        | 4.08E-03 | 4.40E-02    | 0.21                            | 3.69E-02 | 2.14E-01    |  |
| ENSG00000280660.1     | <i>RP11-437J2.3</i>   | LncRNA     | 0.88                        | 1.26E-04 | 3.75E-03    | 0.89                            | 4.12E-05 | 2.29E-03    |  |
| ENSG00000280675.1     | <i>AC092384.1</i>     | Protein    | 0.85                        | 2.12E-04 | 5.62E-03    | 0.80                            | 3.82E-04 | 1.21E-02    |  |
| ENSG00000280743.1     | <i>Metazoa_SRP</i>    | Other      | 0.69                        | 6.61E-03 | 5.98E-02    | 0.62                            | 1.18E-02 | 1.13E-01    |  |
| ENSG00000280758.1     | <i>RP11-216B9.9</i>   | LncRNA     | 0.48                        | 1.12E-04 | 3.46E-03    | 0.29                            | 1.77E-02 | 1.44E-01    |  |
| ENSG00000280777.1     | <i>HYMAI</i>          | LncRNA     | 0.51                        | 1.18E-03 | 1.91E-02    | 0.54                            | 3.18E-04 | 1.06E-02    |  |
| ENSG00000280798.1     | <i>LINC00294</i>      | LncRNA     | -0.17                       | 1.17E-02 | 8.59E-02    | -0.14                           | 3.31E-02 | 2.02E-01    |  |
| ENSG00000280804.1     | <i>TREX1</i>          | Protein    | 0.34                        | 2.23E-05 | 1.00E-03    | 0.30                            | 9.51E-05 | 4.34E-03    |  |
| ENSG00000280816.1     | <i>Metazoa_SRP</i>    | Other      | 0.56                        | 2.10E-04 | 5.58E-03    | 0.38                            | 1.12E-02 | 1.10E-01    |  |
| ENSG00000280852.1     | <i>AC025048.1</i>     | Protein    | 0.55                        | 5.69E-03 | 5.45E-02    | 0.47                            | 1.44E-02 | 1.27E-01    |  |
| ENSG00000280904.1     | <i>SNORD19B</i>       | Other      | 0.49                        | 5.25E-03 | 5.18E-02    | 0.31                            | 6.87E-02 | 3.00E-01    |  |
| ENSG00000280913.1     | <i>CTSLP2</i>         | Pseudogene | 0.62                        | 7.66E-06 | 4.22E-04    | 0.52                            | 1.17E-04 | 5.15E-03    |  |
| ENSG00000280927.1     | <i>CTBP1-AS</i>       | LncRNA     | 0.65                        | 1.19E-04 | 3.62E-03    | 0.48                            | 3.37E-03 | 5.33E-02    |  |
| ENSG00000280969.1     | <i>RPS4Y2</i>         | Protein    | 0.61                        | 2.24E-03 | 2.95E-02    | 0.78                            | 6.96E-05 | 3.44E-03    |  |
| ENSG00000281026.1     | <i>N4BP2L2-IT2</i>    | LncRNA     | 0.31                        | 5.89E-03 | 5.57E-02    | 0.25                            | 2.13E-02 | 1.59E-01    |  |
| ENSG00000281039.1     | <i>RP4-777O23.3</i>   | Protein    | 0.72                        | 2.11E-04 | 5.60E-03    | 0.58                            | 1.96E-03 | 3.68E-02    |  |
| ENSG00000281091.1     | <i>RP13-349O20.2</i>  | LncRNA     | -0.63                       | 2.18E-04 | 5.75E-03    | -0.79                           | 1.72E-06 | 1.86E-04    |  |
| ENSG00000281103.1     | <i>TRG-AS1</i>        | LncRNA     | 0.60                        | 2.58E-03 | 3.25E-02    | 0.78                            | 5.09E-05 | 2.71E-03    |  |
| ENSG00000281162.1     | <i>LINC01127</i>      | LncRNA     | -0.48                       | 1.45E-02 | 9.88E-02    | -0.39                           | 4.23E-02 | 2.32E-01    |  |
| ENSG00000281192.1     | <i>AC018867.1</i>     | Protein    | 0.54                        | 1.31E-02 | 9.24E-02    | 0.39                            | 6.86E-02 | 3.00E-01    |  |
| ENSG00000281207.1     | <i>SLFN1L-AS1</i>     | LncRNA     | 0.30                        | 5.28E-03 | 5.20E-02    | 0.24                            | 2.16E-02 | 1.60E-01    |  |
| ENSG00000281332.1     | <i>LINC00997</i>      | LncRNA     | -0.24                       | 6.55E-03 | 5.96E-02    | -0.21                           | 1.44E-02 | 1.27E-01    |  |
| ENSG00000281348.1     | <i>CTD-2574D22.6</i>  | Protein    | 0.43                        | 5.55E-03 | 5.37E-02    | 0.35                            | 1.83E-02 | 1.46E-01    |  |
| ENSG00000281491.1     | <i>DNAJB5-AS1</i>     | LncRNA     | 0.57                        | 3.48E-03 | 3.96E-02    | 0.45                            | 1.80E-02 | 1.45E-01    |  |
| ENSG00000281523.1     | <i>AC104581.1</i>     | Protein    | 0.65                        | 5.43E-03 | 5.30E-02    | 0.57                            | 1.16E-02 | 1.13E-01    |  |
| ENSG00000281741.1     | <i>AC241377.2</i>     | Protein    | -0.71                       | 9.92E-05 | 3.13E-03    | -0.80                           | 6.04E-06 | 5.03E-04    |  |
| ENSG00000281780.1     | <i>snoZ196</i>        | Other      | 0.53                        | 1.83E-03 | 2.57E-02    | 0.34                            | 4.01E-02 | 2.25E-01    |  |
| ENSG00000281796.1     | <i>EHMT1-IT1</i>      | LncRNA     | 0.52                        | 1.77E-03 | 2.52E-02    | 0.54                            | 6.57E-04 | 1.76E-02    |  |
| ENSG00000281827.1     | <i>AC005071.4</i>     | Other      | 0.77                        | 2.39E-05 | 1.05E-03    | 0.66                            | 1.85E-04 | 7.26E-03    |  |
| ENSG00000281855.1     | <i>AC105009.1</i>     | Protein    | 0.47                        | 4.81E-03 | 4.89E-02    | 0.32                            | 4.79E-02 | 2.48E-01    |  |
| ENSG00000281892.1     | <i>Metazoa_SRP</i>    | Other      | 0.66                        | 1.70E-04 | 4.76E-03    | 0.51                            | 2.44E-03 | 4.30E-02    |  |
| ENSG00000281912.1     | <i>LINC01144</i>      | LncRNA     | 0.25                        | 1.27E-02 | 9.05E-02    | 0.18                            | 7.21E-02 | 3.08E-01    |  |
| ENSG00000281918.1     | <i>Metazoa_SRP</i>    | Other      | 0.54                        | 1.48E-02 | 9.99E-02    | 0.32                            | 1.36E-01 | 4.20E-01    |  |

**Table S11. Gene sets significantly enriched in DEGs upregulated in AA tumors**

| MSigDB gene set name            | Gene set description                        | Gene set size | ES    | NES   | NOM p-val | FDR q-val |
|---------------------------------|---------------------------------------------|---------------|-------|-------|-----------|-----------|
| WALLACE_PROSTATE_CANCER_RACE_UP | Wallace Prostate Cancer Race (Up)           | 277           | 0.516 | 2.529 | 0.00E+00  | 0.00E+00  |
| BIOCARTA_NO2IL12_PATHWAY        | NO2-dependent IL 12 Pathway in NK           | 17            | 0.666 | 1.940 | 1.97E-04  | 1.39E-02  |
| BIOCARTA_THELPER_PATHWAY        | T Helper Cell Surface Molecules             | 12            | 0.739 | 1.934 | 3.96E-04  | 1.19E-02  |
| BIOCARTA_TCRA_PATHWAY           | Lck and Fyn in Initiation of TCR Activation | 11            | 0.760 | 1.951 | 7.95E-04  | 1.60E-02  |
| BIOCARTA_TCYTOTOXIC_PATHWAY     | T Cytotoxic Cell Surface Molecules          | 12            | 0.765 | 2.001 | 7.98E-04  | 1.19E-02  |
| BIOCARTA_CTL_PATHWAY            | CTL Mediated Immune Response                | 13            | 0.686 | 1.846 | 3.29E-03  | 2.91E-02  |
| BIOCARTA_GABA_PATHWAY           | GABA Receptor Life Cycle                    | 10            | 0.740 | 1.825 | 3.77E-03  | 3.09E-02  |
| BIOCARTA_TCAPOPTOSIS_PATHWAY    | HIV Induced T Cell Apoptosis                | 9             | 0.747 | 1.792 | 5.06E-03  | 3.01E-02  |
| BIOCARTA_CTLA4_PATHWAY          | Co-Stimulatory Signal T-cell Activation     | 19            | 0.614 | 1.825 | 5.16E-03  | 2.71E-02  |
| BIOCARTA_BLYMPHOCYTE_PATHWAY    | B Lymphocyte Cell Surface Molecules         | 11            | 0.711 | 1.818 | 5.25E-03  | 2.59E-02  |
| BIOCARTA_ASBCELL_PATHWAY        | Antigen Dependent B Cell Activation         | 12            | 0.669 | 1.761 | 9.13E-03  | 3.66E-02  |
| BIOCARTA_DC_PATHWAY             | DC in Regulating TH1/TH2 Development        | 22            | 0.555 | 1.719 | 1.08E-02  | 4.98E-02  |
| BIOCARTA_FIBRINOLYSIS_PATHWAY   | Fibrinolysis                                | 12            | 0.659 | 1.717 | 1.19E-02  | 4.66E-02  |
| BIOCARTA_IL12_PATHWAY           | IL12 and Stat4 in Th1 Development           | 21            | 0.552 | 1.687 | 1.28E-02  | 5.66E-02  |
| BIOCARTA_NKT_PATHWAY            | Chemokine Receptors in T-cell Polarization  | 29            | 0.489 | 1.626 | 1.67E-02  | 7.04E-02  |
| BIOCARTA_IL17_PATHWAY           | IL 17 Signaling Pathway                     | 14            | 0.612 | 1.684 | 1.72E-02  | 5.40E-02  |
| BIOCARTA_TH1TH2_PATHWAY         | Th1/Th2 Differentiation                     | 19            | 0.554 | 1.644 | 1.93E-02  | 6.96E-02  |
| BIOCARTA_CYTOKINE_PATHWAY       | Cytokine Network                            | 20            | 0.543 | 1.643 | 2.11E-02  | 6.58E-02  |

**Table S12. Gene sets significantly enriched in DEGs downregulated in AA tumors**

| MSigDB gene set name            | Gene set description                        | Gene set size | ES     | NES    | NOM p-val | FDR q-val |
|---------------------------------|---------------------------------------------|---------------|--------|--------|-----------|-----------|
| WALLACE_PROSTATE_CANCER_RACE_DN | Wallace Prostate Cancer Race (Down)         | 76            | -0.661 | -2.743 | 0.00E+00  | 0.00E+00  |
| BIOCARTA_CREB_PATHWAY           | CREB and its extracellular signals          | 27            | -0.622 | -2.052 | 0.00E+00  | 1.51E-02  |
| BIOCARTA_IGF1R_PATHWAY          | IGF-1R signaling                            | 23            | -0.621 | -1.976 | 2.02E-04  | 2.68E-02  |
| BIOCARTA_SHH_PATHWAY            | Sonic Hedgehog Pathway                      | 16            | -0.672 | -1.932 | 4.02E-04  | 3.55E-02  |
| BIOCARTA_MPR_PATHWAY            | Pg Initiates Oocyte Membrane                | 34            | -0.543 | -1.918 | 4.15E-04  | 3.38E-02  |
| BIOCARTA_LONGEVITY_PATHWAY      | IGF-1 Receptor and Longevity                | 15            | -0.676 | -1.909 | 8.21E-04  | 3.14E-02  |
| BIOCARTA_INTEGRIN_PATHWAY       | Integrin Signaling Pathway                  | 38            | -0.521 | -1.874 | 8.22E-04  | 4.09E-02  |
| BIOCARTA_NOS1_PATHWAY           | Nitric Oxide Signaling Pathway              | 21            | -0.595 | -1.860 | 1.24E-03  | 4.10E-02  |
| BIOCARTA_PTEN_PATHWAY           | PTEN dependent cell cycle and apoptosis     | 18            | -0.615 | -1.836 | 1.83E-03  | 4.78E-02  |
| BIOCARTA_GH_PATHWAY             | Growth Hormone Signaling Pathway            | 28            | -0.534 | -1.779 | 2.67E-03  | 7.89E-02  |
| BIOCARTA_NO1_PATHWAY            | Actions of Nitric Oxide in the Heart        | 30            | -0.518 | -1.764 | 4.53E-03  | 8.26E-02  |
| BIOCARTA_ECM_PATHWAY            | Erk and PI-3 Kinase for Collagen Binding    | 24            | -0.547 | -1.758 | 5.53E-03  | 8.02E-02  |
| BIOCARTA_ETC_PATHWAY            | Electron Transport Reaction in Mitochondria | 11            | -0.675 | -1.756 | 8.83E-03  | 7.57E-02  |

Table S13. LncRNA genes differentially expressed between AA and EA patients identified by DESeq2 analysis adjusting for clinical factors

| Gene ID<br>(GENCODE v22) | Gene symbol          | effect size | p value  | adj p value | Classification | Cytoplasmic/Nuclear<br>Relative Concentration Index<br>(CN-RCI) | Regulatory |
|--------------------------|----------------------|-------------|----------|-------------|----------------|-----------------------------------------------------------------|------------|
| ENSG00000082929.7        | <i>LINC01587</i>     | 0.87        | 3.55E-05 | 1.44E-03    | Intergenic     | 1.235                                                           |            |
| ENSG00000116652.6        | <i>DLEU2L</i>        | 0.39        | 5.18E-03 | 5.13E-02    | Exonic         | -2.987                                                          |            |
| ENSG00000122548.5        | <i>KIAA0087</i>      | -0.59       | 1.24E-02 | 8.92E-02    | Intergenic     | NA                                                              |            |
| ENSG00000128254.12       | <i>C22orf24</i>      | 0.55        | 3.45E-04 | 8.11E-03    | Antisense      | -0.136                                                          |            |
| ENSG00000132204.12       | <i>LINC00470</i>     | 0.61        | 1.12E-02 | 8.39E-02    | Intergenic     | -2.059                                                          | Y          |
| ENSG00000142396.9        | <i>ERVK3-1</i>       | 0.20        | 3.30E-04 | 7.87E-03    | Exonic         | -0.971                                                          | Y          |
| ENSG00000151303.11       | <i>RP11-96C23.13</i> | 0.60        | 2.08E-05 | 9.56E-04    | Intergenic     | -2.216                                                          |            |
| ENSG00000157306.13       | <i>RP11-66N24.4</i>  | 0.45        | 5.77E-04 | 1.16E-02    | Exonic         | -3.952                                                          | Y          |
| ENSG00000162947.4        | <i>AC007364.1</i>    | -0.70       | 6.06E-03 | 5.68E-02    | Intergenic     | NA                                                              | N          |
| ENSG00000165511.6        | <i>C10orf25</i>      | -0.24       | 9.08E-04 | 1.58E-02    | Antisense      | 0.649                                                           |            |
| ENSG00000167117.7        | <i>LINC00483</i>     | 0.49        | 1.47E-02 | 9.97E-02    | Intergenic     | 1.585                                                           | Y          |
| ENSG00000170919.14       | <i>TPT1-AS1</i>      | 0.30        | 4.08E-04 | 9.14E-03    | Antisense      | -2.136                                                          | Y          |
| ENSG00000172250.13       | <i>SERHL</i>         | 0.55        | 5.20E-04 | 1.09E-02    | Antisense      | -2.188                                                          | Y          |
| ENSG00000173867.8        | <i>RP11-97O12.7</i>  | 0.42        | 5.46E-05 | 2.01E-03    | Exonic         | NA                                                              | Y          |
| ENSG00000174171.5        | <i>RP11-23P13.6</i>  | 0.74        | 1.75E-04 | 4.88E-03    | Antisense      | -3.382                                                          | Y          |
| ENSG00000175147.10       | <i>TMEM51-AS1</i>    | 0.39        | 1.46E-03 | 2.20E-02    | Antisense      | -1.901                                                          | Y          |
| ENSG00000175746.6        | <i>C15orf54</i>      | 0.56        | 9.73E-03 | 7.63E-02    | Intergenic     | 1.042                                                           |            |
| ENSG00000175772.10       | <i>LINC01106</i>     | -0.42       | 9.47E-05 | 3.03E-03    | Intergenic     | -0.469                                                          |            |
| ENSG00000176236.6        | <i>C10orf111</i>     | 0.37        | 1.44E-03 | 2.18E-02    | Antisense      | -2.093                                                          |            |
| ENSG00000176593.6        | <i>CTD-2368P22.1</i> | 0.37        | 7.21E-04 | 1.36E-02    | Antisense      | -2.405                                                          |            |
| ENSG00000176659.7        | <i>C20orf197</i>     | 0.42        | 6.45E-03 | 5.91E-02    | Intergenic     | -2.079                                                          |            |
| ENSG00000177112.6        | <i>MRV11-AS1</i>     | -0.59       | 1.48E-04 | 4.28E-03    | Antisense      | -0.695                                                          | Y          |
| ENSG00000177410.11       | <i>ZFAS1</i>         | 0.25        | 1.32E-02 | 9.30E-02    | Antisense      | 1.429                                                           | Y          |
| ENSG00000178193.5        | <i>RP4-682C21.5</i>  | 0.67        | 2.94E-03 | 3.53E-02    | Intergenic     | NA                                                              | N          |
| ENSG00000178248.11       | <i>AP000345.1</i>    | -0.64       | 1.52E-03 | 2.26E-02    | Intergenic     | NA                                                              | Y          |
| ENSG00000179141.8        | <i>MTUS2-AS1</i>     | 0.60        | 6.60E-03 | 5.98E-02    | Antisense      | -1.222                                                          | N          |
| ENSG00000179428.2        | <i>AC073072.5</i>    | -0.66       | 1.99E-03 | 2.73E-02    | Antisense      | 0.295                                                           |            |
| ENSG00000180846.7        | <i>CSNK1G2-AS1</i>   | 0.59        | 2.09E-03 | 2.82E-02    | Antisense      | NA                                                              | Y          |
| ENSG00000181800.5        | <i>CELF2-AS1</i>     | 0.48        | 1.05E-02 | 8.05E-02    | Antisense      | NA                                                              | Y          |
| ENSG00000182109.6        | <i>RP11-69E11.4</i>  | 0.38        | 1.75E-03 | 2.49E-02    | Antisense      | -4.349                                                          | Y          |
| ENSG00000182366.8        | <i>FAM87A</i>        | -1.28       | 1.18E-09 | 2.05E-07    | Intergenic     | -1.167                                                          | Y          |
| ENSG00000182376.2        | <i>RP5-1142A6.8</i>  | 0.69        | 1.44E-05 | 7.00E-04    | Antisense      | NA                                                              | Y          |
| ENSG00000182648.10       | <i>LINC01006</i>     | -0.69       | 1.15E-09 | 2.00E-07    | Antisense      | -0.239                                                          | Y          |
| ENSG00000183562.3        | <i>CTC-343N3.1</i>   | 0.56        | 2.64E-03 | 3.30E-02    | Antisense      | NA                                                              |            |
| ENSG00000185203.10       | <i>WASIR1</i>        | -1.06       | 2.55E-05 | 1.11E-03    | Intergenic     | -0.585                                                          |            |
| ENSG00000185837.3        | <i>CECR5-AS1</i>     | 0.31        | 1.13E-02 | 8.43E-02    | Antisense      | -0.389                                                          | Y          |
| ENSG00000186825.5        | <i>C2orf27B</i>      | 0.66        | 9.38E-03 | 7.46E-02    | Intergenic     | -3.824                                                          |            |
| ENSG00000188206.6        | <i>HNRNPU-AS1</i>    | 0.50        | 1.63E-05 | 7.82E-04    | Exonic         | -3.976                                                          | Y          |
| ENSG00000188525.3        | <i>AC010969.1</i>    | -0.69       | 6.84E-03 | 6.12E-02    | Intergenic     | NA                                                              | N          |
| ENSG00000189238.5        | <i>LINC00943</i>     | 0.66        | 8.32E-04 | 1.50E-02    | Intergenic     | NA                                                              | Y          |
| ENSG00000189316.3        | <i>RP11-797H7.5</i>  | 0.47        | 1.46E-02 | 9.91E-02    | Antisense      | 0.072                                                           |            |
| ENSG00000196096.3        | <i>AC079610.2</i>    | 0.79        | 2.49E-06 | 1.68E-04    | Intergenic     | -0.152                                                          |            |
| ENSG00000196295.10       | <i>AC005154.6</i>    | 0.32        | 5.74E-04 | 1.15E-02    | Exonic         | -2.410                                                          | Y          |
| ENSG00000196421.6        | <i>LINC00176</i>     | 0.41        | 6.44E-03 | 5.91E-02    | Antisense      | -3.013                                                          | Y          |
| ENSG00000196756.10       | <i>SNHG17</i>        | 0.44        | 2.20E-05 | 9.97E-04    | Intergenic     | -1.248                                                          | Y          |
| ENSG00000196979.1        | <i>RP11-88G17.6</i>  | 0.56        | 4.60E-03 | 4.76E-02    | Intergenic     | NA                                                              |            |
| ENSG00000197989.12       | <i>SNHG12</i>        | 0.42        | 5.81E-04 | 1.16E-02    | Antisense      | -2.160                                                          | Y          |
| ENSG00000198454.2        | <i>PRR31</i>         | 0.77        | 2.73E-04 | 6.83E-03    | Intergenic     | NA                                                              |            |
| ENSG00000198468.6        | <i>FLVCR1-AS1</i>    | -0.49       | 1.30E-05 | 6.43E-04    | Intergenic     | 1.283                                                           | Y          |
| ENSG00000203279.3        | <i>RP11-498P14.5</i> | 0.74        | 8.05E-08 | 9.06E-06    | Intergenic     | 0.525                                                           | Y          |
| ENSG00000203280.4        | <i>CTA-221G9.12</i>  | 0.35        | 4.03E-03 | 4.37E-02    | Antisense      | 1.663                                                           |            |
| ENSG00000203321.2        | <i>C9orf41-AS1</i>   | 0.42        | 9.33E-03 | 7.44E-02    | Antisense      | NA                                                              |            |
| ENSG00000203364.2        | <i>RP11-370F5.4</i>  | 0.52        | 3.26E-03 | 3.81E-02    | Intergenic     | NA                                                              | Y          |
| ENSG00000203588.3        | <i>IGBP1-AS1</i>     | 0.39        | 5.44E-03 | 5.31E-02    | Antisense      | NA                                                              | Y          |
| ENSG00000203644.3        | <i>RP11-332M2.1</i>  | 0.26        | 3.76E-03 | 4.17E-02    | Intronic       | 1.053                                                           |            |
| ENSG00000203688.4        | <i>RP11-351J23.1</i> | -0.59       | 1.61E-03 | 2.36E-02    | Intergenic     | -0.500                                                          | Y          |
| ENSG00000203739.3        | <i>RP11-296O14.3</i> | 0.42        | 7.77E-07 | 6.28E-05    | Intergenic     | -1.299                                                          | Y          |
| ENSG00000203804.4        | <i>ADAMTSL4-AS1</i>  | 0.46        | 4.71E-03 | 4.83E-02    | Exonic         | -2.544                                                          |            |
| ENSG00000203865.8        | <i>ATP1A1-AS1</i>    | 0.27        | 5.60E-06 | 3.23E-04    | Antisense      | 0.350                                                           |            |
| ENSG00000203875.9        | <i>SNHG5</i>         | -0.31       | 1.25E-02 | 8.98E-02    | Intergenic     | 2.049                                                           | Y          |
| ENSG00000203999.7        | <i>LINC001270</i>    | 0.45        | 4.84E-03 | 4.91E-02    | Intergenic     | -1.912                                                          |            |
| ENSG00000204091.6        | <i>TDRG1</i>         | 0.89        | 5.45E-04 | 1.11E-02    | Intergenic     | 0.144                                                           | N          |
| ENSG00000204110.6        | <i>RP1-153P14.8</i>  | 0.68        | 3.70E-03 | 4.12E-02    | Intergenic     | 2.644                                                           | N          |
| ENSG00000204261.7        | <i>PSMB8-AS1</i>     | 0.45        | 8.02E-05 | 2.68E-03    | Exonic         | 0.378                                                           |            |
| ENSG00000204283.3        | <i>FLJ45079</i>      | 0.58        | 5.92E-03 | 5.59E-02    | Intergenic     | NA                                                              |            |

|                   |                      |       |          |          |            |        |   |
|-------------------|----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000204588.5 | <i>LINC01123</i>     | 0.60  | 9.35E-08 | 1.04E-05 | Intergenic | -1.256 |   |
| ENSG00000204625.9 | <i>HCG9</i>          | 0.76  | 1.17E-07 | 1.26E-05 | Intergenic | NA     | Y |
| ENSG00000204709.4 | <i>LINC01556</i>     | 1.08  | 5.25E-10 | 1.00E-07 | Intergenic | NA     |   |
| ENSG00000204758.6 | <i>CTC-308K20.1</i>  | 0.29  | 1.98E-03 | 2.72E-02 | Antisense  | -1.481 | Y |
| ENSG00000204802.3 | <i>RP11-111F5.4</i>  | 0.84  | 1.31E-05 | 6.43E-04 | Intergenic | -1.580 | Y |
| ENSG00000204949.7 | <i>FAM83A-AS1</i>    | 1.39  | 1.59E-08 | 2.20E-06 | Antisense  | -1.585 | Y |
| ENSG00000205037.2 | <i>RP11-863P13.4</i> | -0.72 | 6.56E-04 | 1.27E-02 | Antisense  | NA     | Y |
| ENSG00000205325.1 | <i>AC005863.1</i>    | 0.68  | 1.17E-03 | 1.89E-02 | Intergenic | 0.328  | Y |
| ENSG00000205559.3 | <i>CHKB-AS1</i>      | 0.34  | 1.69E-03 | 2.44E-02 | Antisense  | 0.509  | Y |
| ENSG00000205622.8 | <i>AF064858.6</i>    | 0.62  | 1.20E-03 | 1.93E-02 | Intergenic | -1.263 | Y |
| ENSG00000205632.2 | <i>LINC01310</i>     | -0.98 | 8.26E-05 | 2.74E-03 | Intergenic | -2.830 |   |
| ENSG00000205663.5 | <i>RP11-706O15.5</i> | -0.67 | 8.71E-03 | 7.14E-02 | Intergenic | -0.498 | Y |
| ENSG00000205664.9 | <i>RP11-706O15.1</i> | -0.21 | 1.34E-02 | 9.38E-02 | Intergenic | -0.138 |   |
| ENSG00000205740.2 | <i>RP11-363N22.3</i> | 0.32  | 1.03E-02 | 7.91E-02 | Antisense  | -1.648 |   |
| ENSG00000205837.6 | <i>LINC00487</i>     | 0.70  | 2.58E-03 | 3.25E-02 | Intergenic | -1.585 | Y |
| ENSG00000205885.6 | <i>CIRL-AS1</i>      | 0.27  | 1.25E-02 | 8.98E-02 | Antisense  | -3.637 | Y |
| ENSG00000205890.3 | <i>RP11-473M20.5</i> | 0.33  | 5.97E-03 | 5.63E-02 | Antisense  | NA     | Y |
| ENSG00000205913.5 | <i>SRRM2-AS1</i>     | 0.41  | 2.40E-04 | 6.19E-03 | Antisense  | -1.599 | Y |
| ENSG00000206140.8 | <i>TMEM191C</i>      | 0.36  | 6.18E-03 | 5.76E-02 | Intergenic | -2.251 | N |
| ENSG00000206337.9 | <i>HCP5</i>          | 0.42  | 2.79E-03 | 3.42E-02 | Exonic     | -0.162 | Y |
| ENSG00000206417.7 | <i>HIFX-AS1</i>      | 0.39  | 1.11E-03 | 1.84E-02 | Antisense  | -2.249 | Y |
| ENSG00000206573.7 | <i>THUMPD3-AS1</i>   | 0.28  | 7.67E-04 | 1.42E-02 | Antisense  | -1.047 |   |
| ENSG00000211683.3 | <i>KB-1572G7.3</i>   | 0.63  | 1.67E-04 | 4.70E-03 | Exonic     | -2.293 | Y |
| ENSG00000213373.6 | <i>LINC00671</i>     | 1.35  | 1.04E-13 | 3.77E-11 | Intergenic | -3.366 | Y |
| ENSG00000213742.5 | <i>ZNF337-AS1</i>    | 0.21  | 2.23E-03 | 2.94E-02 | Antisense  | -1.195 |   |
| ENSG00000213971.6 | <i>RP11-15H20.6</i>  | 0.21  | 3.17E-04 | 7.61E-03 | Intergenic | -0.522 | Y |
| ENSG00000214188.8 | <i>ST7-OT4</i>       | 0.38  | 1.42E-02 | 9.79E-02 | Exonic     | -2.387 |   |
| ENSG00000214401.4 | <i>KANSL1-AS1</i>    | -0.68 | 3.93E-06 | 2.43E-04 | Antisense  | 1.679  | Y |
| ENSG00000214559.3 | <i>RP11-323J4.1</i>  | -0.76 | 4.85E-06 | 2.91E-04 | Antisense  | NA     | Y |
| ENSG00000214770.2 | <i>RP11-544I20.2</i> | 0.38  | 3.21E-03 | 3.77E-02 | Exonic     | -1.602 | Y |
| ENSG00000214783.8 | <i>POLR2J4</i>       | 0.38  | 2.29E-05 | 1.02E-03 | Antisense  | -1.504 |   |
| ENSG00000214894.5 | <i>LINC00243</i>     | 0.53  | 2.68E-04 | 6.74E-03 | Intergenic | -1.687 | Y |
| ENSG00000215022.6 | <i>RP1-257A7.4</i>   | 0.31  | 2.66E-03 | 3.32E-02 | Exonic     | -2.486 | Y |
| ENSG00000215023.2 | <i>AC114730.5</i>    | 0.61  | 2.78E-03 | 3.41E-02 | Antisense  | -1.709 | Y |
| ENSG00000215190.7 | <i>LINC00680</i>     | 0.40  | 2.29E-06 | 1.58E-04 | Intergenic | -0.670 | Y |
| ENSG00000215196.4 | <i>AC091878.1</i>    | 0.57  | 3.03E-03 | 3.60E-02 | Antisense  | -1.501 | Y |
| ENSG00000215256.3 | <i>DHRS4-AS1</i>     | -0.37 | 1.03E-09 | 1.83E-07 | Antisense  | 1.565  | Y |
| ENSG00000215374.5 | <i>FAM66B</i>        | -0.74 | 4.82E-09 | 7.55E-07 | Antisense  | -0.369 | Y |
| ENSG00000215386.9 | <i>MIR99AHG</i>      | 0.51  | 4.67E-05 | 1.78E-03 | Intergenic | -0.069 |   |
| ENSG00000215424.8 | <i>MCM3AP-AS1</i>    | 0.30  | 2.13E-04 | 5.63E-03 | Antisense  | -1.466 | Y |
| ENSG00000215769.7 | <i>RP13-104F24.2</i> | 0.41  | 4.45E-04 | 9.70E-03 | Intergenic | -3.920 |   |
| ENSG00000215859.7 | <i>RP6-74O6.2</i>    | 0.37  | 1.77E-03 | 2.52E-02 | Intergenic | -1.007 | N |
| ENSG00000215908.6 | <i>CROCCP2</i>       | 0.60  | 5.05E-12 | 1.46E-09 | Intergenic | NA     | Y |
| ENSG00000216895.7 | <i>AC009403.2</i>    | 0.21  | 6.28E-03 | 5.83E-02 | Antisense  | 0.671  |   |
| ENSG00000217258.2 | <i>AC007249.3</i>    | 0.51  | 5.72E-04 | 1.15E-02 | Intergenic | NA     | Y |
| ENSG00000217576.7 | <i>RP11-248G5.8</i>  | -0.75 | 2.66E-03 | 3.31E-02 | Intergenic | NA     | Y |
| ENSG00000217702.2 | <i>RP11-287D1.4</i>  | 0.50  | 9.87E-03 | 7.71E-02 | Intergenic | -1.387 |   |
| ENSG00000218416.4 | <i>PP14571</i>       | 0.52  | 9.59E-04 | 1.65E-02 | Antisense  | -1.256 |   |
| ENSG00000218672.1 | <i>AC008060.7</i>    | -0.93 | 2.32E-04 | 6.03E-03 | Intergenic | NA     |   |
| ENSG00000219410.5 | <i>RP4-761J14.8</i>  | 0.46  | 6.79E-04 | 1.30E-02 | Antisense  | 1.000  | N |
| ENSG00000221571.3 | <i>RNU6ATAC35P</i>   | 0.43  | 1.60E-03 | 2.35E-02 | Intergenic | NA     | Y |
| ENSG00000222030.1 | <i>AC007131.1</i>    | 0.82  | 5.44E-04 | 1.11E-02 | Intergenic | NA     | N |
| ENSG00000222042.1 | <i>AP000233.4</i>    | 0.75  | 3.30E-03 | 3.84E-02 | Intergenic | -1.058 | N |
| ENSG00000223396.2 | <i>RP11-134G8.5</i>  | 0.24  | 1.13E-02 | 8.43E-02 | Intergenic | -0.674 |   |
| ENSG00000223511.4 | <i>RP13-297E16.4</i> | 0.64  | 1.70E-03 | 2.45E-02 | Intergenic | -2.072 |   |
| ENSG00000223525.1 | <i>RABGAP1L-IT1</i>  | 0.63  | 1.15E-02 | 8.52E-02 | Intronic   | 0.778  | N |
| ENSG00000223562.1 | <i>RP11-543B16.3</i> | 0.67  | 5.88E-03 | 5.57E-02 | Intergenic | NA     | N |
| ENSG00000223675.1 | <i>RP11-86H7.6</i>   | -0.64 | 8.99E-03 | 7.27E-02 | Intergenic | NA     | N |
| ENSG00000223715.1 | <i>LINC01208</i>     | 0.68  | 5.82E-03 | 5.52E-02 | Intergenic | 0.737  |   |
| ENSG00000223749.6 | <i>MIR503HG</i>      | 0.42  | 1.09E-02 | 8.21E-02 | Intergenic | -3.617 | Y |
| ENSG00000223770.4 | <i>AC006145.4</i>    | 0.76  | 2.40E-03 | 3.08E-02 | Antisense  | -2.000 |   |
| ENSG00000223783.1 | <i>AC124944.5</i>    | 0.81  | 5.07E-05 | 1.90E-03 | Intergenic | NA     | Y |
| ENSG00000223797.4 | <i>ENTPD3-AS1</i>    | 0.22  | 1.35E-02 | 9.42E-02 | Antisense  | 0.914  | Y |
| ENSG00000223834.2 | <i>RP11-472N13.2</i> | 0.63  | 1.23E-03 | 1.97E-02 | Intergenic | NA     | Y |
| ENSG00000223838.1 | <i>AC007091.1</i>    | 0.62  | 1.03E-02 | 7.91E-02 | Intergenic | NA     | Y |
| ENSG00000223891.4 | <i>OSER1-AS1</i>     | 0.22  | 1.05E-02 | 8.03E-02 | Intergenic | 1.614  | Y |
| ENSG00000223901.2 | <i>AP001469.5</i>    | 0.57  | 3.25E-04 | 7.77E-03 | Antisense  | NA     | N |
| ENSG00000223956.1 | <i>RP4-710M16.2</i>  | 1.07  | 7.45E-08 | 8.41E-06 | Intergenic | NA     | Y |
| ENSG00000224050.1 | <i>RP1-90G24.6</i>   | -0.56 | 9.50E-03 | 7.51E-02 | Intergenic | -0.833 | Y |
| ENSG00000224057.1 | <i>EGFR-AS1</i>      | 0.63  | 2.46E-05 | 1.08E-03 | Antisense  | 1.162  | N |
| ENSG00000224066.1 | <i>RP4-622L5.7</i>   | 0.50  | 4.04E-04 | 9.08E-03 | Antisense  | -4.608 |   |

