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South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program

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14. ABSTRACT

**Background:** There is a severe shortage of diverse biomedical scientists in the United States and in South Carolina. The goal of the South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program is to provide a biomedical research training experience to **12** students (*i.e.*, “*Student Fellows*”) from three Historically Black Colleges/Universities – Claflin University, South Carolina State University, and Voorhees College over a three-year period. The major goals of the Training Program are: Goal 1.) To provide training in biomedical and prostate cancer research through the participation of four Student Fellows each year in a newly developed 15 credit hour prostate cancer health equity research course; Goal 2.) To conduct a hands-on research laboratory intensive with four Student Fellows each year. Each Student Fellow will complete a 10-week research project; Goal 3.) To provide the Student Fellows with clinical, cultural, and biotechnical learning opportunities through clinical shadowing experiences with physicians and/or other allied health care professionals; observations of a multidisciplinary prostate cancer tumor board; lay navigation shadowing in the clinical setting to gain experiences in the cultural and social context of prostate cancer treatment/survivorship issues; and interacting with biotechnical experts within the HCC shared resources/courses (*e.g.*, Cancer Genomics, Proteomics, Biorepository & Tissue Analysis, Flow Cytometry & Cell Sorting, Cell & Molecular Imaging, and Lipidomics); Goal 4.) To prepare tangible scientific products through extended mentoring with the Student Fellows such as scientific abstracts and research papers summarizing their prostate cancer research **Results:** During the current reporting period, **four** Student Fellows were identified, recruited to participate in the program, and admitted to the South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program. The Student Fellows were matched with Research Mentors at MUSC, with whom they conducted research in the summer of 2016. Each Student Fellow prepared a scientific paper, gave a scientific presentation at the end of the summer program, and completed an 8-week Kaplan Graduate Record Examination Test Preparation Course. **Conclusions:** State-of-the art comprehensive prostate cancer research education and training opportunities were provided to **four** Student Fellows from HBCUs in South Carolina. Each Student Fellow prepared a scientific paper and gave at least 1 scientific presentation. Fourteen additional Student Fellows were supported by leveraged funds. A cadre of developing scientists who are becoming well-prepared to conduct research spanning the continuum from basic science to clinical science to population-based research was developed.

15. SUBJECT TERMS

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 Prostate Cancer Health Equity Research  
 Student Fellows from Historically Black Colleges and Universities (HBCUs)

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# INTRODUCTION

## Background

The South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program (referred to as the SC CHEC Program) will provide a biomedical research training experience to 12 students from three Historically Black Colleges/Universities (HBCUs) – Claflin University (CU), South Carolina State University (SCSU), and Voorhees College (VC) over a three-year period (2015-2018). Undergraduate students from the three HBCUs (defined as Student Fellows) will participate in research intensive summer internships in the laboratories/research units of senior prostate cancer research scientists at the Medical University of South Carolina Hollings Cancer Center (MUSC HCC).

The didactic component of the 10-week SC CHEC Program includes an introduction to research on cancer disparities and prostate cancer. The SC CHEC Program also encompasses additional exposure to biomarker development, genetics, survivorship issues, and developmental therapeutics through shadowing experiences in the MUSC HCC's clinics, shared resources/cores, and greater interaction with the Sea Island/Gullah population of South Carolina. The ultimate goal of the SC CHEC Program is to increase the diversity of emerging scientists who may choose prostate cancer research careers in the basic, clinical, and population sciences.

## Major Goals:

- Goal 1: To provide training in biomedical and prostate cancer research through the participation of four Student Fellows each year in a newly developed 15 credit hour prostate cancer health equity research course.
- Goal 2: To conduct a hands-on research laboratory intensive with four Student Fellows each year. Each Student Fellow will complete a 10-week research project.
- Goal 3: To provide the Student Fellows with clinical, cultural, and biotechnical learning opportunities through clinical shadowing experiences with physicians and/or other allied health care professionals; observations of a multidisciplinary prostate cancer tumor board; lay navigation shadowing in the clinical setting to gain experiences in the cultural and social context of prostate cancer treatment/survivorship issues; and interacting with biotechnical experts within the HCC shared resources/courses (*e.g.*, Cancer Genomics, Proteomics, Biorepository & Tissue Analysis, Flow Cytometry & Cell Sorting, Cell & Molecular Imaging, and Lipidomics).
- Goal 4: To prepare tangible scientific products through extended mentoring with the Student Fellows such as scientific abstracts and research papers summarizing their prostate cancer research.

**Impact:** Measurable outcomes of the SC CHEC Program will include the number of Student Fellows who take the Graduate Record Examination (GRE), apply to graduate school, and complete scientific presentations and publications based on their summer research projects. Efforts will also be made to evaluate long-term SC CHEC Program outcomes such as the number of Student Fellows who choose to pursue a medical or biomedical focused graduate and postgraduate career.

## Program Director and Leadership Team

Dr. Marvella E. Ford is the Program Director. Drs. Omar Bagasra (CU) and Judith Salley (SCSU), and Mrs. Gayle Tyler-Stukes (VC) are Associate Directors. Dr. Leroy Davis retired from Voorhees College in 2016 and appointed Mrs. Gayle Tyler-Stukes, former SC CHEC Program Faculty Advisor at Voorhees College, to take his place as Associate Director. This four-person leadership team collaborates closely in the management and administration of the award, as well as the continued development and enhancement of the SC CHEC Program. The Program Director and Associate Directors share scientific interests in health disparities, serve in other leadership roles within their institutions, and meet frequently, both formally and informally. Each institution has appointed Faculty Advisors consisting of Dr. Ewen McLean (CU) and Dr. James B. Stukes (SCSU). Additionally, Dr. Kimberly Cannady (MUSC) and Erica Martino (MUSC) serve as the Program Coordinator and Program Assistant, respectively, of the SC CHEC Program.

**KEYWORDS:** Prostate Cancer Research Training Program, Prostate Cancer Health Equity Research, Student Fellows from Historically Black Colleges and Universities (HBCUs)

## BODY

### Statement of Work

#### **Task 1. Identify and Recruit the Student Fellows** *(Year 2, months 1-3)*

- (a) Identify the pool of potential Student Fellows
- (b) Interview the potential Student Fellows and select the best candidates
- (c) Notify the selected Student Fellows of their acceptance into the Training Program
- (d) Match the selected Student Fellows with their MUSC Research Mentors

**Deliverables:** Four Student Fellows (plus an additional 14 students who were supported using leveraged funds) were identified, recruited to participate in the SC CHEC Program, and matched with senior prostate cancer Research Mentors at MUSC.

#### **Task 2. Provide Training in Biomedical and Prostate Cancer Research through a Newly Developed Prostate Cancer Health Equity Research Course and Laboratory Research Training Experience** *(Year 2, months 6-8)*

- (a) Conduct a short-term education course in Prostate Cancer Health Equity Research
- (b) Provide a short-term Laboratory Research Training Experience
- (c) Sponsor the Student Fellows' participation in a Graduate Record Examination (GRE) Preparation Course

**Deliverables:** We provided cutting-edge comprehensive prostate cancer health equity research education and training opportunities for four students from three of South Carolina's HBCUs (plus an additional 14 students who were supported using leveraged funds). We have developed a cadre of biomedical scientists who are well-prepared to contribute to future scientific discoveries related to prostate cancer screening, diagnosis, and treatment. Their research will span the spectrum from basic science to clinical science to population-based research. A minimum of 75% of the Student Fellows will take the GRE. At least 75% of the Student Fellows will apply to graduate school.

#### **Task 3. Prepare Tangible Scientific Products through Extended Mentoring with the Student Fellows** *(Year 2, months 10-12)*

- (a) Student Fellows will prepare and present scientific abstracts based on their prostate cancer research
- (b) Student Fellows will prepare research papers summarizing their prostate cancer research

**Deliverables:** Five scientific presentations were conducted by the four Student Fellows (19 presentations were made by the additional 14 students who participated in the SC CHEC Program via leveraged funds). At least four peer reviewed publications are expected to result.

#### **Task 4. Provide Student Fellows with Clinical, Cultural, and Biotechnical Learning Opportunities** *(Year 2, months 6-8)*

- (a) Conduct a clinical shadowing experience with physicians and/or other allied health care professionals
- (b) Provide an opportunity for Student Fellows to observe a multidisciplinary prostate cancer tumor board
- (c) Offer lay navigation shadowing to provide experiences in the cultural and social contextual dynamics surrounding prostate cancer treatment/survivorship issues within the clinical setting

- (d) Provide interactions with biotechnical experts within the Hollings Cancer Center shared resource/cores (*e.g.*, Cancer Genomics, Proteomics, Biorepository & Tissue Analysis, Flow Cytometry & Cell Sorting, Cell & Molecular Imaging, and Lipidomics)

**Deliverables:** Four Student Fellows, plus the additional 14 students who were supported by other sources of funding, rotated through the Hollings Cancer Center Shared Resources/Cores. Preparation is underway to allow the Student Fellows to shadow physicians and/or allied health care professionals and attend prostate cancer tumor boards in the summer of 2017.

**Task 5. Evaluate the Training Program**

- (a) Assess the number of applicants to the Training Program (Year 2, months 1-4)
- (b) Count the number of Student Fellows who apply to graduate school and the number who are admitted to graduate school (Year 2, months 1-12; Year 3, months 1-12)
- (c) Identify the number of scientific abstracts presented and peer-reviewed publications that result (Year 2, months 1-12)
- (d) Survey the Student Fellows, Research Mentors, Principal Investigator, and Faculty Advisors at the end of each summer to provide feedback (Year 2, month 8)

**Deliverables:** Formative evaluation of the SC CHEC Program has been completed and summative Program evaluation is underway.

