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TITLE: Proteomics Blood-Based Biomarker Discovery for ALS

PRINCIPAL INVESTIGATOR: Dr. Fernando Vieira, MD

CONTRACTING ORGANIZATION: ALS THERAPY DEVELOPMENT FOUNDATION, INC.

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14. ABSTRACT The objective to be reached upon completion of this proposal is the identification of blood-based biomarkers correlated with ALS progression and rate of progression. We will relate symptomatic clinical outcome measures from participants in our Precision Medicine Program to potential blood-based biomarkers by analyzing blood samples collected quarterly from the same participants. Clinical outcome measures used will include: 1) monthly self-assessed ALS-FRS-R measures, 2) accelerometer-based assessments of participant's abilities to move their arms and legs, and 3) Machine Learning (ML) assisted, quantified assessment of speech dysarthria. Plasma samples will be analyzed using the SomaLogic™SomaScan™proteomics platform. Data analysis will include Machine Learning algorithms and Harvard University expert Dr. Michael Brenner.					
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1. Introduction

The objective to be reached upon completion of this proposal is the identification of blood-based biomarkers correlated with ALS progression and rate of progression. We will relate symptomatic clinical outcome measures from participants in our Precision Medicine Program to potential blood-based biomarkers by analyzing blood samples collected quarterly from the same participants. Clinical outcome measures used will include: 1) monthly self-assessed ALS-FRS-R measures, 2) accelerometer-based assessments of participant's abilities to move their arms and legs, and 3) Machine Learning (ML) assisted, quantified assessment of speech dysarthria. Plasma samples will be analyzed using the SomaLogic™SomaScan™proteomics platform. Data analysis will include Machine Learning algorithms and Harvard University expert Dr. Michael Brenner.

2. Keywords

Acronyms and Abbreviations

ALS – amyotrophic lateral sclerosis

fALS – familial amyotrophic lateral sclerosis

iPSC – induced pluripotent stem cells

ML – Machine Learning

ALS-FRS-r – revised ALS functional rating scale

NF-L – neurofilament light chain

NF-H – neurofilament heavy chain IL-6 – interleukin 6

3. Accomplishments

Note – The recruiting and enrollment of participants was delayed approximately 6 months from the project start date. We could only start recruiting in March 2022 because that was when we were able to obtain permission from the HRPO.

Major Task 1 - HRPO Approval – obtained in March 2022. Completed.

Major Task 2 – Collect blood samples from a minimum of 50 people. In Progress.

60 people have been enrolled and are providing us with ALS disease progression data.

	<u>Completed Blood Donations</u>
19	0
23	1
8	2
10	3

From those 60 participants we have collected –

69 Blood collections

483 completed ALS FRS forms*

55 voice recordings*

1130 completed surveys*

74 week/accelerometer sessions*

Major Task 3 – Distribute samples to Somalogic for SomaScan Proteomics Analysis. We will not send blood samples to Somalogic until all samples have been collected.

Major Task 4 – Analyze data to reveal blood-based proteomic markers correlated with indicators of ALS disease progression. Not started.

*please see Appendices section for data collected to date

4. **Impact** – Nothing to report.

5. **Changes/Problems** – We have received a 12 month no-cost extension (NCE).

6. **Products** – Nothing to report.

7. **Participants & Other Collaborating Organizations – Current Period**

<u>Name</u>	<u>Role</u>	<u>Nearest Person Month Worked</u>	<u>Contribution to the Project</u>
Fernando Vieira	PI	1.0	Supervised
Beth Levine	Research Associate	1.0	Secured Regulatory Approval
Alan Premasiri	Research Associate	3.0	Enrolled Participants. Arranged Collection of Blood Samples.
Josh Berman	Research Associate	3.0	Processed Blood Samples

Cumulative

<u>Name</u>	<u>Role</u>	<u>Nearest Person Month Worked</u>	<u>Contribution to the Project</u>
Fernando Vieira	PI	1.5	Supervised
Beth Levine	Research Associate	1.5	Secured Regulatory Approval
Alan Premasiri	Research Associate	4.5	Enrolled Participants. Arranged Collection of Blood Samples.
Josh Berman	Research Associate	4.5	Processed Blood Samples

8. Special Reporting Requirements

9. Appendices

Your ALS Experience Survey Results (as an example of Survey data we are collecting)