|                   |                         |       |          |          |            |        |   |
|-------------------|-------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000224081.6 | <i>LINC01057</i>        | -0.46 | 1.89E-03 | 2.63E-02 | Intergenic | NA     | Y |
| ENSG00000224090.1 | <i>AC097468.4</i>       | -0.42 | 2.87E-04 | 7.06E-03 | Antisense  | -1.437 | Y |
| ENSG00000224093.4 | <i>RP5-1033H22.2</i>    | 0.56  | 3.57E-03 | 4.03E-02 | Antisense  | -1.020 | Y |
| ENSG00000224100.1 | <i>AP001630.5</i>       | 0.58  | 1.13E-03 | 1.86E-02 | Intergenic | NA     | Y |
| ENSG00000224138.1 | <i>AC000123.4</i>       | 0.19  | 1.24E-02 | 8.92E-02 | Antisense  | NA     | Y |
| ENSG00000224141.4 | <i>AL109763.2</i>       | 1.10  | 3.48E-07 | 3.19E-05 | Intergenic | -1.138 | N |
| ENSG00000224152.1 | <i>AC009506.1</i>       | -0.24 | 7.47E-04 | 1.39E-02 | Antisense  | 0.630  |   |
| ENSG00000224189.5 | <i>HAGLR</i>            | -0.50 | 1.12E-02 | 8.38E-02 | Antisense  | 0.501  |   |
| ENSG00000224272.2 | <i>AC114730.3</i>       | 0.62  | 4.66E-04 | 1.01E-02 | Antisense  | 0.134  | N |
| ENSG00000224356.4 | <i>RP11-151A6.4</i>     | 0.93  | 1.30E-12 | 4.06E-10 | Exonic     | -2.487 | Y |
| ENSG00000224387.1 | <i>RP3-395M20.2</i>     | 0.53  | 4.18E-03 | 4.47E-02 | Antisense  | NA     | Y |
| ENSG00000224413.1 | <i>AP001476.2</i>       | 1.17  | 9.25E-08 | 1.03E-05 | Intergenic | -2.323 | Y |
| ENSG00000224418.1 | <i>STK24-AS1</i>        | 0.40  | 2.48E-03 | 3.16E-02 | Antisense  | -1.690 | N |
| ENSG00000224505.2 | <i>AC002117.1</i>       | 0.32  | 1.21E-02 | 8.77E-02 | Antisense  | -2.506 | Y |
| ENSG00000224521.1 | <i>RP11-438F14.3</i>    | 0.75  | 3.03E-03 | 3.61E-02 | Antisense  | -0.770 | Y |
| ENSG00000224536.1 | <i>RP11-134G8.7</i>     | 0.46  | 2.59E-05 | 1.12E-03 | Antisense  | -0.907 | Y |
| ENSG00000224549.1 | <i>RP11-370B11.3</i>    | 0.58  | 9.08E-03 | 7.32E-02 | Intergenic | NA     | Y |
| ENSG00000224596.6 | <i>ZMIZ1-AS1</i>        | 0.53  | 1.42E-07 | 1.49E-05 | Intergenic | -2.389 | Y |
| ENSG00000224614.1 | <i>TNK2-AS1</i>         | 0.75  | 2.36E-06 | 1.61E-04 | Antisense  | -1.377 | Y |
| ENSG00000224635.1 | <i>RP4-564F22.5</i>     | 0.91  | 1.04E-08 | 1.50E-06 | Intergenic | -3.219 | Y |
| ENSG00000224652.1 | <i>LINC00885</i>        | 0.54  | 4.65E-04 | 1.01E-02 | Intergenic | 0.176  | Y |
| ENSG00000224660.1 | <i>SH3BP5-AS1</i>       | 0.53  | 2.33E-06 | 1.59E-04 | Antisense  | -3.977 | Y |
| ENSG00000224794.1 | <i>RP3-333H23.8</i>     | 0.71  | 2.52E-03 | 3.20E-02 | Intergenic | -2.036 | Y |
| ENSG00000224897.5 | <i>POT1-AS1</i>         | 0.50  | 2.54E-04 | 6.44E-03 | Antisense  | -0.437 |   |
| ENSG00000224903.1 | <i>AC005534.8</i>       | 0.61  | 1.58E-05 | 7.61E-04 | Antisense  | -2.185 |   |
| ENSG00000224934.2 | <i>RP11-441O15.3</i>    | 0.35  | 2.79E-03 | 3.42E-02 | Intergenic | -2.327 | Y |
| ENSG00000224945.1 | <i>RP11-82L18.2</i>     | 0.52  | 1.14E-03 | 1.86E-02 | Intronic   | -3.279 | Y |
| ENSG00000224969.1 | <i>RP11-54O7.11</i>     | 0.44  | 1.13E-02 | 8.44E-02 | Antisense  | NA     | Y |
| ENSG00000224975.1 | <i>INE1</i>             | 0.31  | 3.13E-03 | 3.69E-02 | Intronic   | -5.002 | Y |
| ENSG00000225032.4 | <i>RP11-228B15.4</i>    | 0.33  | 8.67E-03 | 7.12E-02 | Antisense  | -4.743 | Y |
| ENSG00000225039.1 | <i>LINC01058</i>        | 0.39  | 1.33E-02 | 9.34E-02 | Intergenic | -1.000 | Y |
| ENSG00000225062.1 | <i>CATIP-AS1</i>        | 0.39  | 8.17E-03 | 6.86E-02 | Antisense  | -0.451 |   |
| ENSG00000225075.1 | <i>RP11-426L16.3</i>    | 0.64  | 3.41E-05 | 1.40E-03 | Antisense  | NA     | Y |
| ENSG00000225077.2 | <i>LINC00337</i>        | 0.69  | 4.47E-05 | 1.72E-03 | Intergenic | 0.337  | Y |
| ENSG00000225084.1 | <i>AL450226.2</i>       | 0.72  | 4.01E-03 | 4.36E-02 | Antisense  | NA     | N |
| ENSG00000225146.1 | <i>AC073957.15</i>      | 0.70  | 3.46E-05 | 1.41E-03 | Antisense  | NA     | Y |
| ENSG00000225173.1 | <i>XXbac-BPG308K3.5</i> | 0.50  | 1.27E-02 | 9.08E-02 | Intergenic | 0.627  | Y |
| ENSG00000225177.4 | <i>RP11-390P2.4</i>     | 0.39  | 3.13E-03 | 3.69E-02 | Antisense  | -1.872 | Y |
| ENSG00000225231.1 | <i>AC091814.2</i>       | 0.79  | 1.75E-03 | 2.49E-02 | Intergenic | NA     | N |
| ENSG00000225243.4 | <i>RP1-127D3.4</i>      | 0.70  | 1.56E-03 | 2.31E-02 | Antisense  | NA     | Y |
| ENSG00000225279.1 | <i>RP11-536C5.2</i>     | 0.85  | 2.92E-06 | 1.91E-04 | Antisense  | NA     | Y |
| ENSG00000225328.1 | <i>AC019100.3</i>       | 0.61  | 2.50E-03 | 3.19E-02 | Intergenic | NA     | Y |
| ENSG00000225331.1 | <i>AP001055.6</i>       | 0.84  | 6.57E-07 | 5.47E-05 | Intergenic | NA     | Y |
| ENSG00000225339.3 | <i>RP11-513I15.6</i>    | 0.37  | 6.65E-04 | 1.28E-02 | Antisense  | -1.127 |   |
| ENSG00000225361.3 | <i>PPP1R26-AS1</i>      | 0.27  | 9.95E-04 | 1.70E-02 | Antisense  | -1.875 | Y |
| ENSG00000225383.5 | <i>SFTA1P</i>           | 0.84  | 9.44E-04 | 1.64E-02 | Intergenic | 1.071  | N |
| ENSG00000225391.4 | <i>NHEG1</i>            | -0.71 | 4.57E-03 | 4.75E-02 | Intergenic | NA     |   |
| ENSG00000225442.2 | <i>MPRIIP-AS1</i>       | 0.86  | 6.32E-06 | 3.60E-04 | Antisense  | NA     | Y |
| ENSG00000225465.8 | <i>RFPL1S</i>           | -0.88 | 2.35E-06 | 1.61E-04 | Antisense  | -0.362 | Y |
| ENSG00000225498.1 | <i>AC002064.5</i>       | 0.48  | 1.28E-02 | 9.14E-02 | Intergenic | NA     | Y |
| ENSG00000225528.1 | <i>RP3-370M22.8</i>     | 0.44  | 1.61E-03 | 2.36E-02 | Intronic   | NA     | Y |
| ENSG00000225578.1 | <i>NCBP2-AS1</i>        | 0.43  | 3.47E-03 | 3.96E-02 | Antisense  | NA     | Y |
| ENSG00000225598.1 | <i>RP11-339D23.1</i>    | 0.81  | 4.24E-04 | 9.36E-03 | Intergenic | 1.243  | Y |
| ENSG00000225708.5 | <i>RP13-379L11.1</i>    | -0.97 | 2.46E-05 | 1.08E-03 | Intergenic | NA     | Y |
| ENSG00000225725.4 | <i>FAM66E</i>           | 1.09  | 3.16E-10 | 6.37E-08 | Antisense  | -0.513 | Y |
| ENSG00000225731.1 | <i>AP001627.1</i>       | -0.60 | 2.05E-03 | 2.79E-02 | Antisense  | NA     | Y |
| ENSG00000225783.5 | <i>MIAT</i>             | 0.44  | 9.74E-03 | 7.63E-02 | Intergenic | -2.904 | Y |
| ENSG00000225819.1 | <i>AC013269.3</i>       | 0.76  | 7.13E-04 | 1.35E-02 | Antisense  | NA     | Y |
| ENSG00000225855.5 | <i>RUSC1-AS1</i>        | 0.28  | 8.71E-03 | 7.14E-02 | Antisense  | -4.076 |   |
| ENSG00000225880.5 | <i>LINC00115</i>        | 0.49  | 2.37E-05 | 1.05E-03 | Intergenic | -1.843 | Y |
| ENSG00000225905.1 | <i>RP4-758J18.7</i>     | -0.56 | 7.53E-07 | 6.10E-05 | Antisense  | -0.110 | Y |
| ENSG00000225916.1 | <i>AC007879.4</i>       | 0.49  | 9.41E-03 | 7.47E-02 | Intergenic | NA     | Y |
| ENSG00000225942.1 | <i>AC093326.2</i>       | 0.88  | 2.32E-04 | 6.03E-03 | Intergenic | NA     | N |
| ENSG00000225953.2 | <i>SATB2-AS1</i>        | -0.34 | 6.59E-03 | 5.98E-02 | Antisense  | 0.534  | Y |
| ENSG00000225969.1 | <i>ABHD11-AS1</i>       | -0.41 | 1.31E-02 | 9.28E-02 | Intergenic | 1.406  |   |
| ENSG00000225988.1 | <i>LAMP5-AS1</i>        | -0.91 | 2.68E-04 | 6.73E-03 | Antisense  | -2.222 |   |
| ENSG00000226155.1 | <i>AC124944.3</i>       | 0.65  | 4.62E-05 | 1.77E-03 | Intergenic | NA     | Y |
| ENSG00000226263.1 | <i>ISM1-AS1</i>         | 0.44  | 1.47E-02 | 9.96E-02 | Antisense  | NA     | Y |
| ENSG00000226312.6 | <i>CFLAR-AS1</i>        | 0.34  | 7.61E-03 | 6.55E-02 | Antisense  | -2.896 | Y |
| ENSG00000226328.5 | <i>NUP50-AS1</i>        | 0.41  | 2.79E-06 | 1.84E-04 | Intergenic | -0.413 |   |
| ENSG00000226332.2 | <i>RP11-157P1.4</i>     | 0.35  | 7.01E-03 | 6.21E-02 | Antisense  | -3.076 | Y |

|                    |                        |       |          |          |            |        |   |
|--------------------|------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000226398.1  | <i>AC013480.2</i>      | -0.82 | 1.09E-03 | 1.81E-02 | Intergenic | NA     | N |
| ENSG00000226416.1  | <i>MRPL23-AS1</i>      | 0.48  | 1.33E-02 | 9.36E-02 | Antisense  | -1.030 | Y |
| ENSG00000226431.1  | <i>RP11-416N2.3</i>    | 0.61  | 1.45E-02 | 9.88E-02 | Intronic   | 2.354  | N |
| ENSG00000226440.6  | <i>RP11-506B6.6</i>    | -0.46 | 3.64E-03 | 4.08E-02 | Exonic     | NA     | N |
| ENSG00000226472.6  | <i>RP11-551L14.4</i>   | 0.43  | 7.10E-03 | 6.25E-02 | Antisense  | -2.748 | Y |
| ENSG00000226508.1  | <i>AC104655.3</i>      | 0.78  | 1.78E-04 | 4.93E-03 | Intergenic | 0.077  | Y |
| ENSG00000226519.1  | <i>LINC00390</i>       | -0.62 | 1.39E-02 | 9.62E-02 | Intergenic | NA     | N |
| ENSG00000226644.4  | <i>RP11-128M1.1</i>    | 0.36  | 1.34E-02 | 9.39E-02 | Intergenic | 2.687  |   |
| ENSG00000226686.6  | <i>LINC01535</i>       | -0.59 | 8.13E-05 | 2.70E-03 | Intergenic | -1.976 |   |
| ENSG00000226706.1  | <i>RP11-426A6.5</i>    | 0.36  | 1.16E-02 | 8.54E-02 | Antisense  | NA     | N |
| ENSG00000226725.2  | <i>PABPC1L2B-AS1</i>   | -0.65 | 1.02E-03 | 1.73E-02 | Intergenic | 0.138  |   |
| ENSG00000226747.5  | <i>AC007966.1</i>      | 0.60  | 9.62E-04 | 1.66E-02 | Antisense  | NA     | Y |
| ENSG00000226752.6  | <i>PSMD5-AS1</i>       | 0.55  | 5.43E-10 | 1.01E-07 | Antisense  | -0.619 | Y |
| ENSG00000226754.1  | <i>RP5-1024G6.5</i>    | -0.38 | 7.43E-06 | 4.12E-04 | Antisense  | 1.352  | Y |
| ENSG00000226756.1  | <i>AC007365.3</i>      | -0.44 | 9.49E-03 | 7.51E-02 | Antisense  | -0.118 | Y |
| ENSG00000226757.2  | <i>PP12613</i>         | 0.83  | 1.21E-03 | 1.94E-02 | Antisense  | -1.760 |   |
| ENSG00000226824.5  | <i>RP4-756H11.3</i>    | 0.30  | 6.87E-03 | 6.13E-02 | Intronic   | 0.544  | Y |
| ENSG00000226835.1  | <i>RP11-148B18.3</i>   | 0.84  | 7.74E-06 | 4.25E-04 | Intergenic | NA     | Y |
| ENSG00000226849.1  | <i>RP4-635E18.7</i>    | 0.36  | 6.83E-03 | 6.12E-02 | Antisense  | -2.660 |   |
| ENSG00000226856.4  | <i>AC093901.1</i>      | -0.55 | 3.15E-04 | 7.59E-03 | Intergenic | 0.163  | Y |
| ENSG00000226864.1  | <i>ATE1-AS1</i>        | 0.57  | 3.13E-04 | 7.54E-03 | Antisense  | -1.093 |   |
| ENSG00000226913.1  | <i>BSN-AS2</i>         | 0.47  | 4.21E-03 | 4.49E-02 | Intergenic | 0.222  | Y |
| ENSG00000226944.1  | <i>RP11-120G22.11</i>  | 0.64  | 2.07E-05 | 9.52E-04 | Antisense  | 1.927  | Y |
| ENSG00000226957.1  | <i>RP4-533D7.4</i>     | 0.48  | 6.57E-03 | 5.97E-02 | Antisense  | NA     | Y |
| ENSG00000227028.5  | <i>SLC8A1-AS1</i>      | 0.70  | 1.36E-04 | 4.02E-03 | Antisense  | NA     | Y |
| ENSG00000227039.5  | <i>ITGB2-AS1</i>       | 0.61  | 2.55E-04 | 6.45E-03 | Antisense  | -3.559 | Y |
| ENSG00000227060.5  | <i>LINC00629</i>       | 0.48  | 1.17E-02 | 8.62E-02 | Intergenic | 0.786  | Y |
| ENSG00000227116.1  | <i>RP3-471C18.1</i>    | 0.57  | 1.24E-02 | 8.94E-02 | Intergenic | NA     | Y |
| ENSG00000227121.1  | <i>RP11-319F12.2</i>   | -0.91 | 3.87E-04 | 8.78E-03 | Intergenic | 0.193  | N |
| ENSG00000227192.1  | <i>RP1-4514.3</i>      | 0.32  | 8.78E-03 | 7.16E-02 | Intergenic | NA     | Y |
| ENSG00000227258.4  | <i>SMIM2-AS1</i>       | 0.37  | 1.19E-02 | 8.71E-02 | Antisense  | 1.516  | Y |
| ENSG00000227301.1  | <i>RP11-384P7.5</i>    | 0.73  | 2.38E-03 | 3.08E-02 | Intergenic | -1.415 | N |
| ENSG00000227308.2  | <i>AC009502.4</i>      | 0.72  | 3.25E-03 | 3.80E-02 | Intergenic | -2.271 | N |
| ENSG00000227359.1  | <i>AC017074.2</i>      | -0.80 | 3.91E-05 | 1.57E-03 | Intergenic | -0.678 | Y |
| ENSG00000227398.3  | <i>KIF9-AS1</i>        | 0.19  | 1.26E-02 | 9.03E-02 | Antisense  | -1.337 | Y |
| ENSG00000227467.3  | <i>LINC01537</i>       | -0.36 | 1.34E-02 | 9.38E-02 | Intergenic | 0.201  |   |
| ENSG00000227492.1  | <i>RP11-316M21.6</i>   | 0.41  | 1.51E-04 | 4.34E-03 | Antisense  | -0.265 | Y |
| ENSG00000227495.1  | <i>AC109333.10</i>     | 0.34  | 1.18E-02 | 8.63E-02 | Antisense  | -1.226 | Y |
| ENSG00000227518.3  | <i>XXYac-YRM2039.3</i> | 0.56  | 4.59E-03 | 4.76E-02 | Antisense  | -2.629 |   |
| ENSG00000227543.4  | <i>SPAG5-AS1</i>       | 0.22  | 8.50E-03 | 7.04E-02 | Antisense  | -1.958 | Y |
| ENSG00000227603.1  | <i>RP11-165J3.6</i>    | 0.34  | 2.56E-04 | 6.46E-03 | Intergenic | -0.042 | Y |
| ENSG00000227676.3  | <i>LINC01068</i>       | -0.77 | 2.28E-04 | 5.96E-03 | Intergenic | -4.139 | Y |
| ENSG00000227698.1  | <i>AP001619.2</i>      | 0.42  | 1.02E-02 | 7.85E-02 | Intronic   | NA     | Y |
| ENSG00000227712.1  | <i>RP11-418J17.3</i>   | 0.60  | 5.21E-03 | 5.15E-02 | Intergenic | -0.585 | Y |
| ENSG00000227744.4  | <i>FLJ43879</i>        | 1.74  | 8.87E-15 | 3.58E-12 | Intergenic | NA     |   |
| ENSG00000227803.2  | <i>RP11-239H6.2</i>    | 0.55  | 3.09E-03 | 3.65E-02 | Antisense  | NA     | N |
| ENSG00000227888.4  | <i>FAM66A</i>          | -0.47 | 4.71E-03 | 4.83E-02 | Intergenic | -0.576 | Y |
| ENSG00000227895.5  | <i>ISX-AS1</i>         | 0.82  | 1.41E-04 | 4.12E-03 | Intergenic | NA     |   |
| ENSG00000227896.2  | <i>RP11-77P6.2</i>     | 0.41  | 1.30E-03 | 2.03E-02 | Intergenic | -1.363 | Y |
| ENSG00000227945.1  | <i>RP11-103C16.2</i>   | 0.49  | 5.73E-03 | 5.47E-02 | Antisense  | NA     | Y |
| ENSG00000227953.5  | <i>LINC01341</i>       | 0.58  | 8.43E-04 | 1.51E-02 | Intergenic | -3.469 |   |
| ENSG00000228021.6  | <i>RP11-383C5.3</i>    | 0.38  | 2.26E-03 | 2.96E-02 | Intergenic | -0.825 | Y |
| ENSG00000228065.9  | <i>LINC01515</i>       | -0.40 | 8.59E-03 | 7.08E-02 | Intergenic | -1.100 |   |
| ENSG00000228067.1  | <i>RP11-61J19.3</i>    | 0.64  | 6.25E-03 | 5.81E-02 | Intergenic | NA     | N |
| ENSG00000228079.2  | <i>AC012368.1</i>      | 0.53  | 3.75E-03 | 4.17E-02 | Intergenic | NA     | Y |
| ENSG00000228086.1  | <i>RP5-837M10.4</i>    | 0.56  | 1.54E-03 | 2.29E-02 | Antisense  | NA     | Y |
| ENSG00000228109.1  | <i>MF12-AS1</i>        | 0.37  | 6.42E-03 | 5.90E-02 | Antisense  | -3.888 | Y |
| ENSG00000228140.1  | <i>RP3-467K16.4</i>    | 0.69  | 1.81E-05 | 8.56E-04 | Intergenic | -1.208 | Y |
| ENSG00000228157.4  | <i>AC007952.5</i>      | 0.76  | 5.49E-04 | 1.12E-02 | Intergenic | -0.678 |   |
| ENSG00000228172.4  | <i>RP1-317E23.3</i>    | 0.19  | 7.36E-03 | 6.41E-02 | Antisense  | -0.870 | Y |
| ENSG00000228201.1  | <i>AL022341.3</i>      | 0.36  | 1.25E-02 | 8.99E-02 | Antisense  | 0.645  | Y |
| ENSG00000228265.4  | <i>RALY-AS1</i>        | 0.24  | 1.08E-02 | 8.17E-02 | Antisense  | 0.939  |   |
| ENSG00000228315.10 | <i>GUSBP11</i>         | 0.37  | 2.05E-03 | 2.79E-02 | Antisense  | -3.760 | Y |
| ENSG00000228318.3  | <i>AP001610.5</i>      | 1.04  | 5.16E-06 | 3.03E-04 | Antisense  | NA     | N |
| ENSG00000228352.2  | <i>RP11-537H15.3</i>   | 0.47  | 7.30E-04 | 1.37E-02 | Antisense  | NA     | Y |
| ENSG00000228389.1  | <i>AC068039.4</i>      | 0.40  | 1.07E-02 | 8.12E-02 | Intergenic | NA     | Y |
| ENSG00000228393.3  | <i>LINC01004</i>       | 0.30  | 1.26E-02 | 9.04E-02 | Intergenic | -2.536 | Y |
| ENSG00000228463.7  | <i>AP006222.2</i>      | 0.37  | 7.58E-03 | 6.53E-02 | Intergenic | -1.323 | Y |
| ENSG00000228486.8  | <i>LINC01125</i>       | 0.43  | 2.17E-04 | 5.74E-03 | Intergenic | -3.459 |   |
| ENSG00000228509.4  | <i>AC006460.2</i>      | 0.70  | 1.22E-03 | 1.94E-02 | Antisense  | NA     | N |
| ENSG00000228526.2  | <i>RP3-510D11.1</i>    | 0.49  | 7.46E-05 | 2.53E-03 | Intergenic | -4.807 | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000228544.1 | <i>CCDC183-AS1</i>    | 0.26  | 6.95E-03 | 6.18E-02 | Antisense  | -2.799 |   |
| ENSG00000228549.3 | <i>RP11-108M9.3</i>   | 1.66  | 3.97E-22 | 3.48E-19 | Intronic   | 0.228  |   |
| ENSG00000228569.1 | <i>AC073133.2</i>     | -0.83 | 4.66E-05 | 1.78E-03 | Intergenic | -2.671 | Y |
| ENSG00000228598.1 | <i>MACC1-AS1</i>      | 1.55  | 3.52E-10 | 6.99E-08 | Antisense  | 0.160  | N |
| ENSG00000228606.1 | <i>RP11-574F21.2</i>  | 0.21  | 1.15E-02 | 8.51E-02 | Antisense  | -0.295 |   |
| ENSG00000228630.4 | <i>HOTAIR</i>         | 0.61  | 6.68E-03 | 6.03E-02 | Antisense  | -1.365 | Y |
| ENSG00000228634.1 | <i>RP4-534N18.2</i>   | 0.65  | 5.04E-04 | 1.06E-02 | Antisense  | NA     | Y |
| ENSG00000228649.7 | <i>AC005682.5</i>     | 0.47  | 1.80E-04 | 4.98E-03 | Intergenic | -2.029 | Y |
| ENSG00000228658.1 | <i>RP11-791O21.5</i>  | 0.94  | 9.36E-06 | 4.94E-04 | Intergenic | NA     | N |
| ENSG00000228679.1 | <i>RP4-676J13.2</i>   | 0.48  | 1.16E-02 | 8.56E-02 | Intergenic | NA     | Y |
| ENSG00000228701.1 | <i>TNKS2-AS1</i>      | -0.60 | 2.75E-05 | 1.17E-03 | Intergenic | 1.067  | Y |
| ENSG00000228708.1 | <i>AL109763.1</i>     | 0.54  | 1.13E-04 | 3.48E-03 | Intronic   | NA     | N |
| ENSG00000228784.6 | <i>LINC00954</i>      | 0.39  | 5.55E-03 | 5.37E-02 | Intergenic | -3.236 | Y |
| ENSG00000228791.6 | <i>THRB-AS1</i>       | 0.26  | 6.96E-03 | 6.19E-02 | Antisense  | -1.049 | Y |
| ENSG00000228793.1 | <i>RP1-223B1.1</i>    | 0.97  | 6.40E-05 | 2.25E-03 | Intergenic | NA     | Y |
| ENSG00000228794.7 | <i>LINC01128</i>      | -0.37 | 2.75E-04 | 6.85E-03 | Intergenic | -0.330 |   |
| ENSG00000228798.1 | <i>AP000473.5</i>     | 0.71  | 1.76E-06 | 1.25E-04 | Intergenic | -3.511 | Y |
| ENSG00000228812.6 | <i>LAMA5-AS1</i>      | -0.56 | 1.00E-02 | 7.79E-02 | Antisense  | 0.763  |   |
| ENSG00000228857.2 | <i>AC104653.1</i>     | -0.58 | 8.58E-05 | 2.82E-03 | Intergenic | -0.315 | Y |
| ENSG00000228863.7 | <i>RP11-404F10.2</i>  | 0.71  | 4.10E-04 | 9.17E-03 | Antisense  | -2.164 | Y |
| ENSG00000228877.2 | <i>RP11-473E2.4</i>   | 0.61  | 5.35E-03 | 5.24E-02 | Intergenic | NA     | Y |
| ENSG00000228906.1 | <i>RP13-216E22.4</i>  | -0.35 | 2.23E-03 | 2.94E-02 | Intergenic | -1.612 | Y |
| ENSG00000228933.6 | <i>RP11-268G12.1</i>  | 0.74  | 3.96E-03 | 4.33E-02 | Intergenic | -3.433 | N |
| ENSG00000229017.5 | <i>LINC01277</i>      | 0.45  | 4.54E-05 | 1.74E-03 | Intergenic | -1.585 |   |
| ENSG00000229081.1 | <i>LINC01165</i>      | 0.53  | 4.94E-03 | 4.97E-02 | Intergenic | -2.841 |   |
| ENSG00000229180.5 | <i>GSI-124K5.11</i>   | 0.20  | 3.37E-03 | 3.88E-02 | Intergenic | -3.074 | Y |
| ENSG00000229240.6 | <i>LINC00710</i>      | 1.68  | 4.32E-11 | 1.03E-08 | Intergenic | NA     | N |
| ENSG00000229255.1 | <i>RP11-407H12.8</i>  | 1.13  | 8.44E-06 | 4.53E-04 | Intergenic | -1.235 | Y |
| ENSG00000229278.1 | <i>RP11-483F11.7</i>  | 0.41  | 2.99E-03 | 3.57E-02 | Intergenic | NA     | Y |
| ENSG00000229321.1 | <i>AC008269.2</i>     | 0.44  | 8.50E-03 | 7.04E-02 | Intergenic | NA     | Y |
| ENSG00000229327.1 | <i>RP11-135A24.2</i>  | -0.75 | 3.64E-03 | 4.08E-02 | Antisense  | NA     | N |
| ENSG00000229393.1 | <i>RP3-395M20.3</i>   | 0.53  | 5.82E-03 | 5.52E-02 | Antisense  | NA     | Y |
| ENSG00000229395.1 | <i>AC013401.1</i>     | 0.65  | 1.08E-02 | 8.16E-02 | Intergenic | NA     | N |
| ENSG00000229431.1 | <i>RP1-92O14.6</i>    | 0.33  | 1.01E-02 | 7.81E-02 | Antisense  | NA     | Y |
| ENSG00000229512.1 | <i>AC068580.5</i>     | 0.50  | 2.09E-04 | 5.56E-03 | Intronic   | NA     | Y |
| ENSG00000229550.1 | <i>AC012445.1</i>     | 0.61  | 1.23E-03 | 1.97E-02 | Intergenic | NA     | Y |
| ENSG00000229569.1 | <i>RP11-481G8.2</i>   | 0.63  | 5.60E-03 | 5.40E-02 | Intergenic | NA     | N |
| ENSG00000229625.3 | <i>RP11-44N12.2</i>   | 0.52  | 1.33E-02 | 9.35E-02 | Intergenic | NA     | Y |
| ENSG00000229703.4 | <i>XX-CR54.1</i>      | 0.71  | 5.42E-03 | 5.30E-02 | Intergenic | NA     | N |
| ENSG00000229727.5 | <i>AC013460.1</i>     | 0.85  | 7.99E-06 | 4.36E-04 | Intergenic | -2.000 | Y |
| ENSG00000229780.1 | <i>UBE2Q1-AS1</i>     | 0.69  | 1.82E-05 | 8.59E-04 | Antisense  | NA     | Y |
| ENSG00000229848.1 | <i>RP13-766D20.2</i>  | 0.31  | 6.54E-03 | 5.96E-02 | Antisense  | -2.122 | Y |
| ENSG00000229854.1 | <i>RP11-524G24.2</i>  | 0.48  | 1.10E-02 | 8.25E-02 | Antisense  | NA     | Y |
| ENSG00000229867.1 | <i>STEAP3-AS1</i>     | 0.37  | 2.43E-03 | 3.12E-02 | Antisense  | -1.538 | Y |
| ENSG00000229873.1 | <i>OGFR-AS1</i>       | 0.47  | 2.33E-05 | 1.03E-03 | Antisense  | -1.441 | Y |
| ENSG00000229896.2 | <i>RP11-456H18.2</i>  | 0.78  | 3.09E-06 | 2.01E-04 | Exonic     | -0.869 | Y |
| ENSG00000229913.1 | <i>RP11-378I13.1</i>  | 0.61  | 4.21E-03 | 4.50E-02 | Intergenic | NA     | Y |
| ENSG00000229915.1 | <i>AC016999.2</i>     | 0.50  | 1.85E-03 | 2.59E-02 | Antisense  | -1.936 | N |
| ENSG00000229921.5 | <i>KIF25-AS1</i>      | -0.68 | 6.98E-03 | 6.20E-02 | Antisense  | -0.417 | N |
| ENSG00000229928.1 | <i>LINC00400</i>      | 1.00  | 3.72E-11 | 9.08E-09 | Intergenic | NA     | N |
| ENSG00000229986.1 | <i>AP001042.1</i>     | 1.27  | 1.32E-07 | 1.39E-05 | Intergenic | NA     | N |
| ENSG00000229990.3 | <i>RP11-574K11.8</i>  | 0.70  | 3.29E-03 | 3.83E-02 | Antisense  | NA     | N |
| ENSG00000229999.5 | <i>RP5-1042K10.10</i> | 0.51  | 2.92E-03 | 3.52E-02 | Antisense  | NA     | Y |
| ENSG00000230149.2 | <i>RP3-508I15.19</i>  | 0.31  | 7.83E-03 | 6.67E-02 | Antisense  | -3.391 |   |
| ENSG00000230177.1 | <i>RP5-1112D6.4</i>   | 0.28  | 4.98E-03 | 5.00E-02 | Intergenic | -1.990 | Y |
| ENSG00000230212.5 | <i>AP000688.14</i>    | 0.49  | 3.00E-04 | 7.32E-03 | Antisense  | 0.500  | Y |
| ENSG00000230286.1 | <i>AC013472.4</i>     | 1.34  | 7.61E-10 | 1.37E-07 | Antisense  | NA     | N |
| ENSG00000230289.1 | <i>RP11-334J6.6</i>   | 0.42  | 4.55E-03 | 4.73E-02 | Antisense  | -3.228 | Y |
| ENSG00000230303.4 | <i>RP11-213G2.2</i>   | 0.58  | 3.40E-04 | 8.04E-03 | Intergenic | -0.160 | Y |
| ENSG00000230314.5 | <i>ELOVL2-AS1</i>     | 0.64  | 1.59E-04 | 4.50E-03 | Antisense  | 0.079  | Y |
| ENSG00000230415.1 | <i>RP5-902P8.10</i>   | 0.48  | 6.51E-04 | 1.26E-02 | Intergenic | -3.750 | Y |
| ENSG00000230423.1 | <i>XX-C2158C6.1</i>   | 0.88  | 5.70E-04 | 1.15E-02 | Intergenic | NA     | Y |
| ENSG00000230438.6 | <i>SERPINB9P1</i>     | 0.59  | 4.45E-04 | 9.70E-03 | Intergenic | 1.107  |   |
| ENSG00000230448.4 | <i>LINC00276</i>      | 1.42  | 7.82E-12 | 2.19E-09 | Intergenic | NA     | Y |
| ENSG00000230454.1 | <i>U73166.2</i>       | 0.49  | 3.53E-04 | 8.24E-03 | Intergenic | -3.412 | Y |
| ENSG00000230470.1 | <i>GSI-115G20.1</i>   | 0.60  | 2.48E-03 | 3.16E-02 | Intronic   | NA     | Y |
| ENSG00000230471.1 | <i>LAI6c-2F2.8</i>    | 0.75  | 3.11E-03 | 3.67E-02 | Intergenic | -4.227 | Y |
| ENSG00000230537.1 | <i>RP11-305L7.1</i>   | 0.42  | 8.47E-03 | 7.02E-02 | Intergenic | -0.167 | Y |
| ENSG00000230551.4 | <i>CTB-89H12.4</i>    | 0.32  | 6.06E-04 | 1.20E-02 | Exonic     | -2.717 |   |
| ENSG00000230561.3 | <i>LINC01183</i>      | 0.41  | 8.64E-05 | 2.83E-03 | Intergenic | -0.778 |   |
| ENSG00000230606.9 | <i>AC159540.1</i>     | 0.50  | 1.92E-04 | 5.23E-03 | Intergenic | -3.658 | Y |

|                   |                        |       |          |          |            |        |   |
|-------------------|------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000230613.1 | <i>HM13-AS1</i>        | 0.50  | 1.48E-04 | 4.29E-03 | Antisense  | 1.902  | Y |
| ENSG00000230641.1 | <i>USP12-AS2</i>       | 1.48  | 7.70E-14 | 2.82E-11 | Intergenic | NA     | Y |
| ENSG00000230648.1 | <i>RP3-406P24.3</i>    | 0.70  | 2.23E-05 | 1.00E-03 | Intergenic | NA     | Y |
| ENSG00000230658.1 | <i>KLHL7-AS1</i>       | 0.53  | 5.07E-04 | 1.07E-02 | Intergenic | -0.330 | Y |
| ENSG00000230663.1 | <i>FAM224B</i>         | 0.62  | 4.93E-03 | 4.97E-02 | Intergenic | -0.671 | Y |
| ENSG00000230709.1 | <i>AC104024.1</i>      | 0.57  | 9.12E-03 | 7.35E-02 | Intergenic | -0.308 | Y |
| ENSG00000230736.2 | <i>RP1-149A16.3</i>    | 0.44  | 1.97E-03 | 2.72E-02 | Antisense  | NA     | Y |
| ENSG00000230741.1 | <i>SC22CB-1D7.1</i>    | 0.58  | 1.38E-02 | 9.57E-02 | Antisense  | NA     | N |
| ENSG00000230812.4 | <i>LINC01358</i>       | 0.43  | 5.57E-03 | 5.39E-02 | Intergenic | NA     |   |
| ENSG00000230844.2 | <i>ZNF674-AS1</i>      | 0.19  | 7.82E-03 | 6.67E-02 | Intergenic | -0.015 | Y |
| ENSG00000230852.1 | <i>RP11-51G5.1</i>     | 0.78  | 2.03E-03 | 2.77E-02 | Intergenic | NA     | N |
| ENSG00000230910.2 | <i>RP3-525N10.2</i>    | 0.60  | 1.18E-03 | 1.91E-02 | Intergenic | -1.668 | Y |
| ENSG00000230945.1 | <i>LINC01507</i>       | 0.63  | 5.79E-03 | 5.50E-02 | Intergenic | NA     |   |
| ENSG00000230978.1 | <i>LINC00160</i>       | 0.58  | 9.24E-03 | 7.40E-02 | Intergenic | -0.686 | Y |
| ENSG00000231056.1 | <i>RP1-290I10.5</i>    | 1.04  | 3.78E-05 | 1.52E-03 | Intergenic | NA     | N |
| ENSG00000231073.1 | <i>RP11-316M1.3</i>    | 0.40  | 1.02E-02 | 7.86E-02 | Antisense  | NA     | Y |
| ENSG00000231105.1 | <i>RP5-107I1N3.1</i>   | 0.45  | 3.58E-04 | 8.32E-03 | Antisense  | -2.652 | Y |
| ENSG00000231113.2 | <i>RP3-475N16.1</i>    | 0.16  | 1.00E-02 | 7.77E-02 | Intergenic | -2.219 | Y |
| ENSG00000231125.2 | <i>AF129075.5</i>      | 0.24  | 6.99E-03 | 6.21E-02 | Intronic   | -0.263 | Y |
| ENSG00000231128.4 | <i>RP5-1073O3.2</i>    | 0.65  | 4.43E-03 | 4.65E-02 | Antisense  | NA     | N |
| ENSG00000231154.1 | <i>MORF4L2-AS1</i>     | 0.34  | 4.68E-03 | 4.81E-02 | Antisense  | -1.655 | Y |
| ENSG00000231173.1 | <i>AC116609.3</i>      | 0.76  | 2.28E-03 | 2.99E-02 | Intergenic | NA     | N |
| ENSG00000231217.1 | <i>RP11-1M18.1</i>     | 0.51  | 1.70E-03 | 2.44E-02 | Intergenic | NA     | Y |
| ENSG00000231233.1 | <i>CCDC147-AS1</i>     | 0.37  | 5.16E-03 | 5.12E-02 | Intergenic | 0.568  | Y |
| ENSG00000231236.2 | <i>AP001604.3</i>      | 1.10  | 3.78E-06 | 2.35E-04 | Intergenic | NA     | N |
| ENSG00000231305.3 | <i>RP11-723O4.2</i>    | 0.69  | 9.24E-08 | 1.03E-05 | Intergenic | -2.204 | Y |
| ENSG00000231336.1 | <i>AC017006.3</i>      | 1.49  | 5.29E-09 | 8.23E-07 | Antisense  | NA     | N |
| ENSG00000231355.1 | <i>AP000302.58</i>     | 0.59  | 2.24E-03 | 2.95E-02 | Intergenic | NA     | Y |
| ENSG00000231367.4 | <i>AC016995.3</i>      | -0.32 | 1.27E-02 | 9.05E-02 | Intergenic | -3.084 | Y |
| ENSG00000231393.1 | <i>RP11-331F9.3</i>    | 0.65  | 2.20E-03 | 2.91E-02 | Antisense  | -2.000 | Y |
| ENSG00000231421.6 | <i>AC006050.2</i>      | 1.48  | 2.04E-10 | 4.26E-08 | Intergenic | -0.224 | N |
| ENSG00000231459.1 | <i>LINC00032</i>       | 0.62  | 1.31E-03 | 2.05E-02 | Intergenic | -1.138 | Y |
| ENSG00000231496.1 | <i>RP1-251M9.2</i>     | 1.45  | 1.32E-08 | 1.86E-06 | Intergenic | NA     | N |
| ENSG00000231518.1 | <i>RP11-327L3.3</i>    | 0.54  | 4.36E-03 | 4.60E-02 | Intergenic | NA     | Y |
| ENSG00000231521.1 | <i>RP11-244N9.4</i>    | 0.64  | 1.53E-04 | 4.35E-03 | Antisense  | NA     | Y |
| ENSG00000231551.5 | <i>RP11-495P10.1</i>   | 0.27  | 3.07E-03 | 3.64E-02 | Intergenic | -1.748 | Y |
| ENSG00000231574.4 | <i>RP11-91K9.1</i>     | -0.51 | 3.68E-03 | 4.12E-02 | Intergenic | 0.950  | Y |
| ENSG00000231663.1 | <i>RP5-827C21.4</i>    | 0.32  | 4.60E-03 | 4.76E-02 | Antisense  | -0.592 | Y |
| ENSG00000231703.2 | <i>RP4-669H2.1</i>     | -0.37 | 1.28E-02 | 9.12E-02 | Antisense  | 0.382  | Y |
| ENSG00000231721.5 | <i>LINC-PINT</i>       | 0.34  | 3.75E-04 | 8.58E-03 | Antisense  | -1.918 |   |
| ENSG00000231742.4 | <i>LINC01273</i>       | -0.51 | 1.59E-03 | 2.35E-02 | Intergenic | 1.624  |   |
| ENSG00000231760.4 | <i>RP11-350J20.5</i>   | 0.69  | 9.35E-07 | 7.36E-05 | Exonic     | -0.025 | Y |
| ENSG00000231770.4 | <i>TMEM44-AS1</i>      | 0.34  | 2.24E-04 | 5.87E-03 | Antisense  | 0.096  | Y |
| ENSG00000231830.1 | <i>XX-FW83128A1.2</i>  | 0.82  | 4.47E-08 | 5.28E-06 | Intergenic | NA     | Y |
| ENSG00000231840.1 | <i>AC073342.12</i>     | 0.59  | 3.32E-03 | 3.85E-02 | Antisense  | 1.073  | Y |
| ENSG00000231858.4 | <i>AC067945.4</i>      | 0.55  | 3.96E-03 | 4.32E-02 | Antisense  | NA     | N |
| ENSG00000231871.4 | <i>IPO9-AS1</i>        | 0.25  | 6.32E-03 | 5.85E-02 | Antisense  | -0.591 | Y |
| ENSG00000232023.2 | <i>AC009410.1</i>      | -0.63 | 1.31E-02 | 9.28E-02 | Intergenic | 1.086  | N |
| ENSG00000232043.1 | <i>RP4-530I15.9</i>    | 0.50  | 1.78E-03 | 2.52E-02 | Antisense  | NA     | Y |
| ENSG00000232044.6 | <i>LINC01105</i>       | 0.78  | 2.51E-04 | 6.37E-03 | Intergenic | -1.355 |   |
| ENSG00000232063.1 | <i>RP11-307E17.8</i>   | 0.46  | 3.66E-04 | 8.46E-03 | Intergenic | 0.162  | Y |
| ENSG00000232079.5 | <i>AL035610.1</i>      | 0.71  | 3.25E-03 | 3.80E-02 | Intergenic | NA     | Y |
| ENSG00000232131.1 | <i>NCOA7-AS1</i>       | 0.96  | 1.78E-04 | 4.93E-03 | Antisense  | NA     | N |
| ENSG00000232227.4 | <i>AC013401.2</i>      | 1.80  | 8.19E-13 | 2.60E-10 | Intergenic | -1.970 | N |
| ENSG00000232265.6 | <i>XXyac-YX155B6.5</i> | 0.68  | 4.38E-03 | 4.62E-02 | Intergenic | -2.100 | N |
| ENSG00000232283.1 | <i>RP11-240L7.4</i>    | 0.60  | 2.12E-03 | 2.85E-02 | Antisense  | NA     | N |
| ENSG00000232298.2 | <i>RP11-10N16.3</i>    | 0.55  | 1.24E-02 | 8.93E-02 | Antisense  | NA     | N |
| ENSG00000232352.1 | <i>SEMA3B-AS1</i>      | 0.39  | 3.05E-03 | 3.62E-02 | Intergenic | 0.592  | Y |
| ENSG00000232354.6 | <i>VIPRI-AS1</i>       | 0.33  | 6.60E-03 | 5.98E-02 | Antisense  | NA     | Y |
| ENSG00000232386.8 | <i>RP11-66B24.2</i>    | -0.29 | 1.89E-03 | 2.63E-02 | Intergenic | -0.840 | Y |
| ENSG00000232411.1 | <i>AC009495.3</i>      | 0.48  | 5.19E-03 | 5.13E-02 | Intergenic | NA     | Y |
| ENSG00000232451.1 | <i>AC016768.1</i>      | 1.00  | 4.75E-05 | 1.81E-03 | Intergenic | NA     | N |
| ENSG00000232455.2 | <i>LARS2-AS1</i>       | 0.70  | 9.81E-04 | 1.68E-02 | Antisense  | NA     | Y |
| ENSG00000232485.2 | <i>AC098820.3</i>      | 0.32  | 3.89E-03 | 4.27E-02 | Antisense  | -1.059 | Y |
| ENSG00000232490.5 | <i>OSBPL10-AS1</i>     | 0.57  | 8.71E-03 | 7.14E-02 | Antisense  | NA     | Y |
| ENSG00000232532.1 | <i>RP11-63K6.7</i>     | 1.21  | 6.85E-08 | 7.88E-06 | Intergenic | NA     | N |
| ENSG00000232593.5 | <i>KANTR</i>           | 1.20  | 5.80E-14 | 2.21E-11 | Intergenic | -1.312 |   |
| ENSG00000232618.1 | <i>RP11-439L18.1</i>   | 0.46  | 6.73E-03 | 6.06E-02 | Intergenic | NA     | Y |
| ENSG00000232645.4 | <i>LINC01431</i>       | 0.31  | 9.56E-03 | 7.54E-02 | Intergenic | -1.018 |   |
| ENSG00000232648.3 | <i>RP11-367N14.2</i>   | 0.56  | 2.07E-08 | 2.73E-06 | Intergenic | NA     | Y |
| ENSG00000232667.8 | <i>AC004862.6</i>      | -0.76 | 2.76E-03 | 3.40E-02 | Antisense  | NA     | N |