## KEY RESEARCH ACCOMPLISHMENTS

### **Task 1. Identify and Recruit the Student Fellows**

*(Year 2, months 1-3)*

- (a) Identify the pool of potential Student Fellows**
- (b) Interview the potential Student Fellows and select the best candidates**
- (c) Notify the selected Student Fellows of their acceptance into the Training Program**

To accomplish Tasks 1(a) – 1(c), Dr. Ford, the Program Director, held bi-weekly teleconferences with Associate Directors Dr. Omar Bagasra (CU), Dr. Judith Salley (SCSU), and Mrs. Gayle Tyler Stukes (VC) as well as Faculty Advisors Dr. Ewen McLean (CU) and Dr. James Stukes (SCSU) to identify potential Student Fellows and discuss student recruitment techniques. To attract students to the SC CHEC Summer Program from the partnering institutions, SC CHEC developed a recruitment flyer (**See Appendix A**) providing a description of the program and highlighting program details. This flyer was distributed to the SC CHEC leaders at the partnering institutions, who disseminated them among their faculty and students and personally approached students whom they felt would be outstanding applicants for the summer research program. Moreover, Dr. Ford and the Program Coordinator, Dr. Kimberly Cannady, visited the partnering institutions to inform the faculty about the SC CHEC summer program and to recruit students.

To further attract a pool of potential applicants, each Associate Director invited faculty and students from his/her institution to participate in the Ernest Just Symposium held on February 26, 2016 at MUSC. A total of 241 students representing 13 different colleges and universities participated. A total of 57 students from HBCUs in SC participated in the Symposium, as well as 56 students from HBCUs in other regions of the country. Drs. Bagasra and McLean from CU were instrumental in recruiting as 38 students attended the Symposium from Claflin University. The students who participated in the Symposium also received a tour of scientific research units at MUSC and met with MUSC faculty members who could become their future research mentors. The agenda and number of students from each institution are included in **Appendices B-C**.

An SC CHEC page was created on the MUSC Hollings Cancer Center website to advertise the SC CHEC Program (<http://www.hollingscancercenter.org/about-hollings/commitments/SC-CHEC/index.html>; **see Products**). This online application portal opened on November 30, 2015 and closed at 11:59 PM on February 29, 2016. A total of 38 applications were received. After review by the Program Director, Associate Directors, and Program Coordinator, four students were accepted based on the following criteria: 1) Minimum GPA of 3.0; 2) Rising Junior or Senior; 3) Two letters of recommendation; 4) University Transcript; 5) Personal Statement indicating a desire for a research career; 6) Willingness to complete the entire 10-week SC CHEC Program. The four selected Student Fellows were comprised of four females (non-Hispanic Black/African American).

#### **(d) Match the Student Fellows with their Research Mentors at MUSC**

Once selected, the four Student Fellows were matched with Research Mentors at MUSC. The Leadership Team examined the expressed research interests of the Student Fellows as stated in their written SC CHEC applications and matched the students' stated research interests with those of available MUSC mentors, based on information contained in the mentors' biosketches. Upon matching, Dr. Ford sent an email to each mentor that contained descriptive information pertaining to their selected Student Fellow.

**Task 1 Deliverables:** Four Student Fellows (plus an additional 14 students who were supported using leveraged funds) were identified, recruited, and admitted to the SC CHEC Program. The Student Fellows were matched with MUSC Research Mentors, with whom they conducted research in the summer of 2016.

**Task 2. Provide Training in Biomedical and Prostate Cancer Research through a Newly Developed Prostate Cancer Health Equity Research Course and Laboratory Research Training Experience (Year 2, months 6-8)**

**(a) Conduct a short-term education course in Prostate Cancer Health Equity Research**

The Student Fellows participated in an intensive, 10-week SC CHEC Program comprised of didactic training and hands-on laboratory research training. The curriculum of this program was designed around the previously implemented prostate cancer-focused cancer research training lectures and expanded to include a larger focus on breast, cervical, and head and neck cancer. This allowed the Student Fellows to experience a broader cancer research training program.

The SC CHEC Cancer Health Equity Research Course (BMTRY 777) is a fifteen-hour credit course comprised of six modules. Module 1 focused on the social determinants of cancer in the US, Module 2 provided training in the responsible conduct of research, Module 3 focused on breast cancer research, Module 4 covered prostate cancer research, Module 5 introduced head and neck cancer research, and Module 6 covered cervical cancer research. Student Fellows received instruction from leading experts in cancer research who collectively presented cutting-edge cancer information across multiple perspectives – basic sciences, clinical sciences, and population sciences with an emphasis on disparate outcomes in breast, prostate, head/neck, and cervical cancer. Each module concluded with a take-home quiz based on the scientific content that was presented during the module to evaluate the Fellows' understanding of the information presented in each module. The 10-week course curriculum is included in **Appendix D**.

To foster the professional development of the Student Fellows, the lectures included discussions of funding opportunities available to students, career opportunities in academic medicine, perspectives of prostate cancer among community members, and strategies for effective presentations. In addition, the Student Fellows participated in etiquette training to gain the tools needed to successfully navigate through their professional careers.

The Student Fellows were given articles at the beginning of the course describing how to run a successful Journal Club. The Journal Club sessions were designed to help the Fellows think critically about research. Each Student Fellow participated in leading a module-based Journal Club session. The Fellows worked in teams to read the assigned original research articles critically, review the design of each study, and present topics for discussion, including but not limited to issues related to measurement, study design, sampling scheme, recruitment, retention, loss to follow-up, statistical approaches, and interpretation of results. The Journal Club assignments are included in **Appendix E**.

In addition, each Fellow completed an 8- to 10-page paper, due on the last day of the course, summarizing what they learned. The Fellows also presented their research to the local scientific community and completed a formal written evaluation of the entire course. The SC CHEC Program schedule provided time for students to rehearse their research presentations and gain input from their mentors and other scientists at the HCC.

Student Fellows participated in a cultural enrichment experience to expose them to the Sea Island (Gullah) population. The Gullah population is a subpopulation of African Americans indigenous to the coastal regions of the eastern seaboard. They are one of the most genetically homogeneous groups of blacks in the U.S. Their particularly low rate of European American genetic admixture makes this a unique population for basic, clinical and population-based research. The Fellows participated in a guided tour to learn about the Gullah language, culture, and music.

**(b) Provide a short-term Laboratory Research Training Experience**

The Student Fellows were matched with Research Mentors at MUSC based on their research areas of interest stated on their applications. The Student Fellows worked ~30-35 hours per week with their assigned mentors conducting research. The Research Mentors helped to shape the Student Fellows’ summer experiences to ensure tangible outcomes – presentation of data results (preliminary or final), and submission of scientific abstracts and papers for peer review. The hands-on training involved learning/performing laboratory techniques, data collection and analytic methods, interviewing techniques, and data interpretation.

The following table shows the names of the students who participated in the 2016 South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program, their Research Mentors at MUSC, and their research topics.

<b>Summer 2016 SC CHEC Program Students, Mentors, and Research Topics</b>			
<b>Student Name</b>	<b>Academic Institution</b>	<b>MUSC Research Mentor</b>	<b>Title of Research Project</b>
Ms. Jordan Barnes	Clafin University	Besim Ogretmen, PhD	A study on the relationship of the presence of Human Papilloma Virus and response to treatment in cervical cancers
Ms. Taaliah Campbell	Clafin University	Shikhar Mehrotra , PhD	Vitamin C and Immunotherapy
Ms. London Knight	SC State University	Dennis Watson, PhD	Friend Leukemia Integration 1 (FLI1) as a contributor to tumor aggression in malignant peripheral nerve sheath tumors and neurofibromas through an interaction with Ras regulation
Ms. Kenyatta Walker	SC State University	David Turner, PhD	The Impact of Reactive Sugar Metabolites on Pubertal Mammary Gland Development and Increased Cancer Risk

In addition to the students listed above, the Program Director leveraged funding to support fourteen additional students (**Appendix F**).

**(c) Sponsor the Student Fellows’ participation in a Graduate Record Examination (GRE) Preparation Course**

In 2016, 18 Student Fellows (four supported by the DoD award and 14 supported by leveraged funds) took the 10-week Kaplan GRE Test Preparation Course. Kaplan provides test preparation materials for more than 90 standardized tests through tutoring, on-site classes, print books, and digital content for college and graduate school admissions. The course met on Wednesday evenings from 5:30 pm – 8:00 pm. The course seamlessly adjusted classwork and homework to the skill level of each student. This was accomplished by focusing on the areas where each student needed the most improvement. The course provided instruction in test-taking skills, and provided opportunities for dynamic group discussions and collaborative drills.

**Task 2 Deliverables:** In 2016, state-of-the-art comprehensive prostate cancer research education and training opportunities were provided for four students from three of South Carolina's HBCUs. Funds were leveraged from other funding sources to provide the same level of education and training to 14 additional students from partnering institutions in South Carolina. We are developing a cadre of scientists who are well-prepared to play a significant role in discovering and testing new prostate cancer biomarkers. In the future, these investigators will likely conduct research spanning the continuum from basic science to clinical science to population-based research.