Subject	AS of today, What is your ALS diagnosis ?	How old were you when a neurologist first told you that you had ALS?	Have you ever experienced..?			Cramps or Muscle Spasms			Scattered Muscle Twitching			Difficulty Swallowing			Problems with Speech			Difficulty Controlling Bowels or Bladder		
			Pneumonia that required treatment with prescription medication	Falls that caused injury significant enough that you were seen by a physician	A blood clot in an arm, leg, or in the lung that required treatment with blood thinner medication	Experienced	Month	Year	Experienced	Month	Year	Experienced	Month	Year	Experienced	Month	Year	Experienced	Month	Year
65	Definitive	59	No	No	No	No			No			No			No			No		
135	Definitive	45	Yes	Yes	No	Yes	November	2008	Yes	June	2008	No			No			No		
135	Definitive	45	Yes	Yes	No	Yes	November	2008	Yes	June	2008	No			No			No		
150	Probable	0	No	No	No	Yes	January	2013	No			No			No			No		
571	Definitive	54	No	No	No	Yes	June	2012	No			No			No	March	2013	No		
1223	Definitive	62	No	No	No	Yes	February	2016	No			No			Yes	September	2016	No		
1294	Definitive	57	No	No	No	No			No			No			No			No		
1312	Definitive	60	No	Yes	No	Yes			Yes			No			No			No		
1320	Definitive	60	No	No	No	Yes	April	2013	Yes	April	2013	Yes	July	2014	No			No		
1633	Probable	0	No	No	No	Yes	November	2014	Yes	January	2015	No			No			No		
1671	Definitive	69	No	No	No	Yes	May	2019	No			No			Yes	September	2019	No		
1875	Probable	0	No	No	No	Yes	June	2019	Yes	July	2015	Yes	June	2019	Yes	January	2020	Yes	October	2020
1876	Definitive	66	No	No	No	No			No			No			No			No		
1852	Definitive	62	No	No	No	No			Yes			Yes	June	2021	Yes	September	2021	No		
1853	Definitive	40	No	No	No	Yes	July	2021	Yes	July	2021	No			No			No		
1895	Definitive	67	No	Yes	No	Yes	November	2017	Yes	November	2017	No			No			No		
1896	Probable	0	No	No	No	No			No			No			Yes	May	2021	No		
1898	Definitive	49	Yes	Yes	No	No			No			No			No			No		
1898	Definitive	49	Yes	Yes	No	No			No			No			No			No		
1891	Definitive	55	No	No	No	Yes	April	2021	No			No			No			No		
1832	Suspected	0	No	Yes	No	No			No			No			No			No		
1900	Definitive	85	No	No	No	Yes	June	2021	Yes	June	2021	No			No			Yes	March	2021
1903	Definitive	67	No	No	No	Yes			Don't know			No			No			No		
1908	Probable	0	No	No	No	Yes	March	2021	Yes	March	2021	No			No			No		
1909	Definitive	65	No	No	No	Yes	July	2019	Yes	January	2021	No			Yes	September	2019	No		
1910	Probable	0	No	No	No	No			No			No			Yes	March	2021	No		
1910	Probable	0	No	No	No	No			No			No			Yes	March	2021	No		
1913	Definitive	59	No	No	No	No			No			No			No			No		
1917	Definitive	60	No	No	No	Yes	February	2021	Yes	February	2021	No			Yes	January	2021	No		
1921	Definitive	53	No	No	No	Yes	May	2021	Yes	August	2021	No			No			No		
1922	Definitive	57	No	Yes	No	Yes			Yes			No			No			No		
1931	Definitive	62	No	No	No	Yes	March	2021	Yes	Septemb	2021	No			No			No		
1939	Definitive	59	No	No	No	Yes	March	2021	Yes	February	2021	No			No			No		
1941	Definitive	64	No	No	No	No	0		Yes	May	2021	Yes	November	2020	Yes	November	2020	Don't know	January	2020
1942	Definitive	52	No	Yes	No	Yes	March	2021	No			No			No			No		
1944	Definitive	44	No	No	No	Yes	October	2018	Yes	December	2018	No			No			No		
1946	Definitive	70	No	Yes	No	Yes	September	2020	No			Yes	July	2020	Yes	July	2020	No		
1953	Definitive	69	No	No	No	No			No			No			Yes	March	2020	No		
1955	Definitive	59	No	No	No	No			No			No			Yes	December	2021	No		
1957	Definitive	60	No	No	No	Yes	April	2021	Yes	April	2021	No			No			No		
1959	Definitive	62	No	No	No	Yes			Yes			No			No			No		
1962	Probable	0	Yes	Yes	No	Yes	February	2021	Yes	August	2022	Yes	June	2022	Yes	June	2022	No		
1964	Definitive	62	No	No	No	Yes	January	2021	No			No			No			No		
1966	Probable	0	No	No	No	Yes	November	2021	Yes	January	2022	No			No			No		
1968	Probable	0	No	No	No	Yes	March	2022	Yes	July	2022	No			No			No		
1975	Definitive	53	No	No	No	Don't know			Don't know			No			No			No		
1983	Definitive	39	No	No	No	Yes	June	2022	Yes	July	2022	No			No			No		
1984	Definitive	54	No	No	No	Yes	March	2020	Yes	July	2020	No			No			No		
1995	Definitive	60	No	No	No	No			No			No			No			No		
1999	Definitive	51	No	No	No	Yes			Yes			No			No			Yes		
2000	Definitive	60	No	No	No	Yes	March	2023	Yes	January	2022	No			No			No		
2002	Definitive	68	No	No	No	Yes			Yes			No			No			No		
2009	Definitive	33	No	Yes	No	No			Yes	June	2020	No			No			Yes	January	2018
2015	Definitive	71	No	No	No	No			No			No			No			No		
2027	Definitive	52	No	No	No	Don't know			Yes	Septemb	2021	No			No			No		
2029	Definitive	35	No	No	No	No			Yes	August	2022	No			No			No		
2030	Probable	0	No	No	No	Yes	January	2016	No			No			No			No		
2036	Definitive	70	No	No	No	Yes	0		Yes	October	2020	No			No			No		
2043	Probable	0	No	No	No	Yes	April	2022	No	0		No			No			No		