|                   |                      |       |          |          |            |        |   |
|-------------------|----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000232685.4 | <i>LINC00442</i>     | 0.78  | 1.64E-03 | 2.39E-02 | Intergenic | NA     | N |
| ENSG00000232732.8 | <i>AC073043.1</i>    | 0.56  | 6.74E-04 | 1.29E-02 | Intergenic | -0.368 | Y |
| ENSG00000232774.6 | <i>FLJ22447</i>      | 0.39  | 2.40E-06 | 1.63E-04 | Exonic     | -0.447 |   |
| ENSG00000232814.2 | <i>COL4A2-AS1</i>    | 0.47  | 7.90E-03 | 6.71E-02 | Antisense  | NA     | Y |
| ENSG00000232828.1 | <i>AF196970.3</i>    | 0.87  | 6.16E-07 | 5.18E-05 | Antisense  | -0.596 | N |
| ENSG00000232909.1 | <i>RP3-510O8.4</i>   | 0.55  | 5.18E-04 | 1.08E-02 | Intergenic | NA     | Y |
| ENSG00000232934.6 | <i>RP11-324O2.3</i>  | 0.28  | 1.20E-02 | 8.75E-02 | Exonic     | NA     | Y |
| ENSG00000232940.4 | <i>HCG25</i>         | 0.22  | 1.10E-02 | 8.29E-02 | Antisense  | -1.147 | Y |
| ENSG00000232956.7 | <i>SNHG15</i>        | 0.27  | 2.88E-03 | 3.49E-02 | Intergenic | -0.919 | Y |
| ENSG00000232987.1 | <i>LINC01219</i>     | 0.64  | 8.32E-03 | 6.94E-02 | Intergenic | -2.676 |   |
| ENSG00000232995.6 | <i>RGS5</i>          | 0.39  | 1.03E-06 | 8.03E-05 | Exonic     | -1.088 |   |
| ENSG00000233006.5 | <i>AC034220.3</i>    | 0.35  | 4.34E-04 | 9.53E-03 | Antisense  | -2.075 | Y |
| ENSG00000233016.5 | <i>SNHG7</i>         | 0.33  | 4.18E-03 | 4.47E-02 | Antisense  | 0.132  | Y |
| ENSG00000233029.3 | <i>RP11-439A17.9</i> | 0.46  | 1.20E-02 | 8.74E-02 | Antisense  | -1.285 | Y |
| ENSG00000233033.1 | <i>CASK-AS1</i>      | 0.49  | 8.69E-03 | 7.13E-02 | Antisense  | NA     | Y |
| ENSG00000233052.1 | <i>RP11-398B16.2</i> | -0.63 | 1.29E-02 | 9.14E-02 | Intronic   | NA     | N |
| ENSG00000233068.2 | <i>RP1-140K8.1</i>   | 0.76  | 1.06E-03 | 1.78E-02 | Intergenic | NA     | N |
| ENSG00000233080.2 | <i>LINC01399</i>     | 0.42  | 1.37E-02 | 9.55E-02 | Intergenic | -2.500 |   |
| ENSG00000233081.1 | <i>RP11-440G5.2</i>  | 0.51  | 2.72E-03 | 3.36E-02 | Intergenic | NA     | Y |
| ENSG00000233093.4 | <i>LINC00892</i>     | 0.54  | 2.69E-03 | 3.34E-02 | Intergenic | 1.585  | Y |
| ENSG00000233098.7 | <i>CCDC144NL-AS1</i> | 0.51  | 1.91E-04 | 5.21E-03 | Antisense  | 0.241  |   |
| ENSG00000233110.1 | <i>RP11-301L8.2</i>  | 0.36  | 1.43E-02 | 9.82E-02 | Antisense  | NA     | Y |
| ENSG00000233200.1 | <i>RP11-324J22.2</i> | 0.67  | 4.22E-03 | 4.50E-02 | Intergenic | NA     | N |
| ENSG00000233215.4 | <i>AP000472.2</i>    | -0.61 | 9.57E-03 | 7.55E-02 | Intergenic | -0.788 | Y |
| ENSG00000233246.1 | <i>RP11-415J8.5</i>  | 0.50  | 6.62E-04 | 1.28E-02 | Antisense  | NA     | Y |
| ENSG00000233250.1 | <i>RP3-339A18.6</i>  | 0.37  | 5.77E-03 | 5.49E-02 | Intronic   | NA     | Y |
| ENSG00000233251.6 | <i>AC007743.1</i>    | 0.39  | 5.52E-03 | 5.36E-02 | Antisense  | -0.724 | Y |
| ENSG00000233293.1 | <i>RP11-410N8.3</i>  | 1.02  | 4.78E-05 | 1.81E-03 | Antisense  | NA     | N |
| ENSG00000233330.1 | <i>RP1-12G14.7</i>   | -0.26 | 2.58E-03 | 3.25E-02 | Intergenic | NA     | Y |
| ENSG00000233332.1 | <i>RP4-799P18.2</i>  | -0.81 | 1.49E-04 | 4.30E-03 | Antisense  | -0.077 | Y |
| ENSG00000233392.4 | <i>AC104809.4</i>    | 1.63  | 1.23E-11 | 3.25E-09 | Antisense  | -5.749 | Y |
| ENSG00000233393.1 | <i>AP000688.29</i>   | 0.75  | 2.42E-06 | 1.65E-04 | Intergenic | -0.071 | Y |
| ENSG00000233403.1 | <i>RP11-86A5.1</i>   | 0.80  | 1.60E-03 | 2.36E-02 | Intergenic | NA     | N |
| ENSG00000233421.4 | <i>RP5-875O13.1</i>  | 1.65  | 4.45E-18 | 2.72E-15 | Intergenic | -0.624 |   |
| ENSG00000233478.1 | <i>RP1-187B23.1</i>  | 0.39  | 8.11E-03 | 6.83E-02 | Antisense  | NA     | Y |
| ENSG00000233483.2 | <i>CTD-2020K17.4</i> | -0.63 | 8.17E-06 | 4.43E-04 | Antisense  | -0.947 | Y |
| ENSG00000233517.1 | <i>AC005162.5</i>    | 0.78  | 1.25E-03 | 1.98E-02 | Intergenic | NA     | N |
| ENSG00000233559.1 | <i>AC016831.7</i>    | 0.62  | 8.93E-04 | 1.56E-02 | Intergenic | 0.262  | Y |
| ENSG00000233569.1 | <i>RP11-500B12.1</i> | -1.09 | 7.66E-06 | 4.22E-04 | Intergenic | NA     | Y |
| ENSG00000233593.5 | <i>RP4-665J23.1</i>  | 0.34  | 1.48E-02 | 9.99E-02 | Intergenic | 1.175  | Y |
| ENSG00000233621.1 | <i>LINC01137</i>     | 0.44  | 9.60E-04 | 1.65E-02 | Intergenic | 1.109  |   |
| ENSG00000233672.5 | <i>RNASEH2B-AS1</i>  | 0.43  | 4.59E-05 | 1.76E-03 | Antisense  | -0.141 | Y |
| ENSG00000233695.2 | <i>GAS6-AS1</i>      | 0.42  | 1.19E-02 | 8.69E-02 | Exonic     | -3.081 | Y |
| ENSG00000233723.6 | <i>LINC01122</i>     | 1.04  | 2.95E-08 | 3.72E-06 | Intergenic | -1.353 |   |
| ENSG00000233730.1 | <i>RP4-666F24.3</i>  | -0.54 | 6.87E-03 | 6.13E-02 | Intergenic | NA     | Y |
| ENSG00000233760.1 | <i>AC004947.2</i>    | -0.92 | 6.13E-05 | 2.18E-03 | Intergenic | -1.064 | Y |
| ENSG00000233766.6 | <i>AC098617.1</i>    | 0.53  | 1.08E-02 | 8.19E-02 | Antisense  | -0.880 | Y |
| ENSG00000233776.4 | <i>LINC01251</i>     | 0.69  | 1.45E-03 | 2.20E-02 | Intergenic | NA     |   |
| ENSG00000233785.1 | <i>RP13-314C10.5</i> | 1.10  | 8.87E-11 | 2.00E-08 | Intergenic | 0.496  | Y |
| ENSG00000233860.1 | <i>RP11-359D14.2</i> | 0.57  | 9.70E-05 | 3.09E-03 | Antisense  | NA     | Y |
| ENSG00000233871.1 | <i>DLG5-AS1</i>      | 0.37  | 4.56E-03 | 4.74E-02 | Intergenic | -1.402 | Y |
| ENSG00000233878.1 | <i>AC073133.1</i>    | -0.82 | 3.39E-05 | 1.40E-03 | Intergenic | -0.904 | Y |
| ENSG00000233894.1 | <i>RP4-650F12.2</i>  | -0.87 | 3.10E-04 | 7.50E-03 | Intronic   | NA     | N |
| ENSG00000233937.5 | <i>CTC-338M12.4</i>  | 0.36  | 5.97E-06 | 3.42E-04 | Antisense  | -1.508 | Y |
| ENSG00000233977.1 | <i>RP11-310H4.2</i>  | 0.59  | 1.03E-02 | 7.94E-02 | Intergenic | -3.263 | N |
| ENSG00000234083.1 | <i>AJ006995.3</i>    | 0.60  | 1.47E-02 | 9.95E-02 | Intergenic | NA     | N |
| ENSG00000234147.1 | <i>RP3-460G2.2</i>   | -0.80 | 3.51E-04 | 8.20E-03 | Intergenic | -0.404 | Y |
| ENSG00000234148.2 | <i>RP11-395L14.3</i> | 0.60  | 1.43E-02 | 9.82E-02 | Intergenic | NA     | N |
| ENSG00000234171.2 | <i>RNASEH1-AS1</i>   | 0.26  | 9.50E-04 | 1.64E-02 | Antisense  | 1.768  |   |
| ENSG00000234181.1 | <i>RP11-182N22.8</i> | 0.55  | 1.15E-03 | 1.88E-02 | Antisense  | NA     | Y |
| ENSG00000234182.1 | <i>RP11-118K6.2</i>  | 0.58  | 5.59E-03 | 5.40E-02 | Intergenic | NA     | Y |
| ENSG00000234185.2 | <i>RP5-1132H15.1</i> | 0.43  | 3.09E-03 | 3.65E-02 | Antisense  | NA     | Y |
| ENSG00000234215.2 | <i>RP5-942I16.1</i>  | 0.47  | 6.17E-03 | 5.75E-02 | Intergenic | -0.812 | Y |
| ENSG00000234263.1 | <i>RP3-325F22.3</i>  | -0.45 | 4.07E-03 | 4.40E-02 | Antisense  | NA     | Y |
| ENSG00000234286.1 | <i>AC006026.13</i>   | -0.43 | 1.55E-03 | 2.30E-02 | Antisense  | NA     | Y |
| ENSG00000234290.2 | <i>AC116366.6</i>    | 0.41  | 1.22E-03 | 1.95E-02 | Antisense  | -2.524 | Y |
| ENSG00000234352.8 | <i>AC009264.1</i>    | -0.77 | 2.18E-03 | 2.89E-02 | Antisense  | -1.471 |   |
| ENSG00000234389.1 | <i>AC007278.3</i>    | 0.74  | 5.05E-04 | 1.06E-02 | Intronic   | NA     | Y |
| ENSG00000234396.3 | <i>RP11-181G12.4</i> | 0.69  | 2.50E-04 | 6.36E-03 | Antisense  | NA     | Y |
| ENSG00000234423.1 | <i>LINC01250</i>     | 0.58  | 1.22E-02 | 8.84E-02 | Intergenic | -1.717 |   |
| ENSG00000234449.2 | <i>RP11-706O15.3</i> | -0.60 | 1.32E-02 | 9.28E-02 | Intergenic | -0.385 | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000234509.1 | <i>AP000253.1</i>     | 0.37  | 8.24E-03 | 6.90E-02 | Intergenic | -2.782 | Y |
| ENSG00000234535.1 | <i>RP11-37L2.1</i>    | -0.70 | 3.74E-06 | 2.33E-04 | Intergenic | NA     | Y |
| ENSG00000234546.2 | <i>RP3-510D11.2</i>   | 0.35  | 7.48E-04 | 1.39E-02 | Intergenic | -0.370 | Y |
| ENSG00000234571.1 | <i>RP5-998N21.4</i>   | 0.68  | 1.17E-03 | 1.89E-02 | Intergenic | -2.354 | Y |
| ENSG00000234593.1 | <i>RP4-704D23.1</i>   | 0.77  | 2.32E-03 | 3.02E-02 | Intergenic | 0.101  | N |
| ENSG00000234636.2 | <i>MED14OS</i>        | 0.40  | 4.91E-05 | 1.85E-03 | Antisense  | 1.650  |   |
| ENSG00000234665.7 | <i>RP11-262H14.3</i>  | 0.96  | 1.10E-05 | 5.65E-04 | Intergenic | -0.025 | Y |
| ENSG00000234695.1 | <i>AC002076.10</i>    | -0.72 | 4.60E-03 | 4.76E-02 | Antisense  | -2.199 | N |
| ENSG00000234707.2 | <i>RP11-745C15.2</i>  | 0.89  | 4.20E-08 | 5.04E-06 | Antisense  | NA     | Y |
| ENSG00000234722.3 | <i>LINC01287</i>      | 1.23  | 9.29E-08 | 1.03E-05 | Intergenic | 0.675  |   |
| ENSG00000234741.6 | <i>GAS5</i>           | 0.32  | 4.71E-03 | 4.83E-02 | Antisense  | -0.264 | Y |
| ENSG00000234771.3 | <i>SLC25A25-AS1</i>   | 0.36  | 8.89E-03 | 7.22E-02 | Antisense  | -2.758 |   |
| ENSG00000234818.1 | <i>AC092687.5</i>     | 1.03  | 6.96E-09 | 1.06E-06 | Antisense  | NA     | Y |
| ENSG00000234828.6 | <i>RP11-526A4.1</i>   | 1.87  | 1.90E-13 | 6.67E-11 | Intergenic | NA     | N |
| ENSG00000234840.1 | <i>LINC01239</i>      | 0.46  | 6.54E-03 | 5.96E-02 | Intergenic | -2.492 |   |
| ENSG00000234917.2 | <i>RP5-994D16.3</i>   | 0.34  | 1.24E-03 | 1.97E-02 | Intergenic | -1.164 | Y |
| ENSG00000234921.1 | <i>RP11-85O21.5</i>   | 0.80  | 1.66E-03 | 2.41E-02 | Antisense  | NA     | N |
| ENSG00000234929.1 | <i>AC018685.1</i>     | -0.49 | 1.31E-02 | 9.23E-02 | Intergenic | NA     | Y |
| ENSG00000235020.3 | <i>RP11-109I13.2</i>  | -0.56 | 4.65E-03 | 4.80E-02 | Antisense  | NA     | N |
| ENSG00000235077.1 | <i>AC073842.19</i>    | 0.50  | 5.60E-03 | 5.40E-02 | Intergenic | -1.010 | Y |
| ENSG00000235100.3 | <i>RP11-80H5.9</i>    | 0.35  | 5.00E-03 | 5.01E-02 | Intergenic | -0.306 | Y |
| ENSG00000235123.4 | <i>DSCAM-AS1</i>      | 1.23  | 1.12E-06 | 8.61E-05 | Antisense  | 0.469  | Y |
| ENSG00000235138.1 | <i>RP11-374P20.4</i>  | 0.46  | 3.51E-03 | 3.98E-02 | Antisense  | NA     | Y |
| ENSG00000235146.2 | <i>RP5-857K21.2</i>   | 1.10  | 7.03E-06 | 3.93E-04 | Intergenic | NA     | Y |
| ENSG00000235172.6 | <i>LINC01366</i>      | 0.45  | 1.08E-02 | 8.18E-02 | Intergenic | 0.583  |   |
| ENSG00000235192.1 | <i>AC009495.2</i>     | 0.46  | 3.81E-04 | 8.69E-03 | Intergenic | -1.318 | Y |
| ENSG00000235209.1 | <i>CTA-150C2.13</i>   | 0.76  | 6.90E-04 | 1.31E-02 | Intergenic | 0.585  | N |
| ENSG00000235237.1 | <i>RP1-151B14.6</i>   | 0.54  | 5.03E-03 | 5.03E-02 | Antisense  | NA     | N |
| ENSG00000235245.1 | <i>RP11-122K13.12</i> | 0.40  | 1.26E-03 | 1.99E-02 | Intronic   | -3.615 | Y |
| ENSG00000235246.1 | <i>RP1-5O6.5</i>      | 0.68  | 2.96E-03 | 3.54E-02 | Antisense  | NA     | N |
| ENSG00000235257.7 | <i>ITG49-AS1</i>      | 0.21  | 4.67E-03 | 4.81E-02 | Antisense  | 0.364  |   |
| ENSG00000235263.1 | <i>RP13-392I16.1</i>  | 0.89  | 1.12E-04 | 3.45E-03 | Intergenic | 0.804  | N |
| ENSG00000235295.1 | <i>FLJ41941</i>       | 0.50  | 1.09E-02 | 8.21E-02 | Intergenic | -0.263 |   |
| ENSG00000235351.1 | <i>AC114730.11</i>    | 0.40  | 9.11E-03 | 7.34E-02 | Antisense  | NA     |   |
| ENSG00000235385.1 | <i>GSI-600G8.5</i>    | -0.77 | 2.35E-03 | 3.04E-02 | Intergenic | 1.063  | N |
| ENSG00000235399.1 | <i>RP11-204P2.3</i>   | -0.68 | 4.73E-04 | 1.02E-02 | Intergenic | NA     | Y |
| ENSG00000235475.1 | <i>LINC01372</i>      | 0.35  | 1.39E-02 | 9.63E-02 | Intergenic | -2.440 |   |
| ENSG00000235481.2 | <i>UBE2R2-AS1</i>     | 0.50  | 1.49E-04 | 4.30E-03 | Antisense  | 1.206  |   |
| ENSG00000235497.4 | <i>AC012506.4</i>     | 0.59  | 9.05E-03 | 7.30E-02 | Intergenic | NA     | N |
| ENSG00000235532.1 | <i>LINC00402</i>      | 0.54  | 1.04E-03 | 1.75E-02 | Intergenic | 4.000  | Y |
| ENSG00000235545.1 | <i>RP11-230B22.1</i>  | 0.52  | 3.82E-04 | 8.69E-03 | Intergenic | -0.568 | Y |
| ENSG00000235565.1 | <i>RP11-86H7.7</i>    | -0.43 | 1.46E-03 | 2.20E-02 | Intergenic | NA     | Y |
| ENSG00000235629.1 | <i>AC090952.5</i>     | 0.62  | 1.43E-03 | 2.18E-02 | Intergenic | -3.561 | Y |
| ENSG00000235641.4 | <i>LINC00484</i>      | -0.45 | 5.27E-03 | 5.19E-02 | Intergenic | -1.585 | Y |
| ENSG00000235643.1 | <i>RP1-69M21.2</i>    | -0.63 | 1.47E-02 | 9.96E-02 | Intergenic | -1.868 | Y |
| ENSG00000235652.6 | <i>RP11-545I5.3</i>   | -0.32 | 1.51E-03 | 2.25E-02 | Antisense  | -0.398 | Y |
| ENSG00000235687.7 | <i>LINC00993</i>      | 0.97  | 8.65E-05 | 2.83E-03 | Intronic   | -3.845 | N |
| ENSG00000235688.1 | <i>AC116614.1</i>     | 0.67  | 1.11E-03 | 1.83E-02 | Intergenic | -3.524 | Y |
| ENSG00000235703.4 | <i>LINC00894</i>      | 0.53  | 2.08E-04 | 5.54E-03 | Antisense  | -4.816 | Y |
| ENSG00000235706.6 | <i>DICER1-AS1</i>     | 0.41  | 5.59E-04 | 1.13E-02 | Antisense  | -2.384 | Y |
| ENSG00000235740.1 | <i>RP11-436I24.1</i>  | 0.69  | 2.20E-03 | 2.91E-02 | Antisense  | NA     | N |
| ENSG00000235802.1 | <i>HCFC1-AS1</i>      | -0.55 | 3.64E-03 | 4.08E-02 | Antisense  | NA     | Y |
| ENSG00000235831.5 | <i>BHLHE40-AS1</i>    | -0.51 | 2.71E-03 | 3.35E-02 | Antisense  | 0.308  | Y |
| ENSG00000235881.2 | <i>AC114776.3</i>     | 0.64  | 3.44E-03 | 3.94E-02 | Intergenic | NA     | Y |
| ENSG00000235884.3 | <i>LINC00941</i>      | -0.40 | 6.82E-03 | 6.11E-02 | Intergenic | 0.224  | Y |
| ENSG00000235978.5 | <i>AC018816.3</i>     | -1.31 | 1.08E-08 | 1.55E-06 | Antisense  | 1.055  |   |
| ENSG00000236030.1 | <i>LINC01036</i>      | 0.66  | 4.42E-03 | 4.64E-02 | Intergenic | NA     | Y |
| ENSG00000236065.2 | <i>RP1-117O3.2</i>    | 0.61  | 3.24E-03 | 3.80E-02 | Antisense  | NA     | Y |
| ENSG00000236076.1 | <i>LINC01072</i>      | -0.63 | 7.78E-03 | 6.64E-02 | Intergenic | NA     | N |
| ENSG00000236199.1 | <i>RP11-264I13.2</i>  | 0.31  | 3.07E-05 | 1.28E-03 | Antisense  | NA     | Y |
| ENSG00000236200.4 | <i>KDM4A-AS1</i>      | 0.30  | 2.07E-03 | 2.80E-02 | Antisense  | -0.656 | Y |
| ENSG00000236266.1 | <i>RP3-467L1.4</i>    | 0.47  | 1.05E-04 | 3.27E-03 | Antisense  | -1.837 | Y |
| ENSG00000236305.1 | <i>RP11-126L15.4</i>  | 0.36  | 2.95E-03 | 3.54E-02 | Antisense  | NA     | Y |
| ENSG00000236385.1 | <i>RP11-114M1.2</i>   | 0.78  | 8.70E-04 | 1.54E-02 | Intergenic | 0.188  | Y |
| ENSG00000236427.1 | <i>RP11-107M16.2</i>  | 0.89  | 5.84E-07 | 4.97E-05 | Intergenic | NA     | Y |
| ENSG00000236471.1 | <i>AF127577.12</i>    | 0.40  | 8.59E-03 | 7.08E-02 | Intergenic | NA     | Y |
| ENSG00000236498.1 | <i>AC107081.5</i>     | 0.43  | 1.62E-03 | 2.37E-02 | Antisense  | NA     | Y |
| ENSG00000236511.1 | <i>LINC01231</i>      | 0.75  | 3.26E-03 | 3.81E-02 | Intergenic | NA     |   |
| ENSG00000236519.1 | <i>LINC01424</i>      | 0.42  | 5.30E-03 | 5.21E-02 | Intergenic | -1.471 |   |
| ENSG00000236525.1 | <i>AC007278.2</i>     | 0.79  | 1.83E-03 | 2.57E-02 | Intronic   | NA     | N |
| ENSG00000236532.4 | <i>AL035610.2</i>     | 1.51  | 1.98E-11 | 4.96E-09 | Intergenic | NA     | Y |

|                   |                        |       |          |          |            |        |   |
|-------------------|------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000236611.1 | <i>AP000343.2</i>      | 0.61  | 7.01E-03 | 6.21E-02 | Intergenic | 0.322  | N |
| ENSG00000236663.1 | <i>AP001631.9</i>      | 0.82  | 8.15E-04 | 1.47E-02 | Intergenic | NA     | Y |
| ENSG00000236665.1 | <i>AC114808.2</i>      | 0.61  | 1.12E-02 | 8.37E-02 | Antisense  | NA     | N |
| ENSG00000236830.5 | <i>CBR3-AS1</i>        | 0.33  | 9.79E-05 | 3.10E-03 | Antisense  | -0.522 | Y |
| ENSG00000236841.6 | <i>AC007750.5</i>      | -0.73 | 1.50E-03 | 2.24E-02 | Antisense  | NA     | Y |
| ENSG00000236871.5 | <i>LINC00106</i>       | 0.45  | 4.44E-03 | 4.66E-02 | Intergenic | -3.943 |   |
| ENSG00000236986.5 | <i>RP11-544A12.4</i>   | 0.50  | 2.13E-03 | 2.85E-02 | Antisense  | NA     | Y |
| ENSG00000237001.5 | <i>WASF3-AS1</i>       | 0.85  | 1.33E-04 | 3.92E-03 | Antisense  | NA     | N |
| ENSG00000237009.2 | <i>GLIS3-AS1</i>       | 0.62  | 2.66E-03 | 3.31E-02 | Antisense  | NA     | Y |
| ENSG00000237037.8 | <i>NDUFA6-AS1</i>      | 0.20  | 5.24E-04 | 1.09E-02 | Antisense  | -0.471 | Y |
| ENSG00000237101.1 | <i>RP11-365O16.6</i>   | 0.45  | 2.07E-03 | 2.80E-02 | Antisense  | -2.654 | Y |
| ENSG00000237188.3 | <i>RP11-337C18.8</i>   | 0.24  | 3.47E-03 | 3.96E-02 | Antisense  | 0.081  | Y |
| ENSG00000237280.1 | <i>RP11-96C23.9</i>    | 0.63  | 4.11E-03 | 4.42E-02 | Intronic   | NA     | Y |
| ENSG00000237372.2 | <i>UNQ6494</i>         | 0.47  | 1.97E-03 | 2.72E-02 | Intergenic | 0.046  |   |
| ENSG00000237399.6 | <i>PITRM1-AS1</i>      | 0.33  | 1.27E-03 | 2.00E-02 | Antisense  | -2.599 | Y |
| ENSG00000237413.4 | <i>MGC27382</i>        | 0.67  | 6.84E-03 | 6.12E-02 | Intronic   | NA     |   |
| ENSG00000237419.1 | <i>RP11-885N19.6</i>   | 0.61  | 7.74E-03 | 6.63E-02 | Intergenic | NA     | N |
| ENSG00000237438.5 | <i>CECR7</i>           | -0.47 | 1.43E-02 | 9.80E-02 | Intergenic | -0.226 | Y |
| ENSG00000237481.1 | <i>RP4-803J11.2</i>    | 0.56  | 1.94E-04 | 5.26E-03 | Antisense  | -3.117 | Y |
| ENSG00000237513.1 | <i>RP11-325F22.2</i>   | 0.46  | 1.39E-02 | 9.63E-02 | Intergenic | NA     | Y |
| ENSG00000237567.1 | <i>RP3-359N14.2</i>    | 0.65  | 1.11E-02 | 8.31E-02 | Intergenic | NA     | Y |
| ENSG00000237604.1 | <i>AP001056.1</i>      | 0.79  | 2.72E-04 | 6.80E-03 | Intergenic | -0.889 | Y |
| ENSG00000237643.1 | <i>RP11-462G2.1</i>    | -0.92 | 3.06E-04 | 7.41E-03 | Intergenic | 1.563  | Y |
| ENSG00000237646.1 | <i>HLCS-IT1</i>        | 0.66  | 7.85E-04 | 1.44E-02 | Intronic   | NA     | Y |
| ENSG00000237647.7 | <i>ERICH1-AS1</i>      | 0.45  | 8.71E-03 | 7.14E-02 | Antisense  | -3.115 | Y |
| ENSG00000237718.2 | <i>AC009095.4</i>      | 0.37  | 5.57E-03 | 5.39E-02 | Antisense  | NA     | Y |
| ENSG00000237742.5 | <i>RP11-624M8.1</i>    | 0.44  | 6.33E-03 | 5.86E-02 | Antisense  | 1.323  | Y |
| ENSG00000237753.1 | <i>AC079922.3</i>      | 0.42  | 3.06E-04 | 7.42E-03 | Intergenic | -1.628 | Y |
| ENSG00000237773.4 | <i>AC003075.4</i>      | -0.41 | 1.08E-02 | 8.19E-02 | Antisense  | 1.431  | Y |
| ENSG00000237781.3 | <i>RP11-544A.2</i>     | 0.61  | 3.15E-04 | 7.59E-03 | Antisense  | NA     | Y |
| ENSG00000237797.1 | <i>RP11-472N13.3</i>   | 0.41  | 4.89E-03 | 4.95E-02 | Intergenic | NA     | Y |
| ENSG00000237877.5 | <i>LINC01473</i>       | 0.30  | 1.50E-03 | 2.24E-02 | Intergenic | -1.396 |   |
| ENSG00000237886.1 | <i>LINC01573</i>       | 0.47  | 8.61E-04 | 1.53E-02 | Intergenic | -4.746 |   |
| ENSG00000237923.1 | <i>XXbac-BPG27H4.8</i> | 0.71  | 5.30E-03 | 5.21E-02 | Intergenic | 1.574  | N |
| ENSG00000237940.3 | <i>AC093642.3</i>      | 0.56  | 1.15E-04 | 3.51E-03 | Intergenic | -4.927 | Y |
| ENSG00000237975.5 | <i>FLG-AS1</i>         | 0.62  | 1.85E-04 | 5.08E-03 | Antisense  | -1.233 | Y |
| ENSG00000238005.2 | <i>RP11-443B7.1</i>    | 0.71  | 9.32E-06 | 4.93E-04 | Intergenic | 0.839  | Y |
| ENSG00000238018.2 | <i>AC093110.3</i>      | 0.41  | 8.63E-03 | 7.10E-02 | Antisense  | NA     | Y |
| ENSG00000238057.7 | <i>ZEB2-AS1</i>        | 1.02  | 1.94E-10 | 4.08E-08 | Antisense  | -1.965 | Y |
| ENSG00000238058.1 | <i>RP11-432J22.2</i>   | 0.24  | 3.47E-03 | 3.96E-02 | Intergenic | NA     | Y |
| ENSG00000238062.4 | <i>SPATA3-AS1</i>      | 0.85  | 1.25E-05 | 6.23E-04 | Intergenic | 0.989  |   |
| ENSG00000238078.1 | <i>LINC01352</i>       | 0.39  | 4.59E-03 | 4.76E-02 | Intergenic | NA     |   |
| ENSG00000238121.4 | <i>LINC00426</i>       | 0.43  | 4.21E-03 | 4.50E-02 | Intergenic | 0.503  | Y |
| ENSG00000238217.4 | <i>AC093590.1</i>      | -0.64 | 4.93E-03 | 4.97E-02 | Intergenic | NA     | Y |
| ENSG00000238232.1 | <i>RP11-95P13.2</i>    | -0.78 | 2.23E-03 | 2.94E-02 | Intergenic | NA     | N |
| ENSG00000238266.1 | <i>LINC00707</i>       | 0.73  | 1.74E-03 | 2.49E-02 | Intergenic | 1.579  | N |
| ENSG00000238272.1 | <i>RP3-436N22.3</i>    | 0.63  | 1.32E-02 | 9.29E-02 | Antisense  | NA     | N |
| ENSG00000238279.1 | <i>BX470102.3</i>      | 0.50  | 6.16E-03 | 5.75E-02 | Antisense  | -1.710 | Y |
| ENSG00000238282.1 | <i>RP5-1164C1.2</i>    | 0.82  | 1.24E-03 | 1.97E-02 | Intergenic | NA     | N |
| ENSG00000239300.4 | <i>RP11-400L8.2</i>    | 0.47  | 2.73E-05 | 1.16E-03 | Antisense  | NA     | Y |
| ENSG00000239335.4 | <i>LLPH-AS1</i>        | -0.75 | 3.69E-05 | 1.49E-03 | Antisense  | -0.659 |   |
| ENSG00000239415.1 | <i>AP001469.9</i>      | 0.31  | 1.61E-03 | 2.36E-02 | Exonic     | -3.237 | Y |
| ENSG00000239523.4 | <i>MYLK-AS1</i>        | 0.56  | 7.45E-06 | 4.13E-04 | Antisense  | -1.131 | Y |
| ENSG00000239552.2 | <i>HOXB-AS2</i>        | 0.65  | 1.01E-03 | 1.71E-02 | Antisense  | NA     | Y |
| ENSG00000239636.1 | <i>RP4-728D4.2</i>     | 0.43  | 5.55E-04 | 1.13E-02 | Antisense  | -0.785 | Y |
| ENSG00000239653.1 | <i>PSMD6-AS2</i>       | 0.40  | 2.22E-03 | 2.93E-02 | Antisense  | -4.197 | Y |
| ENSG00000239801.1 | <i>RP11-755B10.2</i>   | 0.40  | 7.03E-03 | 6.22E-02 | Antisense  | NA     | Y |
| ENSG00000240005.4 | <i>RP11-293A21.1</i>   | 0.60  | 5.44E-05 | 2.00E-03 | Antisense  | 1.482  | Y |
| ENSG00000240006.1 | <i>RP11-200A1.1</i>    | -0.56 | 9.59E-03 | 7.56E-02 | Intergenic | NA     | Y |
| ENSG00000240040.4 | <i>AC096579.13</i>     | 0.63  | 1.21E-02 | 8.79E-02 | Intergenic | NA     | Y |
| ENSG00000240137.4 | <i>ERICH6-AS1</i>      | 0.37  | 5.47E-04 | 1.12E-02 | Antisense  | 1.381  |   |
| ENSG00000240211.1 | <i>RP11-758P17.3</i>   | 0.42  | 8.28E-04 | 1.49E-02 | Antisense  | NA     | Y |
| ENSG00000240401.7 | <i>AC012358.8</i>      | 0.58  | 1.63E-07 | 1.68E-05 | Antisense  | -0.594 | Y |
| ENSG00000240731.1 | <i>RP5-890O3.9</i>     | 0.31  | 1.27E-04 | 3.79E-03 | Exonic     | -2.033 | Y |
| ENSG00000240758.2 | <i>RP11-155G14.6</i>   | 0.49  | 2.07E-04 | 5.51E-03 | Exonic     | -1.784 | Y |
| ENSG00000240889.1 | <i>NDUFB2-AS1</i>      | 0.23  | 9.64E-04 | 1.66E-02 | Antisense  | -0.166 |   |
| ENSG00000240996.1 | <i>RP11-80H5.7</i>     | 0.42  | 5.60E-03 | 5.40E-02 | Intergenic | -1.381 | Y |
| ENSG00000241014.1 | <i>RP11-244H3.1</i>    | 0.36  | 2.21E-05 | 9.99E-04 | Exonic     | -2.358 | Y |
| ENSG00000241163.6 | <i>LINC00877</i>       | 0.57  | 1.17E-04 | 3.58E-03 | Intergenic | -0.244 | Y |
| ENSG00000241213.1 | <i>RP11-768G7.2</i>    | 0.67  | 7.86E-03 | 6.69E-02 | Intergenic | NA     | N |
| ENSG00000241269.1 | <i>AC093620.5</i>      | 0.31  | 9.14E-03 | 7.35E-02 | Antisense  | -0.699 | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000241288.6 | <i>RP11-379B18.5</i>  | 0.32  | 1.34E-02 | 9.39E-02 | Intergenic | -3.139 | Y |
| ENSG00000241490.1 | <i>RP11-553L6.2</i>   | 0.72  | 1.04E-03 | 1.75E-02 | Antisense  | 1.111  | N |
| ENSG00000241520.1 | <i>AC098820.4</i>     | 0.42  | 3.85E-03 | 4.24E-02 | Antisense  | -0.902 | Y |
| ENSG00000241754.1 | <i>RP11-280H21.1</i>  | 1.23  | 1.38E-06 | 1.03E-04 | Intergenic | NA     | N |
| ENSG00000241769.6 | <i>LINC00893</i>      | 0.47  | 1.61E-03 | 2.36E-02 | Exonic     | -4.839 | Y |
| ENSG00000241770.1 | <i>RP11-555M1.3</i>   | 0.41  | 7.21E-03 | 6.32E-02 | Intergenic | NA     | Y |
| ENSG00000241886.1 | <i>RP11-242C19.2</i>  | 0.49  | 6.57E-03 | 5.97E-02 | Intronic   | -4.403 | Y |
| ENSG00000241954.1 | <i>RP1-149A16.17</i>  | 0.42  | 1.30E-02 | 9.23E-02 | Intergenic | NA     | Y |
| ENSG00000242021.2 | <i>RP11-268G12.3</i>  | 0.92  | 3.29E-04 | 7.85E-03 | Intergenic | -1.675 | N |
| ENSG00000242125.3 | <i>SNHG3</i>          | 0.36  | 1.86E-03 | 2.61E-02 | Exonic     | -0.515 | Y |
| ENSG00000242136.1 | <i>RP11-734K21.2</i>  | 0.69  | 5.37E-03 | 5.26E-02 | Intergenic | -0.263 | N |
| ENSG00000242317.1 | <i>RP11-875H7.5</i>   | 1.52  | 3.12E-09 | 5.06E-07 | Intergenic | NA     | N |
| ENSG00000242474.1 | <i>AC093627.9</i>     | 0.28  | 3.58E-04 | 8.32E-03 | Intergenic | -1.323 | Y |
| ENSG00000242578.1 | <i>RP11-469J4.3</i>   | 0.81  | 7.30E-05 | 2.49E-03 | Intergenic | -4.214 | Y |
| ENSG00000242759.5 | <i>LINC00882</i>      | 0.30  | 1.21E-02 | 8.77E-02 | Intergenic | 0.399  | Y |
| ENSG00000242781.1 | <i>RP11-47P18.2</i>   | 1.55  | 6.05E-10 | 1.11E-07 | Intergenic | NA     | Y |
| ENSG00000242795.2 | <i>RP11-3K16.2</i>    | -0.65 | 1.12E-02 | 8.38E-02 | Intronic   | NA     | N |
| ENSG00000242798.1 | <i>RP11-506M12.1</i>  | 0.51  | 1.14E-04 | 3.51E-03 | Antisense  | -3.971 | Y |
| ENSG00000243176.4 | <i>RP11-550J24.2</i>  | 0.21  | 9.48E-03 | 7.50E-02 | Antisense  | 1.101  | Y |
| ENSG00000243193.3 | <i>CTA-360L10.1</i>   | 0.70  | 1.72E-03 | 2.47E-02 | Antisense  | -3.676 | N |
| ENSG00000243197.6 | <i>TUSC7</i>          | 0.77  | 2.56E-03 | 3.24E-02 | Antisense  | NA     | N |
| ENSG00000243230.1 | <i>RP11-286H14.8</i>  | 0.39  | 4.72E-03 | 4.83E-02 | Antisense  | NA     | Y |
| ENSG00000243273.1 | <i>RP11-166N6.2</i>   | 0.75  | 2.86E-03 | 3.47E-02 | Antisense  | NA     | N |
| ENSG00000243321.3 | <i>RP11-167H9.3</i>   | 0.99  | 8.61E-05 | 2.82E-03 | Intergenic | 0.826  |   |
| ENSG00000243368.2 | <i>MCCC1-AS1</i>      | 0.34  | 1.07E-02 | 8.12E-02 | Antisense  | NA     | Y |
| ENSG00000243701.4 | <i>LINC00883</i>      | 0.49  | 4.68E-04 | 1.01E-02 | Intergenic | -0.772 | Y |
| ENSG00000243819.4 | <i>RN7SL832P</i>      | 0.36  | 2.91E-03 | 3.51E-02 | Intergenic | 0.800  | Y |
| ENSG00000243832.1 | <i>RP11-202A13.1</i>  | 0.79  | 1.95E-03 | 2.70E-02 | Intergenic | NA     | N |
| ENSG00000244055.1 | <i>AC007566.10</i>    | 0.55  | 1.96E-06 | 1.37E-04 | Exonic     | -2.617 | Y |
| ENSG00000244063.1 | <i>AC024704.2</i>     | 0.71  | 2.14E-05 | 9.77E-04 | Intergenic | NA     | Y |
| ENSG00000244124.1 | <i>ATPIB3-AS1</i>     | 0.63  | 1.57E-04 | 4.45E-03 | Antisense  | NA     | Y |
| ENSG00000244128.4 | <i>LINC01322</i>      | 1.25  | 8.95E-07 | 7.10E-05 | Intergenic | -0.135 |   |
| ENSG00000244137.1 | <i>RP11-99J16_A.2</i> | 0.48  | 8.87E-03 | 7.21E-02 | Exonic     | NA     | Y |
| ENSG00000244151.1 | <i>RP11-148K1.12</i>  | 0.39  | 3.37E-03 | 3.89E-02 | Antisense  | -3.632 |   |
| ENSG00000244161.1 | <i>FLNB-AS1</i>       | 0.47  | 1.62E-04 | 4.57E-03 | Antisense  | NA     | Y |
| ENSG00000244184.1 | <i>RP11-314A20.2</i>  | 0.46  | 3.54E-04 | 8.26E-03 | Antisense  | 1.270  | Y |
| ENSG00000244265.1 | <i>SIAH2-AS1</i>      | 0.49  | 4.17E-04 | 9.26E-03 | Antisense  | 0.000  | Y |
| ENSG00000244268.1 | <i>RP11-529G21.2</i>  | 0.60  | 2.16E-03 | 2.87E-02 | Intergenic | NA     | Y |
| ENSG00000244286.1 | <i>ITGB5-AS1</i>      | 0.69  | 8.16E-04 | 1.47E-02 | Antisense  | NA     | Y |
| ENSG00000244502.2 | <i>HDAC11-AS1</i>     | 0.43  | 5.45E-03 | 5.31E-02 | Antisense  | 0.076  | N |
| ENSG00000244567.1 | <i>AC096772.6</i>     | -0.24 | 5.50E-04 | 1.12E-02 | Intergenic | 1.533  |   |
| ENSG00000244701.1 | <i>RP5-894A10.2</i>   | 0.28  | 9.42E-03 | 7.48E-02 | Exonic     | -3.415 |   |
| ENSG00000244945.1 | <i>RP11-1379J22.2</i> | 0.37  | 1.46E-03 | 2.20E-02 | Antisense  | -3.632 | Y |
| ENSG00000245017.2 | <i>RP11-181C3.1</i>   | 0.45  | 1.19E-04 | 3.62E-03 | Intergenic | 0.854  |   |
| ENSG00000245080.5 | <i>RP11-320N21.1</i>  | 0.58  | 1.81E-03 | 2.55E-02 | Antisense  | 0.930  |   |
| ENSG00000245105.2 | <i>A2M-AS1</i>        | -0.39 | 3.37E-06 | 2.15E-04 | Antisense  | -1.183 | Y |
| ENSG00000245148.2 | <i>ARAP1-AS2</i>      | 0.40  | 7.94E-03 | 6.72E-02 | Antisense  | NA     | N |
| ENSG00000245149.3 | <i>RNF139-AS1</i>     | 0.29  | 8.12E-03 | 6.84E-02 | Intergenic | -2.680 | Y |
| ENSG00000245498.5 | <i>RP11-677M14.7</i>  | 0.57  | 6.89E-07 | 5.68E-05 | Antisense  | -1.613 | Y |
| ENSG00000245526.7 | <i>LINC00461</i>      | 0.57  | 3.67E-03 | 4.10E-02 | Intergenic | -2.798 | Y |
| ENSG00000245532.5 | <i>NEAT1</i>          | 0.39  | 6.56E-03 | 5.97E-02 | Intergenic | -3.168 | Y |
| ENSG00000245534.5 | <i>RORA-AS1</i>       | -0.34 | 6.63E-04 | 1.28E-02 | Antisense  | 0.321  |   |
| ENSG00000245571.5 | <i>AP001258.4</i>     | 0.55  | 1.13E-06 | 8.67E-05 | Antisense  | -0.511 | Y |
| ENSG00000245614.3 | <i>DDX11-AS1</i>      | 0.25  | 1.48E-02 | 9.99E-02 | Antisense  | -1.076 | Y |
| ENSG00000245667.2 | <i>RP5-940J5.8</i>    | 0.48  | 1.45E-02 | 9.89E-02 | Antisense  | NA     | Y |
| ENSG00000245685.5 | <i>AF146191.4</i>     | -0.30 | 1.22E-02 | 8.85E-02 | Intergenic | -0.792 | Y |
| ENSG00000245688.1 | <i>CTB-26E19.1</i>    | 0.70  | 6.50E-03 | 5.94E-02 | Intronic   | -1.983 | N |
| ENSG00000245694.7 | <i>CRNDE</i>          | 0.28  | 5.79E-03 | 5.50E-02 | Intergenic | -0.954 | Y |
| ENSG00000245719.1 | <i>RP11-34F13.2</i>   | -0.59 | 1.04E-02 | 8.00E-02 | Antisense  | 0.585  | N |
| ENSG00000245832.5 | <i>RP11-179A16.1</i>  | 0.69  | 5.23E-04 | 1.09E-02 | Intergenic | NA     | Y |
| ENSG00000245849.5 | <i>RAD51-AS1</i>      | 0.24  | 1.05E-02 | 8.03E-02 | Antisense  | -2.841 | Y |
| ENSG00000245888.5 | <i>FLJ21408</i>       | 0.39  | 8.20E-04 | 1.48E-02 | Antisense  | -1.827 |   |
| ENSG00000245904.3 | <i>RP11-796E2.4</i>   | 0.52  | 2.46E-05 | 1.08E-03 | Antisense  | -2.983 | Y |
| ENSG00000245910.7 | <i>SNHG6</i>          | 0.39  | 7.32E-04 | 1.37E-02 | Antisense  | 2.005  | Y |
| ENSG00000245954.5 | <i>RP11-18H21.1</i>   | 0.58  | 1.92E-03 | 2.67E-02 | Intergenic | 1.579  | Y |
| ENSG00000245970.2 | <i>KB-1208A12.3</i>   | 0.40  | 6.69E-04 | 1.29E-02 | Antisense  | -3.415 |   |
| ENSG00000245975.2 | <i>RP11-30K9.6</i>    | 0.25  | 6.37E-03 | 5.88E-02 | Intergenic | -0.039 | Y |
| ENSG00000246089.3 | <i>RP11-115C21.2</i>  | 0.33  | 1.45E-04 | 4.21E-03 | Antisense  | 0.510  | Y |
| ENSG00000246145.1 | <i>RRS1-AS1</i>       | 0.46  | 1.77E-04 | 4.91E-03 | Intergenic | -1.666 |   |
| ENSG00000246174.6 | <i>KCTD21-AS1</i>     | 0.50  | 5.55E-06 | 3.22E-04 | Antisense  | 0.063  | Y |
| ENSG00000246263.2 | <i>KB-431C1.4</i>     | 0.28  | 4.86E-04 | 1.04E-02 | Antisense  | -0.094 | Y |