**Task 3. Prepare Tangible Scientific Products through Extended Mentoring with the Student Fellows**  
(Year 2, months 10-12)

- (a) Student Fellows will prepare and present scientific abstracts based on their prostate cancer research
- (b) Student Fellows will prepare research papers summarizing their prostate cancer research

Each Student Fellow prepared a scientific research paper that will form the basis of a peer-reviewed publication and also gave a scientific presentation based on the results of his or her work. Summaries of each Student Fellows' research projects are included in **Appendix G**. Please note that the biological mechanisms that are included in the Student Fellows research have direct relevance/application to prostate cancer research.

**Task 3 Deliverables:** A total of 18 scientific presentations were presented by the four DoD Student Fellows and the 14 additional Student Fellows who were supported through leveraged funds.

**Task 4. Provide Student Fellows with Clinical, Cultural, and Biotechnical Learning Opportunities**  
(Year 2, months 6-8)

- (a) Conduct a clinical shadowing experience with physicians and/or other allied health care professionals
- (b) Provide an opportunity for Student Fellows to observe a multidisciplinary prostate cancer tumor board
- (c) Offer lay navigation shadowing to provide experiences in the cultural and social contextual dynamics surrounding prostate cancer treatment/survivorship issues within the clinical setting
- (d) Provide interactions with biotechnical experts within the Hollings Cancer Center shared resource/cores (e.g., Cancer Genomics, Proteomics, Biorepository & Tissue Analysis, Flow Cytometry & Cell Sorting, Cell & Molecular Imaging, and Lipidomics)

For SC CHEC course electives, the Student Fellows rotate through the MUSC HCC Shared Resource Core Facilities, giving them insight into the multifaceted aspects of biomedical research and the provision of assistance the Shared Resources offer to HCC members. These electives occur for one hour on Fridays. The Fellows were placed into five groups, with each group having a separate Shared Resource rotation schedule to allow for interactive contact with the Shared Resource members. The schedule and groups can be found in **Appendix H**.

**Task 4 Deliverables:** Four DoD Student Fellows and 14 Student Fellows supported by leveraged funds rotated through the Hollings Cancer Center Shared Resources/Cores. Preparation is underway to allow the Student Fellows to shadow physicians and/or allied health care professionals and attend prostate cancer tumor boards in the summer of 2017.

## **Task 5. Evaluate the Training Program**

### **(a) Assess the number of applicants to the Training Program (Year 2, months 1-4)**

In the spring of 2016, 38 students from SC CHEC Program partnering institutions in South Carolina applied to the South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program. As planned, four Student Fellows were selected to participate in the SC CHEC Program. Fourteen additional Student Fellows were selected whom were supported through leveraged funds.

### **(b) Count the number of Student Fellows who apply to graduate school and the number who are admitted to graduate school (Year 2, months 1-12)**

The Student Fellows who participated in the 2016 SC CHEC Program were rising sophomores through seniors. To monitor the Student Fellows' progression through their academic careers, we are actively keeping track of their progress using the strategies that are described below.

1. Searching the MUSC graduate program databases to identify whether any of the students applied, were offered, or accepted positions at MUSC.
2. Contacting the participating universities' alumni offices.
3. Employing other internet-based search tools/communications (Google, Twitter, Facebook, and Historically Black College/University Connections, *etc.*) to identify students' current locations, contact information, and academic achievements (Year 3 and beyond)

We have implemented several steps for tracking student scientific progress. Communication and assistance from the Associate Directors and Faculty Advisors have proved to be very effective. Additionally, social media tools such as Facebook have also been useful for engaging the students and opening a venue for communication. Another method we have found useful is text messaging. We have found that students respond more quickly to text messages than to emails and telephone calls. We will utilize and build upon these methods to improve continued student tracking. These multiple tracking strategies will be used to update the table that is included in **Appendix I**, which lists the academic accomplishments of the Student Fellows.

### **(c) Identify the number of scientific abstracts presented and peer-reviewed publications that result (Year 2, months 1-12)**

The Student Fellows gave a total of 24 scientific presentations (five presentations were led by DOD-funded Student Fellows and 19 presentations were led by the students whose SC CHEC Program participation was supported through other funding mechanisms). One DOD-funded student from Claflin University, Ms. Taaliah Campbell, presented her scientific research at the Annual Biomedical Research Conference for Minority Students in Tampa, Florida. The mentors of many of the Student Fellows have confirmed that they are actively writing manuscripts that will include some of the Student Fellows as co-authors.

### **(d) Survey the Student Fellows, Research Mentors, Principal Investigator, and Faculty Advisors at the end of each summer to provide feedback (Year 2, month 8)**

At the end of the program, the Student Fellows completed SC CHEC Program evaluations. The results from the 2016 Student Fellows are presented in the following table. This table includes evaluations from the students whom were supported by leveraged funds. To evaluate the SC CHEC Program from the perspective of the mentors, the results from the 2016 SC CHEC Program Research Mentors are included in **Appendix J**.

## SUMMARY RESULTS OF STUDENT EVALUATIONS 2016 (n=17\*)

Survey Item	Strongly Disagree		Disagree		Not Sure		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
1. Overall, the SC CHEC Program was a good research experience.	0	0.0	0	0.0	1	5.9	6	35.3	10	58.8
2. The SC CHEC Program helped me learn the fundamentals of breast, prostate, head/neck, and cervical cancer and research.	0	0.0	0	0.0	1	5.9	2	11.8	14	82.3
3. The SC CHEC Program lecture schedule was convenient	1	5.9	6	35.3	4	23.5	4	23.5	2	11.8
4. The SC CHEC Program lecture topics were of interest to me.	0	0.0	1	5.9	2	11.8	8	47.1	6	35.3
5. The SC CHEC Program Journal Clubs helped to strengthen my ability to critically read and evaluate scientific articles	0	0.0	3	17.6	3	17.6	8	47.1	3	17.6
6. The SC CHEC Program Electives were informative and helped me learn more about the resources provided by MUSC Hollings Cancer Center Shared Resources	0	0.0	0	0.0	1	5.9	8	47.1	8	47.1
7. The Kaplan Graduate Record Examination (GRE) Course was effective in helping me to learn GRE test preparation strategies.	1	5.9	1	5.9	3	17.6	2	11.8	10	58.8
8. Participating in the SC CHEC Program helped to strengthen my desire for a career in cancer research.	2	11.8	2	11.8	5	29.4	2	11.8	6	35.3
9. The SC CHEC Program Director (Dr. Marvella Ford) was accessible and assisted me when needed.	0	0.0	3	17.6	2	11.8	8	47.1	4	23.5
10. The SC CHEC Program Coordinators (Dr. Kim Cannady, Ms. Colleen Bauza, and Ms. Bobbie Blake) were accessible and assisted me when needed.	0	0.0	0	0.0	0	0.0	3	17.6	14	82.4
11. My SC CHEC Program research mentor was accessible and assisted me when needed.	1	5.9	1	5.9	2	11.8	1	5.9	12	70.6
12. I would recommend the SC CHEC Program to other students at my college/university.	0	0.0	0	0.0	4	23.5	5	29.4	8	47.1

\* Missing data points

**Task 5 Deliverables:** The Student Fellows gave a total of 24 scientific presentations. Currently, most of the Student Fellows will enter their junior or senior years of college and will begin applying to graduate or professional schools. The SC CHEC Program Research Mentors had positive things to say about the SC CHEC Program and provided positive feedback to enhance the program for future cohorts.

## **Plans to Accomplish Stated Goals for the Next Reporting Period**

To accomplish the goals and objectives for the next reporting period, the Leadership Team will:

- Meet to confirm the activities for the next reporting period
  - Continue with monthly teleconferences and quarterly in-person meetings among the Leadership Team members
- Advertise and market the SC CHEC Program to faculty, students, and administrators at CU, SCSU, and VC in September 2016 – January 2017:
  - Circulate a recruitment flyer among the three partnering institutions
  - Post the flyer on each institution's website
  - Travel to each institution to make presentations to the faculty, students, and administrators regarding the available research training opportunities
  - Participate in organizational activities at each institution, such as student-led health meetings, to recruit students from the three partnering institutions to the SC CHEC Program
  - Participate in health fairs at the three partnering institutions to publicize the SC CHEC Program
- Open the application portal on the MUSC Hollings Cancer Center website in September 2016
- Meet with the Leadership Team in January to review the submitted applications in January 2017
- Notify selected students of their acceptance into the SC CHEC Program in February 2017, after students have confirmed their participation in the SC CHEC Program, submit documents to MUSC Enrollment Management and MUSC Human Resources to facilitate student matriculation at MUSC for the SC CHEC Program
- In February 2017, confirm speakers and dates for the Cancer Health Equity Course
- In February 2017, confirm the physicians, allied health care professionals, and HCC Shared Resource Core directors for the clinical, cultural, and biotechnical learning electives
- In March 2017, match students with Research Mentors

## **IMPACT/REPORTABLE OUTCOMES**

### **Student Summer Research Summaries**

The SC CHEC Program is playing a key role in training the next generation of cancer disparities researchers. Prior to this program, some of the Student Fellows had no experience in conducting cancer disparities research. The SC CHEC Program provides a wonderful opportunity for the students embrace careers in this arena.