ALS FRS Scores Since Enrollment in Proteomics Protocol

ALS Functional Rating Scale - Revised Data													
Participant ID	ALSFRS-R Entry Date	Cutting Food	Dressing Hygiene	Dyspnea	Handwriting	Orthopnea	Respiratory Insufficiency	Salivation	Speech	Swallowing	Turning in Bed	Walking	Total Score
65	2023-07-13	3	3	4	3	4	4	4	4	4	3	2	39
65	2023-06-08	3	3	4	3	4	4	4	4	4	3	2	39
65	2023-05-03	3	3	4	3	4	4	4	4	4	3	2	39
135	2023-06-26	2	2	1	2	2	2	2	2	2	2	2	22
150	2023-06-27	3	2	3	3	4	4	3	2	3	2	2	32
150	2023-06-12	3	2	3	3	4	4	3	2	3	2	2	32
150	2023-05-28	3	2	3	3	4	4	3	2	3	2	2	32
150	2023-05-02	3	2	3	3	4	4	3	2	3	2	2	32
571	2023-07-23	3	2	3	3	4	3	3	3	4	2	2	33
571	2023-06-22	3	2	3	3	4	3	3	3	4	2	2	33
571	2023-05-23	3	2	3	3	4	3	3	3	4	2	2	33
1265	2023-07-12	2	2	4	3	4	4	3	3	3	3	2	34
1265	2023-03-11	2	2	4	3	4	4	3	3	3	3	2	34
1265	2023-02-01	2	2	4	3	4	4	3	3	3	3	2	34
1265	2022-11-13	2	2	4	3	4	4	3	3	3	3	2	34
1265	2022-09-29	2	2	4	3	4	4	3	3	3	3	2	34
1265	2022-08-22	2	2	4	3	4	4	3	3	3	3	2	34
1294	2023-05-23	4	3	3	4	4	4	4	4	4	4	2	42
1312	2023-07-19	3	2	4	3	4	4	3	4	4	3	2	39
1312	2023-06-22	3	2	4	3	3	4	2	4	4	3	2	36
1312	2023-05-22	3	3	3	3	4	4	3	4	4	2	2	38
1312	2023-04-17	3	3	1	3	4	4	3	4	4	3	2	37
1312	2023-03-15	4	3	4	3	4	4	3	4	4	3	2	41
1312	2023-02-18	3	3	4	3	4	4	3	4	4	3	2	40
1312	2023-01-20	3	3	4	4	4	4	3	4	4	3	2	41
1312	2022-12-15	4	3	4	4	4	4	3	4	4	3	2	42
1312	2022-10-17	3	3	4	3	4	4	3	4	4	3	2	40
1312	2022-09-26	3	3	4	3	4	4	3	4	4	3	2	40
1312	2022-08-14	3	3	4	4	4	4	3	4	4	3	2	41
1312	2022-07-14	3	3	4	4	4	4	4	4	4	3	2	42
1312	2022-06-10	3	3	4	4	4	4	3	4	4	3	2	41
1312	2022-05-12	3	3	4	3	4	4	3	4	4	3	2	40
1320	2023-07-13	4	4	4	4	4	4	4	4	4	4	4	48
1320	2023-06-22	4	4	4	4	4	4	4	4	4	4	4	48
1320	2023-05-31	4	4	4	4	4	4	4	4	4	4	4	48
1320	2023-05-10	4	4	4	4	4	4	4	4	4	4	4	48
1320	2023-04-25	4	4	4	4	4	4	4	4	4	4	4	48
1320	2023-04-04	4	4	4	4	4	4	4	4	4	4	4	48
1320	2023-03-14	4	4	4	4	4	4	4	4	4	4	4	48
1320	2023-02-22	4	4	4	4	4	4	4	4	4	4	4	48
1320	2023-02-01	4	4	4	4	4	4	4	4	3	4	4	47
1320	2023-01-11	4	4	4	4	4	4	4	4	3	4	4	47
1320	2022-12-19	4	4	4	4	4	4	4	4	3	4	4	47
1320	2022-11-28	4	4	4	4	4	4	4	4	3	4	4	47
1320	2022-11-07	4	4	4	4	4	4	4	4	3	4	4	47
1320	2022-10-17	4	4	4	4	4	4	4	4	3	4	4	47
1320	2022-09-26	4	4	4	4	4	4	4	4	3	4	4	47