|                   |                      |       |          |          |            |        |   |
|-------------------|----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000246339.5 | <i>EXTL3-AS1</i>     | 0.53  | 1.53E-04 | 4.36E-03 | Antisense  | -2.905 | Y |
| ENSG00000246366.5 | <i>RP11-382J12.1</i> | 0.61  | 1.23E-06 | 9.28E-05 | Antisense  | NA     |   |
| ENSG00000246375.2 | <i>RP11-10L7.1</i>   | 0.72  | 3.39E-06 | 2.16E-04 | Intergenic | -3.536 | Y |
| ENSG00000246477.3 | <i>AF131216.6</i>    | 0.38  | 8.76E-03 | 7.16E-02 | Antisense  | NA     |   |
| ENSG00000246526.2 | <i>RP11-539L10.2</i> | 0.55  | 5.00E-05 | 1.88E-03 | Intergenic | -1.847 | Y |
| ENSG00000246528.3 | <i>RP11-159H10.3</i> | 0.34  | 8.54E-03 | 7.06E-02 | Antisense  | -0.579 | Y |
| ENSG00000246740.2 | <i>PLA2G4E-AS1</i>   | 0.70  | 3.87E-07 | 3.48E-05 | Antisense  | 1.000  |   |
| ENSG00000246982.5 | <i>RP1-179N16.6</i>  | 0.40  | 1.82E-03 | 2.56E-02 | Antisense  | -2.781 | Y |
| ENSG00000247092.5 | <i>SNHG10</i>        | 0.40  | 8.04E-05 | 2.69E-03 | Antisense  | -1.131 | Y |
| ENSG00000247095.2 | <i>MIR210HG</i>      | 0.48  | 8.39E-04 | 1.50E-02 | Intergenic | -1.969 | Y |
| ENSG00000247121.5 | <i>CTD-2260A17.2</i> | -0.18 | 1.04E-02 | 7.96E-02 | Antisense  | 0.147  |   |
| ENSG00000247137.7 | <i>RP11-727A23.5</i> | 0.40  | 7.85E-06 | 4.30E-04 | Antisense  | -0.510 | Y |
| ENSG00000247157.5 | <i>LINC01252</i>     | 0.53  | 2.30E-04 | 6.00E-03 | Intergenic | -2.346 |   |
| ENSG00000247400.3 | <i>DNAJC3-AS1</i>    | -0.21 | 1.39E-02 | 9.63E-02 | Intergenic | -0.310 | Y |
| ENSG00000247556.5 | <i>OIP5-AS1</i>      | -0.16 | 1.08E-02 | 8.20E-02 | Antisense  | -0.137 | Y |
| ENSG00000247624.5 | <i>CPEB2-AS1</i>     | 0.39  | 1.03E-02 | 7.91E-02 | Intergenic | -2.629 | Y |
| ENSG00000247679.2 | <i>RP11-1277A3.1</i> | 0.32  | 4.43E-05 | 1.72E-03 | Intergenic | -1.886 | Y |
| ENSG00000247796.2 | <i>CTD-2366F13.1</i> | -0.24 | 6.27E-04 | 1.23E-02 | Antisense  | 0.277  | Y |
| ENSG00000247982.5 | <i>LINC00926</i>     | 0.44  | 2.26E-03 | 2.96E-02 | Intergenic | -3.769 | Y |
| ENSG00000248019.2 | <i>FAM13A-AS1</i>    | 0.56  | 2.62E-05 | 1.13E-03 | Antisense  | -4.624 | Y |
| ENSG00000248092.6 | <i>NNT-AS1</i>       | -0.36 | 6.28E-06 | 3.58E-04 | Antisense  | 0.264  | Y |
| ENSG00000248138.4 | <i>RP11-446J8.1</i>  | 0.78  | 2.03E-03 | 2.77E-02 | Antisense  | -2.478 | N |
| ENSG00000248165.1 | <i>RP11-44F21.2</i>  | 0.73  | 3.91E-03 | 4.29E-02 | Antisense  | NA     | N |
| ENSG00000248206.1 | <i>RP11-739P1.2</i>  | -0.55 | 8.63E-03 | 7.10E-02 | Intronic   | 0.943  | Y |
| ENSG00000248279.4 | <i>CTD-2218G20.2</i> | 1.49  | 1.51E-09 | 2.57E-07 | Intergenic | NA     | Y |
| ENSG00000248318.1 | <i>RP11-713M15.1</i> | 0.77  | 8.28E-04 | 1.49E-02 | Antisense  | NA     | N |
| ENSG00000248330.4 | <i>LINC00613</i>     | 0.84  | 1.06E-05 | 5.47E-04 | Intergenic | NA     | N |
| ENSG00000248356.1 | <i>RP11-557J10.4</i> | 0.51  | 8.48E-04 | 1.52E-02 | Antisense  | 0.000  | Y |
| ENSG00000248363.4 | <i>CTC-261N6.1</i>   | 0.68  | 7.89E-04 | 1.44E-02 | Intergenic | NA     | N |
| ENSG00000248416.1 | <i>RP11-1191J2.4</i> | 0.67  | 1.03E-03 | 1.74E-02 | Antisense  | NA     | Y |
| ENSG00000248429.4 | <i>RP11-597D13.9</i> | -0.65 | 1.74E-07 | 1.77E-05 | Exonic     | -1.093 | Y |
| ENSG00000248445.4 | <i>SEMA6A-AS1</i>    | 0.38  | 5.27E-04 | 1.10E-02 | Antisense  | -3.395 |   |
| ENSG00000248469.1 | <i>RP11-826N14.2</i> | 0.66  | 8.46E-04 | 1.51E-02 | Antisense  | NA     |   |
| ENSG00000248528.1 | <i>CTC-458G6.2</i>   | -0.61 | 3.40E-03 | 3.91E-02 | Intergenic | NA     | Y |
| ENSG00000248544.2 | <i>CTB-47B11.3</i>   | 0.41  | 6.76E-03 | 6.07E-02 | Antisense  | -2.350 | Y |
| ENSG00000248599.1 | <i>FLJ42969</i>      | 1.17  | 1.26E-08 | 1.78E-06 | Intergenic | -0.336 |   |
| ENSG00000248677.1 | <i>CTD-2044J15.1</i> | 0.51  | 2.75E-04 | 6.85E-03 | Intergenic | NA     | Y |
| ENSG00000248738.5 | <i>RP11-87E22.2</i>  | 0.39  | 1.33E-02 | 9.35E-02 | Antisense  | -1.172 | Y |
| ENSG00000248783.1 | <i>RP11-308B16.2</i> | 0.54  | 1.17E-02 | 8.61E-02 | Intergenic | NA     | N |
| ENSG00000248837.4 | <i>RP11-412P11.1</i> | 1.28  | 1.35E-08 | 1.90E-06 | Intergenic | NA     | N |
| ENSG00000248869.4 | <i>RP11-138I17.1</i> | 0.84  | 9.84E-04 | 1.68E-02 | Intergenic | NA     | N |
| ENSG00000248986.1 | <i>RP11-774O3.1</i>  | 0.64  | 4.43E-03 | 4.65E-02 | Intergenic | NA     | Y |
| ENSG00000249022.1 | <i>RP11-285C1.2</i>  | 0.84  | 2.23E-04 | 5.86E-03 | Intergenic | NA     | N |
| ENSG00000249102.1 | <i>CTD-2066L21.1</i> | 1.22  | 1.92E-06 | 1.34E-04 | Intergenic | NA     | N |
| ENSG00000249106.1 | <i>RP11-806K15.1</i> | 1.05  | 3.89E-05 | 1.56E-03 | Antisense  | NA     | N |
| ENSG00000249116.1 | <i>CTD-2194D22.3</i> | 0.60  | 7.95E-05 | 2.67E-03 | Antisense  | NA     | Y |
| ENSG00000249128.1 | <i>RP11-2N5.1</i>    | 0.93  | 2.09E-04 | 5.55E-03 | Intergenic | NA     | N |
| ENSG00000249159.5 | <i>RP11-480D4.2</i>  | -0.44 | 7.17E-03 | 6.29E-02 | Intergenic | NA     | Y |
| ENSG00000249173.4 | <i>LINC01093</i>     | 0.54  | 3.69E-04 | 8.50E-03 | Intergenic | NA     |   |
| ENSG00000249199.1 | <i>CTD-2139B15.5</i> | 1.21  | 1.36E-06 | 1.02E-04 | Intergenic | NA     | N |
| ENSG00000249201.2 | <i>CTD-3080P12.3</i> | 0.85  | 6.28E-05 | 2.22E-03 | Intergenic | -5.157 | Y |
| ENSG00000249203.1 | <i>RP11-473L15.3</i> | 0.97  | 1.34E-04 | 3.95E-03 | Intergenic | NA     | N |
| ENSG00000249328.2 | <i>RP11-26J3.1</i>   | 1.41  | 3.68E-13 | 1.22E-10 | Intergenic | -2.122 | Y |
| ENSG00000249352.4 | <i>RP11-141O11.2</i> | 0.34  | 6.63E-03 | 6.00E-02 | Intergenic | 1.000  |   |
| ENSG00000249362.1 | <i>CTD-2316B1.1</i>  | 0.58  | 5.14E-03 | 5.10E-02 | Intergenic | NA     | N |
| ENSG00000249379.1 | <i>RP1-27K12.4</i>   | 0.85  | 9.15E-07 | 7.23E-05 | Antisense  | -0.585 | Y |
| ENSG00000249392.1 | <i>RP11-725D20.1</i> | 1.22  | 5.73E-07 | 4.89E-05 | Intergenic | NA     | N |
| ENSG00000249430.1 | <i>CTD-2231H16.1</i> | -0.58 | 1.61E-03 | 2.36E-02 | Intergenic | -0.287 | Y |
| ENSG00000249453.1 | <i>RP13-497K6.1</i>  | 0.94  | 1.38E-05 | 6.71E-04 | Antisense  | NA     | N |
| ENSG00000249494.4 | <i>CTB-161M19.4</i>  | 0.65  | 1.08E-09 | 1.90E-07 | Antisense  | NA     | Y |
| ENSG00000249526.1 | <i>CTB-35F21.1</i>   | 0.71  | 2.62E-03 | 3.28E-02 | Intergenic | NA     | N |
| ENSG00000249592.4 | <i>RP11-440L14.1</i> | 0.25  | 9.91E-03 | 7.73E-02 | Antisense  | -2.413 | Y |
| ENSG00000249602.1 | <i>RP11-98D18.3</i>  | 0.31  | 1.02E-03 | 1.72E-02 | Exonic     | NA     | Y |
| ENSG00000249631.4 | <i>RP11-281P23.2</i> | 0.54  | 1.31E-02 | 9.24E-02 | Intergenic | -0.863 | Y |
| ENSG00000249641.2 | <i>HOXC13-AS</i>     | 1.15  | 3.72E-06 | 2.32E-04 | Antisense  | 0.320  |   |
| ENSG00000249664.1 | <i>CTD-2227C6.2</i>  | 0.53  | 1.03E-02 | 7.91E-02 | Intergenic | NA     | Y |
| ENSG00000249717.1 | <i>RP11-44F21.3</i>  | 0.73  | 3.82E-04 | 8.69E-03 | Antisense  | NA     | Y |
| ENSG00000249736.1 | <i>RP11-83M16.5</i>  | 0.74  | 2.10E-03 | 2.82E-02 | Intergenic | NA     | N |
| ENSG00000249752.1 | <i>RP11-563M4.1</i>  | 0.84  | 1.32E-04 | 3.90E-03 | Intergenic | NA     | Y |
| ENSG00000249786.6 | <i>EAF1-AS1</i>      | 0.33  | 2.10E-03 | 2.82E-02 | Exonic     | -2.379 | Y |
| ENSG00000249846.5 | <i>RP11-77P16.4</i>  | 0.39  | 9.66E-04 | 1.66E-02 | Intronic   | -1.827 | Y |