The South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program will help to address the problem of the gross underrepresentation of diverse students in the pool of US biomedical research scientists despite the fact that historically underrepresented groups are the most rapidly growing portion of the US population and experience a disproportionate burden of cancer morbidity and mortality.

The SC CHEC Cancer Health Equity Course and GRE training that are provided through the South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program are expected to facilitate:

- The Student Fellows' entry into graduate degree programs
- The Student Fellows' transition from graduate programs to postdoctoral fellowships
- The Student Fellows' appointment in their first independent scientific positions
- The award of the Student Fellows' first independent research grants from the NIH or from an equivalent scientific source
- The Student Fellows' receipt of tenure awarded in an academic or non-academic setting

The Student Fellows who participated in the 2016 South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program each prepared a research paper and gave a scientific presentation to his/her peers, mentors and other faculty at MUSC. Details regarding the manuscripts and scientific presentations developed by the Student Fellows are included in **Appendix I**. Ms. Taaliah Campbell presented her research at the 2016 Annual Biomedical Conference for Minority Students in Tampa, Florida.

## **CHANGES/PROBLEMS**

Dr. Leroy Davis retired from Voorhees College in 2016 and appointed Mrs. Gayle Tyler-Stukes, former SC CHEC Program Faculty Advisor at Voorhees College, to take his place as Associate Director.

## **PRODUCTS**

Several products have resulted during the current grant award period.

- A cancer research curriculum was developed.
- Inter-institutional relationships among the four partnering institutions (MUSC, CU, SCSU, and VC) were strengthened.
- A SC CHEC Program page was created on the Hollings Cancer Center website. This website provides information about the SC CHEC Program, i.e., program goals, SC CHEC Leadership, Student Fellow pictures, summer research titles, and Student Testimonials). The page also contains the application portal. The website is below.
  - <http://www.hollingscancercenter.org/about-hollings/commitments/SC-CHEC/index.html>
- A cohort of four DOD-funded Student Fellows were trained to conduct cancer research. Additionally, 14 other students participated in the SC CHEC Program. Their participation was supported through other leveraged funding sources.
- The Student Fellows received formal instruction in the history and culture of the unique Sea Island/Gullah population of South Carolina.
- During the reporting period, Ms. Taaliah Campbell gave a poster presentation at the 2016 Annual Biomedical Research Conference for Minority Students in Tampa, Florida.
- All four DOD-funded Student Fellows are still enrolled at their home academic institutions. Among the additional 14 students who were supported by other funding mechanisms:
  - One student graduated from the University of South Carolina – Columbia in May 2016 and is currently employed as a Research Assistant with Clinical Trials of South Carolina
  - One student graduated from the University of South Carolina –Beaufort in May 2017 and is currently enrolled in an MPH program at USC, with a focus on health services policy and management
  - One student graduated from the University of South Carolina –Columbia in December 2016 and is currently enrolled in an MPH program at the University of Michigan
  - The remaining 11 other students are still enrolled at their home academic institutions
- Several research mentors are writing manuscripts and will include their Student Fellows as co-authors, based on their substantial scientific contributions completed during their summer research training projects.

## PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

The individuals listed in the table below have worked on the project during the reporting period for at least one person month per year.

NAME	
Marvella E. Ford, PhD	No Change
Erica Martino, CHES	No Change
Kimberly Cannady, PhD	No Change

In addition to the three partnering institutions – CU, SCSU, and VC – we have partnered with the Palmetto Medical, Dental, and Pharmaceutical Association. The list of partner organizations is below.

1.

<b>Organization Name</b>	Claflin University
<b>Location of Organization</b>	400 Magnolia Street Orangeburg, South Carolina 29115
<b>Partner's Contribution to the Project</b>	Collaboration

2.

<b>Organization Name</b>	South Carolina State University
<b>Location of Organization</b>	300 College Street NE Orangeburg, South Carolina 29115
<b>Partner's Contribution to the Project</b>	Collaboration

3.

<b>Organization Name</b>	Voorhees College
<b>Location of Organization</b>	481 Porter Drive Denmark, South Carolina 29042
<b>Partner's Contribution to the Project</b>	Collaboration

4.

<b>Organization Name</b>	Palmetto Medical, Dental, and Pharmaceutical Association
<b>Location of Organization</b>	South Carolina
<b>Partner's Contribution to the Project</b>	Other: In addition to the four partnering institutions, a new partner is the Palmetto Medical, Dental, and Pharmaceutical Association (PMDPA). This organization recently invited the Leadership Team to give a presentation describing the SC CHEC Program during their annual statewide convention. The PMDPA was established in 1896. It serves as South Carolina's auxiliary branch of the National Medical Association. In this capacity, the PMDPA provides seminars and workshops for diverse health care professionals to ensure that these professionals achieve their annual CME/CE requirements for continued certification.

	Additionally, the PMDPA maintains a strong focus on educating and training the next generation of diverse health care professionals. This mission overlays with the mission of the South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program. Therefore, the leaders of the PMDPA have pledged to work with the Leadership Team to help identify applicants who could participate in future years of the SC CHEC Program.
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**SPECIAL REPORTING REQUIREMENTS**

N/A.

**CONCLUSIONS**

During the past year of funding for the South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program, the tasks outlined in the Statement of Work were successfully met. Four Student Fellows were recruited from CU, SCSU, and VC. Additional funds were leveraged to support fourteen students. Each Student Fellow conducted research and prepared a research paper that was presented at the conclusion of the program. These 18 Student Fellows are now trained to conduct cancer research and some are expected to be included as co-authors on future peer-reviewed scientific publications, based on their summer research.

# 2016 Annual Report Appendices

## **Appendix A: 2016 SC CHEC Program Advertisement Flyer**



## 2016 Summer Undergraduate Cancer Research Training Opportunity

You are invited to participate in an exciting 13-week, summer research training program where you will learn from the nation's leading cancer researchers and receive hands-on training at the Medical University of South Carolina Hollings Cancer Center. You will be exposed to the latest advances in biomedical and biobehavioral cancer research spanning basic, clinical, and population sciences with an emphasis on cancer disparity dynamics in South Carolina.



### Program Description

- 13 week program (May 16, 2016 — August 12, 2016)
- Transferable credit hours
- Hands-on research experience with faculty member
- Cultural awareness activities
- GRE prep course
- Competitive stipend
- Housing available

**Location:** Medical University of South Carolina, Charleston, SC

**Application Opens:** **November 30, 2015**

**Deadline:** **February 19, 2016**

**To Apply:** <https://kcannady.wufoo.com/forms/zrg5yr2156ofci/>

For more information, please contact:

Marvella Ford, PhD, Program Director, [fordmar@musc.edu](mailto:fordmar@musc.edu)

Kimberly Cannady, PhD, Program Coordinator, [cannadyk@musc.edu](mailto:cannadyk@musc.edu)



## **Appendix B: 2016 Ernest E. Just Symposium Agenda**

## ERNEST E. JUST

Ernest Everett Just (1883–1941) was born and raised in a family of dockworkers in Charleston, SC. He left to prepare for college at the Industrial School of State College in Orangeburg and the Kimball Hall Academy, NH. Subsequently, he graduated in 1907 from Dartmouth College, magna cum laude, Phi Beta Kappa, with honors in botany, history, and sociology. That same year, Dr. Just accepted a teaching post at Howard University, where he later advanced to the rank of full professor and head of the Department of Physiology. In 1909, he served as a summer research assistant at the Marine Biological Laboratory at Woods Hole, MA. In 1915, his research attracted the attention of the National Association of the Advancement of Colored People, who conferred upon him the first Spingarn Medal, an annual prize given to an outstanding African-American. In 1916, Ernest Just received his PhD in experimental embryology, magna cum laude, from the University of Chicago, with a dissertation on the mechanics of fertilization. In 1919, he worked at the marine biological laboratories in Naples and Sicily.

Dr. Just's achievements earned him the role of adjunct researcher at the Kaiser Wilhelm Institute für Biologie in Berlin-Dahlem (1920–1931) as the Julius Rosenwald Fellow in Biology of the National Research Council. A gift from the Rosenwald Fund to Just for \$80,000 annually for several years offered him protected time for research and graduate teaching. So significant was his work that several of the crowned heads of Europe offered him use of their laboratories.

Dr. Just eventually returned to Woods Hole, where he spent almost twenty years at the research bench. In 1924, he was selected by leading German biologists to write a treatise on fertilization, one of a series of monographs by experts on cell structure and function.

Dr. Just coauthored *General Cytology* (published in 1924) and contributed to a series on colloid chemistry. He was vice president of the American Zoological Society, a member of the Ecological Society, National Research Council, and La Societe Nationale Des Sciences Naturelles Et Mathematiques, the founder of Omega Psi Phi and faculty advisor at Howard University (1911); Editor of *Protoplasm, Biological Zoology, and Physiological Zoology*; and a collaborator for *Cytologia*. In 1930, Dr. Just lectured at the 11<sup>th</sup> International Congress of Zoologists, Padua, Italy, basing his talk on his fifty published papers. In 1936, he spent three years on *The Biology of the Cell Surface*, a book summarizing his scientific observations. In 1939, early in WWII, Dr. Just was captured in France by Germans and held briefly in a prisoner-of-war camp. In 1940, he returned to the U.S. planning to resume teaching at Howard University. Unfortunately, an illness, which proved to be cancer, intervened and Dr. Just succumbed to his disease in 1941.