1320	2022-09-05	4	4	4	4	4	4	4	4	3	4	4	47
1320	2022-08-15	4	4	4	4	4	4	4	4	3	4	4	47
1633	2023-07-04	0	1	2	1	4	4	4	4	4	2	2	29
1633	2023-06-09	0	1	2	2	4	4	4	4	4	2	2	30
1633	2023-05-18	0	1	2	1	4	4	4	4	4	2	2	29
1671	2023-06-08	4	1	4	4	4	4	1	2	4	0	1	29
1671	2023-05-06	4	1	4	4	4	4	2	2	4	1	0	30
1875	2022-12-05	3	3	3	3	3	3	3	3	3	3	2	34
1875	2023-06-29	3	3	3	3	3	3	3	3	3	3	2	34
1875	2023-05-15	3	3	3	3	3	3	3	3	3	3	2	34
1875	2023-02-24	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-06-30	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-11-14	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-08-21	3	3	3	3	3	3	3	3	3	3	2	34
1875	2023-01-22	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-10-24	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-12-26	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-10-03	3	3	3	3	3	3	3	3	3	3	2	34
1875	2023-04-18	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-07-28	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-09-12	3	3	3	3	3	3	3	3	3	3	2	34
1875	2022-05-17	4	3	3	3	3	3	3	3	3	3	2	35
1875	2022-03-30	4	3	3	3	3	3	3	3	3	3	2	35
1875	2022-06-07	3	3	3	3	3	4	3	3	3	3	2	35
1875	2023-03-21	4	3	3	3	3	3	3	3	3	3	2	35
1875	2022-04-26	3	3	4	3	3	4	3	3	3	3	2	36
1876	2023-06-22	1	2	1	3	3	2	4	3	4	3	3	32
1876	2023-05-17	2	2	2	3	3	2	4	3	4	2	3	33
1876	2023-04-08	2	2	2	3	3	2	4	3	4	3	3	34
1876	2023-01-12	2	2	2	3	3	3	4	3	4	3	3	35
1876	2023-02-14	2	2	2	3	3	3	4	3	4	3	3	35
1876	2022-09-08	2	2	2	3	3	3	4	3	4	3	3	35
1876	2022-11-13	2	2	2	3	3	3	4	3	4	3	3	35
1876	2023-02-23	2	2	2	3	3	3	4	3	4	3	3	35
1876	2022-12-06	2	2	2	3	3	3	4	3	4	3	3	35
1876	2022-10-19	2	2	2	3	4	3	4	3	4	3	3	36
1876	2023-03-24	2	2	2	3	4	3	4	3	4	3	3	36
1876	2022-08-13	2	2	2	3	4	4	4	3	4	3	3	38
1876	2022-05-27	2	2	3	3	4	4	4	3	4	3	3	39
1876	2022-07-17	3	3	2	3	4	4	4	3	4	3	3	39
1876	2022-06-18	2	2	2	3	4	4	4	3	4	4	3	39
1876	2022-04-21	2	2	3	3	4	4	4	3	4	4	3	40
1876	2022-05-06	2	2	3	3	4	4	4	3	4	4	3	40
1876	2022-04-10	3	2	3	3	4	4	4	3	4	4	3	41
1876	2022-03-20	2	3	4	3	4	4	4	4	4	3	4	43
1877	2022-03-17	1	1	4	0	4	4	3	3	4	2	2	29
1882	2023-06-16	0	1	1	1	2	3	1	1	0	2	2	15
1882	2023-04-27	1	2	2	1	2	4	1	1	0	2	2	20