|                   |                        |       |          |          |            |        |   |
|-------------------|------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000249849.1 | <i>RP11-1101H11.1</i>  | 0.48  | 1.41E-02 | 9.73E-02 | Antisense  | NA     | Y |
| ENSG00000249859.6 | <i>PVT1</i>            | 0.53  | 1.95E-06 | 1.36E-04 | Intergenic | -1.090 | Y |
| ENSG00000249923.1 | <i>XXbac-B444P24.8</i> | -0.61 | 8.13E-04 | 1.47E-02 | Intergenic | NA     | Y |
| ENSG00000249937.4 | <i>RP11-454P21.1</i>   | 0.97  | 6.46E-05 | 2.26E-03 | Intergenic | NA     | Y |
| ENSG00000249984.1 | <i>CTC-529L17.2</i>    | -0.49 | 1.46E-02 | 9.91E-02 | Intergenic | NA     | Y |
| ENSG00000250033.4 | <i>SLC7A11-AS1</i>     | 0.59  | 1.83E-03 | 2.57E-02 | Antisense  | 1.241  | Y |
| ENSG00000250056.4 | <i>LINC01018</i>       | -0.57 | 1.41E-03 | 2.15E-02 | Intergenic | 1.242  | Y |
| ENSG00000250075.4 | <i>RP11-584P21.2</i>   | 0.55  | 9.16E-04 | 1.59E-02 | Intergenic | -4.630 | Y |
| ENSG00000250159.5 | <i>RP11-381K20.2</i>   | -0.44 | 1.25E-02 | 8.98E-02 | Antisense  | 0.245  | Y |
| ENSG00000250174.4 | <i>MYLK-AS2</i>        | 1.14  | 1.65E-07 | 1.68E-05 | Antisense  | -1.222 | N |
| ENSG00000250220.1 | <i>RP11-692D12.1</i>   | 0.31  | 3.70E-04 | 8.51E-03 | Intergenic | 1.474  | Y |
| ENSG00000250252.1 | <i>RP11-342A1.1</i>    | 1.84  | 9.82E-17 | 5.14E-14 | Intergenic | NA     | N |
| ENSG00000250258.1 | <i>CTC-431G16.2</i>    | 0.68  | 8.54E-04 | 1.52E-02 | Antisense  | NA     | Y |
| ENSG00000250266.1 | <i>RP11-789C1.1</i>    | -0.87 | 6.89E-04 | 1.31E-02 | Intergenic | NA     | Y |
| ENSG00000250295.5 | <i>RP11-434I12.2</i>   | 0.58  | 1.66E-03 | 2.41E-02 | Antisense  | NA     | Y |
| ENSG00000250348.1 | <i>RP11-466P24.6</i>   | 0.86  | 6.17E-04 | 1.22E-02 | Antisense  | NA     | N |
| ENSG00000250366.2 | <i>TUNAR</i>           | -1.41 | 2.50E-08 | 3.18E-06 | Intergenic | 0.779  |   |
| ENSG00000250397.2 | <i>RP11-1391J7.1</i>   | 0.32  | 1.17E-02 | 8.61E-02 | Antisense  | -4.217 | Y |
| ENSG00000250413.1 | <i>RP11-448G15.1</i>   | 0.53  | 7.99E-03 | 6.76E-02 | Antisense  | -1.117 | Y |
| ENSG00000250421.4 | <i>RP11-83M16.6</i>    | 0.76  | 6.65E-04 | 1.28E-02 | Intergenic | 0.041  | Y |
| ENSG00000250451.4 | <i>HOXC-AS1</i>        | 1.43  | 1.65E-09 | 2.79E-07 | Antisense  | 1.546  | Y |
| ENSG00000250509.1 | <i>CTC-573N18.1</i>    | -0.64 | 1.26E-02 | 9.01E-02 | Intergenic | NA     | N |
| ENSG00000250608.1 | <i>RP11-933H2.4</i>    | 0.57  | 1.82E-06 | 1.29E-04 | Antisense  | -1.356 | Y |
| ENSG00000250614.1 | <i>AC007078.4</i>      | 0.58  | 8.64E-03 | 7.10E-02 | Antisense  | NA     | Y |
| ENSG00000250616.2 | <i>RP11-455F5.3</i>    | 0.23  | 6.93E-03 | 6.17E-02 | Antisense  | 0.507  | Y |
| ENSG00000250658.1 | <i>RP11-138B4.1</i>    | -0.69 | 2.77E-03 | 3.40E-02 | Intergenic | -1.292 | Y |
| ENSG00000250673.1 | <i>RP11-6L6.2</i>      | 0.61  | 1.02E-03 | 1.73E-02 | Intergenic | NA     |   |
| ENSG00000250696.4 | <i>RP11-704M14.1</i>   | 0.69  | 4.53E-03 | 4.72E-02 | Antisense  | NA     | N |
| ENSG00000250704.1 | <i>RP11-423J7.1</i>    | 0.61  | 3.85E-07 | 3.47E-05 | Intergenic | NA     | N |
| ENSG00000250740.1 | <i>RP11-710F7.2</i>    | 0.44  | 1.25E-02 | 8.99E-02 | Antisense  | 0.861  | Y |
| ENSG00000250790.4 | <i>RP11-46H11.3</i>    | -0.30 | 2.18E-03 | 2.90E-02 | Antisense  | 0.552  | Y |
| ENSG00000250822.1 | <i>CTD-2139B15.4</i>   | 0.68  | 2.69E-03 | 3.34E-02 | Intergenic | NA     | N |
| ENSG00000250874.1 | <i>CTC-480C2.1</i>     | 0.81  | 5.82E-04 | 1.17E-02 | Intergenic | -1.437 | N |
| ENSG00000250891.1 | <i>CTD-2281M20.1</i>   | 0.63  | 5.84E-04 | 1.17E-02 | Intergenic | NA     | Y |
| ENSG00000250900.5 | <i>CTC-338M12.6</i>    | 0.45  | 4.60E-03 | 4.76E-02 | Antisense  | -1.723 | Y |
| ENSG00000250903.7 | <i>GMDS-AS1</i>        | 0.17  | 3.97E-03 | 4.33E-02 | Intergenic | -0.942 | Y |
| ENSG00000250910.6 | <i>AC097467.2</i>      | 1.31  | 5.67E-12 | 1.63E-09 | Antisense  | NA     | Y |
| ENSG00000250917.1 | <i>RP4-785G19.5</i>    | 0.47  | 4.00E-04 | 9.00E-03 | Exonic     | -0.152 | Y |
| ENSG00000250948.1 | <i>RP11-1079K10.2</i>  | 0.44  | 1.47E-02 | 9.96E-02 | Intergenic | NA     | Y |
| ENSG00000250971.1 | <i>RP11-696F12.1</i>   | 0.64  | 4.52E-03 | 4.72E-02 | Intergenic | NA     | N |
| ENSG00000250988.6 | <i>SNHG21</i>          | 0.21  | 7.48E-03 | 6.47E-02 | Antisense  | -0.870 |   |
| ENSG00000250990.1 | <i>AC073635.5</i>      | 0.41  | 5.59E-03 | 5.40E-02 | Antisense  | NA     | Y |
| ENSG00000251061.2 | <i>RP11-789C1.2</i>    | -0.60 | 1.45E-02 | 9.87E-02 | Intergenic | NA     | N |
| ENSG00000251129.1 | <i>RP11-734I18.1</i>   | -0.63 | 1.32E-02 | 9.29E-02 | Intergenic | 0.838  | N |
| ENSG00000251136.7 | <i>RP11-37B2.1</i>     | 0.29  | 2.09E-03 | 2.82E-02 | Intergenic | -1.977 | Y |
| ENSG00000251218.1 | <i>RP11-1057B8.2</i>   | 1.50  | 2.93E-09 | 4.78E-07 | Intergenic | NA     | N |
| ENSG00000251221.1 | <i>LINC01337</i>       | 0.52  | 1.43E-02 | 9.79E-02 | Intergenic | -1.641 |   |
| ENSG00000251248.1 | <i>RP11-223C24.2</i>   | 0.66  | 8.28E-03 | 6.92E-02 | Antisense  | NA     | N |
| ENSG00000251259.1 | <i>AC004069.2</i>      | 0.46  | 8.82E-04 | 1.56E-02 | Intergenic | -2.220 | Y |
| ENSG00000251281.1 | <i>CTD-2066L21.2</i>   | 0.82  | 1.21E-03 | 1.94E-02 | Intergenic | NA     | N |
| ENSG00000251314.2 | <i>CTD-2337A12.1</i>   | 0.33  | 1.30E-02 | 9.20E-02 | Antisense  | -5.033 | Y |
| ENSG00000251321.1 | <i>PCAT4</i>           | 0.69  | 3.83E-03 | 4.23E-02 | Intergenic | NA     | Y |
| ENSG00000251330.3 | <i>CTD-2283N19.1</i>   | 0.34  | 4.07E-03 | 4.40E-02 | Antisense  | NA     | Y |
| ENSG00000251364.5 | <i>CTD-2516F10.2</i>   | 0.29  | 1.04E-02 | 7.99E-02 | Antisense  | -1.933 | Y |
| ENSG00000251432.5 | <i>RP11-420A23.1</i>   | 0.49  | 1.96E-04 | 5.31E-03 | Intergenic | -3.466 | Y |
| ENSG00000251455.1 | <i>RP11-164P12.3</i>   | 0.63  | 4.07E-05 | 1.61E-03 | Antisense  | -5.306 | Y |
| ENSG00000251497.2 | <i>RP11-197N18.7</i>   | -0.67 | 7.00E-03 | 6.21E-02 | Antisense  | NA     | N |
| ENSG00000251574.5 | <i>RP11-6N13.1</i>     | 0.76  | 1.06E-03 | 1.77E-02 | Intergenic | NA     | N |
| ENSG00000251584.1 | <i>RP11-440I14.3</i>   | 0.58  | 1.42E-02 | 9.76E-02 | Intergenic | NA     | Y |
| ENSG00000251601.1 | <i>RP11-317O24.2</i>   | -0.68 | 7.72E-03 | 6.61E-02 | Intergenic | NA     | N |
| ENSG00000251602.5 | <i>RP11-521B24.3</i>   | 0.24  | 5.72E-03 | 5.47E-02 | Antisense  | 1.041  | Y |
| ENSG00000251623.1 | <i>RP11-826N14.4</i>   | 1.24  | 8.90E-07 | 7.08E-05 | Intergenic | NA     | Y |
| ENSG00000251661.3 | <i>RP11-326C3.11</i>   | 0.86  | 5.38E-10 | 1.01E-07 | Antisense  | -1.571 | Y |
| ENSG00000251687.1 | <i>RP11-181K12.2</i>   | 1.33  | 9.18E-11 | 2.06E-08 | Antisense  | 1.663  | Y |
| ENSG00000251867.3 | <i>RP11-48B3.5</i>     | 0.38  | 2.64E-05 | 1.14E-03 | Antisense  | 0.039  |   |
| ENSG00000253102.1 | <i>RP1-117B12.4</i>    | -0.37 | 1.17E-02 | 8.60E-02 | Antisense  | 1.363  |   |
| ENSG00000253138.4 | <i>LINC00967</i>       | 1.17  | 1.45E-06 | 1.08E-04 | Intergenic | -2.585 | N |
| ENSG00000253167.1 | <i>KLAA0196-AS1</i>    | 0.53  | 2.92E-04 | 7.15E-03 | Antisense  | NA     | Y |
| ENSG00000253177.1 | <i>RP11-100L22.1</i>   | 0.72  | 8.56E-04 | 1.53E-02 | Intergenic | NA     | Y |
| ENSG00000253214.1 | <i>RP11-1149M10.2</i>  | 0.64  | 1.38E-03 | 2.11E-02 | Intergenic | NA     | Y |
| ENSG00000253284.2 | <i>RP11-282K24.3</i>   | 0.54  | 1.14E-03 | 1.87E-02 | Intronic   | -2.901 | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000253317.1 | <i>RP11-142A23.1</i>  | 0.73  | 4.38E-03 | 4.62E-02 | Intergenic | NA     | N |
| ENSG00000253320.4 | <i>KB-1507C5.2</i>    | 0.41  | 2.56E-06 | 1.72E-04 | Antisense  | 0.783  |   |
| ENSG00000253363.4 | <i>RP11-962G15.1</i>  | 0.76  | 2.38E-05 | 1.05E-03 | Intergenic | 2.112  | N |
| ENSG00000253369.1 | <i>RP11-1081M5.1</i>  | 0.83  | 6.94E-04 | 1.32E-02 | Intergenic | -1.322 | Y |
| ENSG00000253372.4 | <i>RP11-44N11.1</i>   | 0.50  | 1.20E-03 | 1.93E-02 | Intronic   | NA     | Y |
| ENSG00000253379.4 | <i>RP11-1102P16.1</i> | -0.37 | 1.22E-02 | 8.83E-02 | Intergenic | -1.181 |   |
| ENSG00000253404.1 | <i>AC034243.1</i>     | 0.50  | 3.49E-03 | 3.97E-02 | Antisense  | 2.668  | Y |
| ENSG00000253405.1 | <i>EVX1-AS</i>        | 0.44  | 1.24E-02 | 8.92E-02 | Antisense  | NA     | Y |
| ENSG00000253417.4 | <i>RP11-109J4.1</i>   | -0.65 | 1.08E-02 | 8.18E-02 | Intergenic | -0.176 | N |
| ENSG00000253438.2 | <i>PCAT1</i>          | 1.04  | 1.60E-08 | 2.20E-06 | Intergenic | -2.003 | Y |
| ENSG00000253475.1 | <i>RP11-110G21.2</i>  | 1.01  | 3.48E-05 | 1.42E-03 | Intronic   | NA     | Y |
| ENSG00000253500.4 | <i>AF121898.3</i>     | 1.30  | 1.16E-07 | 1.26E-05 | Antisense  | 1.088  | N |
| ENSG00000253535.4 | <i>RP11-624C23.1</i>  | 0.58  | 4.27E-03 | 4.54E-02 | Antisense  | NA     | Y |
| ENSG00000253576.1 | <i>GSI-5L10.1</i>     | -0.72 | 4.07E-03 | 4.40E-02 | Antisense  | NA     | N |
| ENSG00000253593.2 | <i>RP11-157E21.1</i>  | 0.64  | 1.10E-02 | 8.26E-02 | Intergenic | NA     | N |
| ENSG00000253664.1 | <i>RP11-401H2.1</i>   | 0.70  | 5.90E-07 | 5.01E-05 | Antisense  | NA     | N |
| ENSG00000253665.1 | <i>RP11-359E19.2</i>  | 0.89  | 1.12E-04 | 3.44E-03 | Intergenic | NA     | Y |
| ENSG00000253669.3 | <i>KB-1732A1.1</i>    | 0.40  | 7.84E-04 | 1.44E-02 | Intergenic | 1.371  | Y |
| ENSG00000253671.1 | <i>RP11-806O11.1</i>  | 0.52  | 1.11E-04 | 3.44E-03 | Intergenic | -3.127 | Y |
| ENSG00000253704.1 | <i>RP11-267M23.4</i>  | 0.36  | 8.10E-04 | 1.47E-02 | Intergenic | -0.236 | Y |
| ENSG00000253764.1 | <i>RP11-439C15.4</i>  | 0.43  | 8.77E-03 | 7.16E-02 | Antisense  | -2.288 | Y |
| ENSG00000253768.1 | <i>CTB-33O18.1</i>    | 0.57  | 1.42E-02 | 9.75E-02 | Intergenic | 1.229  | Y |
| ENSG00000253802.1 | <i>CTA-392C11.1</i>   | 1.09  | 2.02E-05 | 9.35E-04 | Intergenic | -0.524 | N |
| ENSG00000253824.1 | <i>KB-173C10.2</i>    | -0.67 | 7.32E-03 | 6.38E-02 | Intronic   | NA     | N |
| ENSG00000253838.1 | <i>RP11-44K6.2</i>    | 0.80  | 8.90E-04 | 1.56E-02 | Intronic   | NA     | N |
| ENSG00000253852.1 | <i>CTB-140J7.2</i>    | 0.66  | 1.34E-03 | 2.08E-02 | Antisense  | NA     | N |
| ENSG00000253878.4 | <i>RP11-347C18.3</i>  | 0.34  | 2.86E-03 | 3.47E-02 | Intronic   | -0.683 | Y |
| ENSG00000253893.2 | <i>FAM85B</i>         | 1.44  | 3.33E-17 | 1.81E-14 | Intergenic | -1.060 | Y |
| ENSG00000253939.1 | <i>RP11-44K6.3</i>    | 1.18  | 1.48E-06 | 1.09E-04 | Antisense  | NA     | N |
| ENSG00000253955.1 | <i>CTB-33O18.3</i>    | 2.95  | 1.54E-67 | 6.89E-64 | Intergenic | -3.216 | Y |
| ENSG00000253972.4 | <i>RP11-4K16.2</i>    | 0.79  | 2.46E-06 | 1.67E-04 | Antisense  | NA     | Y |
| ENSG00000253978.1 | <i>CTB-178M22.2</i>   | 0.36  | 2.27E-03 | 2.98E-02 | Antisense  | -1.134 | Y |
| ENSG00000254018.1 | <i>RP11-785H20.1</i>  | 1.10  | 2.39E-08 | 3.08E-06 | Intergenic | NA     | N |
| ENSG00000254024.1 | <i>KB-1562D12.1</i>   | 0.44  | 1.16E-03 | 1.89E-02 | Antisense  | -0.160 | Y |
| ENSG00000254035.1 | <i>RP11-281O15.4</i>  | -0.45 | 2.08E-03 | 2.81E-02 | Antisense  | -2.322 | Y |
| ENSG00000254057.1 | <i>RP3-388N13.3</i>   | 0.58  | 4.22E-03 | 4.50E-02 | Intergenic | 0.000  | Y |
| ENSG00000254139.1 | <i>CTD-2339F6.1</i>   | 1.32  | 2.35E-08 | 3.04E-06 | Intergenic | NA     | Y |
| ENSG00000254153.1 | <i>CTA-398F10.2</i>   | 0.74  | 9.29E-06 | 4.92E-04 | Intergenic | 3.755  | Y |
| ENSG00000254154.7 | <i>RP4-798P15.3</i>   | 0.59  | 9.84E-05 | 3.11E-03 | Exonic     | -2.573 | Y |
| ENSG00000254165.1 | <i>RP11-503E24.2</i>  | 0.41  | 2.03E-03 | 2.77E-02 | Intronic   | -2.725 | Y |
| ENSG00000254205.1 | <i>RP11-92K15.1</i>   | 0.60  | 6.38E-03 | 5.88E-02 | Antisense  | NA     | Y |
| ENSG00000254224.1 | <i>KB-1043D8.6</i>    | 0.48  | 6.62E-03 | 6.00E-02 | Antisense  | NA     | Y |
| ENSG00000254231.1 | <i>CTD-2284J15.1</i>  | 0.60  | 1.14E-05 | 5.78E-04 | Antisense  | -1.534 | Y |
| ENSG00000254248.1 | <i>RP11-320N21.2</i>  | 0.65  | 3.99E-03 | 4.34E-02 | Antisense  | NA     | Y |
| ENSG00000254258.1 | <i>RP11-398H6.1</i>   | 0.71  | 4.55E-03 | 4.74E-02 | Intergenic | -0.850 | Y |
| ENSG00000254266.4 | <i>RP11-594N15.2</i>  | 0.52  | 1.58E-04 | 4.49E-03 | Antisense  | NA     | Y |
| ENSG00000254269.4 | <i>CTD-2281E23.2</i>  | 0.60  | 1.14E-02 | 8.49E-02 | Intergenic | NA     | N |
| ENSG00000254275.5 | <i>LINC00824</i>      | 0.96  | 1.67E-05 | 7.97E-04 | Intergenic | -0.906 |   |
| ENSG00000254281.1 | <i>KB-1507C5.4</i>    | 0.44  | 4.85E-04 | 1.03E-02 | Intergenic | NA     | Y |
| ENSG00000254287.1 | <i>RP11-44K6.4</i>    | 0.67  | 5.13E-03 | 5.10E-02 | Antisense  | NA     | N |
| ENSG00000254290.1 | <i>RP11-150O12.3</i>  | -0.61 | 1.07E-03 | 1.78E-02 | Intergenic | -0.699 | Y |
| ENSG00000254317.1 | <i>RP11-473O4.5</i>   | 0.45  | 3.97E-03 | 4.33E-02 | Antisense  | -1.000 | Y |
| ENSG00000254349.4 | <i>FLJ39080</i>       | 0.76  | 1.14E-03 | 1.87E-02 | Intergenic | 2.392  |   |
| ENSG00000254419.1 | <i>RP11-261P9.4</i>   | 0.49  | 2.43E-03 | 3.12E-02 | Intronic   | -4.608 | Y |
| ENSG00000254433.1 | <i>RP11-677I18.3</i>  | 0.41  | 7.92E-04 | 1.45E-02 | Antisense  | NA     | Y |
| ENSG00000254458.1 | <i>RP11-867G23.13</i> | 0.61  | 8.78E-03 | 7.16E-02 | Antisense  | NA     | N |
| ENSG00000254461.1 | <i>RP11-755F10.3</i>  | 0.39  | 3.10E-03 | 3.66E-02 | Antisense  | -2.459 | Y |
| ENSG00000254485.4 | <i>RP11-380O24.1</i>  | 0.46  | 2.67E-05 | 1.15E-03 | Exonic     | 1.020  | Y |
| ENSG00000254556.1 | <i>AF131215.4</i>     | 0.55  | 1.06E-02 | 8.09E-02 | Intronic   | -1.064 | Y |
| ENSG00000254638.1 | <i>RP11-356J5.4</i>   | 0.76  | 2.30E-03 | 3.00E-02 | Antisense  | NA     | N |
| ENSG00000254653.1 | <i>RP11-702F3.1</i>   | 0.63  | 9.18E-03 | 7.37E-02 | Antisense  | NA     | N |
| ENSG00000254654.1 | <i>AC068858.1</i>     | 0.66  | 6.72E-03 | 6.05E-02 | Intergenic | NA     | N |
| ENSG00000254676.1 | <i>RP11-727A23.4</i>  | 0.31  | 1.25E-02 | 8.99E-02 | Exonic     | -3.754 | Y |
| ENSG00000254682.1 | <i>RP11-660L16.2</i>  | -0.63 | 4.09E-08 | 4.94E-06 | Antisense  | 1.072  | Y |
| ENSG00000254689.1 | <i>RP11-354A14.1</i>  | 0.71  | 1.38E-05 | 6.71E-04 | Intergenic | NA     | Y |
| ENSG00000254756.1 | <i>RP11-867G23.12</i> | 0.64  | 1.07E-03 | 1.79E-02 | Antisense  | NA     | N |
| ENSG00000254757.1 | <i>RP13-726E6.1</i>   | 0.53  | 2.12E-03 | 2.85E-02 | Intergenic | NA     | Y |
| ENSG00000254777.4 | <i>AC022182.1</i>     | 0.46  | 5.76E-03 | 5.49E-02 | Intergenic | -0.553 | Y |
| ENSG00000254802.1 | <i>AC022182.3</i>     | 0.45  | 1.20E-02 | 8.74E-02 | Intergenic | NA     | Y |
| ENSG00000254815.4 | <i>RP11-496I9.1</i>   | 0.49  | 4.00E-03 | 4.35E-02 | Antisense  | -4.564 |   |
| ENSG00000254833.1 | <i>RP11-50B3.2</i>    | 0.59  | 2.27E-03 | 2.98E-02 | Intergenic | NA     | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000254854.1 | <i>CTD-2523D13.2</i>  | 0.53  | 4.70E-06 | 2.83E-04 | Intergenic | 0.760  | Y |
| ENSG00000254860.4 | <i>TMEM9B-AS1</i>     | 0.44  | 1.35E-05 | 6.61E-04 | Antisense  | -0.676 | Y |
| ENSG00000254862.4 | <i>RP11-159H22.2</i>  | 0.34  | 1.52E-03 | 2.27E-02 | Antisense  | 0.585  | Y |
| ENSG00000254951.6 | <i>RP11-494M8.4</i>   | -0.54 | 9.56E-03 | 7.54E-02 | Intronic   | -1.947 | Y |
| ENSG00000254952.1 | <i>AP001257.1</i>     | 0.87  | 3.50E-04 | 8.20E-03 | Intergenic | NA     | N |
| ENSG00000254967.5 | <i>RP11-680F20.6</i>  | -0.68 | 1.69E-03 | 2.44E-02 | Antisense  | -1.322 | Y |
| ENSG00000254973.1 | <i>RP11-429J17.7</i>  | 1.10  | 6.31E-18 | 3.74E-15 | Intergenic | -0.796 | Y |
| ENSG00000254988.1 | <i>CTD-2547H18.1</i>  | -1.11 | 1.71E-06 | 1.22E-04 | Antisense  | NA     | Y |
| ENSG00000254990.4 | <i>RP11-108O10.2</i>  | 0.97  | 4.95E-10 | 9.54E-08 | Intergenic | 0.000  | Y |
| ENSG00000255002.1 | <i>CTD-2509G16.2</i>  | 0.60  | 1.40E-02 | 9.68E-02 | Intergenic | NA     | N |
| ENSG00000255031.4 | <i>RP11-802E16.3</i>  | 0.47  | 5.71E-04 | 1.15E-02 | Exonic     | -4.385 | Y |
| ENSG00000255036.4 | <i>RP11-23J9.4</i>    | 0.56  | 6.69E-06 | 3.77E-04 | Exonic     | -2.479 |   |
| ENSG00000255050.1 | <i>RP11-661A12.9</i>  | 0.62  | 3.59E-03 | 4.05E-02 | Antisense  | NA     | Y |
| ENSG00000255080.1 | <i>RP11-1082L8.3</i>  | -0.49 | 8.32E-03 | 6.94E-02 | Intergenic | NA     | Y |
| ENSG00000255089.1 | <i>RP11-326C3.10</i>  | 0.89  | 3.79E-04 | 8.65E-03 | Antisense  | 1.742  | Y |
| ENSG00000255109.4 | <i>CTD-2572N17.1</i>  | 0.69  | 7.34E-03 | 6.40E-02 | Intergenic | NA     | N |
| ENSG00000255159.1 | <i>RP11-318C2.1</i>   | 0.70  | 6.52E-04 | 1.26E-02 | Antisense  | NA     | Y |
| ENSG00000255176.1 | <i>AP002954.3</i>     | 0.52  | 2.11E-03 | 2.84E-02 | Intronic   | -4.386 | Y |
| ENSG00000255182.2 | <i>CTD-2517M22.14</i> | 0.63  | 4.95E-05 | 1.86E-03 | Antisense  | -3.634 | Y |
| ENSG00000255246.1 | <i>RP11-179A16.2</i>  | 0.93  | 1.70E-04 | 4.76E-03 | Intergenic | NA     | N |
| ENSG00000255250.1 | <i>CTD-2005H7.2</i>   | 0.50  | 1.35E-03 | 2.08E-02 | Intergenic | NA     | Y |
| ENSG00000255299.4 | <i>RP11-655C2.3</i>   | 0.90  | 1.23E-04 | 3.72E-03 | Intergenic | -0.741 | N |
| ENSG00000255451.1 | <i>RP11-58K22.1</i>   | 0.46  | 8.44E-06 | 4.53E-04 | Intergenic | NA     | N |
| ENSG00000255479.1 | <i>RP11-672A2.6</i>   | 0.63  | 4.88E-03 | 4.94E-02 | Intergenic | NA     | N |
| ENSG00000255495.1 | <i>AC145124.2</i>     | -0.55 | 2.41E-04 | 6.19E-03 | Intergenic | -0.352 |   |
| ENSG00000255693.1 | <i>RP11-766N7.3</i>   | 0.68  | 1.82E-05 | 8.59E-04 | Intergenic | -0.848 | Y |
| ENSG00000255717.5 | <i>SNHG1</i>          | 0.40  | 4.97E-05 | 1.87E-03 | Intergenic | -2.566 | Y |
| ENSG00000255857.4 | <i>PXN-AS1</i>        | 0.34  | 6.15E-05 | 2.19E-03 | Antisense  | 0.248  | Y |
| ENSG00000255928.1 | <i>RP11-456I15.2</i>  | 0.97  | 1.20E-04 | 3.64E-03 | Antisense  | NA     | N |
| ENSG00000256006.1 | <i>AC084117.3</i>     | 0.49  | 5.18E-03 | 5.13E-02 | Intronic   | NA     | Y |
| ENSG00000256031.1 | <i>RP11-364C11.3</i>  | 0.64  | 1.21E-02 | 8.78E-02 | Intronic   | NA     | N |
| ENSG00000256039.1 | <i>RP11-291B21.2</i>  | 0.63  | 1.60E-03 | 2.35E-02 | Intergenic | 2.170  | Y |
| ENSG00000256128.4 | <i>LINC00944</i>      | 0.88  | 1.88E-06 | 1.33E-04 | Intergenic | NA     | Y |
| ENSG00000256150.1 | <i>RP11-885B4.1</i>   | 0.82  | 1.13E-03 | 1.86E-02 | Intergenic | NA     | Y |
| ENSG00000256250.1 | <i>RP11-989F5.1</i>   | 0.87  | 1.02E-04 | 3.22E-03 | Antisense  | NA     | N |
| ENSG00000256257.1 | <i>CACNA1C-IT2</i>    | -0.61 | 8.76E-03 | 7.16E-02 | Intronic   | NA     | Y |
| ENSG00000256276.1 | <i>RP5-916L7.2</i>    | 0.59  | 2.33E-03 | 3.03E-02 | Intergenic | NA     | Y |
| ENSG00000256299.1 | <i>RP11-989F5.3</i>   | 1.11  | 3.46E-06 | 2.19E-04 | Intronic   | NA     | Y |
| ENSG00000256321.4 | <i>RP11-153K16.1</i>  | 3.23  | 1.80E-36 | 4.26E-33 | Intergenic | -2.865 | N |
| ENSG00000256427.1 | <i>RP11-118B22.4</i>  | 0.51  | 1.11E-02 | 8.35E-02 | Intergenic | NA     | Y |
| ENSG00000256433.2 | <i>RP1-102E24.8</i>   | 0.52  | 1.97E-05 | 9.16E-04 | Intergenic | -3.068 | Y |
| ENSG00000256458.1 | <i>RP11-363J17.1</i>  | 0.61  | 1.12E-02 | 8.36E-02 | Antisense  | NA     | Y |
| ENSG00000256481.1 | <i>RP11-21A7A.4</i>   | 0.71  | 3.57E-04 | 8.32E-03 | Antisense  | NA     | Y |
| ENSG00000256576.2 | <i>RP13-977J11.2</i>  | 0.32  | 4.67E-03 | 4.81E-02 | Intergenic | -0.634 | Y |
| ENSG00000256582.1 | <i>RP11-75L1.1</i>    | 1.00  | 2.23E-05 | 1.00E-03 | Intergenic | NA     | N |
| ENSG00000256597.2 | <i>FLJ37505</i>       | 1.07  | 4.88E-06 | 2.91E-04 | Intergenic | NA     |   |
| ENSG00000256670.1 | <i>RP11-338E21.1</i>  | 0.54  | 8.61E-03 | 7.09E-02 | Intergenic | NA     | Y |
| ENSG00000256751.4 | <i>PLBD1-AS1</i>      | -0.49 | 6.13E-03 | 5.73E-02 | Antisense  | -1.160 |   |
| ENSG00000256894.1 | <i>RP11-283G6.3</i>   | -0.47 | 1.74E-03 | 2.48E-02 | Antisense  | -2.345 | Y |
| ENSG00000256940.1 | <i>RP11-783K16.5</i>  | -0.33 | 1.32E-02 | 9.29E-02 | Antisense  | 1.898  | Y |
| ENSG00000256948.1 | <i>RP11-598F7.3</i>   | 0.86  | 1.23E-05 | 6.14E-04 | Antisense  | -0.161 | Y |
| ENSG00000256967.1 | <i>RP11-273B20.1</i>  | 0.33  | 7.55E-03 | 6.51E-02 | Antisense  | -2.905 | Y |
| ENSG00000256982.1 | <i>CTD-2555A7.2</i>   | 0.63  | 1.49E-04 | 4.31E-03 | Intergenic | -0.685 | Y |
| ENSG00000257002.1 | <i>AP000438.2</i>     | 0.56  | 1.10E-04 | 3.40E-03 | Antisense  | -0.221 | Y |
| ENSG00000257022.1 | <i>RP11-729I10.2</i>  | -0.67 | 9.30E-03 | 7.43E-02 | Antisense  | NA     | N |
| ENSG00000257038.1 | <i>RP11-800A3.7</i>   | -0.32 | 4.82E-03 | 4.90E-02 | Antisense  | -1.216 | Y |
| ENSG00000257057.1 | <i>C11orf97</i>       | -0.64 | 1.23E-02 | 8.87E-02 | Intergenic | NA     |   |
| ENSG00000257135.4 | <i>RP11-320M2.1</i>   | 0.58  | 1.80E-06 | 1.27E-04 | Intergenic | -0.363 | Y |
| ENSG00000257176.2 | <i>RP11-996F15.2</i>  | 0.79  | 2.20E-10 | 4.56E-08 | Antisense  | -2.703 | Y |
| ENSG00000257178.3 | <i>RP11-357H14.16</i> | 0.78  | 1.31E-03 | 2.04E-02 | Exonic     | -4.601 |   |
| ENSG00000257194.2 | <i>RP11-567C2.1</i>   | 0.63  | 1.52E-03 | 2.26E-02 | Intergenic | NA     | Y |
| ENSG00000257222.1 | <i>RP11-554E23.4</i>  | 0.45  | 6.49E-04 | 1.26E-02 | Antisense  | NA     | Y |
| ENSG00000257252.4 | <i>RP11-486A14.2</i>  | 0.45  | 7.86E-03 | 6.69E-02 | Intergenic | -0.047 | Y |
| ENSG00000257261.4 | <i>RP11-96H19.1</i>   | -0.30 | 9.00E-04 | 1.57E-02 | Antisense  | -2.216 | Y |
| ENSG00000257322.4 | <i>RP11-511B23.2</i>  | 0.59  | 9.05E-04 | 1.58E-02 | Intergenic | -0.035 | Y |
| ENSG00000257354.2 | <i>RP11-631N16.2</i>  | 0.30  | 4.09E-03 | 4.40E-02 | Intergenic | -3.245 | Y |
| ENSG00000257379.1 | <i>RP11-793H13.8</i>  | 0.50  | 1.41E-04 | 4.12E-03 | Exonic     | -2.953 |   |
| ENSG00000257407.1 | <i>RP11-1028N23.4</i> | 0.59  | 1.37E-02 | 9.53E-02 | Intergenic | NA     | N |
| ENSG00000257434.1 | <i>RP11-81K13.1</i>   | -1.02 | 5.14E-06 | 3.03E-04 | Antisense  | NA     | Y |
| ENSG00000257453.1 | <i>RP11-290L1.3</i>   | 0.60  | 6.36E-03 | 5.88E-02 | Antisense  | -1.700 |   |
| ENSG00000257495.4 | <i>KRT73-AS1</i>      | 0.92  | 2.36E-04 | 6.11E-03 | Antisense  | -2.536 |   |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000257524.4 | <i>RP11-203J24.9</i>  | 0.37  | 7.76E-03 | 6.63E-02 | Exonic     | -3.793 |   |
| ENSG00000257550.1 | <i>RP11-793H13.3</i>  | 0.88  | 4.35E-06 | 2.64E-04 | Antisense  | NA     |   |
| ENSG00000257595.2 | <i>RP3-473L9.4</i>    | 0.56  | 1.31E-03 | 2.04E-02 | Intergenic | 3.535  | Y |
| ENSG00000257596.1 | <i>RP11-968A15.2</i>  | 0.49  | 8.95E-04 | 1.57E-02 | Antisense  | NA     | Y |
| ENSG00000257599.1 | <i>OVCH1-AS1</i>      | -0.73 | 1.56E-03 | 2.31E-02 | Antisense  | 0.406  |   |
| ENSG00000257613.1 | <i>LINC01481</i>      | 0.56  | 5.94E-05 | 2.13E-03 | Intergenic | -2.954 |   |
| ENSG00000257621.6 | <i>PSMA3-AS1</i>      | 0.17  | 5.27E-03 | 5.19E-02 | Exonic     | -1.423 |   |
| ENSG00000257636.5 | <i>RP11-1103G16.1</i> | 1.17  | 3.18E-06 | 2.05E-04 | Antisense  | 0.348  | N |
| ENSG00000257663.1 | <i>RP11-1100L3.7</i>  | 0.70  | 5.39E-04 | 1.11E-02 | Antisense  | -0.860 | N |
| ENSG00000257698.1 | <i>RP11-620J15.3</i>  | 0.27  | 3.99E-03 | 4.34E-02 | Intergenic | 1.687  | Y |
| ENSG00000257718.1 | <i>RP11-396F22.1</i>  | 0.56  | 7.71E-04 | 1.42E-02 | Antisense  | 1.746  | Y |
| ENSG00000257726.1 | <i>RP11-116D17.1</i>  | 0.61  | 9.84E-03 | 7.69E-02 | Intergenic | NA     |   |
| ENSG00000257737.1 | <i>RP11-341G23.2</i>  | -0.62 | 1.44E-02 | 9.86E-02 | Antisense  | NA     | N |
| ENSG00000257769.1 | <i>CTB-193M12.1</i>   | 0.68  | 3.85E-03 | 4.24E-02 | Antisense  | NA     | N |
| ENSG00000257781.1 | <i>RP11-110L15.1</i>  | 0.45  | 4.84E-03 | 4.90E-02 | Intergenic | NA     | Y |
| ENSG00000257817.1 | <i>RP4-601P9.2</i>    | 0.55  | 9.95E-04 | 1.70E-02 | Intergenic | 0.447  | Y |
| ENSG00000257859.1 | <i>CASC18</i>         | 0.40  | 1.44E-02 | 9.83E-02 | Intergenic | -3.058 |   |
| ENSG00000257890.1 | <i>RP11-114F10.2</i>  | 0.53  | 8.34E-03 | 6.95E-02 | Intergenic | NA     | Y |
| ENSG00000257894.2 | <i>RP1-78O14.1</i>    | -0.39 | 2.85E-03 | 3.47E-02 | Antisense  | -0.923 | Y |
| ENSG00000258038.4 | <i>CTD-238A14.1</i>   | 1.16  | 5.48E-06 | 3.20E-04 | Intergenic | -1.754 | N |
| ENSG00000258144.1 | <i>RP11-554L12.1</i>  | 1.31  | 1.97E-08 | 2.63E-06 | Intergenic | NA     | Y |
| ENSG00000258203.4 | <i>RP1-228P16.3</i>   | -0.68 | 5.89E-03 | 5.57E-02 | Intergenic | NA     | Y |
| ENSG00000258294.4 | <i>RP11-314D7.1</i>   | 0.75  | 1.02E-03 | 1.73E-02 | Intergenic | NA     | Y |
| ENSG00000258302.2 | <i>RP11-981P6.1</i>   | 0.31  | 1.26E-02 | 9.04E-02 | Antisense  | -2.841 | Y |
| ENSG00000258317.1 | <i>RP11-603J24.5</i>  | 0.50  | 3.38E-04 | 8.01E-03 | Antisense  | -1.579 | Y |
| ENSG00000258331.1 | <i>RP11-118A3.1</i>   | 0.80  | 1.87E-03 | 2.62E-02 | Intergenic | NA     | N |
| ENSG00000258345.1 | <i>RP11-603J24.6</i>  | 0.63  | 1.44E-02 | 9.86E-02 | Antisense  | NA     | N |
| ENSG00000258365.1 | <i>RP11-1105G2.3</i>  | 0.62  | 6.95E-06 | 3.89E-04 | Antisense  | -2.778 |   |
| ENSG00000258380.1 | <i>RP11-33N16.2</i>   | 0.62  | 1.20E-02 | 8.76E-02 | Antisense  | NA     | N |
| ENSG00000258443.1 | <i>RP3-414A15.11</i>  | 0.36  | 4.40E-03 | 4.63E-02 | Intronic   | NA     | Y |
| ENSG00000258461.4 | <i>RP11-164J13.1</i>  | 0.36  | 9.69E-03 | 7.61E-02 | Exonic     | -3.895 | N |
| ENSG00000258490.1 | <i>RP11-862P13.1</i>  | 0.61  | 1.27E-02 | 9.08E-02 | Antisense  | NA     | N |
| ENSG00000258525.1 | <i>RP11-829H16.3</i>  | -0.56 | 1.02E-03 | 1.73E-02 | Antisense  | -5.003 | Y |
| ENSG00000258545.4 | <i>RP4-755D9.1</i>    | 0.60  | 4.66E-05 | 1.78E-03 | Antisense  | -0.112 | Y |
| ENSG00000258602.1 | <i>RP11-7F17.7</i>    | 0.73  | 6.28E-04 | 1.23E-02 | Intergenic | 0.112  | Y |
| ENSG00000258603.3 | <i>RP3-414A15.10</i>  | 0.37  | 1.36E-02 | 9.51E-02 | Antisense  | -0.334 | Y |
| ENSG00000258630.1 | <i>RP11-725G5.2</i>   | 0.45  | 2.73E-03 | 3.37E-02 | Intergenic | -1.000 | Y |
| ENSG00000258647.4 | <i>LINC00930</i>      | 1.21  | 3.21E-11 | 7.89E-09 | Intergenic | -4.170 | Y |
| ENSG00000258676.4 | <i>RP11-386M24.3</i>  | 0.82  | 1.81E-05 | 8.56E-04 | Intergenic | NA     | Y |
| ENSG00000258693.1 | <i>RP11-436M15.3</i>  | 0.72  | 5.06E-03 | 5.05E-02 | Antisense  | NA     | N |
| ENSG00000258701.1 | <i>LINC00638</i>      | -0.33 | 2.17E-03 | 2.89E-02 | Intergenic | 0.028  | Y |
| ENSG00000258725.1 | <i>PRC1-AS1</i>       | 0.72  | 1.74E-08 | 2.37E-06 | Antisense  | -3.342 | Y |
| ENSG00000258727.1 | <i>RP11-66N24.3</i>   | 0.54  | 8.19E-05 | 2.72E-03 | Antisense  | -5.003 |   |
| ENSG00000258730.1 | <i>ITPK1-AS1</i>      | 0.67  | 2.24E-03 | 2.95E-02 | Antisense  | NA     | N |
| ENSG00000258733.4 | <i>CTD-2341M24.1</i>  | 0.43  | 2.82E-03 | 3.44E-02 | Intergenic | -0.325 | Y |
| ENSG00000258738.1 | <i>RP11-73E17.2</i>   | -0.24 | 1.46E-04 | 4.23E-03 | Antisense  | 0.642  |   |
| ENSG00000258789.1 | <i>RP11-507K2.3</i>   | -0.44 | 2.31E-04 | 6.01E-03 | Antisense  | 1.569  | Y |
| ENSG00000258793.1 | <i>RP11-404P21.3</i>  | 0.81  | 7.72E-04 | 1.43E-02 | Antisense  | 0.848  | N |
| ENSG00000258819.1 | <i>RP11-7F17.3</i>    | -0.46 | 4.58E-03 | 4.76E-02 | Intergenic | -1.530 | Y |
| ENSG00000258829.1 | <i>CTD-2243E23.1</i>  | 0.97  | 2.62E-05 | 1.13E-03 | Antisense  | NA     | Y |
| ENSG00000258847.1 | <i>CTD-2014B16.3</i>  | 0.56  | 3.25E-04 | 7.78E-03 | Intergenic | NA     |   |
| ENSG00000258875.4 | <i>CTD-2547L24.3</i>  | 0.55  | 6.54E-05 | 2.29E-03 | Antisense  | -1.203 |   |
| ENSG00000258884.1 | <i>CTD-3035D6.2</i>   | 0.98  | 6.94E-07 | 5.71E-05 | Intergenic | 2.623  | Y |
| ENSG00000258904.1 | <i>RP11-638I2.2</i>   | 0.39  | 6.53E-03 | 5.96E-02 | Intronic   | -2.807 | Y |
| ENSG00000258926.1 | <i>RP11-47I22.1</i>   | 0.43  | 1.36E-02 | 9.50E-02 | Antisense  | NA     | Y |
| ENSG00000258957.1 | <i>RP11-363J20.1</i>  | 0.34  | 2.92E-03 | 3.52E-02 | Antisense  | 2.326  | Y |
| ENSG00000258998.1 | <i>RP11-398E10.1</i>  | -0.94 | 5.66E-05 | 2.07E-03 | Intergenic | -0.184 | Y |
| ENSG00000259023.2 | <i>LINC00524</i>      | -0.53 | 1.17E-02 | 8.60E-02 | Intergenic | NA     | Y |
| ENSG00000259065.1 | <i>RP5-1021I20.1</i>  | -0.42 | 1.25E-04 | 3.73E-03 | Antisense  | -0.026 | Y |
| ENSG00000259081.1 | <i>RP11-488C13.6</i>  | 0.42  | 3.44E-03 | 3.93E-02 | Antisense  | -2.901 | Y |
| ENSG00000259083.1 | <i>RP11-407N17.4</i>  | 0.33  | 5.56E-03 | 5.38E-02 | Antisense  | -1.710 | Y |
| ENSG00000259113.1 | <i>RP11-406H23.2</i>  | 0.52  | 2.13E-03 | 2.85E-02 | Antisense  | NA     |   |
| ENSG00000259163.1 | <i>RP11-1078H9.5</i>  | 0.47  | 3.56E-03 | 4.02E-02 | Antisense  | NA     | Y |
| ENSG00000259188.4 | <i>CTD-2647E9.3</i>   | 0.59  | 8.64E-03 | 7.10E-02 | Antisense  | NA     | N |
| ENSG00000259238.1 | <i>RP11-361D15.2</i>  | 0.61  | 1.18E-04 | 3.59E-03 | Antisense  | NA     | Y |
| ENSG00000259268.1 | <i>AC007950.1</i>     | 0.74  | 7.47E-04 | 1.39E-02 | Intergenic | NA     | Y |
| ENSG00000259314.1 | <i>CTD-3065B20.3</i>  | 0.49  | 2.04E-04 | 5.44E-03 | Antisense  | -0.447 | N |
| ENSG00000259321.1 | <i>RP11-468E2.5</i>   | 0.38  | 1.96E-03 | 2.71E-02 | Antisense  | -3.044 |   |
| ENSG00000259365.1 | <i>RP11-424I19.1</i>  | 1.00  | 6.67E-05 | 2.33E-03 | Intergenic | NA     | N |
| ENSG00000259402.1 | <i>RP11-30K9.4</i>    | 0.59  | 3.67E-03 | 4.11E-02 | Intronic   | -2.899 | Y |
| ENSG00000259407.1 | <i>RP11-158M2.3</i>   | 0.47  | 9.80E-05 | 3.10E-03 | Antisense  | -2.368 | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000259408.2 | <i>RP11-3D4.3</i>     | 0.36  | 5.08E-03 | 5.06E-02 | Antisense  | -2.670 | Y |
| ENSG00000259416.2 | <i>RP11-158M2.5</i>   | 0.60  | 9.73E-05 | 3.09E-03 | Intergenic | -1.800 | Y |
| ENSG00000259420.4 | <i>RP11-307C19.2</i>  | -0.59 | 5.46E-03 | 5.32E-02 | Intergenic | -1.743 | Y |
| ENSG00000259423.2 | <i>RP11-265N7.2</i>   | 0.58  | 6.19E-03 | 5.76E-02 | Intergenic | NA     | Y |
| ENSG00000259444.1 | <i>RP11-736N17.8</i>  | 0.59  | 1.08E-02 | 8.19E-02 | Intergenic | NA     | Y |
| ENSG00000259446.4 | <i>RP11-489D6.2</i>   | -0.86 | 7.00E-05 | 2.41E-03 | Intergenic | NA     | Y |
| ENSG00000259459.4 | <i>RP11-321G12.1</i>  | 0.79  | 2.98E-06 | 1.94E-04 | Intergenic | -0.533 | Y |
| ENSG00000259471.1 | <i>LINC01169</i>      | 0.71  | 7.93E-04 | 1.45E-02 | Intergenic | 0.082  |   |
| ENSG00000259474.1 | <i>RP11-650L12.1</i>  | 0.56  | 1.34E-02 | 9.41E-02 | Antisense  | NA     | N |
| ENSG00000259495.2 | <i>RP11-210M15.2</i>  | -0.31 | 7.67E-03 | 6.58E-02 | Intergenic | -0.159 |   |
| ENSG00000259515.1 | <i>RP11-365N19.2</i>  | 0.37  | 6.50E-03 | 5.94E-02 | Exonic     | NA     | Y |
| ENSG00000259532.1 | <i>RP11-138H8.2</i>   | 0.56  | 1.08E-02 | 8.16E-02 | Antisense  | NA     | N |
| ENSG00000259536.4 | <i>RP11-111A22.1</i>  | 0.46  | 5.70E-06 | 3.27E-04 | Antisense  | -0.032 | Y |
| ENSG00000259543.1 | <i>CTD-2034I4.1</i>   | 0.69  | 6.74E-03 | 6.06E-02 | Intergenic | NA     | N |
| ENSG00000259546.1 | <i>RP11-351M8.2</i>   | 0.55  | 1.42E-03 | 2.16E-02 | Exonic     | NA     |   |
| ENSG00000259561.1 | <i>RP11-300G22.2</i>  | 0.74  | 8.38E-05 | 2.77E-03 | Intronic   | NA     | Y |
| ENSG00000259587.2 | <i>RP11-463I20.2</i>  | 0.68  | 7.38E-03 | 6.41E-02 | Intergenic | NA     | N |
| ENSG00000259594.4 | <i>CTD-2034I4.2</i>   | 0.99  | 2.83E-07 | 2.69E-05 | Intergenic | -2.222 | Y |
| ENSG00000259604.4 | <i>RP11-66B24.1</i>   | 2.07  | 1.32E-29 | 2.13E-26 | Intergenic | NA     | Y |
| ENSG00000259605.3 | <i>AC074212.5</i>     | 0.36  | 1.08E-02 | 8.18E-02 | Antisense  | -4.163 |   |
| ENSG00000259628.1 | <i>RP11-467H10.2</i>  | 0.51  | 4.34E-03 | 4.58E-02 | Exonic     | NA     | Y |
| ENSG00000259635.1 | <i>AC100830.3</i>     | 0.33  | 9.09E-03 | 7.33E-02 | Antisense  | -3.267 | Y |
| ENSG00000259641.4 | <i>PCAT29</i>         | 0.41  | 4.52E-03 | 4.71E-02 | Intergenic | NA     |   |
| ENSG00000259654.1 | <i>RP11-245C17.2</i>  | 0.53  | 4.71E-03 | 4.83E-02 | Antisense  | NA     | Y |
| ENSG00000259656.1 | <i>RP11-325E5.1</i>   | -0.80 | 4.78E-04 | 1.02E-02 | Intergenic | NA     | Y |
| ENSG00000259685.2 | <i>CTD-2315E11.1</i>  | 0.74  | 1.07E-05 | 5.49E-04 | Intergenic | NA     | Y |
| ENSG00000259737.5 | <i>RP11-475A13.1</i>  | 0.68  | 1.20E-03 | 1.93E-02 | Intergenic | NA     | Y |
| ENSG00000259756.1 | <i>RP11-625H11.2</i>  | 0.79  | 1.90E-03 | 2.65E-02 | Antisense  | NA     | N |
| ENSG00000259767.1 | <i>RP11-90B9.2</i>    | 0.45  | 4.10E-03 | 4.41E-02 | Intronic   | NA     | Y |
| ENSG00000259780.3 | <i>RP11-304L19.12</i> | 0.62  | 2.51E-03 | 3.19E-02 | Antisense  | -2.600 |   |
| ENSG00000259782.2 | <i>CTD-2270L9.2</i>   | 0.43  | 1.37E-02 | 9.55E-02 | Intronic   | -1.024 | Y |
| ENSG00000259820.1 | <i>AC083843.1</i>     | 0.54  | 1.82E-05 | 8.59E-04 | Intergenic | -4.317 | Y |
| ENSG00000259826.1 | <i>RP11-467D6.1</i>   | 0.25  | 3.92E-03 | 4.29E-02 | Intergenic | -1.114 | Y |
| ENSG00000259865.1 | <i>RP11-488L18.10</i> | 0.33  | 8.97E-04 | 1.57E-02 | Intergenic | -1.432 | Y |
| ENSG00000259869.1 | <i>AL022344.7</i>     | 0.43  | 1.46E-02 | 9.94E-02 | Intergenic | 2.379  | Y |
| ENSG00000259883.1 | <i>EHD4-AS1</i>       | 0.43  | 3.83E-03 | 4.23E-02 | Antisense  | -1.585 |   |
| ENSG00000259926.1 | <i>RP11-44F14.5</i>   | 0.56  | 5.16E-03 | 5.12E-02 | Intronic   | NA     | Y |
| ENSG00000259937.2 | <i>RP11-438D14.2</i>  | -0.79 | 7.73E-04 | 1.43E-02 | Intronic   | 0.788  | Y |
| ENSG00000259940.2 | <i>CTD-3203P2.1</i>   | 0.33  | 2.47E-03 | 3.16E-02 | Antisense  | -2.427 |   |
| ENSG00000259943.1 | <i>RP1-39G22.7</i>    | 0.25  | 2.87E-04 | 7.06E-03 | Intergenic | 0.101  | Y |
| ENSG00000259947.1 | <i>XX-DJ76P10_A.2</i> | 0.83  | 6.33E-04 | 1.24E-02 | Intergenic | NA     | N |
| ENSG00000259974.2 | <i>LINC00261</i>      | -0.87 | 2.84E-04 | 7.01E-03 | Intergenic | -0.320 | Y |
| ENSG00000259976.1 | <i>RP11-553L6.5</i>   | -0.23 | 4.08E-03 | 4.40E-02 | Intergenic | -1.567 |   |
| ENSG00000260005.5 | <i>AC027601.1</i>     | 0.41  | 8.97E-04 | 1.57E-02 | Antisense  | NA     | Y |
| ENSG00000260011.2 | <i>RP13-20L14.1</i>   | 0.70  | 3.13E-05 | 1.30E-03 | Intergenic | NA     | Y |
| ENSG00000260017.1 | <i>RP11-1035H13.2</i> | 0.52  | 4.30E-03 | 4.56E-02 | Antisense  | NA     | N |
| ENSG00000260022.1 | <i>LA16c-306A4.1</i>  | 0.45  | 9.65E-05 | 3.08E-03 | Antisense  | NA     | Y |
| ENSG00000260057.4 | <i>LINC01571</i>      | -0.67 | 7.49E-03 | 6.48E-02 | Intergenic | NA     |   |
| ENSG00000260064.1 | <i>RP11-18F14.4</i>   | 0.50  | 1.18E-02 | 8.67E-02 | Intronic   | -4.600 | Y |
| ENSG00000260077.1 | <i>RP11-254F7.2</i>   | -0.32 | 3.91E-04 | 8.86E-03 | Intergenic | -0.794 | Y |
| ENSG00000260083.1 | <i>MIR762HG</i>       | 0.24  | 3.04E-03 | 3.62E-02 | Antisense  | 1.224  |   |
| ENSG00000260088.1 | <i>RP11-92G12.3</i>   | 0.71  | 9.21E-05 | 2.96E-03 | Antisense  | 1.007  | Y |
| ENSG00000260118.1 | <i>RP6-201G10.2</i>   | 0.93  | 4.58E-15 | 2.00E-12 | Intergenic | -1.211 | Y |
| ENSG00000260121.1 | <i>RP5-1142A6.9</i>   | 0.42  | 1.24E-03 | 1.97E-02 | Antisense  | -2.920 |   |
| ENSG00000260136.4 | <i>CTD-2270L9.4</i>   | 0.33  | 6.48E-04 | 1.26E-02 | Antisense  | 1.990  | Y |
| ENSG00000260145.1 | <i>RP11-322D14.2</i>  | 0.55  | 1.25E-02 | 8.98E-02 | Antisense  | NA     | N |
| ENSG00000260166.1 | <i>RP11-863P13.6</i>  | -0.79 | 2.22E-03 | 2.93E-02 | Intronic   | NA     | N |
| ENSG00000260179.1 | <i>RP5-902P8.12</i>   | 0.42  | 3.95E-03 | 4.32E-02 | Intergenic | -4.138 | Y |
| ENSG00000260185.1 | <i>RP11-432I5.6</i>   | 0.70  | 1.75E-03 | 2.49E-02 | Antisense  | NA     | N |
| ENSG00000260186.4 | <i>RP11-481J2.2</i>   | -0.54 | 1.38E-02 | 9.57E-02 | Intergenic | -1.700 | Y |
| ENSG00000260197.1 | <i>RP11-424G14.1</i>  | 0.25  | 1.01E-02 | 7.81E-02 | Intergenic | -1.198 | Y |
| ENSG00000260228.4 | <i>RP11-483P21.2</i>  | -0.47 | 6.27E-03 | 5.82E-02 | Antisense  | 2.004  | Y |
| ENSG00000260233.3 | <i>SSSCA1-AS1</i>     | 0.22  | 8.82E-03 | 7.19E-02 | Intergenic | -0.946 | Y |
| ENSG00000260236.1 | <i>RP11-708J19.1</i>  | 0.28  | 5.62E-03 | 5.41E-02 | Intergenic | -0.369 | Y |
| ENSG00000260244.1 | <i>RP11-588K22.2</i>  | -0.36 | 3.78E-04 | 8.64E-03 | Intergenic | -0.989 |   |
| ENSG00000260246.1 | <i>AC000032.2</i>     | 1.01  | 7.85E-05 | 2.64E-03 | Antisense  | NA     |   |
| ENSG00000260261.1 | <i>RP11-480A16.1</i>  | 0.38  | 4.45E-03 | 4.67E-02 | Intergenic | -4.215 | Y |
| ENSG00000260265.1 | <i>RP11-44F21.5</i>   | -0.55 | 6.65E-03 | 6.01E-02 | Intergenic | 1.546  | Y |
| ENSG00000260276.2 | <i>RP11-77H9.2</i>    | 0.36  | 3.70E-05 | 1.49E-03 | Exonic     | -0.488 | Y |
| ENSG00000260306.1 | <i>RP11-645C24.5</i>  | -0.75 | 1.63E-05 | 7.81E-04 | Intergenic | -2.975 | Y |
| ENSG00000260316.2 | <i>LA16c-306A4.2</i>  | 0.52  | 1.03E-03 | 1.74E-02 | Intronic   | -3.617 | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000260317.1 | <i>RP11-48B3.4</i>    | 0.38  | 5.53E-04 | 1.13E-02 | Intergenic | -1.684 | Y |
| ENSG00000260337.3 | <i>RP11-386M24.6</i>  | 1.02  | 3.35E-10 | 6.68E-08 | Intergenic | -4.164 | Y |
| ENSG00000260339.1 | <i>HEXA-AS1</i>       | -0.46 | 5.22E-03 | 5.16E-02 | Antisense  | -0.616 |   |
| ENSG00000260361.1 | <i>CTD-2313J17.5</i>  | 0.38  | 1.09E-03 | 1.81E-02 | Intronic   | -2.187 | Y |
| ENSG00000260368.1 | <i>RP11-521I2.3</i>   | 0.54  | 4.77E-04 | 1.02E-02 | Intergenic | -2.723 | Y |
| ENSG00000260394.2 | <i>LA16c-313D11.9</i> | 0.48  | 1.93E-03 | 2.68E-02 | Antisense  | -1.254 | Y |
| ENSG00000260423.1 | <i>RP13-735L24.1</i>  | 0.41  | 1.17E-02 | 8.61E-02 | Intergenic | -4.278 | Y |
| ENSG00000260426.1 | <i>RP5-912I13.1</i>   | -0.97 | 1.43E-04 | 4.15E-03 | Intergenic | NA     | Y |
| ENSG00000260448.4 | <i>LCMT1-AS1</i>      | 0.62  | 8.64E-08 | 9.70E-06 | Intergenic | 1.377  |   |
| ENSG00000260460.1 | <i>RP11-284F21.8</i>  | 0.58  | 8.44E-03 | 7.01E-02 | Intergenic | NA     | Y |
| ENSG00000260475.1 | <i>RP11-85A1.3</i>    | 0.39  | 6.05E-03 | 5.67E-02 | Intergenic | -1.750 | Y |
| ENSG00000260484.1 | <i>RP11-1081M5.2</i>  | 1.20  | 5.19E-07 | 4.49E-05 | Intergenic | NA     | Y |
| ENSG00000260493.1 | <i>RP11-219B4.7</i>   | 0.57  | 4.06E-04 | 9.11E-03 | Intergenic | -1.337 | Y |
| ENSG00000260500.1 | <i>CTD-3193O13.1</i>  | 0.55  | 7.33E-05 | 2.50E-03 | Antisense  | -1.573 |   |
| ENSG00000260519.1 | <i>RP11-109E24.2</i>  | 0.35  | 1.15E-02 | 8.49E-02 | Intergenic | NA     | Y |
| ENSG00000260565.5 | <i>CTD-2270P14.1</i>  | 0.36  | 6.40E-04 | 1.25E-02 | Intergenic | -3.292 |   |
| ENSG00000260581.1 | <i>CTB-113P19.4</i>   | 0.67  | 8.78E-04 | 1.55E-02 | Intergenic | NA     | Y |
| ENSG00000260599.1 | <i>CTC-457E21.1</i>   | 0.63  | 1.43E-02 | 9.82E-02 | Intronic   | NA     | N |
| ENSG00000260661.1 | <i>RP11-152L20.3</i>  | 0.87  | 1.02E-04 | 3.21E-03 | Antisense  | NA     | N |
| ENSG00000260671.2 | <i>RP11-278A23.2</i>  | 0.59  | 4.29E-03 | 4.55E-02 | Intronic   | NA     | Y |
| ENSG00000260672.1 | <i>RP11-1006G14.1</i> | 0.46  | 6.13E-03 | 5.73E-02 | Intergenic | -3.351 | Y |
| ENSG00000260679.1 | <i>RP11-643C9.2</i>   | 1.28  | 3.14E-08 | 3.94E-06 | Intergenic | NA     |   |
| ENSG00000260698.1 | <i>RP11-439E19.9</i>  | 0.40  | 5.69E-04 | 1.15E-02 | Intergenic | -3.899 | Y |
| ENSG00000260708.1 | <i>CTA-29F11.1</i>    | 0.50  | 2.01E-05 | 9.32E-04 | Intergenic | 0.232  | Y |
| ENSG00000260719.1 | <i>AC009133.17</i>    | 1.76  | 5.89E-15 | 2.45E-12 | Antisense  | -0.384 | Y |
| ENSG00000260735.1 | <i>RP11-7218.1</i>    | 0.41  | 2.43E-03 | 3.12E-02 | Intronic   | -1.898 | Y |
| ENSG00000260741.1 | <i>CTC-391G2.1</i>    | 0.70  | 4.50E-03 | 4.70E-02 | Antisense  | NA     | N |
| ENSG00000260751.2 | <i>CTD-2196E14.6</i>  | 0.42  | 3.94E-04 | 8.91E-03 | Intronic   | -3.360 | Y |
| ENSG00000260760.1 | <i>PWRN3</i>          | 0.81  | 1.34E-03 | 2.07E-02 | Intergenic | -1.666 | N |
| ENSG00000260773.1 | <i>RP11-352G18.2</i>  | 0.33  | 1.25E-02 | 8.99E-02 | Antisense  | -1.257 | Y |
| ENSG00000260774.1 | <i>CTD-2083E4.4</i>   | 0.31  | 9.77E-04 | 1.67E-02 | Exonic     | -2.344 | Y |
| ENSG00000260793.2 | <i>RP5-882C2.2</i>    | 0.33  | 6.32E-03 | 5.85E-02 | Antisense  | -3.990 | Y |
| ENSG00000260796.1 | <i>RP11-1348G14.5</i> | 0.38  | 1.22E-02 | 8.84E-02 | Intergenic | NA     | Y |
| ENSG00000260806.1 | <i>RP11-872J21.3</i>  | 0.37  | 1.68E-03 | 2.43E-02 | Antisense  | 0.583  |   |
| ENSG00000260807.5 | <i>RP11-161M6.2</i>   | 0.41  | 4.24E-03 | 4.52E-02 | Exonic     | -2.816 | Y |
| ENSG00000260808.1 | <i>CTD-2007L18.5</i>  | 0.38  | 4.99E-03 | 5.01E-02 | Antisense  | -1.651 | N |
| ENSG00000260876.4 | <i>LINC01229</i>      | 0.77  | 2.28E-06 | 1.57E-04 | Intergenic | NA     |   |
| ENSG00000260877.1 | <i>RP11-211G23.2</i>  | 0.90  | 3.21E-04 | 7.70E-03 | Intergenic | -4.900 | N |
| ENSG00000260886.1 | <i>TAT-AS1</i>        | 0.46  | 9.62E-03 | 7.57E-02 | Antisense  | -1.214 |   |
| ENSG00000260899.1 | <i>RP11-2C24.4</i>    | 0.42  | 9.83E-04 | 1.68E-02 | Exonic     | -4.204 |   |
| ENSG00000260911.2 | <i>RP11-196G11.2</i>  | 0.48  | 2.77E-03 | 3.40E-02 | Intergenic | -1.486 | Y |
| ENSG00000260912.1 | <i>RP11-363E7.4</i>   | 0.36  | 8.95E-05 | 2.91E-03 | Intergenic | -0.621 | Y |
| ENSG00000260917.1 | <i>RP11-57H14.4</i>   | -0.30 | 1.88E-03 | 2.63E-02 | Intergenic | -1.593 | Y |
| ENSG00000260923.4 | <i>AC137934.1</i>     | -0.54 | 3.32E-04 | 7.88E-03 | Intergenic | -1.949 | Y |
| ENSG00000260924.2 | <i>LINC01311</i>      | 0.35  | 1.26E-02 | 9.01E-02 | Intergenic | -1.172 |   |
| ENSG00000260932.1 | <i>RP11-483P21.6</i>  | 0.90  | 3.21E-07 | 3.00E-05 | Antisense  | NA     | Y |
| ENSG00000260951.1 | <i>RP5-978I12.1</i>   | -0.68 | 7.84E-03 | 6.68E-02 | Intergenic | NA     | N |
| ENSG00000260988.1 | <i>RP11-285A1.1</i>   | 0.39  | 9.14E-03 | 7.35E-02 | Intronic   | -0.938 | Y |
| ENSG00000260992.1 | <i>DOCK9-AS2</i>      | 0.25  | 8.45E-03 | 7.01E-02 | Intergenic | -0.759 | Y |
| ENSG00000261097.1 | <i>LINC00563</i>      | 0.88  | 3.14E-05 | 1.30E-03 | Intergenic | -1.826 | Y |
| ENSG00000261101.2 | <i>RP4-545K15.5</i>   | 0.43  | 1.88E-04 | 5.14E-03 | Intergenic | -3.049 | Y |
| ENSG00000261104.1 | <i>RP11-734K21.5</i>  | 0.84  | 4.73E-04 | 1.02E-02 | Intergenic | -1.804 | Y |
| ENSG00000261105.4 | <i>LMO7-AS1</i>       | 0.58  | 9.47E-04 | 1.64E-02 | Antisense  | 3.276  |   |
| ENSG00000261113.1 | <i>RP11-141O15.1</i>  | 0.51  | 2.60E-03 | 3.26E-02 | Antisense  | NA     |   |
| ENSG00000261126.6 | <i>RP11-795F19.1</i>  | 0.36  | 1.51E-03 | 2.26E-02 | Exonic     | -2.920 |   |
| ENSG00000261131.1 | <i>RP11-93O14.2</i>   | 0.41  | 1.82E-03 | 2.56E-02 | Intronic   | NA     | Y |
| ENSG00000261136.1 | <i>RP11-37C7.3</i>    | 0.37  | 7.91E-03 | 6.71E-02 | Antisense  | -1.481 |   |
| ENSG00000261140.1 | <i>RP11-20I23.6</i>   | 0.48  | 5.76E-03 | 5.48E-02 | Antisense  | -1.610 | Y |
| ENSG00000261159.1 | <i>RP11-723O4.9</i>   | 0.63  | 2.51E-05 | 1.09E-03 | Intergenic | -1.790 | Y |
| ENSG00000261189.1 | <i>RP3-512B11.3</i>   | 0.38  | 5.44E-04 | 1.11E-02 | Intergenic | -0.088 | Y |
| ENSG00000261193.1 | <i>RP11-863P13.5</i>  | -0.76 | 2.46E-03 | 3.15E-02 | Antisense  | NA     | N |
| ENSG00000261207.1 | <i>LA16c-361A3.3</i>  | 0.45  | 3.32E-03 | 3.86E-02 | Antisense  | -1.981 | Y |
| ENSG00000261220.2 | <i>RP11-629O1.2</i>   | 0.41  | 1.05E-02 | 8.01E-02 | Intergenic | -1.165 | Y |
| ENSG00000261257.1 | <i>RP11-673E11.2</i>  | 0.78  | 4.25E-04 | 9.38E-03 | Intergenic | NA     | Y |
| ENSG00000261318.1 | <i>RP11-653J6.1</i>   | 0.42  | 1.36E-02 | 9.51E-02 | Antisense  | NA     | Y |
| ENSG00000261338.2 | <i>RP11-378A13.1</i>  | -0.24 | 2.13E-03 | 2.85E-02 | Intergenic | 0.398  | Y |
| ENSG00000261351.2 | <i>CTD-3185P2.1</i>   | 0.19  | 1.08E-02 | 8.19E-02 | Exonic     | 0.063  |   |
| ENSG00000261353.1 | <i>CTA-14H9.5</i>     | -0.37 | 6.37E-03 | 5.88E-02 | Intergenic | 1.156  | Y |
| ENSG00000261360.1 | <i>CTD-2165H16.4</i>  | 0.38  | 3.91E-03 | 4.29E-02 | Intergenic | -0.324 | Y |
| ENSG00000261369.1 | <i>RP11-474B12.1</i>  | 0.60  | 1.22E-02 | 8.85E-02 | Antisense  | NA     | N |
| ENSG00000261379.1 | <i>RP11-395N3.1</i>   | 0.78  | 4.13E-04 | 9.21E-03 | Intergenic | -2.738 | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000261416.1 | <i>RP11-455F5.5</i>   | 0.50  | 4.04E-03 | 4.38E-02 | Antisense  | NA     | Y |
| ENSG00000261426.1 | <i>AC144833.1</i>     | 0.64  | 1.93E-03 | 2.68E-02 | Intronic   | NA     | Y |
| ENSG00000261433.1 | <i>CTC-297N7.1</i>    | 0.66  | 4.44E-05 | 1.72E-03 | Intergenic | NA     | Y |
| ENSG00000261467.2 | <i>RP11-731K22.1</i>  | 0.81  | 1.08E-04 | 3.36E-03 | Intergenic | NA     | Y |
| ENSG00000261468.1 | <i>RP11-1024P17.1</i> | 0.33  | 4.05E-03 | 4.39E-02 | Intergenic | -2.313 | Y |
| ENSG00000261480.1 | <i>RP11-578F21.6</i>  | 0.94  | 1.69E-04 | 4.72E-03 | Exonic     | NA     |   |
| ENSG00000261489.1 | <i>CTD-2515H24.3</i>  | 0.47  | 8.79E-03 | 7.17E-02 | Antisense  | NA     | Y |
| ENSG00000261490.1 | <i>RP11-448G15.3</i>  | 0.37  | 6.31E-03 | 5.85E-02 | Intergenic | -4.536 | Y |
| ENSG00000261512.2 | <i>RP11-46D6.1</i>    | -0.37 | 9.11E-05 | 2.94E-03 | Intergenic | -0.054 | Y |
| ENSG00000261526.2 | <i>CTB-31O20.2</i>    | 0.33  | 9.64E-04 | 1.66E-02 | Intergenic | -1.081 | Y |
| ENSG00000261543.1 | <i>RP11-665J16.1</i>  | 0.58  | 1.37E-02 | 9.52E-02 | Antisense  | NA     | N |
| ENSG00000261570.1 | <i>RP11-744I24.2</i>  | 0.60  | 4.88E-04 | 1.04E-02 | Antisense  | NA     | Y |
| ENSG00000261578.1 | <i>RP11-21L23.2</i>   | 0.42  | 1.14E-04 | 3.51E-03 | Intergenic | -1.418 | Y |
| ENSG00000261583.1 | <i>CTD-2385L22.1</i>  | 0.74  | 3.63E-03 | 4.08E-02 | Antisense  | NA     | N |
| ENSG00000261606.4 | <i>RP11-414J4.2</i>   | 0.58  | 3.90E-03 | 4.28E-02 | Exonic     | NA     |   |
| ENSG00000261610.1 | <i>AP000265.1</i>     | 0.62  | 1.01E-03 | 1.71E-02 | Intergenic | -2.058 | Y |
| ENSG00000261632.1 | <i>RP11-390D11.1</i>  | 0.54  | 9.83E-03 | 7.68E-02 | Antisense  | NA     | Y |
| ENSG00000261663.1 | <i>RP11-304L19.11</i> | 0.34  | 1.48E-03 | 2.22E-02 | Antisense  | -2.650 | Y |
| ENSG00000261685.2 | <i>RP11-401P9.4</i>   | -0.47 | 2.21E-03 | 2.92E-02 | Intergenic | -1.069 | Y |
| ENSG00000261707.1 | <i>RP11-264M12.2</i>  | 0.42  | 7.04E-03 | 6.22E-02 | Antisense  | 0.276  | Y |
| ENSG00000261713.5 | <i>SSTR5-AS1</i>      | -0.70 | 1.93E-03 | 2.67E-02 | Intergenic | -0.795 | Y |
| ENSG00000261744.1 | <i>RP11-21B21.4</i>   | 0.40  | 1.22E-02 | 8.82E-02 | Antisense  | NA     | Y |
| ENSG00000261758.1 | <i>RP11-102M11.2</i>  | -0.63 | 3.39E-03 | 3.90E-02 | Intergenic | -2.417 | Y |
| ENSG00000261761.3 | <i>RP11-103J17.2</i>  | 0.67  | 2.58E-03 | 3.25E-02 | Intergenic | 0.372  | N |
| ENSG00000261766.1 | <i>RP11-22P6.2</i>    | 0.59  | 1.64E-07 | 1.68E-05 | Antisense  | -0.087 | Y |
| ENSG00000261777.4 | <i>RP11-529K1.2</i>   | 0.41  | 8.79E-06 | 4.70E-04 | Antisense  | 0.237  | Y |
| ENSG00000261797.1 | <i>RP11-744I24.3</i>  | 0.54  | 5.33E-03 | 5.23E-02 | Intergenic | NA     | Y |
| ENSG00000261824.5 | <i>LINC00662</i>      | 0.29  | 5.86E-03 | 5.56E-02 | Intergenic | 0.451  | Y |
| ENSG00000261839.1 | <i>RP1-265C24.8</i>   | 0.39  | 3.75E-03 | 4.17E-02 | Intergenic | -1.641 | Y |
| ENSG00000261840.2 | <i>RP11-146F11.1</i>  | 0.32  | 6.24E-03 | 5.80E-02 | Antisense  | -2.850 | Y |
| ENSG00000261864.1 | <i>RP11-67A1.2</i>    | 0.45  | 1.10E-02 | 8.27E-02 | Exonic     | NA     | Y |
| ENSG00000261971.5 | <i>MMP25-AS1</i>      | 0.29  | 1.14E-03 | 1.86E-02 | Antisense  | -2.833 |   |
| ENSG00000261996.1 | <i>CTC-281F24.1</i>   | 0.44  | 2.97E-04 | 7.25E-03 | Intergenic | -2.198 | Y |
| ENSG00000262006.1 | <i>RP11-700H6.4</i>   | 0.74  | 1.74E-05 | 8.28E-04 | Intergenic | NA     | Y |
| ENSG00000262052.1 | <i>RP11-763E3.1</i>   | 0.96  | 3.25E-07 | 3.03E-05 | Antisense  | NA     | N |
| ENSG00000262117.4 | <i>BCAR4</i>          | 2.32  | 2.48E-25 | 3.03E-22 | Intergenic | NA     | Y |
| ENSG00000262133.1 | <i>RP11-676J12.6</i>  | 0.99  | 1.25E-07 | 1.34E-05 | Antisense  | NA     | Y |
| ENSG00000262136.1 | <i>CTD-2033A16.3</i>  | -0.86 | 4.13E-06 | 2.54E-04 | Antisense  | -0.440 | Y |
| ENSG00000262188.1 | <i>RP11-353N14.4</i>  | 0.83  | 7.42E-07 | 6.03E-05 | Intergenic | -0.816 | Y |
| ENSG00000262198.1 | <i>RP11-124N19.3</i>  | 0.61  | 1.13E-02 | 8.44E-02 | Intergenic | NA     | Y |
| ENSG00000262202.4 | <i>RP11-160E2.6</i>   | -1.00 | 2.22E-05 | 9.99E-04 | Intergenic | -2.189 |   |
| ENSG00000262312.2 | <i>LA16c-390H2.4</i>  | 0.51  | 6.88E-04 | 1.31E-02 | Antisense  | -3.058 | Y |
| ENSG00000262370.4 | <i>RP11-473M20.9</i>  | 0.45  | 7.66E-04 | 1.42E-02 | Antisense  | -3.046 | Y |
| ENSG00000262445.3 | <i>CTD-2545H1.2</i>   | 0.46  | 9.63E-03 | 7.58E-02 | Antisense  | 0.540  | Y |
| ENSG00000262585.1 | <i>RP11-353N14.5</i>  | 0.53  | 6.60E-03 | 5.98E-02 | Intergenic | -1.702 | Y |
| ENSG00000262652.1 | <i>RP13-638C3.2</i>   | 0.38  | 9.35E-03 | 7.46E-02 | Intronic   | -3.493 | Y |
| ENSG00000262691.1 | <i>CTC-277H1.7</i>    | 0.48  | 1.28E-05 | 6.36E-04 | Exonic     | -3.254 |   |
| ENSG00000262728.4 | <i>RP11-1000B6.8</i>  | 0.31  | 2.06E-03 | 2.80E-02 | Antisense  | -0.753 |   |
| ENSG00000262766.1 | <i>RP11-196G11.4</i>  | 0.34  | 6.74E-03 | 6.06E-02 | Intronic   | -2.577 | Y |
| ENSG00000262772.1 | <i>RP11-353N14.2</i>  | 0.60  | 7.26E-05 | 2.48E-03 | Intergenic | -2.877 | Y |
| ENSG00000262823.1 | <i>RP13-580F15.2</i>  | -0.53 | 5.31E-03 | 5.21E-02 | Antisense  | NA     | Y |
| ENSG00000262833.1 | <i>RP11-28G8.1</i>    | 0.61  | 8.25E-03 | 6.90E-02 | Antisense  | NA     | N |
| ENSG00000262877.4 | <i>RP11-1055B8.4</i>  | 0.48  | 3.83E-03 | 4.23E-02 | Intergenic | -5.783 | Y |
| ENSG00000262884.1 | <i>CTD-3060P21.1</i>  | -0.39 | 1.02E-02 | 7.85E-02 | Antisense  | -0.263 |   |
| ENSG00000262903.1 | <i>RP11-235E17.6</i>  | 0.56  | 2.58E-05 | 1.12E-03 | Antisense  | -5.595 | Y |
| ENSG00000263015.1 | <i>RP5-1029F21.3</i>  | -0.80 | 1.75E-03 | 2.49E-02 | Antisense  | NA     | N |
| ENSG00000263033.2 | <i>RP11-396B14.2</i>  | 0.48  | 1.09E-03 | 1.81E-02 | Intergenic | -1.440 | Y |
| ENSG00000263041.1 | <i>RP11-355F22.1</i>  | 0.63  | 1.17E-02 | 8.60E-02 | Intergenic | NA     | N |
| ENSG00000263065.1 | <i>AF001548.6</i>     | -0.46 | 6.66E-03 | 6.01E-02 | Antisense  | -2.492 |   |
| ENSG00000263080.1 | <i>RP11-485G7.5</i>   | 0.61  | 3.39E-04 | 8.02E-03 | Antisense  | -0.390 | Y |
| ENSG00000263082.1 | <i>CTD-2034I21.2</i>  | -0.88 | 5.85E-04 | 1.17E-02 | Intergenic | 1.141  | N |
| ENSG00000263120.1 | <i>RP5-1107A17.4</i>  | 0.51  | 3.30E-03 | 3.84E-02 | Intronic   | -3.372 | Y |
| ENSG00000263126.1 | <i>CTC-479C5.10</i>   | 0.30  | 1.15E-02 | 8.49E-02 | Exonic     | -4.309 |   |
| ENSG00000263167.1 | <i>RP11-149I9.2</i>   | 0.60  | 3.89E-03 | 4.27E-02 | Antisense  | NA     | Y |
| ENSG00000263220.1 | <i>RP11-420A6.2</i>   | 0.48  | 1.59E-03 | 2.35E-02 | Intronic   | NA     | Y |
| ENSG00000263276.1 | <i>RP11-96D1.10</i>   | 0.30  | 1.74E-03 | 2.48E-02 | Exonic     | -4.019 |   |
| ENSG00000263335.1 | <i>AF001548.5</i>     | -0.26 | 5.30E-03 | 5.20E-02 | Antisense  | -0.788 |   |
| ENSG00000263345.1 | <i>RP1-59D14.5</i>    | 0.38  | 5.34E-03 | 5.24E-02 | Antisense  | -4.151 | Y |
| ENSG00000263400.5 | <i>TMEM220-AS1</i>    | 0.41  | 9.96E-03 | 7.75E-02 | Antisense  | 0.586  |   |
| ENSG00000263429.3 | <i>LINC00675</i>      | 0.53  | 7.11E-03 | 6.26E-02 | Intergenic | -1.060 | Y |
| ENSG00000263508.4 | <i>RP11-963H4.3</i>   | 0.59  | 1.50E-04 | 4.32E-03 | Intergenic | -0.415 | Y |