### Thank you to our Sponsors:

*MUSC Dept. of Regenerative Medicine, College of Graduate Studies, Office of the Provost, SC EPSCoR/IDeA, SC NASA Space Grant Consortium, College of Dental Medicine, College of Health Professions, College of Medicine, College of Pharmacy, College of Nursing, Avery Research Center for African American History and Culture (College of Charleston), U.S. Department of Energy, Mu Alpha Chapter of the Omega Psi Phi Fraternity.*

For more information contact:

Dr. Titus Reaves reaves@musc.edu

Phone: 843-876-2411 Website: <http://academicdepartments.musc.edu/grad/ernestjust/>

## Ernest E. Just Scientific Symposium Medical University of South Carolina



Friday, February 26, 2016  
110 Drug Discovery Auditorium



8:00-9:00 am	<b>Registration and Breakfast</b> Drug Discovery Lobby
9:00-9:10 am	<b>Opening</b> <b>Darlene Shaw, Ph.D., Associate Provost for Educational Affairs and Student Life</b>  <b>Professor of Psychiatry and Behavioral Sciences</b> <b>Deborah Deas, M.D., Interim Dean, College of Medicine</b> <b>Professor of Psychiatry and Behavioral Sciences</b>  <b>Greeting</b> <b>Paula Traktman, Ph.D.</b> <b>Dean, College of Graduate Studies</b> <b>Hirschmann Endowed Professor</b> <b>Professor of Biochemistry &amp; Molecular Biology</b> <b>Professor of Microbiology &amp; Immunology</b>
9:10-9:20 am	<b>Paul Adams, Ph.D.</b> Associate Professor of Chemistry and Biochemistry Associate Professor of Cellular and Molecular Biology University of Arkansas, Fayetteville <i>"Greetings from Omega Psi Phi Fraternity Representative"</i>
9:20 – 9:50 am	<b>W. Malcolm Brynes, Ph.D.</b> Associate Professor of Biochemistry and Molecular Biology Howard University <i>"Ernest E. Just Broad Influence on the Development of Modern Biology"</i>
9:50 – 10:10 am	<b>Rose Ndeto, Ph.D. Candidate</b> Department of Biochemistry Medical University of South Carolina <i>"FTY20 Induces Necroptosis by Regulating Ceramide Signaling at the Plasma Membrane"</i>

### Joseph V. Bonventre, M.D., Ph.D.

Dr. Bonventre received his M.D. from Harvard Medical School in Boston, Massachusetts and his Ph.D. from Harvard University in Cambridge, Massachusetts. Dr. Bonventre is Chief of the Renal Unit and Chief of the Bioengineering Division at Brigham and Women's Hospital, Past-President of the American Society of Nephrology, and has had a long-standing interest in various aspects of cellular injury and repair mechanisms in the kidney with a special emphasis on the role of inflammation, biomarkers and stem cells. Recently, he demonstrated the role of proximal tubule cell cycle arrest in the maladaptive fibrosis that can occur after severe injury leading to chronic kidney disease. Dr. Bonventre's work has been cited more than 38,000 times and he has received two MERIT awards from NIH.

<b>Rose Ndeto, Ph.D. Candidate</b>	10:10 – 10:25 am	<b>BREAK</b>
Ms. Ndeto received her Bachelor of Science degree in Biology from Benedict College in Columbia, South Carolina. Ms. Ndeto is a fourth year Ph.D. student in the Department of Biochemistry and Molecular Biology at the Medical University of South Carolina. Ms. Ndeto is in the laboratory of Dr. Besim Ogretmen where her research is focused on sphingolipid signaling and metabolism in lung cancer treatment. In 2010, Ms. Ndeto presented at the ABRCMS conference in Charlotte, North Carolina and gave a poster presentation at the ERN conference in Washington D.C. Ms. Ndeto is the 2015-2016 Ray Greenberg Presidential scholar. Through this, she is able to develop and work inter-professionally with students from the other colleges on campus. She hopes to develop her career in cancer research and hopes to see cancer eliminated.	10:25 – 11:00 am	<p><b>The E.E. Just Undergraduate Excellence in Research Presentations</b></p> <p><b>Chiamaka Ekunazu</b>  <b>University of Maryland Baltimore County</b>  1<sup>st</sup> Place Recipient of The E.E. Just Undergraduate Award for Excellence in Research  <i>"Early Life Anti-Depressant Drug Exposure Alters Brain Development: Possible Role of Maternal Care"</i></p> <p><b>Esleie Aguilar</b>  <b>Anderson University</b>  2<sup>nd</sup> Place Recipient of The E.E. Just Undergraduate Award for Excellence in Research  <i>"Using Periodic Patterns to Statistically Verify Local Warming Trends in Low Latitude Locations"</i></p>
<b>Garth Graham, M.D., M.P.H., F.A.C.P., F.A.C.C.</b>	11:00 – 11:45 am	<b>Ernest E. Just Symposium Keynote Speaker</b>
Dr. Graham received his medical degree from Yale University, School of Medicine and his master's degree in public health from Yale School of Public Health, New Haven, Connecticut. Dr. Garth Graham is president of the Aetna Foundation. He is board certified in internal medicine and cardiology and previously served as deputy assistant secretary in the U.S. Department of Health and Human Services and assistant dean for health policy at the University of Florida. He has published in the <i>Journal of the American Medical Association, Health Affairs</i> and <i>Circulation</i> . He has served on a number of boards including the Institute of Medicine Board on Population Health, North America Thrombosis Forum and the Federal Coordinating Council on Comparative Effectiveness Research.	11:45 – 12:30 pm	Panel Discussion (questions and answers with speakers)
<b>Cathy Mendelsohn, Ph.D.</b>	12:30 – 2:00 pm	<b>EDUCATIONAL SESSIONS/LUNCH</b>
Dr. Mendelsohn received her Ph.D. in Microbiology from Columbia University, New York, New York and her project focused on cloning the human poliovirus receptors. She completed her postdoctoral studies at the University Louis Pasteur, France and worked on retinoid signaling and continued to work on retinoid signaling and development at Columbia University. In 1998, Dr. Mendelsohn started her own lab in the Department of Urology. Currently, her focus is on urothelium, differentiation, formation and regeneration, as well as bladder cancer, which derive from urothelial cells.	Visiting students meet with MUSC College Admissions Officers: <b>College of Graduate Studies:</b> Dr. Cynthia Wright – Bioengineering Building Rm 201 <b>College of Medicine:</b> Myra Haney Singleton and Wanda Taylor – Basic Science Bldg 302 <b>College of Dental Medicine:</b> Pearl Givens – Basic Science Bldg Rm 120 <b>College of Pharmacy:</b> Christine Faye Ratliff – Pharmacy Building Rm QF 105 <b>College of Nursing:</b> Mardi Long – Nursing Building Rm 221 <b>College of Health Professions:</b> Lauren Smith and Cami Taylor - CHP Bldg A Rm A105	
2:05 - 2:45 pm	<b>Cathy Mendelsohn, Ph.D.</b> Professor of Urology Professor of Pathology & Cell Biology Columbia University <i>"Retinoic Acids Controls Urothelial Progenitors During Development, Homeostasis and Regeneration"</i>	<b>Paul Adams, Ph.D.</b> Dr. Adams received his Bachelor of Science in Biochemistry from Louisiana State University, Baton Rouge, Louisiana and his Ph.D. in Biophysical Chemistry from Case Western Reserve University, Cleveland, Ohio. From 2003-2006, he was a National Science Foundation postdoctoral fellow in the Department of Molecular Medicine at Cornell University in Ithaca, New York. Currently, Dr. Adams is an Associate Professor of Chemistry and Biochemistry, as well as Cellular and Molecular Biology, with tenure, at the University of Arkansas, Fayetteville. Dr. Adams is a 27-year member of the Omega Psi Phi Fraternity, Inc. He serves as Chairman of the International Advanced Degree Committee, as well as Co-Chairman of the International Undergraduate Chapter Advisors' Committee for the fraternity.
2:50 - 3:30 pm	<b>Joseph V. Bonventre, M.D., Ph.D.</b> Samuel A. Levine Professor of Medicine Chief of Renal Division Chief of Division of Biomedical Engineering Past-President, American Society of Nephrology Brigham and Women's Hospital, Harvard Medical School <i>"Making 'Mini-Kidneys' in a Dish: The Path from Stem Cell to Nephron"</i>	<b>W. Malcolm Byrnes, Ph.D.</b> Dr. Byrnes received his undergraduate degree in Chemistry from Xavier University of Louisiana and his Ph.D. in Biochemistry from Louisiana State University, Baton Rouge, Louisiana. Dr. Byrnes completed his postdoctoral research at Cornell University in Ithaca, New York. He has taught courses in Biochemistry and Chemical Sciences at Xavier University and the University of Louisiana in Lafayette, and Howard University, where he currently holds the position of Associate Professor of Biochemistry and Molecular Biology in the College of Medicine. The focus of his research is on the structural and functional characterization of enzymes, especially ones of potential biotechnological or biomedical importance from Bacteria and Archaea. Since 2004, Dr. Byrnes has become interested in the work of biologist Ernest Everett Just. He has written more than a dozen scholarly articles and has given multiple ten presentations on Ernest Just to a variety of audiences, both in the United States and abroad. In his talk at this year Ernest E. Just Symposium, Dr. Byrnes will argue that Dr. Just's concept of the "independent irritability" of living systems has influenced several areas of modern biology, including protein allosteric behavior, embryonic induction and competence, and developmental plasticity. However, because the chain of attribution that normally exists was broken, Dr. Just's broad impact in these areas has remained hidden. Dr. Just's influence on biology is much more broad than previously has been known or appreciated.
3:30-3:45 pm	Discussion: Perspectives on the Research Area and the Future of Science	