1882	2023-03-22	1	2	2	1	2	3	1	1	0	2	3	20
1882	2023-02-21	1	2	2	3	2	4	1	1	0	2	3	23
1882	2022-12-26	2	2	2	2	2	4	1	1	1	3	3	25
1882	2023-01-28	2	2	2	3	2	4	1	1	1	3	3	26
1882	2022-11-09	2	2	2	3	2	4	1	1	1	3	3	26
1882	2022-12-01	2	3	2	3	2	4	1	1	1	3	3	27
1882	2022-09-27	3	3	2	3	2	4	1	1	1	3	4	29
1882	2022-09-02	3	3	2	3	2	4	1	2	1	4	4	31
1882	2022-10-18	3	2	2	3	2	4	1	1	1	4	4	31
1882	2022-07-15	3	3	2	3	2	3	2	2	2	4	4	33
1882	2022-06-24	3	3	2	3	3	4	1	3	2	4	4	34

1882	2022-08-11	3	3	2	3	2	4	1	3	2	4	4	34
1882	2022-06-02	3	3	2	3	4	4	2	2	2	4	4	36
1882	2022-05-11	3	3	2	3	4	4	2	3	2	4	4	37
1882	2022-04-19	3	3	2	3	4	4	2	3	2	4	4	38
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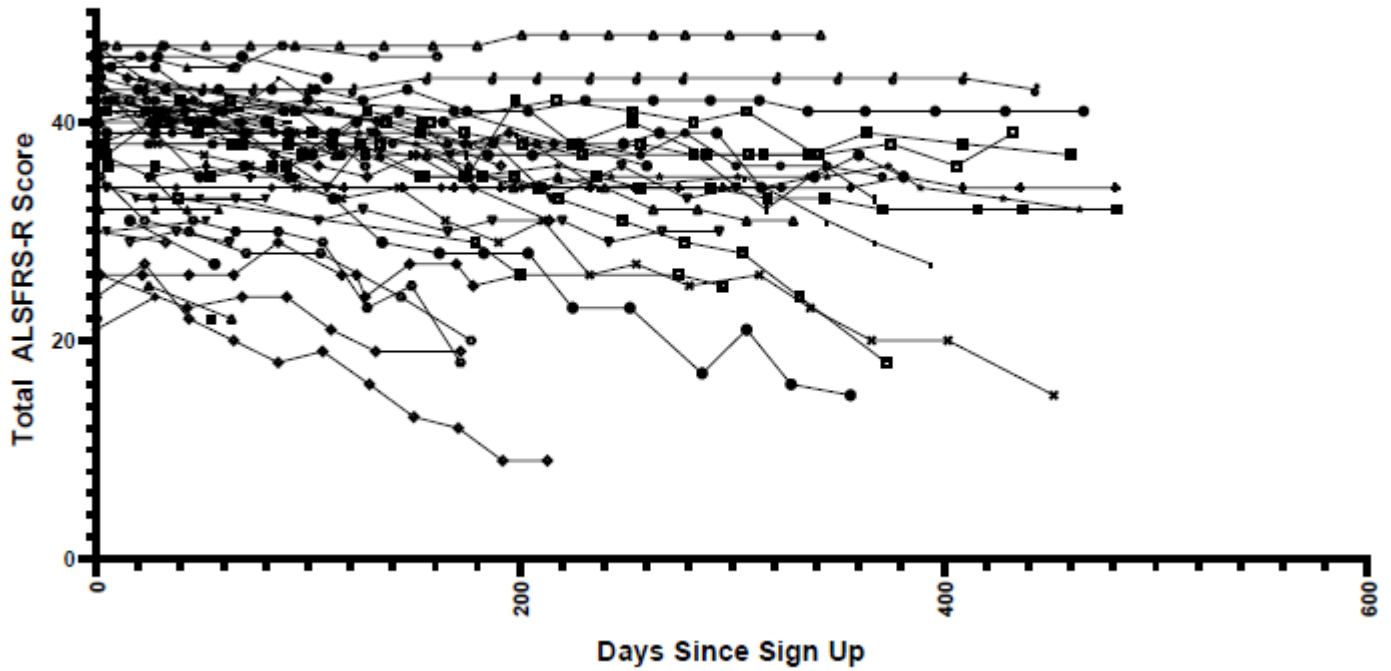
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1944	2022-11-20	2	2	4	3	4	4	4	4	4	2	0	33
1944	2022-10-12	2	2	4	3	4	4	4	4	4	2	0	33
1944	2022-09-20	3	2	4	3	4	4	4	4	4	2	0	34
1946	2023-03-01	1	1	3	2	2	3	2	0	1	2	2	19
1946	2023-04-10	1	1	3	3	2	2	2	0	1	2	2	19
1946	2023-02-08	1	1	3	2	2	3	2	1	1	3	2	21
1946	2022-12-02	1	2	3	2	2	3	2	1	2	3	2	23
1946	2022-12-28	2	2	2	3	2	3	2	1	2	3	2	24
1946	2023-01-18	1	2	2	3	2	3	3	1	2	3	2	24
1946	2022-10-22	2	2	1	3	3	3	3	2	2	3	2	26
1953	2023-06-15	0	0	2	0	4	3	0	0	0	0	0	9
1953	2023-07-06	0	0	2	0	4	3	0	0	0	0	0	9
1953	2023-05-25	0	0	2	0	4	4	0	0	0	0	2	12
1953	2023-05-04	0	0	3	0	4	4	0	0	0	0	2	13
1953	2023-04-13	1	0	2	2	4	4	0	0	0	1	2	16
1953	2023-03-01	1	1	2	3	4	3	0	0	0	2	2	18
1953	2023-03-22	1	1	2	2	4	4	0	0	0	2	2	19
1953	2023-02-08	1	1	2	3	4	4	0	0	0	2	2	20
1953	2023-01-18	1	2	3	2	4	4	0	0	0	2	3	22
1953	2022-12-05	1	2	2	2	4	4	0	0	0	3	3	24
1953	2022-12-28	1	2	3	3	4	4	0	0	1	3	3	27
1955	2023-06-14	4	3	4	4	4	4	2	0	2	4	3	36
1955	2023-04-17	4	4	4	4	4	3	3	1	3	4	3	40
1955	2022-12-20	4	4	4	4	4	4	3	1	4	4	4	44
1957	2023-07-10	2	3	4	2	3	4	3	3	3	2	2	31
1957	2023-06-04	2	3	4	3	4	4	3	3	3	2	2	34
1957	2023-04-15	3	3	4	3	4	4	3	3	3	2	2	35
1957	2023-03-23	3	3	4	4	4	4	3	3	3	2	2	36
1957	2023-03-02	3	4	4	4	4	4	3	3	3	2	2	37
1957	2023-05-08	3	3	4	3	4	4	3	3	4	3	2	37
1957	2023-02-02	3	4	4	4	4	4	3	4	3	3	2	40
1957	2022-12-12	4	4	4	4	4	4	3	3	4	3	2	42
1959	2023-07-19	3	3	4	4	4	4	4	4	4	2	2	38
1959	2023-06-07	3	3	4	3	4	4	4	4	4	3	2	38