|                   |                           |       |          |          |            |        |   |
|-------------------|---------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000263531.1 | <i>RP13-753N3.1</i>       | 0.59  | 5.37E-04 | 1.11E-02 | Antisense  | NA     | Y |
| ENSG00000263624.1 | <i>RP11-45M22.3</i>       | 0.67  | 4.26E-04 | 9.41E-03 | Antisense  | NA     | Y |
| ENSG00000263627.1 | <i>PPP4R1-AS1</i>         | 0.38  | 1.45E-02 | 9.87E-02 | Intergenic | NA     |   |
| ENSG00000263753.5 | <i>LINC00667</i>          | 0.14  | 1.06E-02 | 8.10E-02 | Intergenic | 0.304  | Y |
| ENSG00000264016.2 | <i>CTC-297N7.9</i>        | 0.45  | 6.16E-03 | 5.75E-02 | Intergenic | 1.018  | Y |
| ENSG00000264044.1 | <i>RP11-192H23.7</i>      | 0.45  | 1.10E-02 | 8.26E-02 | Antisense  | NA     |   |
| ENSG00000264067.1 | <i>RP11-401O9.3</i>       | 0.85  | 2.91E-04 | 7.15E-03 | Antisense  | 1.609  | N |
| ENSG00000264080.1 | <i>CTD-2015H3.1</i>       | 0.62  | 1.10E-03 | 1.82E-02 | Intergenic | NA     | N |
| ENSG00000264235.4 | <i>RP13-270P17.1</i>      | 0.34  | 8.90E-04 | 1.56E-02 | Antisense  | -0.798 | Y |
| ENSG00000264290.1 | <i>RP11-68I3.4</i>        | 0.40  | 3.06E-03 | 3.63E-02 | Intronic   | -4.987 | Y |
| ENSG00000264456.1 | <i>RP11-848P1.2</i>       | 0.40  | 8.16E-07 | 6.54E-05 | Intronic   | -1.867 | Y |
| ENSG00000264514.1 | <i>RP11-720L2.4</i>       | 0.47  | 1.06E-02 | 8.08E-02 | Antisense  | NA     | Y |
| ENSG00000264589.1 | <i>MAPT-AS1</i>           | -0.70 | 3.96E-03 | 4.33E-02 | Antisense  | 0.000  | Y |
| ENSG00000264660.2 | <i>RP11-381P6.1</i>       | 0.80  | 8.77E-05 | 2.87E-03 | Intergenic | -0.063 | Y |
| ENSG00000264707.1 | <i>L3MBTL4-AS1</i>        | 0.37  | 4.59E-03 | 4.76E-02 | Antisense  | NA     |   |
| ENSG00000264727.1 | <i>RP11-680C21.1</i>      | -0.51 | 8.84E-04 | 1.56E-02 | Intronic   | -0.561 | Y |
| ENSG00000264772.4 | <i>RP11-186B7.4</i>       | 0.28  | 1.48E-02 | 9.99E-02 | Exonic     | -3.327 |   |
| ENSG00000264932.3 | <i>CTD-2104P17.2</i>      | 0.44  | 1.40E-02 | 9.68E-02 | Antisense  | NA     |   |
| ENSG00000264964.1 | <i>RP11-888D10.3</i>      | 0.31  | 7.35E-03 | 6.40E-02 | Intergenic | 0.530  | Y |
| ENSG00000264968.1 | <i>RP11-387H17.4</i>      | 0.69  | 9.16E-07 | 7.23E-05 | Intergenic | 0.403  | Y |
| ENSG00000265000.1 | <i>RP11-453A12.1</i>      | 0.66  | 1.00E-02 | 7.79E-02 | Intergenic | -4.824 | N |
| ENSG00000265010.1 | <i>RP11-661C3.2</i>       | 0.44  | 2.01E-03 | 2.76E-02 | Intronic   | NA     | Y |
| ENSG00000265096.1 | <i>CIQTNFI-AS1</i>        | 0.84  | 1.09E-04 | 3.38E-03 | Antisense  | 1.032  |   |
| ENSG00000265174.1 | <i>CTD-2124B20.3</i>      | 1.04  | 1.00E-05 | 5.24E-04 | Intergenic | NA     | N |
| ENSG00000265194.1 | <i>RP11-70L8.4</i>        | 0.37  | 6.47E-03 | 5.92E-02 | Antisense  | NA     |   |
| ENSG00000265218.1 | <i>RP11-927P21.1</i>      | -0.86 | 6.63E-07 | 5.48E-05 | Antisense  | -0.920 | Y |
| ENSG00000265349.1 | <i>RP11-55L4.2</i>        | 0.48  | 7.95E-03 | 6.73E-02 | Antisense  | NA     | Y |
| ENSG00000265399.1 | <i>RP13-270P17.2</i>      | -0.29 | 7.06E-04 | 1.34E-02 | Antisense  | -0.924 | Y |
| ENSG00000265451.1 | <i>RP11-204L24.2</i>      | 0.35  | 1.21E-02 | 8.81E-02 | Antisense  | -0.107 | Y |
| ENSG00000265479.4 | <i>X2P1-UPK3BP1-PMS2F</i> | 0.41  | 5.75E-05 | 2.09E-03 | Intergenic | -2.099 | Y |
| ENSG00000265519.1 | <i>CTD-3157E16.1</i>      | -0.43 | 6.80E-04 | 1.30E-02 | Intergenic | NA     | Y |
| ENSG00000265625.1 | <i>RP11-68I3.11</i>       | 0.45  | 1.21E-02 | 8.78E-02 | Intronic   | -1.747 | Y |
| ENSG00000265692.1 | <i>RP13-516M14.4</i>      | 0.42  | 6.48E-03 | 5.92E-02 | Intergenic | -0.844 | Y |
| ENSG00000265717.1 | <i>RP11-94B19.7</i>       | 0.87  | 6.88E-04 | 1.31E-02 | Intergenic | NA     | N |
| ENSG00000265743.1 | <i>RP11-848P1.3</i>       | 0.31  | 2.77E-03 | 3.40E-02 | Intergenic | NA     | Y |
| ENSG00000265750.1 | <i>RP11-799B12.4</i>      | 0.42  | 4.42E-04 | 9.65E-03 | Exonic     | -2.775 | Y |
| ENSG00000265787.1 | <i>CYP4F35P</i>           | 0.73  | 3.07E-04 | 7.43E-03 | Intergenic | -3.499 | Y |
| ENSG00000265907.1 | <i>RP11-737O24.2</i>      | 1.45  | 5.37E-10 | 1.01E-07 | Antisense  | NA     | N |
| ENSG00000265944.1 | <i>LINC01387</i>          | 1.00  | 8.12E-05 | 2.70E-03 | Intergenic | NA     |   |
| ENSG00000265975.1 | <i>CTB-41I6.2</i>         | 0.38  | 1.09E-02 | 8.20E-02 | Intergenic | 0.135  | Y |
| ENSG00000266053.2 | <i>NDUFV2-AS1</i>         | 0.23  | 2.27E-03 | 2.98E-02 | Antisense  | 0.107  |   |
| ENSG00000266171.1 | <i>RP11-769O8.1</i>       | 0.46  | 5.50E-03 | 5.35E-02 | Antisense  | NA     |   |
| ENSG00000266340.1 | <i>RP11-848P1.4</i>       | 0.86  | 9.40E-06 | 4.95E-04 | Antisense  | NA     | Y |
| ENSG00000266369.1 | <i>RP11-344E13.4</i>      | 0.73  | 3.38E-03 | 3.89E-02 | Antisense  | NA     | Y |
| ENSG00000266521.1 | <i>RP11-650P15.1</i>      | 0.56  | 4.94E-03 | 4.97E-02 | Intergenic | NA     | Y |
| ENSG00000266579.1 | <i>RP1-71H19.2</i>        | 0.92  | 2.89E-06 | 1.90E-04 | Intronic   | NA     | Y |
| ENSG00000266644.1 | <i>RP11-927P21.2</i>      | -0.58 | 4.43E-03 | 4.65E-02 | Antisense  | NA     | Y |
| ENSG00000266651.1 | <i>RP11-138I1.3</i>       | 0.46  | 2.60E-03 | 3.26E-02 | Intergenic | NA     | Y |
| ENSG00000266729.4 | <i>DSG1-AS1</i>           | 0.50  | 1.02E-02 | 7.90E-02 | Antisense  | NA     |   |
| ENSG00000266835.4 | <i>LINC01540</i>          | 0.48  | 9.36E-03 | 7.46E-02 | Intergenic | 1.747  |   |
| ENSG00000266916.4 | <i>ZNF793-AS1</i>         | 0.23  | 9.92E-03 | 7.73E-02 | Antisense  | 1.354  |   |
| ENSG00000266918.1 | <i>RP11-798G7.8</i>       | -0.56 | 8.88E-03 | 7.22E-02 | Intergenic | -4.246 | Y |
| ENSG00000266957.1 | <i>RP11-49K24.4</i>       | 0.56  | 1.46E-03 | 2.20E-02 | Antisense  | NA     | Y |
| ENSG00000266969.1 | <i>RP11-773H22.4</i>      | 0.34  | 1.07E-02 | 8.16E-02 | Antisense  | NA     | Y |
| ENSG00000266975.1 | <i>FARS4-AS1</i>          | 0.78  | 1.00E-05 | 5.22E-04 | Antisense  | NA     |   |
| ENSG00000266994.1 | <i>RP11-127I20.7</i>      | 0.49  | 1.28E-02 | 9.12E-02 | Exonic     | NA     | Y |
| ENSG00000267002.1 | <i>RP11-242D8.1</i>       | 0.25  | 7.13E-03 | 6.27E-02 | Intergenic | -2.884 | Y |
| ENSG00000267055.1 | <i>RP11-486P11.1</i>      | 1.77  | 3.72E-13 | 1.22E-10 | Intergenic | 0.392  | Y |
| ENSG00000267078.1 | <i>RP11-666A8.9</i>       | 0.68  | 1.68E-03 | 2.43E-02 | Antisense  | -2.524 |   |
| ENSG00000267092.2 | <i>CTB-25B13.9</i>        | 0.60  | 4.09E-04 | 9.15E-03 | Antisense  | 0.555  |   |
| ENSG00000267131.1 | <i>RP11-332H18.5</i>      | 0.44  | 7.11E-03 | 6.26E-02 | Antisense  | 0.292  | Y |
| ENSG00000267147.2 | <i>CTC-548K16.1</i>       | 0.57  | 9.28E-03 | 7.42E-02 | Intergenic | 2.862  | N |
| ENSG00000267163.1 | <i>AC084219.3</i>         | 0.37  | 9.46E-03 | 7.49E-02 | Antisense  | NA     | Y |
| ENSG00000267174.4 | <i>CTC-510F12.4</i>       | 0.36  | 6.25E-03 | 5.81E-02 | Exonic     | NA     | Y |
| ENSG00000267192.1 | <i>AC006116.12</i>        | 0.43  | 1.39E-03 | 2.12E-02 | Antisense  | NA     | Y |
| ENSG00000267198.1 | <i>RP11-798G7.6</i>       | -0.42 | 6.22E-03 | 5.78E-02 | Intergenic | -1.440 | Y |
| ENSG00000267199.1 | <i>RP11-861E21.2</i>      | 0.50  | 1.27E-03 | 1.99E-02 | Antisense  | -3.301 | Y |
| ENSG00000267212.1 | <i>CTD-2659N19.9</i>      | 0.54  | 8.83E-03 | 7.20E-02 | Intronic   | NA     | Y |
| ENSG00000267219.1 | <i>AC010504.2</i>         | 0.25  | 2.25E-03 | 2.96E-02 | Antisense  | 0.561  | Y |
| ENSG00000267244.4 | <i>CTB-31O20.4</i>        | 0.35  | 8.28E-03 | 6.92E-02 | Antisense  | -2.459 | Y |
| ENSG00000267277.1 | <i>CTD-2342J14.6</i>      | 0.29  | 1.87E-04 | 5.11E-03 | Antisense  | -1.079 | Y |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000267280.4 | <i>TBX2-AS1</i>       | 0.53  | 5.63E-04 | 1.14E-02 | Antisense  | -0.305 |   |
| ENSG00000267287.1 | <i>RP11-567M16.1</i>  | 0.36  | 6.12E-03 | 5.72E-02 | Intergenic | NA     | Y |
| ENSG00000267289.1 | <i>CTD-2623N2.11</i>  | 0.63  | 4.01E-05 | 1.60E-03 | Intergenic | 0.276  | Y |
| ENSG00000267308.1 | <i>AC004510.3</i>     | 0.74  | 2.16E-05 | 9.82E-04 | Intergenic | NA     | Y |
| ENSG00000267345.1 | <i>CTD-2293H3.2</i>   | 0.31  | 7.04E-03 | 6.22E-02 | Antisense  | NA     | N |
| ENSG00000267348.2 | <i>CTB-179K24.3</i>   | 0.23  | 9.88E-03 | 7.71E-02 | Exonic     | -0.009 | Y |
| ENSG00000267354.1 | <i>RP11-749H17.2</i>  | -0.68 | 8.12E-03 | 6.84E-02 | Intronic   | NA     | N |
| ENSG00000267372.2 | <i>AC005330.2</i>     | 0.54  | 3.02E-03 | 3.60E-02 | Intronic   | NA     | Y |
| ENSG00000267374.1 | <i>RP11-244M2.1</i>   | 0.50  | 4.34E-03 | 4.58E-02 | Intergenic | 0.268  |   |
| ENSG00000267383.5 | <i>CTC-260E6.6</i>    | 0.43  | 1.29E-02 | 9.17E-02 | Antisense  | 0.673  | Y |
| ENSG00000267397.1 | <i>RP11-873E20.1</i>  | 0.34  | 5.70E-03 | 5.46E-02 | Intergenic | -1.593 | Y |
| ENSG00000267419.1 | <i>CTC-559E9.6</i>    | 0.23  | 7.04E-05 | 2.42E-03 | Antisense  | NA     | Y |
| ENSG00000267429.1 | <i>AC006116.15</i>    | 0.48  | 5.53E-04 | 1.13E-02 | Intronic   | -0.967 | Y |
| ENSG00000267457.1 | <i>RP5-837J1.4</i>    | 0.77  | 7.84E-06 | 4.30E-04 | Intronic   | -2.415 | Y |
| ENSG00000267480.1 | <i>RP11-703I16.1</i>  | -0.28 | 1.54E-03 | 2.29E-02 | Intergenic | NA     | Y |
| ENSG00000267523.1 | <i>CTD-2537I9.12</i>  | 0.43  | 2.28E-03 | 2.98E-02 | Antisense  | NA     |   |
| ENSG00000267565.1 | <i>CTC-559E9.8</i>    | -0.25 | 1.54E-03 | 2.29E-02 | Antisense  | NA     | Y |
| ENSG00000267571.1 | <i>AC104532.4</i>     | 0.31  | 1.24E-02 | 8.95E-02 | Antisense  | NA     |   |
| ENSG00000267577.1 | <i>CTD-2587H24.5</i>  | -0.76 | 3.21E-03 | 3.77E-02 | Antisense  | -0.928 | N |
| ENSG00000267606.1 | <i>AC006116.21</i>    | 0.50  | 7.57E-04 | 1.40E-02 | Exonic     | NA     | Y |
| ENSG00000267610.2 | <i>AC007787.2</i>     | 0.52  | 7.69E-03 | 6.60E-02 | Antisense  | NA     |   |
| ENSG00000267612.1 | <i>CTD-3116E22.7</i>  | 0.41  | 5.99E-03 | 5.64E-02 | Intergenic | NA     | Y |
| ENSG00000267629.3 | <i>AC138430.4</i>     | 0.61  | 1.02E-02 | 7.88E-02 | Exonic     | -1.544 |   |
| ENSG00000267633.1 | <i>CTB-5E10.3</i>     | 1.57  | 5.20E-15 | 2.21E-12 | Antisense  | NA     |   |
| ENSG00000267670.1 | <i>CTB-55O6.4</i>     | -0.63 | 1.42E-02 | 9.78E-02 | Antisense  | NA     | N |
| ENSG00000267719.1 | <i>HP09025</i>        | -0.46 | 9.98E-03 | 7.76E-02 | Intergenic | 0.161  |   |
| ENSG00000267857.2 | <i>RP5-1023B21.1</i>  | 0.76  | 2.03E-03 | 2.77E-02 | Antisense  | NA     |   |
| ENSG00000267858.4 | <i>MZF1-AS1</i>       | 0.25  | 2.35E-03 | 3.05E-02 | Antisense  | -1.122 |   |
| ENSG00000267890.1 | <i>CTD-2126E3.4</i>   | -0.78 | 7.79E-04 | 1.43E-02 | Intergenic | -1.831 | Y |
| ENSG00000267896.1 | <i>AC018766.4</i>     | 0.33  | 3.91E-03 | 4.29E-02 | Antisense  | -4.535 |   |
| ENSG00000267919.1 | <i>RP11-256I23.3</i>  | 0.55  | 9.96E-03 | 7.75E-02 | Intergenic | NA     | N |
| ENSG00000267939.1 | <i>CTD-2325M2.1</i>   | 0.31  | 3.46E-03 | 3.95E-02 | Antisense  | 1.041  | Y |
| ENSG00000267968.1 | <i>AC011523.2</i>     | 0.44  | 1.27E-02 | 9.09E-02 | Antisense  | NA     | Y |
| ENSG00000267980.1 | <i>AC007292.6</i>     | 0.37  | 1.34E-03 | 2.07E-02 | Antisense  | -2.411 |   |
| ENSG00000267986.1 | <i>AC130469.2</i>     | 0.50  | 7.43E-03 | 6.44E-02 | Antisense  | NA     | Y |
| ENSG00000268030.1 | <i>AC005253.2</i>     | 0.25  | 1.46E-02 | 9.91E-02 | Antisense  | NA     |   |
| ENSG00000268078.1 | <i>RP11-805I24.4</i>  | 0.72  | 1.33E-03 | 2.06E-02 | Intergenic | NA     | N |
| ENSG00000268181.3 | <i>RP11-73B2.7</i>    | 0.66  | 2.65E-03 | 3.31E-02 | Intergenic | NA     |   |
| ENSG00000268230.4 | <i>CTD-2619J13.8</i>  | 0.31  | 1.47E-02 | 9.96E-02 | Exonic     | -3.907 | Y |
| ENSG00000268401.1 | <i>CTC-344H19.4</i>   | 0.47  | 3.35E-03 | 3.87E-02 | Intergenic | -3.125 | Y |
| ENSG00000268471.4 | <i>DKFZP434I0714</i>  | 0.22  | 7.76E-03 | 6.63E-02 | Intergenic | -0.964 |   |
| ENSG00000268499.1 | <i>CTB-102L5.8</i>    | 0.46  | 4.55E-03 | 4.73E-02 | Intronic   | NA     | Y |
| ENSG00000268583.1 | <i>CTC-453G23.8</i>   | 0.35  | 1.11E-02 | 8.30E-02 | Antisense  | NA     | Y |
| ENSG00000268584.1 | <i>RP11-464F9.20</i>  | 0.30  | 4.76E-03 | 4.85E-02 | Intergenic | -0.420 | Y |
| ENSG00000268812.3 | <i>RP1-102K2.8</i>    | 0.55  | 2.83E-03 | 3.44E-02 | Antisense  | 0.060  | N |
| ENSG00000268945.1 | <i>CTD-2192J16.26</i> | 0.47  | 8.87E-04 | 1.56E-02 | Intergenic | -1.431 | Y |
| ENSG00000268947.1 | <i>AD000684.2</i>     | 0.41  | 1.78E-03 | 2.52E-02 | Intronic   | -4.851 | Y |
| ENSG00000268970.1 | <i>CTD-3099C6.11</i>  | 0.33  | 1.94E-05 | 9.07E-04 | Intronic   | NA     | Y |
| ENSG00000268996.3 | <i>MAN1B1-AS1</i>     | 0.25  | 1.09E-02 | 8.22E-02 | Intergenic | 1.734  |   |
| ENSG00000269019.1 | <i>AC005932.1</i>     | 0.45  | 1.49E-03 | 2.24E-02 | Antisense  | -1.574 | Y |
| ENSG00000269054.1 | <i>CTD-2619J13.3</i>  | 0.27  | 2.81E-03 | 3.43E-02 | Antisense  | -2.996 | Y |
| ENSG00000269191.1 | <i>AC005387.2</i>     | 0.34  | 1.31E-02 | 9.27E-02 | Antisense  | NA     | Y |
| ENSG00000269210.2 | <i>RP11-173C1.1</i>   | -0.43 | 1.40E-02 | 9.68E-02 | Antisense  | 1.112  |   |
| ENSG00000269220.1 | <i>LINC00528</i>      | 0.40  | 9.98E-03 | 7.76E-02 | Intergenic | -0.067 | Y |
| ENSG00000269300.1 | <i>CTD-2529P6.3</i>   | 0.51  | 4.69E-03 | 4.81E-02 | Antisense  | NA     |   |
| ENSG00000269321.1 | <i>CTC-453G23.4</i>   | 0.61  | 1.35E-02 | 9.42E-02 | Antisense  | NA     | N |
| ENSG00000269353.1 | <i>AC092071.1</i>     | 0.62  | 1.45E-02 | 9.89E-02 | Intergenic | NA     | N |
| ENSG00000269386.4 | <i>RAB11B-AS1</i>     | 0.27  | 5.89E-03 | 5.57E-02 | Antisense  | 0.431  | Y |
| ENSG00000269480.1 | <i>CTD-3032J10.3</i>  | 0.57  | 4.16E-03 | 4.46E-02 | Antisense  | NA     | N |
| ENSG00000269483.1 | <i>AC006272.1</i>     | 0.59  | 4.49E-05 | 1.73E-03 | Intergenic | -1.149 | Y |
| ENSG00000269889.1 | <i>RP11-816J6.3</i>   | 0.59  | 5.56E-06 | 3.22E-04 | Antisense  | -0.401 | Y |
| ENSG00000269890.1 | <i>RP5-1139B12.2</i>  | -0.38 | 3.97E-03 | 4.34E-02 | Antisense  | -0.474 |   |
| ENSG00000269899.1 | <i>RP11-589N15.2</i>  | 0.43  | 8.12E-04 | 1.47E-02 | Intronic   | NA     | Y |
| ENSG00000269919.1 | <i>RP1-134E15.3</i>   | 0.63  | 1.08E-03 | 1.80E-02 | Intronic   | -2.246 | Y |
| ENSG00000269937.1 | <i>RP11-20123.8</i>   | 0.61  | 1.21E-03 | 1.94E-02 | Antisense  | -1.395 |   |
| ENSG00000269949.1 | <i>RP11-738E22.3</i>  | 0.34  | 8.93E-03 | 7.24E-02 | Intergenic | 0.376  | Y |
| ENSG00000269956.1 | <i>MKNK1-AS1</i>      | 0.42  | 3.36E-03 | 3.88E-02 | Antisense  | 2.000  | Y |
| ENSG00000269967.1 | <i>RP11-84A19.4</i>   | 0.51  | 4.10E-03 | 4.41E-02 | Intronic   | NA     | Y |
| ENSG00000269978.1 | <i>RP11-338N10.3</i>  | 0.55  | 1.75E-03 | 2.49E-02 | Antisense  | -3.182 | Y |
| ENSG00000269985.1 | <i>RP1-232P20.1</i>   | 0.39  | 1.39E-03 | 2.12E-02 | Antisense  | 1.254  | Y |
| ENSG00000269989.1 | <i>RP11-635N19.3</i>  | 0.66  | 9.08E-03 | 7.32E-02 | Intronic   | NA     | N |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000269994.1 | <i>RP11-276H19.2</i>  | -0.95 | 4.45E-05 | 1.72E-03 | Intergenic | 1.425  | Y |
| ENSG00000270002.1 | <i>RP11-93H12.4</i>   | 0.76  | 2.92E-03 | 3.52E-02 | Antisense  | 0.427  | N |
| ENSG00000270015.1 | <i>RP11-540B6.6</i>   | 0.22  | 4.35E-03 | 4.59E-02 | Intronic   | -3.355 | Y |
| ENSG00000270036.1 | <i>RP11-685G9.4</i>   | 0.66  | 4.61E-03 | 4.76E-02 | Intergenic | 0.000  | N |
| ENSG00000270069.1 | <i>MIR222HG</i>       | 0.47  | 7.89E-03 | 6.71E-02 | Intergenic | -4.988 |   |
| ENSG00000270083.1 | <i>RP1-257I20.14</i>  | 0.23  | 1.41E-02 | 9.71E-02 | Intronic   | -1.281 | Y |
| ENSG00000270093.1 | <i>AP000473.8</i>     | 0.72  | 4.02E-06 | 2.48E-04 | Intergenic | -3.726 | Y |
| ENSG00000270116.1 | <i>AP001429.1</i>     | 0.35  | 1.13E-02 | 8.42E-02 | Intronic   | -3.083 | Y |
| ENSG00000270133.1 | <i>CTC-303L1.2</i>    | 0.44  | 9.36E-03 | 7.46E-02 | Intronic   | NA     | Y |
| ENSG00000270147.1 | <i>RP11-646I6.6</i>   | 0.36  | 1.22E-02 | 8.86E-02 | Antisense  | -3.031 |   |
| ENSG00000270179.1 | <i>RP11-159N11.4</i>  | 0.33  | 8.79E-04 | 1.55E-02 | Exonic     | -1.682 |   |
| ENSG00000270212.1 | <i>CTD-2540B15.12</i> | 0.74  | 1.90E-03 | 2.64E-02 | Intergenic | NA     | N |
| ENSG00000270362.1 | <i>HMG3-AS1</i>       | -0.23 | 2.60E-03 | 3.26E-02 | Antisense  | -0.657 | Y |
| ENSG00000270426.1 | <i>RP11-326I11.5</i>  | 0.45  | 2.10E-04 | 5.58E-03 | Intronic   | -3.255 | Y |
| ENSG00000270482.1 | <i>RP11-131L12.2</i>  | 0.32  | 7.39E-03 | 6.42E-02 | Intergenic | -1.695 | Y |
| ENSG00000270607.1 | <i>RP11-359E10.1</i>  | -0.39 | 5.52E-03 | 5.36E-02 | Antisense  | 0.441  | Y |
| ENSG00000270638.1 | <i>RP3-466P17.1</i>   | 0.32  | 9.37E-03 | 7.46E-02 | Antisense  | -0.728 |   |
| ENSG00000270673.1 | <i>YTHDF3-AS1</i>     | 0.44  | 4.77E-04 | 1.02E-02 | Intergenic | 0.996  | Y |
| ENSG00000270681.1 | <i>RP11-372K14.2</i>  | -0.43 | 1.97E-06 | 1.37E-04 | Antisense  | -0.354 | Y |
| ENSG00000270696.1 | <i>RP11-342K6.1</i>   | -0.33 | 6.74E-11 | 1.57E-08 | Intronic   | 1.121  |   |
| ENSG00000270894.1 | <i>AC015849.13</i>    | 0.46  | 1.31E-02 | 9.26E-02 | Intronic   | NA     | Y |
| ENSG00000271119.1 | <i>CTD-2012J19.3</i>  | 0.40  | 2.60E-03 | 3.26E-02 | Intergenic | 0.000  | Y |
| ENSG00000271141.1 | <i>RP11-171I2.4</i>   | 0.38  | 9.65E-03 | 7.59E-02 | Antisense  | -4.023 |   |
| ENSG00000271335.4 | <i>RP11-324I22.4</i>  | 0.33  | 2.01E-03 | 2.76E-02 | Antisense  | -1.234 | Y |
| ENSG00000271387.1 | <i>RP11-382D12.2</i>  | 0.59  | 4.43E-05 | 1.72E-03 | Intergenic | -1.434 | Y |
| ENSG00000271392.1 | <i>RP1-161P9.5</i>    | 0.58  | 2.45E-03 | 3.14E-02 | Intronic   | NA     | Y |
| ENSG00000271401.1 | <i>RP11-171I2.3</i>   | 0.44  | 1.37E-02 | 9.52E-02 | Antisense  | 0.617  | Y |
| ENSG00000271427.1 | <i>RP11-188D8.1</i>   | 0.46  | 1.71E-03 | 2.46E-02 | Intergenic | -1.162 | Y |
| ENSG00000271452.1 | <i>RP11-342K6.2</i>   | -0.44 | 6.26E-06 | 3.58E-04 | Antisense  | -0.279 |   |
| ENSG00000271533.1 | <i>RP3-368A4.6</i>    | 0.38  | 7.82E-04 | 1.44E-02 | Intergenic | -4.525 | Y |
| ENSG00000271553.1 | <i>RP11-274B21.10</i> | 0.36  | 5.69E-03 | 5.45E-02 | Intergenic | -2.043 | Y |
| ENSG00000271555.1 | <i>CTD-3214K23.1</i>  | 0.58  | 1.26E-04 | 3.75E-03 | Antisense  | NA     | Y |
| ENSG00000271576.1 | <i>RP11-486G15.2</i>  | 0.38  | 1.66E-03 | 2.41E-02 | Intergenic | -2.844 | Y |
| ENSG00000271579.1 | <i>RP11-116D17.3</i>  | 0.58  | 6.39E-04 | 1.25E-02 | Intergenic | -2.464 | Y |
| ENSG00000271725.1 | <i>RP11-761I4.4</i>   | 0.45  | 6.52E-03 | 5.95E-02 | Exonic     | NA     |   |
| ENSG00000271732.1 | <i>RP5-1182A14.5</i>  | 1.32  | 2.46E-09 | 4.07E-07 | Intergenic | NA     | Y |
| ENSG00000271751.1 | <i>RP11-110I1.14</i>  | 0.46  | 2.22E-04 | 5.84E-03 | Intergenic | -0.359 | Y |
| ENSG00000271754.1 | <i>RP3-337H4.9</i>    | 0.48  | 1.21E-04 | 3.66E-03 | Antisense  | -1.388 |   |
| ENSG00000271757.1 | <i>RP11-111M22.5</i>  | 0.44  | 8.38E-03 | 6.97E-02 | Intronic   | -0.097 | Y |
| ENSG00000271771.1 | <i>RP11-1250I15.3</i> | 0.60  | 8.46E-03 | 7.02E-02 | Intergenic | NA     | N |
| ENSG00000271789.1 | <i>RP5-1112D6.7</i>   | 0.31  | 1.01E-02 | 7.82E-02 | Intergenic | -2.287 | Y |
| ENSG00000271795.1 | <i>CTC-251D13.1</i>   | 0.56  | 4.71E-04 | 1.01E-02 | Antisense  | -3.913 |   |
| ENSG00000271828.1 | <i>CTD-2310F14.1</i>  | 0.25  | 1.27E-02 | 9.05E-02 | Antisense  | -0.311 |   |
| ENSG00000271862.1 | <i>RP11-343L5.2</i>   | 0.31  | 4.53E-03 | 4.72E-02 | Intergenic | -2.909 | Y |
| ENSG00000271868.1 | <i>RP11-1293J14.1</i> | -0.37 | 1.97E-04 | 5.31E-03 | Antisense  | -1.995 |   |
| ENSG00000271869.1 | <i>RP11-51J9.5</i>    | 0.38  | 6.95E-03 | 6.18E-02 | Antisense  | 1.260  | Y |
| ENSG00000271870.1 | <i>RP11-97C16.1</i>   | 0.45  | 3.45E-04 | 8.11E-03 | Antisense  | -2.877 |   |
| ENSG00000271880.1 | <i>AGAP11</i>         | 0.75  | 6.69E-05 | 2.33E-03 | Exonic     | -2.741 |   |
| ENSG00000271889.1 | <i>RP11-493E12.1</i>  | 0.43  | 8.44E-03 | 7.01E-02 | Antisense  | NA     | Y |
| ENSG00000271892.1 | <i>CTD-2228A4.1</i>   | 0.78  | 2.02E-03 | 2.76E-02 | Antisense  | NA     | N |
| ENSG00000271895.2 | <i>RP4-635E18.8</i>   | 0.35  | 7.01E-04 | 1.33E-02 | Exonic     | -1.608 |   |
| ENSG00000271911.1 | <i>RP11-532F6.5</i>   | -0.45 | 8.79E-03 | 7.17E-02 | Intergenic | 0.000  | Y |
| ENSG00000271917.1 | <i>RP11-506O24.2</i>  | 0.61  | 9.00E-03 | 7.28E-02 | Intronic   | -4.644 | N |
| ENSG00000271952.1 | <i>RP11-245G13.2</i>  | -0.77 | 9.96E-04 | 1.70E-02 | Intergenic | NA     | Y |
| ENSG00000271959.1 | <i>CTD-3064M3.7</i>   | 0.81  | 1.36E-05 | 6.65E-04 | Intergenic | -4.230 | Y |
| ENSG00000271966.1 | <i>RP11-7F18.2</i>    | 0.40  | 5.74E-04 | 1.15E-02 | Intergenic | -1.659 | Y |
| ENSG00000271983.1 | <i>RP11-28H5.2</i>    | 0.61  | 6.65E-05 | 2.32E-03 | Antisense  | -1.946 | Y |
| ENSG00000272002.1 | <i>RP11-557L19.1</i>  | 0.46  | 1.24E-03 | 1.97E-02 | Intergenic | -0.585 | Y |
| ENSG00000272010.1 | <i>CTD-3025N20.3</i>  | 0.50  | 6.01E-05 | 2.16E-03 | Intergenic | -0.851 | Y |
| ENSG00000272037.1 | <i>KB-431C1.5</i>     | 0.46  | 1.24E-04 | 3.72E-03 | Antisense  | -2.585 |   |
| ENSG00000272068.1 | <i>RP11-284F21.9</i>  | -0.57 | 7.00E-03 | 6.21E-02 | Intergenic | -2.220 | Y |
| ENSG00000272088.1 | <i>RP11-168F9.2</i>   | 0.46  | 2.80E-03 | 3.42E-02 | Intergenic | -2.816 | Y |
| ENSG00000272100.1 | <i>RP11-155O18.6</i>  | 0.49  | 1.32E-03 | 2.05E-02 | Antisense  | -1.503 |   |
| ENSG00000272109.1 | <i>CTD-2260A17.3</i>  | 0.73  | 4.48E-05 | 1.73E-03 | Antisense  | NA     | Y |
| ENSG00000272129.1 | <i>RP11-250B2.6</i>   | -0.33 | 2.42E-04 | 6.21E-03 | Intergenic | -0.468 | Y |
| ENSG00000272140.2 | <i>RP11-574K11.29</i> | 0.24  | 1.09E-02 | 8.22E-02 | Intergenic | -3.205 | Y |
| ENSG00000272145.1 | <i>NFYC-AS1</i>       | 0.35  | 1.06E-03 | 1.77E-02 | Antisense  | -1.396 |   |
| ENSG00000272146.4 | <i>RP11-755B10.4</i>  | 0.35  | 5.17E-03 | 5.13E-02 | Antisense  | 0.746  | Y |
| ENSG00000272153.1 | <i>RP1-286D6.5</i>    | 0.28  | 3.17E-03 | 3.73E-02 | Antisense  | -2.848 |   |
| ENSG00000272186.1 | <i>RP11-110I1.13</i>  | 0.31  | 9.90E-03 | 7.72E-02 | Antisense  | NA     |   |
| ENSG00000272195.1 | <i>RP11-156E8.1</i>   | -0.47 | 4.40E-04 | 9.61E-03 | Antisense  | -3.214 |   |