## **Appendix C: 2016 Ernest E. Just Symposium Student Attendees**

## Schools that Participated in the 2016 Ernest E. Just Symposium

Name of School	# of Students
Anderson University	30
Benedict College	19
Clayton University	38
Clark Atlanta University	23
Clemson University	21
Citadel	2
Fayetteville State University	22
Francis Marion University	21
Morehouse College	11
University of Maryland Baltimore County	11
UNC Pembroke	4
UNC Wilmington	19
USC Aiken	20
<b>TOTAL</b>	<b>241</b>

- HBCU outside of SC
- HBCU in SC

## **Appendix D: SC CHEC BMTRY 777 Curriculum**

<b>BMTRY 777 - MUSC Cancer Health Equity Research Course</b> (Course Will Meet for One Hour Per Lecture)				
Week 1	5/16/16	8:00 am	BE112	<b>Welcome and Kickoff Intensive</b>
<b>MODULE 1: INTRODUCTION TO CANCER DISPARITIES RESEARCH</b>				
Week 1	5/17/16	8:00 am	BE110	Description of the course goals, modules, and expectations of Student Fellows (M. Ford, PhD)
Week 1	5/18/16	8:00 am	BE112	Unnatural Causes: Health and health equity: framework, data sources, national and state priorities (M. Ford, PhD)
Week 1	5/19/16	8:00 am	BS202	Health inequities: institutionalized causes and social determinants of health (T. Felder, PhD)
Week 1	5/20/16	8:00 am	BS202	Understanding the effect of socioeconomic gradients within racial/ethnic groups on cancer outcomes (T. Felder, PhD)
Week 2	5/23/16	8:00 am	BE112	Clinical trials: overview & participation of diverse populations (M. Ford, PhD)
Week 2	5/24/16	8:00 am	BE112	Unnatural Causes: Health and health equity: framework, data sources, national and state priorities (M. Ford, PhD)
Week 2	5/25/16	8:00 am	BE112	Disparities Research Journal Club (led by M. Ford, PhD)
<b>Module 1 Cancer Disparities Research Take-Home Test</b>				
<b>Week 2</b>	<b>5/26/16</b>	<b>8:00 am</b>	<b>BE110</b>	<b>Collaborative IRB Training Initiative (CITI) On-line Module and Test (on own)</b>
<b>Week 2</b>	<b>5/27/16</b>	<b>8:00 am</b>	<b>BE112</b>	<b>Collaborative IRB Training Initiative (CITI) On-line Module and Test (on own)</b>
<b>Memorial Day Holiday – No Class on 5/30/16</b>				
<b>Week 3</b>	<b>5/31/16</b>	<b>8:00 am</b>	<b>BE112</b>	<b>Collaborative IRB Training Initiative (CITI) On-line Module and Test (on own)</b>
<b>MODULE 2: TRAINING IN THE RESPONSIBLE CONDUCT OF RESEARCH</b>				
Week 3	6/1/16	8:30 am*	BS302	Responsible Conduct of Research (E. Krug, PhD)
Week 3	6/2/16	8:30 am*	BS302	
Week 3	6/3/16	8:30 am*	BS302	
Week 4	6/6/16	8:30 am*	BS302	
<b>MODULE 3: INTRODUCTION TO BREAST CANCER RESEARCH</b>				
Week 4	6/7/16	8:00 am	BE110	Graduate School Funding Opportunities for Underrepresented Students (J. Sullivan, PhD)
Week 4	6/8/16	8:00 am	BE112	<i>Basic Sciences Research Lecture</i> Genetic and molecular characteristics of breast cancer; importance of race/ethnicity/ancestry (D. Watson, PhD and V. Findlay, PhD)
Week 4	6/9/16	8:00 am	BS202	<i>Population Sciences Research Lecture</i> Current and emerging imaging strategies in the detection of breast cancer (M. Lewis,
Week 4	6/10/16			Elective (1 hr)
Week 5	6/13/16	8:00 am	BE112	<i>Population Sciences Research Lecture</i> Racial/ethnic disparities in breast cancer treatment, outcomes and survivorship (C. Hughes-Halbert, PhD)
Week 5	6/13/16	9:30 am	BE112	<i>Clinical Trials: Overview, Design and Results of a Breast Cancer Trial</i> (N. DeMore,
Week 5	6/14/16	8:00 am	BE110	<i>Population Sciences Research Lecture</i> Survivorship issues in breast cancer (K. Sterba, PhD)
Week 5	6/14/16	9:30 am	BE110	<i>Clinical Sciences Research Lecture</i> Etiology of and current treatment approaches for breast cancer (L. Peterson, MD)
Week 5	6/15/16	8:00 am	BE112	Professional Communication (M. Ford, PhD)
Week 5	6/16/16	8:00 am	BE110	<i>Basic Sciences Research Lecture</i> Genomic approaches utilizing contemporary technologies (Next Generation sequencing, microarray profiling, RNA sequencing, DNA-based approaches) in providing new biological understanding of breast cancer (S. Ethier, PhD)
Week 5	6/17/16			Elective (1 hr)
Week 6	6/20/16	8:00 am	BE112	Breast Cancer Journal Club (moderated by V. Findlay, PhD)
<b>Module 3 Breast Cancer Research Take-Home Test</b>				
<b>MODULE 4: INTRODUCTION TO PROSTATE CANCER RESEARCH</b>				

Week 6	6/21/16	8:00 am	BE110	<i>Clinical Trials: Overview, Design and Results of a Prostate Cancer Trial</i> (D. Marshall, MD)
Week 6	6/22/16	8:00 am	BE112	<i>Population Sciences Research Lecture</i> Racial and ethnic disparities in prostate cancer research (A. Alberg, PhD)
Week 6	6/23/16	8:00 am	BE110	<i>Clinical Trials: Overview, Design and Results of Phase I Clinical Trials</i> (C. Britten, MD)
Week 6	6/23/16	9:30 am	BS355	<i>Population Sciences Research Lecture</i> Controversies in prostate cancer screening (S. Savage, MD)
Week 6	6/24/16	Elective (1 hr)		
Week 7	6/27/16	8:00 am	BE112	Strategies for Effective Presentations (P. Halushka, PhD)
Week 7	6/28/16	8:00 am	BS202	<i>Basic Sciences Research Lecture</i> Cancer genes and molecular regulation of prostate cancer (D. Watson, PhD and D. Turner, PhD)
Week 7	6/29/16	8:00 am	BE112	<i>Translational Science Research Lecture</i> Immunotherapeutic approaches to prostate cancer (J. Wu, PhD)
Week 7	6/29/16	9:30 am	BE 112	Biostatistical Methods Lecture (E. Garrett-Mayer, PhD)
Week 7	6/30/16	8:00 am	BE112	Prostate Cancer Journal Club (moderated by D. Watson, PhD)
Week 7	7/1/16	Sea Island/Gullah Cultural Awareness Program		
<b>Fourth of July Holiday – No Class on 7/4/16</b>				
Week 8	7/5/16	8:00 am	BE110	<i>Basic Sciences Research Lecture</i> Vitamin D and prostate cancer (S. Gattoni-Celli, MD)
Week 8	7/5/16	9:30 am	BE110	<i>Clinical Sciences Research Lecture</i> Etiology and current treatment approaches for prostate cancer (M. Lilly, MD)
<b>Module 4 Prostate Cancer Research Take-Home Test</b>				
<b>MODULE 5: INTRODUCTION TO HEAD/NECK CANCER RESEARCH</b>				
Week 8	7/6/16	8:00 am	BE112	<i>Clinical Sciences Research Lecture</i> Etiology of and current treatment approaches for head/neck cancers (T. Day, MD)
Week 8	7/6/16	9:30 am	BE112	<i>Basic Sciences Research Lecture</i> HPV background and role in head/neck cancer (L. Pirisi-Creek, MD)
Week 8	7/7/16	8:00 am	BE112	<i>Clinical Sciences Research Lecture</i> Physiologic issues in head/neck cancer survivorship (B. Martin-Harris, PhD)
Week 8	7/7/16	9:30 am	BE112	<i>Populations Sciences Research Lecture</i> Racial/ethnic disparities in head/neck cancer (M. Ford, PhD)
Week 8	7/8/16	Elective (1 hr)		
Week 9	7/11/16	8:00 am	BE112	<i>Populations Sciences Research Lecture</i> Smoking and cancer (K. Cummings, PhD)
Week 9	7/11/16	9:30 am	BE112	<i>Basic Sciences Research Lecture</i> Using genomic approaches to enhance personalization of head/neck cancer care (D. Neskey, MD)
Week 9	7/12/16	8:00 am	BE110	<i>Clinical Trials: Overview, Design, and Results of a Head/Neck Cancer Trial</i> (D. Neskey, MD)
Week 9	7/12/16	9:30 am	BE110	Head/Neck Cancer Journal Club (moderated by S. Rosenzweig, PhD)
<b>Module 5 Head/Neck Cancer Research Take-Home Test</b>				
<b>MODULE 6: INTRODUCTION TO CERVICAL CANCER RESEARCH</b>				
Week 9	7/13/16	8:00 am	BE112	<i>Clinical Sciences Research Lecture</i> Etiology of and treatment approaches for cervical cancer (J. Young Pierce, MD)
Week 9	7/13/16	9:30 am	BE112	<i>Population Sciences Research Lecture</i> Overview of HPV infection and cervical cancer in the US (J. Korte, PhD)
Week 9	7/14/16	8:00 am	BE112	<i>Populations Sciences Research Lecture</i> Cervical cancer vaccination in the US: a case study (K. Cartmell, PhD)
Week 9	7/14/16	9:30 am	BE112	<i>Population Sciences Research Lecture</i> Racial/ethnic disparities in cervical cancer in the US (M. Ford, PhD)
Week 9	7/15/16	Elective (1 hr)		