1959	2023-06-28	3	3	4	3	4	4	4	4	4	3	2	39
1959	2023-04-05	3	3	4	3	4	4	4	4	4	3	2	39
1959	2023-03-15	3	3	4	3	4	4	4	4	4	3	2	39
1959	2023-04-26	3	4	4	3	4	4	4	4	4	3	2	39
1959	2023-05-17	3	3	4	3	4	4	4	4	4	3	2	39
1959	2023-02-01	3	3	4	3	4	4	4	4	4	3	2	40
1959	2023-02-22	3	4	4	3	4	4	4	4	4	3	2	40
1959	2023-01-11	3	3	4	3	4	4	4	4	4	4	2	41
1959	2022-12-16	3	3	4	3	4	4	4	4	4	4	2	41
1962	2023-05-05	2	2	1	2	1	2	3	2	3	2	2	24
1962	2023-06-25	2	2	1	2	3	2	3	2	2	2	2	25
1962	2022-12-31	2	2	2	3	2	3	3	2	3	2	1	26
1962	2023-02-11	2	2	2	2	2	3	3	2	3	2	1	26
1962	2023-07-17	2	2	2	2	3	2	3	2	2	2	2	26
1962	2023-04-24	2	2	2	2	2	2	2	3	3	2	2	26
1962	2023-03-04	2	2	2	2	3	3	3	3	3	2	1	26
1962	2023-01-20	2	2	2	2	2	3	2	3	3	2	1	26
1962	2023-05-01	2	2	2	2	3	2	2	2	3	2	2	26
1962	2023-06-17	2	2	2	2	3	3	3	2	2	2	2	27
1962	2023-05-26	3	2	2	2	2	2	3	2	3	2	2	27
1962	2023-03-25	2	2	2	2	3	3	3	3	3	2	2	29
1964	2023-01-10	2	2	1	4	2	1	0	0	0	2	4	22
1966	2023-07-05	0	0	1	0	3	2	3	3	3	2	2	20
1966	2023-06-02	1	0	2	3	3	2	3	3	3	2	2	24
1966	2023-04-25	1	0	4	3	3	2	3	3	3	3	2	28
1966	2023-03-21	1	1	3	3	4	2	3	3	3	2	2	28
1966	2023-02-22	1	2	3	1	4	3	3	4	3	3	2	30
1966	2023-02-01	1	2	3	1	4	3	4	4	4	3	2	31
1966	2023-01-11	1	2	3	3	4	4	4	4	4	3	2	35
1968	2023-03-20	3	4	4	3	4	4	4	4	4	4	4	45
1968	2023-05-24	3	4	4	3	4	4	4	4	4	4	4	46
1968	2023-06-23	3	4	4	3	4	4	4	4	4	4	4	46
1968	2023-01-17	4	4	4	3	4	4	4	4	4	4	4	47
1968	2023-02-14	4	4	4	3	4	4	4	4	4	4	4	47
1968	2023-04-11	4	4	4	3	4	4	4	4	4	4	4	47
1975	2023-07-22	0	0	3	2	3	3	2	1	1	1	2	18
1975	2023-06-08	0	0	4	2	3	4	2	1	2	2	2	23
1975	2023-06-29	0	1	4	3	4	4	3	1	2	1	2	25
1975	2023-05-18	1	1	4	3	4	4	2	2	3	2	2	29
1975	2023-04-07	1	1	4	3	4	4	2	2	3	2	2	30
1975	2023-04-27	1	1	4	2	4	4	3	2	3	2	2	30
1975	2023-03-18	1	1	4	3	4	4	2	2	3	2	3	31
1975	2023-02-26	1	2	4	3	4	4	3	3	4	2	3	35
1975	2023-02-03	1	2	4	3	4	4	4	3	4	2	3	37
1983	2023-07-11	3	3	4	3	4	4	3	3	4	2	2	36
1983	2023-04-17	3	3	4	3	4	4	4	4	4	3	2	41