|                   |                            |       |          |          |            |        |   |
|-------------------|----------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000272217.1 | <i>XXbac-BPG157A10.21</i>  | 0.44  | 2.97E-03 | 3.55E-02 | Intergenic | -2.767 | Y |
| ENSG00000272221.1 | <i>XXbac-BPG181B23.7</i>   | -0.44 | 5.31E-04 | 1.10E-02 | Intergenic | -0.147 | Y |
| ENSG00000272240.1 | <i>RP5-855D21.1</i>        | 0.38  | 2.26E-03 | 2.97E-02 | Antisense  | NA     | Y |
| ENSG00000272243.4 | <i>RP11-554D15.3</i>       | 0.66  | 9.50E-03 | 7.51E-02 | Intergenic | NA     | N |
| ENSG00000272277.1 | <i>RP1-40E16.12</i>        | 0.50  | 2.88E-04 | 7.08E-03 | Antisense  | 0.138  |   |
| ENSG00000272279.1 | <i>RP11-157J24.2</i>       | -0.49 | 5.86E-03 | 5.56E-02 | Intergenic | 1.135  | Y |
| ENSG00000272282.1 | <i>RP11-222K16.2</i>       | 0.41  | 9.36E-03 | 7.46E-02 | Intergenic | 1.092  | Y |
| ENSG00000272293.1 | <i>RP11-91J19.3</i>        | 0.42  | 1.77E-04 | 4.91E-03 | Antisense  | 0.180  |   |
| ENSG00000272367.1 | <i>CTC-428H11.2</i>        | 0.53  | 6.05E-05 | 2.16E-03 | Antisense  | -3.911 |   |
| ENSG00000272382.1 | <i>CTD-2035E11.4</i>       | 0.58  | 9.14E-05 | 2.95E-03 | Intergenic | -3.355 | Y |
| ENSG00000272402.1 | <i>RP1-30M3.6</i>          | 0.28  | 3.12E-04 | 7.52E-03 | Antisense  | NA     | Y |
| ENSG00000272411.1 | <i>RP11-44B19.1</i>        | 0.54  | 4.79E-04 | 1.02E-02 | Antisense  | NA     | Y |
| ENSG00000272425.1 | <i>RP11-363E6.4</i>        | 0.60  | 1.36E-03 | 2.09E-02 | Intergenic | -2.117 | Y |
| ENSG00000272426.1 | <i>RP11-108M9.6</i>        | 0.55  | 6.04E-03 | 5.67E-02 | Antisense  | -0.858 | Y |
| ENSG00000272430.1 | <i>RP11-38L15.8</i>        | -0.44 | 1.27E-03 | 2.00E-02 | Intergenic | NA     | N |
| ENSG00000272432.1 | <i>RP3-465N24.6</i>        | 0.48  | 3.89E-04 | 8.82E-03 | Antisense  | -0.254 | Y |
| ENSG00000272463.1 | <i>RP11-532F6.3</i>        | -0.43 | 8.36E-04 | 1.50E-02 | Intergenic | 0.097  | Y |
| ENSG00000272472.1 | <i>RP11-95G17.2</i>        | 0.70  | 1.01E-03 | 1.72E-02 | Intronic   | -2.316 | Y |
| ENSG00000272482.1 | <i>RP11-474O21.5</i>       | -0.49 | 6.72E-04 | 1.29E-02 | Intergenic | 0.087  | Y |
| ENSG00000272486.1 | <i>RP11-532M24.1</i>       | 0.80  | 1.97E-13 | 6.85E-11 | Antisense  | -0.266 |   |
| ENSG00000272502.1 | <i>RP11-713M15.2</i>       | 0.74  | 9.38E-05 | 3.01E-03 | Antisense  | 0.517  |   |
| ENSG00000272508.1 | <i>RP11-96C23.14</i>       | 0.80  | 2.85E-05 | 1.20E-03 | Exonic     | -0.591 | Y |
| ENSG00000272509.1 | <i>RP11-347C18.5</i>       | 0.37  | 7.32E-04 | 1.37E-02 | Antisense  | 0.000  |   |
| ENSG00000272511.1 | <i>RP11-180N14.1</i>       | -0.36 | 1.04E-02 | 8.01E-02 | Intergenic | NA     | Y |
| ENSG00000272518.1 | <i>RP11-26J3.3</i>         | 0.23  | 1.17E-02 | 8.59E-02 | Intronic   | 0.110  | Y |
| ENSG00000272519.1 | <i>RP11-105N14.2</i>       | 1.06  | 3.69E-07 | 3.36E-05 | Intergenic | NA     | Y |
| ENSG00000272525.1 | <i>RP11-79P5.9</i>         | 0.33  | 1.27E-02 | 9.09E-02 | Intergenic | 0.486  | Y |
| ENSG00000272529.1 | <i>RP11-415F23.4</i>       | 0.50  | 1.88E-04 | 5.13E-03 | Intronic   | -3.580 | Y |
| ENSG00000272541.1 | <i>XXbac-BPGBPG55C20.1</i> | 0.54  | 3.53E-03 | 4.00E-02 | Intergenic | -2.656 | Y |
| ENSG00000272568.4 | <i>CTB-113D17.1</i>        | 0.38  | 1.39E-02 | 9.61E-02 | Antisense  | -1.000 | Y |
| ENSG00000272588.1 | <i>RP11-440L14.4</i>       | 0.36  | 2.02E-03 | 2.76E-02 | Antisense  | -1.655 | Y |
| ENSG00000272604.1 | <i>RP11-251G23.5</i>       | 0.19  | 1.28E-02 | 9.14E-02 | Antisense  | -0.208 | Y |
| ENSG00000272606.1 | <i>RP11-554J4.1</i>        | 0.38  | 2.47E-04 | 6.28E-03 | Antisense  | -0.183 |   |
| ENSG00000272622.1 | <i>RP11-395N3.2</i>        | 0.47  | 1.22E-02 | 8.84E-02 | Intergenic | -1.092 | Y |
| ENSG00000272630.1 | <i>RP11-344N10.5</i>       | 0.56  | 5.51E-09 | 8.55E-07 | Intergenic | -1.978 | Y |
| ENSG00000272668.1 | <i>RP11-190A12.8</i>       | -0.80 | 1.17E-05 | 5.93E-04 | Antisense  | -6.528 | Y |
| ENSG00000272677.1 | <i>RP11-127B20.3</i>       | 0.45  | 5.64E-04 | 1.14E-02 | Antisense  | -0.449 | Y |
| ENSG00000272690.4 | <i>RP11-803B1.8</i>        | 0.39  | 1.08E-03 | 1.80E-02 | Intergenic | -1.237 | Y |
| ENSG00000272692.1 | <i>RP11-399K21.14</i>      | 0.67  | 1.75E-09 | 2.94E-07 | Intergenic | -3.050 | Y |
| ENSG00000272702.1 | <i>RP11-44N22.3</i>        | 0.42  | 6.93E-03 | 6.18E-02 | Antisense  | 0.546  | Y |
| ENSG00000272720.1 | <i>CTA-228A9.3</i>         | 0.47  | 2.03E-03 | 2.76E-02 | Antisense  | -4.292 | Y |
| ENSG00000272732.1 | <i>RP5-1159O4.2</i>        | 0.41  | 7.63E-03 | 6.56E-02 | Intergenic | -1.398 | Y |
| ENSG00000272733.1 | <i>KB-208E9.1</i>          | 0.43  | 6.85E-03 | 6.13E-02 | Intergenic | -2.709 | Y |
| ENSG00000272734.1 | <i>ADIRF-AS1</i>           | 0.41  | 6.09E-03 | 5.71E-02 | Exonic     | -2.196 | Y |
| ENSG00000272746.1 | <i>RP11-53B2.6</i>         | -0.59 | 3.84E-04 | 8.73E-03 | Intronic   | NA     | Y |
| ENSG00000272750.1 | <i>RP11-378J18.8</i>       | 0.25  | 4.40E-03 | 4.63E-02 | Antisense  | -0.777 |   |
| ENSG00000272755.1 | <i>RP11-326G21.1</i>       | -0.62 | 3.02E-03 | 3.60E-02 | Intergenic | 0.246  | Y |
| ENSG00000272783.1 | <i>RP13-1016M1.2</i>       | -0.51 | 1.36E-02 | 9.48E-02 | Intergenic | NA     | Y |
| ENSG00000272787.1 | <i>KB-226F1.2</i>          | 0.67  | 2.70E-06 | 1.80E-04 | Intronic   | -3.261 | Y |
| ENSG00000272795.1 | <i>RP11-602N24.3</i>       | 0.46  | 2.18E-03 | 2.90E-02 | Intergenic | -0.875 | Y |
| ENSG00000272798.1 | <i>CTA-390C10.9</i>        | -0.92 | 4.23E-05 | 1.66E-03 | Intergenic | NA     | Y |
| ENSG00000272799.1 | <i>RP11-474N24.6</i>       | 0.52  | 1.31E-04 | 3.88E-03 | Intergenic | -2.335 | Y |
| ENSG00000272808.2 | <i>RP11-66B24.7</i>        | 1.04  | 8.56E-15 | 3.52E-12 | Intergenic | -1.406 | Y |
| ENSG00000272823.1 | <i>RP11-295M18.6</i>       | 0.48  | 1.90E-03 | 2.65E-02 | Intergenic | NA     | Y |
| ENSG00000272824.1 | <i>RP6-74O6.6</i>          | 1.44  | 1.25E-20 | 9.72E-18 | Intergenic | NA     | Y |
| ENSG00000272825.1 | <i>LL2INC02-1C16.2</i>     | 0.33  | 3.50E-03 | 3.98E-02 | Intergenic | -3.286 | Y |
| ENSG00000272827.1 | <i>RP11-445P19.3</i>       | 1.14  | 1.65E-06 | 1.20E-04 | Intergenic | -3.338 | Y |
| ENSG00000272829.1 | <i>XXbac-B135H6.18</i>     | 0.41  | 5.79E-04 | 1.16E-02 | Antisense  | 0.964  | Y |
| ENSG00000272834.1 | <i>RP5-1042K10.13</i>      | 0.90  | 1.10E-09 | 1.94E-07 | Antisense  | NA     | Y |
| ENSG00000272836.1 | <i>RP3-402G11.27</i>       | 0.27  | 9.51E-03 | 7.51E-02 | Antisense  | -2.864 | Y |
| ENSG00000272843.1 | <i>RP11-313P13.5</i>       | 0.40  | 8.86E-03 | 7.21E-02 | Antisense  | -0.777 |   |
| ENSG00000272853.1 | <i>RP11-398C13.6</i>       | 0.36  | 1.71E-03 | 2.46E-02 | Intergenic | -0.156 | Y |
| ENSG00000272854.1 | <i>RP4-593H12.1</i>        | 0.50  | 2.93E-04 | 7.17E-03 | Antisense  | -1.943 |   |
| ENSG00000272861.1 | <i>RP11-332H14.1</i>       | -0.32 | 4.29E-03 | 4.55E-02 | Intergenic | NA     | Y |
| ENSG00000272864.1 | <i>RP11-17E13.2</i>        | 0.39  | 1.44E-02 | 9.83E-02 | Intergenic | -2.340 | Y |
| ENSG00000272871.1 | <i>RP11-408A13.4</i>       | 0.35  | 6.05E-03 | 5.68E-02 | Intergenic | -3.253 | Y |
| ENSG00000272888.4 | <i>LINC01578</i>           | 0.23  | 8.72E-04 | 1.55E-02 | Exonic     | 0.444  |   |
| ENSG00000272894.4 | <i>RP5-1159O4.1</i>        | 0.59  | 9.15E-05 | 2.95E-03 | Antisense  | -2.127 | Y |
| ENSG00000272899.2 | <i>RP11-309L24.4</i>       | 0.44  | 1.24E-04 | 3.72E-03 | Antisense  | -1.385 |   |
| ENSG00000272906.1 | <i>RP11-533E19.7</i>       | 0.40  | 4.43E-03 | 4.65E-02 | Antisense  | -1.085 |   |
| ENSG00000272911.1 | <i>RP11-74E22.6</i>        | 0.58  | 1.20E-03 | 1.93E-02 | Intergenic | NA     | Y |

|                   |                           |       |          |          |            |        |   |
|-------------------|---------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000272931.1 | <i>RP5-943J3.2</i>        | 0.35  | 3.06E-03 | 3.64E-02 | Antisense  | -0.502 | Y |
| ENSG00000272941.1 | <i>RP11-134L10.1</i>      | 0.43  | 2.45E-04 | 6.25E-03 | Antisense  | -1.043 |   |
| ENSG00000272942.1 | <i>CTA-246H3.12</i>       | -0.76 | 4.66E-04 | 1.01E-02 | Intergenic | -1.290 | Y |
| ENSG00000272949.1 | <i>RP11-514P8.8</i>       | 0.85  | 7.35E-05 | 2.50E-03 | Exonic     | -2.866 | Y |
| ENSG00000272977.1 | <i>CTA-390C10.10</i>      | -0.94 | 1.54E-20 | 1.17E-17 | Intergenic | -2.315 | Y |
| ENSG00000272979.1 | <i>RP11-647K16.1</i>      | 0.39  | 2.08E-03 | 2.81E-02 | Antisense  | 0.468  | Y |
| ENSG00000272994.1 | <i>RP11-332H14.2</i>      | 0.27  | 5.74E-03 | 5.48E-02 | Antisense  | -1.874 |   |
| ENSG00000273004.1 | <i>GSI-279B7.2</i>        | -0.33 | 8.54E-03 | 7.06E-02 | Intergenic | -1.363 | Y |
| ENSG00000273009.1 | <i>RP11-352G9.1</i>       | 0.66  | 7.24E-05 | 2.48E-03 | Intergenic | -2.589 | Y |
| ENSG00000273010.1 | <i>RP11-96K19.5</i>       | 0.34  | 2.52E-03 | 3.20E-02 | Antisense  | -0.177 |   |
| ENSG00000273013.1 | <i>CTD-2002J20.1</i>      | 0.42  | 1.63E-03 | 2.38E-02 | Antisense  | NA     |   |
| ENSG00000273014.1 | <i>RP11-225B17.2</i>      | -0.24 | 9.19E-03 | 7.37E-02 | Intergenic | 0.759  | Y |
| ENSG00000273036.2 | <i>FAM95C</i>             | 0.38  | 7.43E-03 | 6.44E-02 | Exonic     | -3.886 |   |
| ENSG00000273038.2 | <i>RP11-479G22.8</i>      | -0.26 | 2.62E-03 | 3.28E-02 | Intergenic | -1.991 | Y |
| ENSG00000273055.1 | <i>CTB-13F3.1</i>         | 0.45  | 2.45E-04 | 6.25E-03 | Antisense  | -3.554 |   |
| ENSG00000273056.1 | <i>RP11-77E14.2</i>       | 0.55  | 2.02E-03 | 2.76E-02 | Intergenic | -3.332 | Y |
| ENSG00000273058.2 | <i>RP11-385F5.5</i>       | 0.40  | 7.52E-05 | 2.55E-03 | Antisense  | -2.227 | Y |
| ENSG00000273062.1 | <i>RP11-428K3.1</i>       | 0.40  | 6.53E-03 | 5.96E-02 | Antisense  | -0.999 |   |
| ENSG00000273073.1 | <i>RP11-109E12.1</i>      | 0.91  | 2.25E-07 | 2.20E-05 | Intergenic | -1.218 | Y |
| ENSG00000273076.1 | <i>RP3-508I15.22</i>      | 0.51  | 1.66E-04 | 4.68E-03 | Antisense  | NA     | Y |
| ENSG00000273096.1 | <i>RP3-508I15.20</i>      | 0.39  | 4.86E-03 | 4.92E-02 | Antisense  | NA     | Y |
| ENSG00000273137.1 | <i>RP3-402G11.28</i>      | 0.37  | 6.69E-04 | 1.29E-02 | Antisense  | -3.297 | Y |
| ENSG00000273139.1 | <i>XXbac-B444P24.14</i>   | 0.48  | 1.11E-03 | 1.83E-02 | Intergenic | -0.456 | Y |
| ENSG00000273148.1 | <i>RP5-1068E13.7</i>      | 0.30  | 9.66E-03 | 7.59E-02 | Intergenic | -1.878 | Y |
| ENSG00000273151.1 | <i>RP11-449P15.2</i>      | 0.43  | 2.95E-03 | 3.54E-02 | Antisense  | -2.235 |   |
| ENSG00000273179.1 | <i>RP11-20I20.4</i>       | 0.60  | 3.88E-03 | 4.27E-02 | Antisense  | NA     | Y |
| ENSG00000273183.1 | <i>RP11-5C23.2</i>        | 0.32  | 1.61E-03 | 2.37E-02 | Antisense  | -3.495 | Y |
| ENSG00000273186.1 | <i>RP11-339B21.10</i>     | 0.49  | 5.57E-04 | 1.13E-02 | Intronic   | -0.498 | Y |
| ENSG00000273243.1 | <i>CTA-217C2.2</i>        | 1.14  | 9.13E-20 | 6.57E-17 | Intergenic | -1.811 | Y |
| ENSG00000273249.1 | <i>LL09NC01-251B2.3</i>   | 0.36  | 5.08E-03 | 5.06E-02 | Antisense  | -0.143 | Y |
| ENSG00000273287.2 | <i>CTA-268H5.14</i>       | 0.45  | 3.57E-03 | 4.03E-02 | Intergenic | -2.121 | Y |
| ENSG00000273306.1 | <i>RP11-527J8.1</i>       | 0.42  | 4.32E-06 | 2.64E-04 | Antisense  | -2.631 | Y |
| ENSG00000273319.1 | <i>RP11-138A9.2</i>       | 0.49  | 2.02E-03 | 2.76E-02 | Intergenic | -0.959 | Y |
| ENSG00000273328.4 | <i>RP11-141M3.6</i>       | 1.35  | 2.23E-13 | 7.62E-11 | Exonic     | -1.334 |   |
| ENSG00000273329.1 | <i>RP11-448A19.1</i>      | 0.27  | 1.70E-03 | 2.44E-02 | Intergenic | -2.369 | Y |
| ENSG00000273332.2 | <i>XXbac-BPG300A18.13</i> | 0.55  | 5.13E-04 | 1.08E-02 | Exonic     | NA     |   |
| ENSG00000273335.1 | <i>RP11-61L19.2</i>       | -0.78 | 6.87E-04 | 1.31E-02 | Intergenic | 0.105  | Y |
| ENSG00000273341.1 | <i>RP5-899E9.1</i>        | 0.59  | 6.89E-05 | 2.38E-03 | Intergenic | NA     | Y |
| ENSG00000273344.1 | <i>PAXIP1-AS1</i>         | 0.22  | 3.46E-03 | 3.95E-02 | Intergenic | -0.537 | Y |
| ENSG00000273345.4 | <i>CTD-2410N18.4</i>      | 0.41  | 8.93E-03 | 7.24E-02 | Exonic     | -0.655 |   |
| ENSG00000273356.1 | <i>RP11-804H8.6</i>       | 0.26  | 8.93E-03 | 7.24E-02 | Intergenic | -2.114 | Y |
| ENSG00000273381.1 | <i>RP11-305L7.7</i>       | 0.47  | 2.01E-04 | 5.39E-03 | Intergenic | -3.327 | Y |
| ENSG00000273384.1 | <i>RP5-1098D14.1</i>      | 0.71  | 2.90E-04 | 7.13E-03 | Intergenic | 1.302  | Y |
| ENSG00000273387.1 | <i>RP3-412A9.16</i>       | -0.37 | 2.73E-03 | 3.37E-02 | Antisense  | -1.237 |   |
| ENSG00000273389.1 | <i>RP13-514E23.2</i>      | 0.70  | 4.11E-04 | 9.17E-03 | Antisense  | NA     |   |
| ENSG00000273391.1 | <i>RP11-634H22.1</i>      | 0.47  | 1.16E-04 | 3.56E-03 | Antisense  | 0.463  |   |
| ENSG00000273402.1 | <i>RP5-855D21.2</i>       | 0.37  | 8.92E-03 | 7.23E-02 | Intronic   | -3.618 | Y |
| ENSG00000273419.1 | <i>RP4-751H13.7</i>       | 0.46  | 3.88E-04 | 8.81E-03 | Antisense  | -2.028 |   |
| ENSG00000273447.1 | <i>AC004067.5</i>         | 0.27  | 1.47E-02 | 9.99E-02 | Antisense  | -0.264 | Y |
| ENSG00000273448.1 | <i>RP11-166O4.6</i>       | 0.60  | 5.99E-07 | 5.07E-05 | Intergenic | -2.630 | Y |
| ENSG00000273449.1 | <i>RP11-218F10.3</i>      | 0.34  | 1.32E-02 | 9.29E-02 | Antisense  | -4.342 | Y |
| ENSG00000273450.1 | <i>RP11-76P2.4</i>        | 0.64  | 1.30E-05 | 6.42E-04 | Antisense  | -2.241 |   |
| ENSG00000273478.1 | <i>RP11-465N4.5</i>       | 0.22  | 1.36E-02 | 9.48E-02 | Antisense  | -0.374 |   |
| ENSG00000273485.1 | <i>RP11-225H22.7</i>      | 0.68  | 5.94E-04 | 1.18E-02 | Antisense  | -2.314 |   |
| ENSG00000273489.1 | <i>RP11-180C16.1</i>      | 0.49  | 1.56E-04 | 4.43E-03 | Antisense  | -1.473 |   |
| ENSG00000273557.1 | <i>CTD-2024I7.18</i>      | -0.34 | 1.37E-02 | 9.55E-02 | Intronic   | NA     |   |
| ENSG00000273558.1 | <i>RP11-244H18.3</i>      | 0.95  | 1.98E-04 | 5.34E-03 | Intergenic | -4.483 | Y |
| ENSG00000273615.1 | <i>RP11-1136G4.2</i>      | -0.68 | 1.68E-03 | 2.43E-02 | Intergenic | -0.361 |   |
| ENSG00000273619.1 | <i>RP5-908M14.9</i>       | 0.34  | 9.65E-03 | 7.59E-02 | Intergenic | -0.349 |   |
| ENSG00000273687.1 | <i>RP5-837J1.6</i>        | 0.60  | 2.66E-05 | 1.14E-03 | Antisense  | NA     |   |
| ENSG00000273760.1 | <i>CH17-360D5.3</i>       | 1.55  | 5.92E-14 | 2.23E-11 | Intergenic | -0.271 |   |
| ENSG00000273816.1 | <i>RP11-85B7.5</i>        | 0.58  | 2.14E-03 | 2.85E-02 | Intergenic | NA     |   |
| ENSG00000273840.1 | <i>AL078471.5</i>         | 0.55  | 9.71E-04 | 1.67E-02 | Exonic     | -2.007 |   |
| ENSG00000273890.1 | <i>RP11-603J24.21</i>     | 0.50  | 6.36E-04 | 1.24E-02 | Antisense  | NA     |   |
| ENSG00000273891.1 | <i>RP11-500G22.5</i>      | 0.38  | 3.76E-05 | 1.52E-03 | Antisense  | -1.000 |   |
| ENSG00000273951.1 | <i>RP4-620E11.8</i>       | 0.25  | 8.45E-03 | 7.01E-02 | Intronic   | -1.792 |   |
| ENSG00000273980.1 | <i>RP13-491I5.6</i>       | 0.55  | 6.05E-04 | 1.20E-02 | Intergenic | NA     |   |
| ENSG00000273989.1 | <i>RP11-425D17.2</i>      | 0.46  | 4.06E-03 | 4.39E-02 | Intronic   | NA     |   |
| ENSG00000274080.1 | <i>CTA-315H11.2</i>       | 0.48  | 1.10E-02 | 8.27E-02 | Intronic   | -3.600 |   |
| ENSG00000274272.1 | <i>RP11-44M6.7</i>        | 0.35  | 1.64E-03 | 2.39E-02 | Exonic     | -3.489 |   |
| ENSG00000274297.1 | <i>RP11-138H8.8</i>       | 0.41  | 7.44E-03 | 6.45E-02 | Intronic   | -3.558 |   |