Week 10	7/18/16	8:00 am	BE112	<i>Clinical Sciences Research Lecture</i> Global perspective of cervical cancer screening and early detection (J. Young Pierce, MD)
Week 10	7/18/16	9:00 am	BE 112	Careers in Academic Medicine (G. Silvestri, MD)
Week 10	7/19/16	8:00 am	BE110	<i>Basic Sciences Research Lecture</i> Cellular and molecular changes associated with HPV infection in cervical cancer (K. Creek, PhD)
Week 10	7/19/16	9:30 am	BE110	Cervical Cancer Journal Club (moderated by K. Creek, PhD)
Week 10	7/20/16	9:30 am	DD	Experiences of a Prostate Cancer Survivor (S. Slaughter, PhD)
<b>Module 6 Cervical Cancer Research Take-Home Test</b>				
Week 10	7/22/16	8:00 am	HO120	Students' Presentations, Final Class Discussion, Course Evaluations and Final Papers Are Due

## **Appendix E: SC CHEC Journal Club Assignments**

## 2016 SC CHEC Journal Club Groups

### **Breast Cancer Journal Club**

**June 20, 2016**

Mina Gunter  
Jerrica Walden  
Brianna Jacobs  
Christina Alford  
Thomas Wallace

### **Prostate Cancer Journal Club**

**June 30, 2016**

Daniel Patterson  
Taaliah Campbell  
London Knight  
Kenyatta Walker  
Jordan Barnes

### **Head/Neck Cancer Journal Club**

**July 12, 2016**

Nakea Pennant  
Tanner Coleman  
Jamicca Green  
Taylor Trachtenberg

### **Cervical Cancer Journal Club**

**July 19, 2016**

Malik Leach  
Kai Cobb  
NiAsia Hazelton  
Rosa Alcantar

## **Appendix F: 2016 Students Supported from Leveraged Funding Sources**

**Summer 2016 South Carolina Cancer Health Equity Consortium: HBCU Student Summer Training Program Additional Student, Mentor, Funding Source, and Title of Research Project**

<b>Student Name</b>	<b>Academic Institution</b>	<b>MUSC Research Mentor</b>	<b>Funding Source</b>	<b>Title of Research Project</b>
Rosa Alcantar	Claflin University	Juan Luque, PhD	NIH/NCI R25E	HPV and Cervical Cancer: Standardized Questionnaire on Opinions and Experiences of the Latina Women
Kai Cobb	Claflin University	Gayenell Magwood, PhD, RN	NIH/NCI R25E	The Relationship between Cardiometabolic Risk Factors and African-American Breast Cancer Survivors
Jamicca Green	Claflin University	Chanita Hughes-Halbert, PhD	NIH/NCI R25E	Examining Health Behaviors and Weight Management Issues in Primary Care
Christina Alford	University of South Carolina	Sundar Balasubramanian, PhD	NIH/NCI R25E	Yogic Breathing as an Adjunct Mind-Body Intervention to Reduce Side Effects of Cancer Treatment
Tanner Coleman	University of South Carolina	Kevin Gray, MD	NIH/NCI R25E	Racial and socioeconomic differences in cortisol reactivity to Trier Social Stress Test in adult smokers: An interim analysis
Mina Gunter	University of South Carolina	Phillip Howe, PhD	NIH/NCI R25E	Role of ER-Golgi Trafficking Genes in Breast Cancer Metastatic Progression
NiAsia Hazelton	University of South Carolina	Marvella E. Ford, PhD	NIH/NCI R25E	Assessing an Intervention to Increase Cervical Cancer Knowledge and HPV Vaccination Knowledge in SC
Brianna Jacobs	University of South Carolina	Danyelle Townsend, PhD	NIH/NCI R25E	The effect of redox enzymes and polymorphisms on triple negative breast cancer in African-American women
Daniel Patterson	University of South Carolina	Steven Rosenzweig, PhD	NIH/NCI R25E	NEDD9 Mutations Affect Levels of Protein Expression in Head and Neck Squamous Cell Carcinoma
Taylor Trachtenberg	University of South Carolina	Howard Becker, PhD	NIH/NCI R25E	The Effect of Repeated Stress on Brain Stress Systems: Implications for Cancer Development
Jerrica Walden	University of South Carolina	Victoria Findlay, PhD	NIH/NCI R25E	miR-204 Expression Disrupts Normal Lactation in Mammary Gland Development
Thomas Wallace	University of South Carolina	Bart Smits, PhD	NIH/NCI R25E	Mutations of TOX3 affect Breast Cancer Susceptibility in Non-Hispanic White and African-American Women
Malik Leach	Voorhees College	Kathleen Cartmell, PhD, MPH	NIH/NCI R25E	Somatic Genetic Mutations in African American and Caucasian American Patients with Colorectal Cancer
Nakea Pennant	South Carolina State University	Kristin Wallace, PhD	NIH/NCI R25E	A Systematic Review of Patient Navigation Interventions To Improve Patient Education and Enrollment in Cancer Clinical Trials

**Appendix G: Summaries of Students' Scientific Research from the 2016  
SC CHEC Program**

**Jordan Barnes**  
**Clafin University**  
**Mentor: Besim Ogretmen, PhD**

### **ABSTRACT**

#### **A study on the relationship of the presence of Human Papilloma Virus and response to treatment in cervical cancers**

Human Papilloma Virus (HPV) is a sexually transmitted virus that is associated with cervical cancer. HPV early proteins, E6 and E7, have cancer-killing properties and maintain cell viability by disrupting the cell growth cycle. It is hypothesized that when HPV+ (SiHa) and HPV- (C33a) cervical cancer cells are treated with anti-cancer drugs, cisplatin and a ceramide analog, the HPV+ cells would respond better to treatment. Using either cisplatin or the ceramide analog in dose titration treatments on HPV+ and HPV- cells, we determined that both HPV- and HPV+ cells are more sensitive to ceramide versus cisplatin. However, HPV- cells displayed a higher sensitivity than HPV+ cells to 15.8 uM cisplatin (50% vs. 43% cell death). To determine if the HPV E6 and E7 proteins in cancer cells have therapeutic effects and lead to cancer cell death we overexpressed E6 and E7 proteins in HPV- cells and treated them with cisplatin. Using the MTT colorimetric assay we assessed cell viability and discovered an increase in cell death as compared to the control. Taken together these results indicate a role of HPV E6 and E7 proteins in mediating cancer cell death. The results have implications for prostate cancer, as recent studies have begun to elucidate the mechanisms by which sphingolipid metabolism and signaling may regulate tumor growth and progression. These mechanisms, such as the intracellular protein targets of sphingolipids, are now the focus for the development of new chemotherapeutic approaches for diseases such as prostate cancer.

**Taaliah Campbell**  
**Claflin University**  
**Mentor: Shikhar Mehrotra, PhD**

## **ABSTRACT**

### **Vitamin C and Immunotherapy**

The immune system is a network of cells, tissues, and organs that work together collectively to protect the body from infection. All cells involved in the immune system have extremely significant functions to ensure that the body operates properly. T cells are among the major cells that assist in the well-being of the immune system. Given the successful use of tumor reactive T cells in controlling tumor growth upon adoptive transfer, the strategies that improve persistence and function of T cells in an oxidative tumor microenvironment hold immense translational potential. Since Vitamin C also possesses high anti-oxidant capacity, we postulated that T cells programmed with Vitamin C will exhibit increased anti-tumor property. Thus, in this study, different dosage amounts of vitamin C, and growth factors consisting of Interleukin-2, CD3, and CD28 were combined to stimulate T cells. The results from our pilot experiments indicate that Vitamin C modulates the proliferation, and cell surface marker expression of various adhesion molecules that play an important role in T cell mediated tumor immunotherapy. Future *in vitro* characterization and *in vivo* tumor studies will be needed to comprehensively establish the role of Vitamin C in T cell immunomodulation, and if it can be used to boost immunotherapy.

**London Knight**  
**South Carolina State University**  
**Mentor: Dennis Watson, PhD**

## **ABSTRACT**

### **Friend Leukemia Integration 1 (FLI1) as a contributor to tumor aggression in malignant peripheral nerve sheath tumors and neurofibromas through an interaction with Ras regulation**

FLI1 is a member of the Ets transcription family and is associated with cellular differentiation, proliferation, survival, migration, and invasion; all pathways important to the development of cancer. Ras is an oncogene that activates cell proliferation and may interact with Ets genes. MPNSTs have NF1 mutations that allow Ras activation. Observations show that in the absence of FLI1, embryonic fibroblasts do not undergo senescence following Ras activation. Furthermore, loss of FLI1 has been contributed to aggressiveness in breast cancer. With these factors considered, our research examined the expression of FLI1 in neurofibromas and MPNSTs as a means to measure oncogenic aggressiveness. The expression of FLI1 was evaluated using techniques such as qPCR, Western Blot analysis, and IHC to observe cellular distribution. Results from qPCR were mixed with varied expression of FLI1 in the more aggressive tumors. Western Blot also showed varied expression of FLI1, though loss of FLI1 in the more aggressive tissues was consistent. IHC results favored loss of FLI1 in aggressive tumors; however exact results could not be obtained due to the similarity of the distribution levels. A correlation of FLI1 loss among aggressive tissues was observed, however the results were not consistent enough to support or refute the hypothesis. Altogether, our research examined FLI1 as a potential biomarker for tumor aggression in MPNSTs and neurofibromas.