1983	2023-06-09	3	3	4	3	4	4	4	4	4	3	2	41
1983	2023-05-08	3	3	4	4	4	4	4	4	4	3	2	42
1983	2023-03-30	3	3	4	3	4	4	4	4	4	3	3	42
1983	2023-03-09	4	3	4	3	4	4	4	4	4	3	3	43
1984	2023-06-06	3	3	4	4	4	4	4	4	4	3	2	39
1984	2023-05-16	4	3	4	4	4	4	4	4	4	2	2	39
1984	2023-06-27	3	3	4	4	4	4	4	4	4	3	2	39
1984	2023-04-02	3	3	4	4	4	4	4	4	4	3	2	40
1984	2023-04-25	4	3	4	4	4	4	4	4	4	3	2	40
1984	2023-03-12	3	3	4	4	4	4	4	4	4	3	3	42
1995	2023-07-10	0	1	4	3	4	4	4	3	4	2	4	37
1995	2023-04-10	1	1	4	3	4	4	4	3	4	2	4	38
1995	2023-05-10	1	1	4	3	4	4	4	3	4	2	4	38
1995	2023-06-15	1	1	4	3	4	4	4	3	4	2	4	38
1999	2023-04-24	2	4	4	3	4	4	4	4	4	4	3	44
1999	2023-03-27	3	3	4	4	4	4	4	4	4	4	4	46
2000	2023-06-02	3	2	3	4	4	4	4	3	4	3	4	41
2000	2023-07-15	2	2	4	4	4	4	4	4	4	2	4	41
2000	2023-05-11	3	2	3	4	4	4	4	4	4	4	4	42
2000	2023-06-23	3	2	4	4	4	4	4	4	4	3	4	44
2000	2023-04-19	2	3	4	4	4	4	4	4	4	3	4	44
2000	2023-03-28	3	4	4	4	4	4	4	4	4	4	4	47
2002	2023-04-04	4	4	4	4	4	4	4	4	4	4	2	42
2009	2023-07-11	4	3	4	4	4	4	4	4	4	2	2	40
2009	2023-04-12	4	3	4	4	4	4	4	4	4	3	2	41
2009	2023-06-19	4	3	4	4	4	4	4	4	4	3	2	41
2009	2023-05-27	4	3	4	4	4	4	4	4	4	3	2	41
2015	2023-07-02	4	3	4	4	4	4	4	4	4	3	2	40
2015	2023-07-23	4	3	4	4	4	4	4	4	4	3	2	41
2015	2023-06-11	4	3	4	4	4	4	4	4	4	3	2	42
2015	2023-05-17	4	3	4	4	4	4	4	4	4	4	2	43
2015	2023-04-26	4	4	4	4	4	4	4	4	4	3	2	43
2027	2023-06-29	1	3	4	3	4	4	3	3	3	4	4	40
2027	2023-05-16	2	3	4	3	4	4	3	3	3	4	4	41
2027	2023-06-08	2	3	4	3	4	4	3	3	3	4	4	41
2029	2023-07-20	4	3	4	4	4	4	4	4	4	4	3	45
2029	2023-05-17	4	3	4	4	4	4	4	4	4	4	3	45
2029	2023-06-29	4	3	4	4	4	4	4	4	4	4	3	45
2029	2023-06-08	4	4	4	4	4	4	4	4	4	4	3	46
2030	2023-05-24	0	1	3	0	4	2	4	4	4	2	3	30
2030	2023-07-10	0	1	3	1	4	2	4	4	4	2	3	31
2036	2023-06-06	1	1	1	0	2	1	4	3	3	3	2	21
2036	2023-07-04	1	1	2	1	3	1	4	3	4	3	1	24
2043	2023-07-06	4	4	4	4	4	4	4	4	4	4	3	46
2043	2023-06-15	4	4	4	4	4	4	4	4	4	4	3	46