|                   |                       |       |          |          |            |        |   |
|-------------------|-----------------------|-------|----------|----------|------------|--------|---|
| ENSG00000274312.1 | <i>RP11-167B3.2</i>   | -0.57 | 1.01E-02 | 7.82E-02 | Intergenic | NA     |   |
| ENSG00000274363.1 | <i>RP11-104O19.4</i>  | 0.49  | 2.57E-03 | 3.25E-02 | Intergenic | 0.613  |   |
| ENSG00000274373.1 | <i>RP13-714J12.1</i>  | 0.68  | 4.03E-04 | 9.07E-03 | Intergenic | -3.053 |   |
| ENSG00000274386.3 | <i>RP5-994D16.11</i>  | 0.61  | 3.38E-05 | 1.39E-03 | Exonic     | -1.601 |   |
| ENSG00000274421.1 | <i>RP11-386J22.3</i>  | 0.52  | 8.13E-03 | 6.84E-02 | Intronic   | -1.762 |   |
| ENSG00000274578.1 | <i>RP11-430E17.1</i>  | 0.67  | 8.98E-03 | 7.27E-02 | Intronic   | -1.619 |   |
| ENSG00000274598.1 | <i>RP11-423G4.10</i>  | 0.78  | 5.08E-04 | 1.07E-02 | Intronic   | -0.947 |   |
| ENSG00000274653.1 | <i>RP11-347C12.11</i> | 0.23  | 1.17E-02 | 8.59E-02 | Antisense  | -0.920 |   |
| ENSG00000274719.1 | <i>RP11-86K22.2</i>   | -0.51 | 5.71E-03 | 5.46E-02 | Intronic   | NA     |   |
| ENSG00000274767.1 | <i>AC131056.3</i>     | 1.51  | 1.51E-16 | 7.72E-14 | Antisense  | 0.807  | Y |
| ENSG00000274898.1 | <i>AC001226.7</i>     | 0.53  | 5.63E-04 | 1.14E-02 | Intergenic | -0.862 |   |
| ENSG00000274949.1 | <i>RP5-1009E24.9</i>  | -0.55 | 5.95E-03 | 5.61E-02 | Exonic     | -0.541 |   |
| ENSG00000274987.1 | <i>RP11-295I5.3</i>   | 0.29  | 2.53E-03 | 3.21E-02 | Antisense  | -2.388 |   |
| ENSG00000275005.1 | <i>RP11-234G16.5</i>  | 0.65  | 2.02E-04 | 5.42E-03 | Antisense  | NA     |   |
| ENSG00000275056.1 | <i>RP11-127I20.8</i>  | 0.42  | 4.57E-03 | 4.75E-02 | Intronic   | -2.313 |   |
| ENSG00000275147.1 | <i>RP11-324D17.3</i>  | -0.77 | 2.07E-03 | 2.80E-02 | Intergenic | NA     |   |
| ENSG00000275180.1 | <i>RP11-631N16.4</i>  | 0.37  | 1.13E-02 | 8.43E-02 | Intergenic | -2.428 |   |
| ENSG00000275212.1 | <i>RP3-446N13.5</i>   | 0.76  | 1.07E-03 | 1.78E-02 | Intergenic | NA     |   |
| ENSG00000275248.1 | <i>RP11-40E6.2</i>    | 0.78  | 4.70E-04 | 1.01E-02 | Intergenic | NA     |   |
| ENSG00000275401.1 | <i>RP4-564F22.7</i>   | 0.65  | 2.83E-05 | 1.19E-03 | Intergenic | -3.630 |   |
| ENSG00000275413.1 | <i>CTC-529I10.1</i>   | 0.40  | 2.85E-03 | 3.47E-02 | Antisense  | -1.603 |   |
| ENSG00000275418.1 | <i>RP11-126O1.6</i>   | 0.71  | 3.63E-03 | 4.08E-02 | Intergenic | NA     |   |
| ENSG00000275437.1 | <i>RP5-908M14.10</i>  | 0.34  | 5.13E-03 | 5.10E-02 | Intronic   | -3.336 |   |
| ENSG00000275441.1 | <i>RP11-666O2.2</i>   | 0.42  | 1.57E-03 | 2.33E-02 | Antisense  | -1.101 |   |
| ENSG00000275450.1 | <i>RP11-4L24.3</i>    | -0.58 | 3.26E-03 | 3.81E-02 | Intergenic | -0.673 |   |
| ENSG00000275454.1 | <i>CTD-2026K11.4</i>  | 0.26  | 2.34E-03 | 3.03E-02 | Antisense  | -1.028 |   |
| ENSG00000275476.1 | <i>RP11-996F15.4</i>  | 0.98  | 9.29E-11 | 2.07E-08 | Antisense  | -3.328 |   |
| ENSG00000275491.1 | <i>RP5-1009E24.8</i>  | -0.53 | 8.07E-03 | 6.81E-02 | Intergenic | -3.617 |   |
| ENSG00000275494.1 | <i>RP11-266L9.8</i>   | 0.61  | 4.03E-06 | 2.48E-04 | Intergenic | 1.247  |   |
| ENSG00000275532.1 | <i>CTB-58E17.3</i>    | 0.24  | 5.93E-03 | 5.60E-02 | Antisense  | -1.241 | Y |
| ENSG00000275576.1 | <i>RP5-836N17.4</i>   | 0.53  | 1.37E-03 | 2.11E-02 | Intronic   | -2.075 |   |
| ENSG00000275601.1 | <i>AC011330.13</i>    | -0.37 | 1.44E-03 | 2.18E-02 | Intronic   | -1.170 |   |
| ENSG00000275632.1 | <i>RP5-967N21.11</i>  | 0.27  | 1.36E-02 | 9.51E-02 | Intergenic | -1.914 |   |
| ENSG00000275741.1 | <i>RP11-40E6.1</i>    | 0.64  | 3.24E-03 | 3.80E-02 | Antisense  | NA     |   |
| ENSG00000275888.1 | <i>RP13-516M14.10</i> | 0.49  | 3.34E-04 | 7.92E-03 | Antisense  | -3.726 |   |
| ENSG00000275897.1 | <i>RP11-94C24.13</i>  | 0.36  | 6.57E-03 | 5.97E-02 | Intergenic | -4.235 |   |
| ENSG00000275936.1 | <i>RP1-278C19.8</i>   | 0.50  | 5.63E-03 | 5.42E-02 | Antisense  | -3.074 |   |
| ENSG00000276075.1 | <i>CTD-2012K14.8</i>  | 0.44  | 9.93E-04 | 1.69E-02 | Antisense  | 0.133  |   |
| ENSG00000276121.1 | <i>CTD-2008A1.3</i>   | 0.60  | 7.45E-03 | 6.45E-02 | Intergenic | NA     |   |
| ENSG00000276128.1 | <i>RP11-459O16.8</i>  | 1.04  | 2.30E-05 | 1.02E-03 | Intergenic | -2.585 |   |
| ENSG00000276148.1 | <i>RP11-278C7.4</i>   | 0.31  | 1.43E-02 | 9.81E-02 | Antisense  | -2.060 |   |
| ENSG00000276188.1 | <i>RP11-173P15.10</i> | 0.41  | 2.30E-03 | 3.00E-02 | Intergenic | -1.000 |   |
| ENSG00000276261.1 | <i>RP11-106OJ15.9</i> | 0.38  | 1.79E-03 | 2.53E-02 | Intergenic | -1.261 |   |
| ENSG00000276272.1 | <i>RP11-121C6.5</i>   | 0.86  | 2.03E-07 | 2.03E-05 | Intergenic | -2.797 |   |
| ENSG00000276308.1 | <i>RP11-116D17.4</i>  | 0.76  | 1.57E-03 | 2.33E-02 | Intergenic | NA     |   |
| ENSG00000276384.1 | <i>RP11-186B7.7</i>   | 0.41  | 8.53E-03 | 7.05E-02 | Antisense  | -0.909 |   |
| ENSG00000276445.1 | <i>LLNLR-268E12.1</i> | 0.44  | 3.72E-03 | 4.14E-02 | Intergenic | -0.636 |   |
| ENSG00000276517.1 | <i>AL133243.2</i>     | 0.22  | 4.33E-03 | 4.57E-02 | Intronic   | -2.643 |   |
| ENSG00000276533.1 | <i>RP11-139H15.5</i>  | 0.65  | 1.84E-04 | 5.06E-03 | Intronic   | -2.336 |   |
| ENSG00000276564.1 | <i>CTA-276F8.1</i>    | 0.42  | 7.71E-04 | 1.43E-02 | Intronic   | -2.546 |   |
| ENSG00000276570.1 | <i>CTD-2587H24.14</i> | 0.20  | 5.98E-03 | 5.63E-02 | Exonic     | -2.728 |   |
| ENSG00000276704.1 | <i>RP11-128N14.4</i>  | 0.48  | 1.50E-03 | 2.24E-02 | Intronic   | -2.157 |   |
| ENSG00000276742.1 | <i>RP11-500G22.4</i>  | 0.50  | 5.36E-03 | 5.25E-02 | Antisense  | NA     |   |
| ENSG00000276842.1 | <i>RP11-713N11.6</i>  | 0.52  | 4.01E-04 | 9.03E-03 | Antisense  | NA     |   |
| ENSG00000276855.1 | <i>CTD-3157E16.2</i>  | -0.41 | 2.59E-04 | 6.53E-03 | Intergenic | 1.418  |   |
| ENSG00000276934.1 | <i>RP11-231E4.5</i>   | 0.80  | 1.99E-08 | 2.65E-06 | Intronic   | -1.399 |   |
| ENSG00000276957.1 | <i>RP11-29B2.6</i>    | 0.51  | 1.21E-03 | 1.94E-02 | Intergenic | NA     |   |
| ENSG00000276972.1 | <i>RP11-116D17.5</i>  | 0.58  | 6.76E-03 | 6.07E-02 | Intergenic | NA     |   |
| ENSG00000277010.1 | <i>RP11-616M22.12</i> | -0.66 | 2.81E-04 | 6.95E-03 | Antisense  | -2.115 |   |
| ENSG00000277022.1 | <i>RP3-453C12.15</i>  | -0.79 | 5.29E-05 | 1.96E-03 | Intergenic | -2.052 |   |
| ENSG00000277087.1 | <i>RP5-1116H23.6</i>  | 0.71  | 1.36E-03 | 2.09E-02 | Intergenic | NA     |   |
| ENSG00000277128.1 | <i>RP11-146E13.4</i>  | -0.63 | 8.58E-03 | 7.08E-02 | Intergenic | NA     | Y |
| ENSG00000277135.1 | <i>RP11-327J17.9</i>  | 0.46  | 3.31E-03 | 3.85E-02 | Intergenic | NA     |   |
| ENSG00000277142.1 | <i>LINC00235</i>      | 0.36  | 2.30E-03 | 3.00E-02 | Intergenic | -1.821 |   |
| ENSG00000277170.1 | <i>RP11-295D4.4</i>   | 0.40  | 2.09E-03 | 2.82E-02 | Intronic   | -1.399 |   |
| ENSG00000277200.1 | <i>RP11-74E22.8</i>   | -0.57 | 3.85E-03 | 4.24E-02 | Intergenic | -0.324 |   |
| ENSG00000277215.1 | <i>SPANX42-OT1</i>    | -0.58 | 6.91E-03 | 6.16E-02 | Intronic   | -0.677 | N |
| ENSG00000277232.2 | <i>GTSE1-AS1</i>      | -0.73 | 5.60E-11 | 1.31E-08 | Intergenic | -0.099 |   |
| ENSG00000277235.1 | <i>RP4-550H1.7</i>    | 0.47  | 5.32E-03 | 5.22E-02 | Intergenic | NA     |   |
| ENSG00000277245.1 | <i>RP11-48G14.3</i>   | 0.53  | 3.79E-05 | 1.53E-03 | Antisense  | 0.107  |   |
| ENSG00000277299.1 | <i>RP11-837J7.4</i>   | 0.45  | 4.31E-03 | 4.57E-02 | Antisense  | NA     |   |

|                   |                           |       |          |          |            |        |   |
|-------------------|---------------------------|-------|----------|----------|------------|--------|---|
| ENSG00000277382.1 | <i>RP11-318A15.8</i>      | 0.78  | 3.58E-04 | 8.32E-03 | Antisense  | NA     |   |
| ENSG00000277383.1 | <i>CTD-3001H11.2</i>      | 0.40  | 1.21E-02 | 8.79E-02 | Antisense  | -1.810 |   |
| ENSG00000277425.1 | <i>RP5-1116H23.3</i>      | 0.44  | 1.84E-03 | 2.58E-02 | Intergenic | -0.208 |   |
| ENSG00000277449.1 | <i>CEBPB-AS1</i>          | 0.26  | 1.71E-03 | 2.45E-02 | Antisense  | -0.888 |   |
| ENSG00000277511.1 | <i>CTD-2095E4.5</i>       | 0.46  | 3.75E-04 | 8.59E-03 | Intergenic | -0.773 |   |
| ENSG00000277548.1 | <i>RP11-139H15.6</i>      | 0.24  | 1.32E-02 | 9.32E-02 | Antisense  | NA     |   |
| ENSG00000277579.1 | <i>CTC-268N12.3</i>       | 0.63  | 7.73E-03 | 6.62E-02 | Intronic   | NA     | N |
| ENSG00000277589.1 | <i>RP11-333J10.3</i>      | 0.47  | 1.27E-03 | 2.00E-02 | Intronic   | -2.429 | Y |
| ENSG00000277621.1 | <i>RP11-597M12.2</i>      | 0.47  | 1.47E-02 | 9.96E-02 | Antisense  | NA     |   |
| ENSG00000277654.3 | <i>RP11-255M2.3</i>       | -0.95 | 1.39E-04 | 4.08E-03 | Intergenic | -2.718 |   |
| ENSG00000277693.1 | <i>AP003900.6</i>         | 0.59  | 6.01E-03 | 5.65E-02 | Intergenic | 0.078  | Y |
| ENSG00000277728.1 | <i>RP11-143K11.7</i>      | 0.31  | 9.66E-03 | 7.59E-02 | Antisense  | -2.459 |   |
| ENSG00000277778.1 | <i>PGM5P2</i>             | 0.32  | 2.02E-03 | 2.76E-02 | Intergenic | -3.628 |   |
| ENSG00000277831.1 | <i>RP11-269C23.5</i>      | -0.49 | 1.29E-02 | 9.15E-02 | Intergenic | -1.144 |   |
| ENSG00000277855.1 | <i>RP11-154H23.4</i>      | -0.86 | 5.17E-05 | 1.93E-03 | Antisense  | 0.710  |   |
| ENSG00000277938.1 | <i>RP5-965G21.3</i>       | 0.80  | 1.26E-17 | 7.04E-15 | Intergenic | -2.061 |   |
| ENSG00000278000.1 | <i>AC139100.4</i>         | 0.39  | 1.08E-02 | 8.20E-02 | Antisense  | -3.164 |   |
| ENSG00000278022.1 | <i>RP11-35O15.2</i>       | 0.51  | 7.08E-03 | 6.24E-02 | Intronic   | -4.649 |   |
| ENSG00000278090.1 | <i>RP11-6O2.2</i>         | 0.57  | 7.81E-05 | 2.63E-03 | Intergenic | -2.687 |   |
| ENSG00000278095.1 | <i>RP11-283G6.6</i>       | 0.78  | 9.98E-04 | 1.70E-02 | Antisense  | NA     |   |
| ENSG00000278126.1 | <i>RP11-454E5.4</i>       | 0.38  | 5.62E-07 | 4.81E-05 | Intronic   | -0.050 |   |
| ENSG00000278175.2 | <i>GLIDR</i>              | -0.21 | 1.07E-02 | 8.15E-02 | Intergenic | 0.127  |   |
| ENSG00000278185.1 | <i>RP11-153F5.7</i>       | 0.38  | 1.39E-03 | 2.12E-02 | Intronic   | NA     |   |
| ENSG00000278231.1 | <i>RP5-906C1.1</i>        | 0.40  | 1.34E-02 | 9.38E-02 | Intronic   | 0.762  |   |
| ENSG00000278238.1 | <i>RP11-245D16.4</i>      | 0.38  | 2.93E-03 | 3.53E-02 | Intergenic | 0.489  |   |
| ENSG00000278239.1 | <i>AC020956.3</i>         | 0.66  | 9.46E-03 | 7.49E-02 | Intergenic | NA     | N |
| ENSG00000278383.1 | <i>RP4-694B14.8</i>       | 0.41  | 4.85E-05 | 1.84E-03 | Antisense  | -1.369 |   |
| ENSG00000278472.1 | <i>RP11-74D7.3</i>        | -1.27 | 1.56E-17 | 8.63E-15 | Antisense  | NA     |   |
| ENSG00000278518.1 | <i>RP11-108K14.12</i>     | -0.57 | 6.57E-03 | 5.97E-02 | Antisense  | NA     |   |
| ENSG00000278642.1 | <i>RP11-159D12.11</i>     | 0.58  | 4.62E-03 | 4.77E-02 | Intergenic | NA     |   |
| ENSG00000278727.1 | <i>AC000403.4</i>         | -0.33 | 9.12E-03 | 7.35E-02 | Intergenic | 1.050  |   |
| ENSG00000278730.1 | <i>RP11-147L13.11</i>     | -0.11 | 6.82E-03 | 6.11E-02 | Intergenic | 0.239  |   |
| ENSG00000278743.1 | <i>RP11-707G18.1</i>      | 0.57  | 5.11E-04 | 1.07E-02 | Intergenic | -1.273 |   |
| ENSG00000278765.1 | <i>RP5-890E16.5</i>       | 0.28  | 1.27E-03 | 2.00E-02 | Intergenic | 0.298  |   |
| ENSG00000278766.2 | <i>AC159540.2</i>         | -0.86 | 8.02E-04 | 1.46E-02 | Intergenic | NA     | Y |
| ENSG00000278840.1 | <i>RP11-345N11.1</i>      | -0.44 | 5.93E-03 | 5.60E-02 | Intronic   | NA     |   |
| ENSG00000278867.1 | <i>RP11-640N20.4</i>      | 0.44  | 1.22E-05 | 6.13E-04 | Intronic   | -3.080 |   |
| ENSG00000278875.1 | <i>CTC-439O9.1</i>        | 0.42  | 1.18E-02 | 8.62E-02 | Intergenic | -3.844 |   |
| ENSG00000278909.1 | <i>RP11-401P9.7</i>       | -0.65 | 8.36E-03 | 6.96E-02 | Intronic   | -3.322 |   |
| ENSG00000278912.1 | <i>CTD-2196E14.8</i>      | 0.99  | 6.43E-05 | 2.26E-03 | Intronic   | -1.837 |   |
| ENSG00000278932.2 | <i>bP-21264C1.2</i>       | 0.59  | 1.30E-05 | 6.41E-04 | Intergenic | -0.408 |   |
| ENSG00000278949.1 | <i>RP11-46H11.11</i>      | 0.33  | 1.09E-02 | 8.20E-02 | Intronic   | -4.384 |   |
| ENSG00000278958.1 | <i>RP11-313L6.2</i>       | 0.86  | 2.09E-04 | 5.56E-03 | Intergenic | -2.000 |   |
| ENSG00000278965.1 | <i>RP11-39H3.2</i>        | 0.50  | 7.18E-03 | 6.30E-02 | Intergenic | 0.070  |   |
| ENSG00000278967.1 | <i>RP5-849H19.3</i>       | 0.65  | 5.85E-03 | 5.55E-02 | Antisense  | NA     |   |
| ENSG00000278983.1 | <i>RP11-426J5.3</i>       | -1.24 | 4.91E-11 | 1.16E-08 | Intronic   | -3.170 |   |
| ENSG00000278999.1 | <i>AC008985.1</i>         | 0.50  | 2.53E-03 | 3.21E-02 | Antisense  | NA     |   |
| ENSG00000279078.1 | <i>SND1-IT1</i>           | 0.58  | 2.55E-03 | 3.23E-02 | Exonic     | -5.726 |   |
| ENSG00000279110.1 | <i>CTA-243E7.1</i>        | 0.34  | 9.38E-03 | 7.46E-02 | Antisense  | NA     |   |
| ENSG00000279121.1 | <i>RP11-83B20.5</i>       | 0.69  | 3.32E-03 | 3.86E-02 | Antisense  | NA     |   |
| ENSG00000279127.1 | <i>RP3-442L6.4</i>        | 0.87  | 5.59E-04 | 1.13E-02 | Intergenic | -1.519 |   |
| ENSG00000279141.2 | <i>LINC01451</i>          | 0.58  | 1.74E-03 | 2.48E-02 | Intergenic | -3.484 |   |
| ENSG00000279145.1 | <i>RP11-547D13.1</i>      | -0.37 | 2.81E-03 | 3.43E-02 | Intergenic | -1.544 |   |
| ENSG00000279170.1 | <i>RP1-199J3.6</i>        | 0.36  | 9.20E-03 | 7.38E-02 | Intergenic | -0.149 |   |
| ENSG00000279174.1 | <i>RP11-1099M24.9</i>     | 0.56  | 8.89E-04 | 1.56E-02 | Antisense  | 0.000  |   |
| ENSG00000279182.1 | <i>XX-C00717C00720L.1</i> | 0.50  | 1.68E-03 | 2.43E-02 | Antisense  | -1.919 |   |
| ENSG00000279196.1 | <i>RP11-1072A3.3</i>      | 0.81  | 3.91E-12 | 1.17E-09 | Antisense  | -3.865 |   |
| ENSG00000279200.1 | <i>RP11-524F11.3</i>      | 0.53  | 1.88E-03 | 2.63E-02 | Intergenic | -0.415 |   |
| ENSG00000279220.1 | <i>GPRI-AS</i>            | 1.21  | 2.27E-06 | 1.57E-04 | Antisense  | -1.322 |   |
| ENSG00000279227.1 | <i>AC009303.2</i>         | -0.31 | 3.15E-03 | 3.71E-02 | Intergenic | 1.126  |   |
| ENSG00000279249.1 | <i>RP11-491F9.3</i>       | 0.64  | 1.25E-02 | 8.98E-02 | Intergenic | NA     |   |
| ENSG00000279265.1 | <i>AC000123.3</i>         | 0.28  | 3.40E-03 | 3.91E-02 | Intronic   | -2.206 |   |
| ENSG00000279267.1 | <i>RP11-395L14.18</i>     | -0.56 | 2.32E-06 | 1.59E-04 | Intergenic | 0.233  |   |
| ENSG00000279281.1 | <i>RP11-226M10.3</i>      | 1.36  | 5.63E-10 | 1.04E-07 | Intronic   | -4.460 |   |
| ENSG00000279283.1 | <i>RP11-417L19.5</i>      | 0.54  | 1.70E-04 | 4.76E-03 | Intronic   | -5.026 |   |
| ENSG00000279296.1 | <i>RP11-609D21.3</i>      | 0.56  | 6.05E-03 | 5.68E-02 | Antisense  | NA     |   |
| ENSG00000279311.1 | <i>RP11-170K4.2</i>       | -0.40 | 6.39E-03 | 5.89E-02 | Intergenic | -2.085 |   |
| ENSG00000279312.1 | <i>RP3-331H24.7</i>       | 0.45  | 1.04E-03 | 1.75E-02 | Intergenic | -5.382 |   |
| ENSG00000279322.1 | <i>RP4-738P15.6</i>       | 0.32  | 5.75E-03 | 5.48E-02 | Antisense  | NA     |   |
| ENSG00000279325.1 | <i>RP11-24H2.3</i>        | -0.80 | 1.81E-03 | 2.56E-02 | Intergenic | NA     |   |
| ENSG00000279331.1 | <i>RBM12B-AS1</i>         | 0.33  | 8.31E-03 | 6.93E-02 | Antisense  | -0.407 |   |

|                   |                       |       |          |          |            |        |
|-------------------|-----------------------|-------|----------|----------|------------|--------|
| ENSG00000279345.1 | <i>RP3-522J7.7</i>    | 0.48  | 1.03E-03 | 1.74E-02 | Antisense  | NA     |
| ENSG00000279347.1 | <i>RP11-851I7.2</i>   | 0.45  | 7.83E-03 | 6.67E-02 | Intronic   | -2.768 |
| ENSG00000279375.1 | <i>CH17-140K24.6</i>  | -0.49 | 7.26E-03 | 6.35E-02 | Antisense  | NA     |
| ENSG00000279398.1 | <i>RP3-429G5.5</i>    | -0.62 | 8.56E-03 | 7.07E-02 | Intronic   | NA     |
| ENSG00000279418.1 | <i>LINC00244</i>      | -0.92 | 7.75E-06 | 4.25E-04 | Intergenic | NA     |
| ENSG00000279432.1 | <i>RP11-135N5.3</i>   | 0.46  | 8.91E-04 | 1.56E-02 | Intronic   | -2.805 |
| ENSG00000279433.1 | <i>RP11-4B16.1</i>    | 0.63  | 2.60E-04 | 6.54E-03 | Intronic   | -4.534 |
| ENSG00000279434.1 | <i>RP11-85K15.3</i>   | 0.20  | 7.19E-03 | 6.31E-02 | Antisense  | -2.552 |
| ENSG00000279481.1 | <i>RP11-181K12.1</i>  | 0.66  | 1.97E-04 | 5.32E-03 | Intronic   | -4.193 |
| ENSG00000279516.1 | <i>FAM230C</i>        | 0.87  | 4.12E-05 | 1.62E-03 | Antisense  | -1.204 |
| ENSG00000279518.1 | <i>AC083843.4</i>     | 0.63  | 4.15E-05 | 1.63E-03 | Intergenic | -4.352 |
| ENSG00000279529.1 | <i>CTD-3222D19.8</i>  | 0.27  | 1.13E-02 | 8.44E-02 | Antisense  | -2.055 |
| ENSG00000279579.2 | <i>bP-2189O9.3</i>    | 1.15  | 9.58E-07 | 7.50E-05 | Intergenic | -5.135 |
| ENSG00000279582.1 | <i>SC22CB-109E1.1</i> | 0.59  | 2.13E-03 | 2.85E-02 | Intergenic | NA     |
| ENSG00000279605.1 | <i>RP11-661A12.8</i>  | 0.38  | 5.63E-03 | 5.43E-02 | Antisense  | -1.737 |
| ENSG00000279608.1 | <i>RP11-182N22.9</i>  | 0.39  | 5.64E-03 | 5.43E-02 | Antisense  | -2.443 |
| ENSG00000279622.1 | <i>RP11-254F19.4</i>  | -0.44 | 8.43E-03 | 7.01E-02 | Antisense  | -1.170 |
| ENSG00000279637.1 | <i>RP11-196B3.1</i>   | 0.77  | 8.70E-04 | 1.54E-02 | Intronic   | -3.063 |
| ENSG00000279656.1 | <i>RP11-298I3.6</i>   | -1.42 | 1.29E-19 | 9.13E-17 | Intronic   | -2.010 |
| ENSG00000279667.1 | <i>RP11-656D10.7</i>  | 0.39  | 3.21E-03 | 3.76E-02 | Intergenic | -0.587 |
| ENSG00000279679.1 | <i>RP11-278J6.5</i>   | 0.75  | 3.14E-03 | 3.70E-02 | Intronic   | NA     |
| ENSG00000279689.1 | <i>RP11-574K11.32</i> | 0.20  | 1.14E-02 | 8.47E-02 | Antisense  | -1.044 |
| ENSG00000279692.1 | <i>RP11-1055B8.1</i>  | 0.88  | 5.16E-07 | 4.47E-05 | Antisense  | 0.200  |
| ENSG00000279699.1 | <i>RP1-102K2.9</i>    | 0.68  | 6.41E-07 | 5.36E-05 | Intergenic | -2.992 |
| ENSG00000279748.1 | <i>CTD-3222D19.9</i>  | 0.42  | 1.10E-03 | 1.82E-02 | Antisense  | -1.154 |
| ENSG00000279762.2 | <i>RP11-227G15.12</i> | 0.45  | 2.41E-03 | 3.10E-02 | Antisense  | NA     |
| ENSG00000279766.1 | <i>RP11-642A1.2</i>   | 0.47  | 2.03E-03 | 2.77E-02 | Exonic     | -1.521 |
| ENSG00000279770.1 | <i>LINC00552</i>      | 0.78  | 5.54E-04 | 1.13E-02 | Intergenic | -2.331 |
| ENSG00000279771.1 | <i>AP000997.3</i>     | 0.66  | 2.29E-03 | 2.99E-02 | Intergenic | NA     |
| ENSG00000279778.1 | <i>RP11-60A14.1</i>   | 1.31  | 5.26E-10 | 1.00E-07 | Intergenic | -1.146 |
| ENSG00000279786.1 | <i>CTD-2014D20.1</i>  | -0.51 | 6.96E-03 | 6.18E-02 | Intronic   | -4.139 |
| ENSG00000279789.1 | <i>CTD-2574D22.3</i>  | 0.35  | 4.98E-03 | 5.00E-02 | Intronic   | -3.873 |
| ENSG00000279807.1 | <i>CTC-510F12.3</i>   | 0.40  | 8.21E-03 | 6.88E-02 | Antisense  | NA     |
| ENSG00000279821.1 | <i>RP11-1334A24.5</i> | 0.41  | 3.79E-03 | 4.19E-02 | Intergenic | -3.003 |
| ENSG00000279827.1 | <i>RP11-886P16.10</i> | 0.72  | 7.95E-05 | 2.67E-03 | Exonic     | -1.700 |
| ENSG00000279845.1 | <i>RP11-6L6.4</i>     | 0.46  | 3.69E-03 | 4.12E-02 | Intronic   | NA     |
| ENSG00000279861.1 | <i>RP11-43N16.4</i>   | 0.36  | 4.32E-03 | 4.57E-02 | Exonic     | -3.638 |
| ENSG00000279873.2 | <i>LINC01126</i>      | 0.34  | 7.93E-03 | 6.72E-02 | Intergenic | -3.464 |
| ENSG00000279880.1 | <i>RP11-855A2.2</i>   | 0.38  | 3.81E-03 | 4.21E-02 | Exonic     | -4.123 |
| ENSG00000279900.1 | <i>RP11-113K21.6</i>  | 0.38  | 1.30E-02 | 9.21E-02 | Intergenic | -1.296 |
| ENSG00000279901.1 | <i>CTD-2270P14.2</i>  | 0.61  | 1.32E-03 | 2.05E-02 | Intronic   | -3.957 |
| ENSG00000279908.1 | <i>RP11-325I22.3</i>  | 0.32  | 6.81E-03 | 6.10E-02 | Intergenic | -0.258 |
| ENSG00000279949.1 | <i>RP11-10A14.9</i>   | -0.67 | 8.87E-03 | 7.21E-02 | Intergenic | NA     |
| ENSG00000279954.1 | <i>WI2-85898F10.2</i> | 0.52  | 3.74E-03 | 4.16E-02 | Intergenic | -4.644 |
| ENSG00000279976.1 | <i>RP11-243M5.4</i>   | 0.63  | 1.39E-02 | 9.62E-02 | Intronic   | NA     |
| ENSG00000280018.2 | <i>CH507-154B10.2</i> | -0.83 | 1.05E-05 | 5.41E-04 | Intergenic | -1.130 |
| ENSG00000280035.1 | <i>RP11-10J21.2</i>   | 0.56  | 1.31E-03 | 2.04E-02 | Intronic   | -4.248 |
| ENSG00000280042.1 | <i>RP11-71H17.8</i>   | 0.51  | 3.56E-03 | 4.03E-02 | Intronic   | -4.078 |
| ENSG00000280043.1 | <i>RP11-1281K21.8</i> | 0.64  | 9.91E-03 | 7.72E-02 | Intergenic | -5.322 |
| ENSG00000280067.1 | <i>CTD-2600H12.2</i>  | 0.32  | 1.36E-02 | 9.48E-02 | Antisense  | -2.770 |
| ENSG00000280077.1 | <i>RP11-87H9.4</i>    | 0.27  | 6.50E-03 | 5.94E-02 | Intergenic | -2.650 |
| ENSG00000280081.2 | <i>MGC39584</i>       | 0.72  | 1.64E-03 | 2.39E-02 | Intergenic | -0.847 |
| ENSG00000280087.1 | <i>CTB-129P6.7</i>    | 0.45  | 6.30E-03 | 5.84E-02 | Exonic     | -2.027 |
| ENSG00000280119.1 | <i>AC093642.1</i>     | 0.64  | 5.45E-06 | 3.19E-04 | Intergenic | -3.059 |
| ENSG00000280135.1 | <i>RP1-47M23.3</i>    | 0.66  | 5.46E-04 | 1.12E-02 | Intergenic | -1.379 |
| ENSG00000280140.1 | <i>RP11-597D13.2</i>  | 1.32  | 1.32E-11 | 3.38E-09 | Intergenic | NA     |
| ENSG00000280143.1 | <i>AP000892.6</i>     | -0.45 | 2.72E-03 | 3.36E-02 | Antisense  | -1.569 |
| ENSG00000280153.1 | <i>RP11-876N24.3</i>  | 0.31  | 6.35E-03 | 5.87E-02 | Antisense  | -2.598 |
| ENSG00000280162.1 | <i>RP11-314N13.9</i>  | 0.64  | 3.32E-04 | 7.88E-03 | Antisense  | -2.459 |
| ENSG00000280182.1 | <i>RP11-626G3.1</i>   | 0.44  | 9.94E-03 | 7.74E-02 | Antisense  | NA     |
| ENSG00000280190.1 | <i>RP11-319G9.1</i>   | -0.71 | 5.86E-03 | 5.56E-02 | Intronic   | -2.907 |
| ENSG00000280195.1 | <i>XX-FW83563B9.5</i> | 0.72  | 1.21E-13 | 4.33E-11 | Antisense  | -0.323 |
| ENSG00000280207.1 | <i>RP11-423H2.4</i>   | 0.47  | 7.29E-03 | 6.37E-02 | Intergenic | NA     |
| ENSG00000280212.1 | <i>RP11-49K24.3</i>   | 0.60  | 2.51E-04 | 6.36E-03 | Intronic   | NA     |
| ENSG00000280237.1 | <i>MIR4697HG</i>      | -0.37 | 2.20E-03 | 2.92E-02 | Intergenic | -2.026 |
| ENSG00000280254.1 | <i>RP11-81A22.4</i>   | 0.25  | 7.56E-03 | 6.52E-02 | Exonic     | -3.965 |
| ENSG00000280266.1 | <i>RP11-331D5.2</i>   | 0.59  | 7.50E-03 | 6.48E-02 | Intergenic | 0.000  |
| ENSG00000280323.1 | <i>AC053503.12</i>    | -0.78 | 2.57E-05 | 1.11E-03 | Intergenic | NA     |
| ENSG00000280339.1 | <i>RP11-736K20.4</i>  | -0.27 | 3.66E-03 | 4.10E-02 | Antisense  | -1.017 |
| ENSG00000280353.1 | <i>CTC-453G23.7</i>   | 0.45  | 7.76E-03 | 6.63E-02 | Antisense  | -1.968 |
| ENSG00000280354.1 | <i>RP11-83B20.4</i>   | 0.68  | 4.80E-03 | 4.88E-02 | Antisense  | NA     |

|                   |                       |       |          |          |            |        |
|-------------------|-----------------------|-------|----------|----------|------------|--------|
| ENSG00000280370.1 | <i>CTA-342B11.3</i>   | 0.45  | 4.76E-03 | 4.85E-02 | Intergenic | NA     |
| ENSG00000280376.1 | <i>RP11-93O14.3</i>   | 0.61  | 8.21E-03 | 6.88E-02 | Intronic   | -2.322 |
| ENSG00000280383.1 | <i>CTA-941F9.10</i>   | 0.44  | 2.41E-04 | 6.20E-03 | Exonic     | -2.692 |
| ENSG00000280399.1 | <i>RP11-80P20.3</i>   | 0.39  | 2.81E-03 | 3.43E-02 | Intergenic | -2.103 |
| ENSG00000280407.2 | <i>RP13-516M14.8</i>  | 0.39  | 1.23E-02 | 8.91E-02 | Antisense  | -3.370 |
| ENSG00000280413.1 | <i>KB-1674E1.1</i>    | 0.45  | 1.09E-02 | 8.24E-02 | Intronic   | NA     |
| ENSG00000280418.1 | <i>AC007326.10</i>    | 0.66  | 9.48E-03 | 7.51E-02 | Intergenic | NA     |
| ENSG00000280422.1 | <i>RP11-155D18.13</i> | -0.45 | 3.56E-03 | 4.02E-02 | Intergenic | -2.186 |
| ENSG00000280424.1 | <i>CITF22-92A6.2</i>  | 0.47  | 7.91E-03 | 6.71E-02 | Intergenic | -3.186 |
| ENSG00000280429.1 | <i>AF001548.3</i>     | -0.57 | 2.51E-03 | 3.19E-02 | Intronic   | NA     |
| ENSG00000280432.1 | <i>AP000962.1</i>     | 0.56  | 7.68E-03 | 6.59E-02 | Intergenic | NA     |
| ENSG00000280486.1 | <i>LLNLR-307A6.1</i>  | 0.46  | 1.34E-02 | 9.39E-02 | Antisense  | NA     |
| ENSG00000280620.1 | <i>SCAANTI</i>        | 0.49  | 4.12E-03 | 4.42E-02 | Antisense  | NA     |
| ENSG00000280639.1 | <i>RP11-96C21.2</i>   | 0.47  | 5.07E-03 | 5.06E-02 | Intergenic | -2.071 |
| ENSG00000280660.1 | <i>RP11-437J2.3</i>   | 0.88  | 1.26E-04 | 3.75E-03 | Intronic   | NA     |
| ENSG00000280758.1 | <i>RP11-216B9.9</i>   | 0.48  | 1.12E-04 | 3.46E-03 | Antisense  | NA     |
| ENSG00000280777.1 | <i>HYMAI</i>          | 0.51  | 1.18E-03 | 1.91E-02 | Exonic     | NA     |
| ENSG00000280798.1 | <i>LINC00294</i>      | -0.17 | 1.17E-02 | 8.59E-02 | Antisense  | -0.146 |
| ENSG00000280927.1 | <i>CTBP1-AS</i>       | 0.65  | 1.19E-04 | 3.62E-03 | Antisense  | NA     |
| ENSG00000281026.1 | <i>N4BP2L2-IT2</i>    | 0.31  | 5.89E-03 | 5.57E-02 | Intronic   | -4.345 |
| ENSG00000281091.1 | <i>RP13-349O20.2</i>  | -0.63 | 2.18E-04 | 5.75E-03 | Intergenic | -1.288 |
| ENSG00000281103.1 | <i>TRG-ASI</i>        | 0.60  | 2.58E-03 | 3.25E-02 | Intergenic | 1.070  |
| ENSG00000281162.1 | <i>LINC01127</i>      | -0.48 | 1.45E-02 | 9.88E-02 | Intergenic | -1.588 |
| ENSG00000281207.1 | <i>SLFNL1-ASI</i>     | 0.30  | 5.28E-03 | 5.20E-02 | Antisense  | -5.200 |
| ENSG00000281332.1 | <i>LINC00997</i>      | -0.24 | 6.55E-03 | 5.96E-02 | Intergenic | -0.911 |
| ENSG00000281491.1 | <i>DNAJB5-ASI</i>     | 0.57  | 3.48E-03 | 3.96E-02 | Intergenic | -2.263 |
| ENSG00000281796.1 | <i>EHMT1-IT1</i>      | 0.52  | 1.77E-03 | 2.52E-02 | Intronic   | -4.767 |
| ENSG00000281912.1 | <i>LINC01144</i>      | 0.25  | 1.27E-02 | 9.05E-02 | Antisense  | -1.076 |

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