Total ALS FRS Scores – Scores vs Days Since Enrollment in Proteomics Protocol

Total ALSFRS-R Scores by Participant



Voice Recording – Machine Learning (ML) assisted, quantified assessment of speech dysarthria

Scored Voice Recording Data		
Participant ID	Date Completed	Voice Recording Score
65	7/13/2023	4
65	6/8/2023	4
65	5/3/2023	4
135	6/26/2023	3
150	6/12/2023	2.041666667
150	5/2/2023	1.529411765
571	7/23/2023	2.647058824
571	6/22/2023	3.105263158
571	5/23/2023	2.470588235
1265	7/12/2023	2.884615385
1294	5/23/2023	4
1312	7/19/2023	3
1312	6/22/2023	3.533333333
1312	5/22/2023	3.153846154
1312	4/17/2023	3.307692308
1312	3/15/2023	2.75308642
1312	2/18/2023	3.285714286
1312	1/20/2023	3
1312	12/15/2022	3.727272727
1312	10/17/2022	3.8
1312	9/26/2022	3.916666667
1312	8/14/2022	4
1312	7/14/2022	3.4
1312	6/15/2022	4
1312	6/10/2022	3.2
1312	5/12/2022	3.954545455
1320	7/18/2023	4
1320	6/13/2023	4
1320	5/31/2023	4
1320	5/10/2023	4
1320	4/25/2023	4
1320	4/4/2023	4
1320	3/12/2023	4
1320	2/22/2023	4
1320	2/13/2023	4
1320	2/1/2023	4
1320	1/11/2023	4
1320	1/4/2023	4
1320	12/14/2022	4
1320	11/28/2022	4
1320	11/15/2022	4
1320	11/7/2022	4
1320	10/17/2022	4
1320	9/26/2022	4

Scored Voice Recording Data By Participant