**Kenyatta Walker**  
**South Carolina State University**  
**Mentor: David Turner, PhD**

## **ABSTRACT**

### **The Impact of Reactive Sugar Metabolites on Pubertal Mammary Gland Development and Increased Cancer Risk**

Advanced Glycation End-Products (AGEs) are a product of glycated sugars bound to macromolecules such as proteins, DNA, and lipids. AGE accumulation in our bodies is also increased by poor diet. When these molecules bind to a receptor such the receptor for AGE (RAGE), a surface binding receptor, it creates an environment susceptible to inflammation and pro-oxidation. The mammary gland is essential to the growth of the breast. It is possible that the accumulation of AGEs throughout pubertal mammary gland development can lead to alterations and abnormalities potentially caused by increased inflammation and oxidative stress. This may create an environment suitable for cancer development in later life. In this study it is hypothesized that mice fed a diet high in AGEs will impact pubertal mammary gland development leading to increased risk of cancer.

**Methods:** In order to test this hypothesis, precise protocols were chosen that would best complete this study in the limited timeframe. The FVB/N mouse was the chosen animal model. Embedding, Whole Mounting, Immunohistochemistry staining with Ki67, Hematoxylin and Eosin staining, and Dot blot were all performed in order to obtain data to support our hypothesis.

**Results:** After collecting mammary glands from the 8 week mice fed either a high or regular AGE diet, we found that ductal extension as well as the terminal end buds' area, and rate of proliferation were affected by the high AGE diet. In the mice fed a high AGE diet the ductal tension was reduced in distance from the gland's Lymph node compared to the control group of mice fed a regular diet. Whole Mounting showed that the Terminal End Bud (TEB) areas were greater in size as well in mice fed the high AGE diet. Dot Blot assay using serum from both diet groups confirmed that there were higher levels of circulating AGEs in mice fed the diet high in AGEs.

**Conclusion:** It is possible that our bad habits of eating while we go through puberty can have long term effects on our health when we get much older. The accumulation of AGEs alters the development of the pubertal mammary gland by increasing cell proliferation of the TEBs. Future studies will examine if this could possibly lead to an increased risk of cancer risk in later life.

## **Appendix H: 2016 SC CHEC Program Elective Groups**

## SC CHEC Elective Groups

<b>Group A</b>	Kai Cobb
	Thomas Wallace
	Mina Gunter

<b>Group D</b>	Kenyatta Walker
	Rosa Alcantar
	Daniel Patterson

<b>Group B</b>	Tanner Coleman
	Taaliah Campbell
	London Knight
	Nakea Pennant

<b>Group E</b>	Brianna Jacobs
	NiAsia Hazelton
	Jamicca Green
	Jordan Barnes

<b>Group C</b>	Christina Alford
	Malik Leach
	Taylor Trachtenberg
	Jerrica Walden

## SC CHEC 2016 Elective Schedule

	June 10, 2016	June 17, 2016	June 24, 2016	July 8, 2016	July 15, 2016
<b>Biorepository &amp; Tissue Analysis</b> • BE 421 – 3:30 PM	Group A	Group C	Group B	Group D	Group E
<b>Cell &amp; Molecular Imaging Core Facility</b> • DD 507 – 2:00 PM	Group B	Group A	Group D	Group E	Group C
<b>Flow Cytometry and Cell Sorting Core</b> • HCC 324 – 2:00 PM	Group E	Group D	Group C	Group B	Group A
<b>Genomics</b> • BE 433 – 11:00 AM	Group C	Group B	Group E	Group A	Group D
<b>Lipidomics</b> • CRI 505c – 10:00 AM	Group D	Group E	Group A	Group C	Group B

## **Appendix I: Academic Accomplishments to Date of the 2016 Student Fellows**

**Year of Program Participation: 2016**

These are the most recent student fellows that participated in the 2016 SC CHEC Program. Additional accomplishments are expected to occur during the course of the next few years following their participation.

Student Name	Summer Research Project	Funding Source	Publications and Presentations	GRE Status	Graduate School Admission
Ms. Jordan Barnes Claflin University	<b>Mentor:</b> Besim Ogretmen, Ph.D. <b>Research Project:</b> A Study on the Relationship of the Presence of Human Papilloma Virus and Response to Treatment in Cervical Cancers	Department of Defense (HBCU)	<b>Publications:</b> No publications to date <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium <b>Honors:</b> 2016 Moses and Emma Harvin Scholarship	N/A	Still enrolled at Claflin University as a Biology Major.
Ms. Taaliah Campbell Claflin University	<b>Mentor:</b> Shikhar Mehrotra, Ph.D. <b>Research Project:</b> Vitamin C and Immunotherapy	Department of Defense (HBCU)	<b>Publications:</b> No publications to date <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium 2016 Annual Biomedical Research Conference for Minority Students (poster). Tampa, Florida <b>Honors:</b> Claflin University NIH Rise Program	Scheduled to take the GRE in August of 2017	Still enrolled at Claflin University.
Ms. London Knight South Carolina State University	<b>Mentor:</b> Dennis Watson, Ph.D. <b>Research Project:</b> Friend Leukemia Integration 1 (FLI1) as a Contributor to Tumor Aggression in Malignant Peripheral Nerve Sheath Tumors and Neurofibromas through an Interaction with Ras Regulation	Department of Defense (HBCU)	<b>Publications:</b> No publications to date <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium <b>Honors:</b> Miss South Carolina State University, 2016 – 2017	N/A	Still enrolled at South Carolina State University.
Ms. Kenyatta Walker South Carolina State University	<b>Mentor:</b> David Turner, Ph.D. <b>Research Project:</b> The Impact of Reactive Sugar Metabolites on Pubertal Mammary Gland Development and Increased Cancer Risk	Department of Defense (HBCU)	<b>Publications:</b> No publications to date <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium	N/A	Still enrolled at South Carolina State University.

**Students Supported by Leveraged Funding Sources**

<b>Student Name</b>	<b>Summer Research Project</b>	<b>Funding Source</b>	<b>Publications, Presentations and Honors</b>	<b>GRE Status</b>	<b>Graduate School Admission</b>
Ms. Rosa Alcantar Claflin University	<b>Mentor:</b> Juan Luque, Ph.D. <b>Research Project:</b> HPV and Cervical Cancer: Standardized Questionnaire on Opinions and Experiences of the Latina Women	NIH/NCI R25E	<b>Publications:</b> Luque JS, Tarasenko YN, Li H, Davila CB, Knight RN, <b>Alcantar RE.</b> Utilization of cervical cancer screening among Hispanic immigrant women in coastal South Carolina. Journal of Racial and Ethnic Health Disparities 2017; July 12; Epub ahead of print. <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium	N/A	Still enrolled at Claflin University.
Ms. Christina Alford University of South Carolina	<b>Mentor:</b> Sundar Balasubramanian, Ph.D. <b>Research Project:</b> Yogic Breathing as an Adjunct Mind-Body Intervention to Reduce Side Effects of Cancer Treatment	NIH/NCI R25E	<b>Publications:</b> No publications to date <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium <b>Honors:</b> National Society of Collegiate Scholars National Honor Society-Alpha Lambda Delta	N/A	Graduated from the University of South Carolina in 2016. Currently employed as a Research Assistant with Clinical Trials of South Carolina.
Ms. Kai Cobb Claflin University	<b>Mentor:</b> Gayenell Magwood, Ph.D., RN <b>Research Project:</b> The Relationship between Cardiometabolic Risk Factors and African-American Breast Cancer Survivors	NIH/NCI R25E	<b>Publications:</b> No publications to date <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium 2016 Annual Biomedical Research Conference for Minority Students (poster). Tampa, Florida Perry Halushka 2016 MUSC Research Day (poster)	N/A	Still enrolled at Claflin University.

**Students Supported by Leveraged Funding Sources (continued)**

<b>Student Name</b>	<b>Summer Research Project</b>	<b>Funding Source</b>	<b>Publications, Presentations and Honors</b>	<b>GRE Status</b>	<b>Graduate School Admission</b>
Mr. Tanner Coleman University of South Carolina	<b>Mentor:</b> Kevin Gray, M.D.  <b>Research Project:</b> Racial and Socioeconomic Differences in Cortisol Reactivity to Trier Social Stress Test in Adult Smokers: An Interim Analysis	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium  <b>Honors:</b> University of South Carolina Honors College	N/A	Still enrolled at the University of South Carolina.
Ms. Jamicca Green Claflin University	<b>Mentor:</b> Chanita Hughes Halbert  <b>Research Project:</b> Examining Health Behaviors and Weight Management Issues in Primary Care	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium  2017 Annual National Conference on Health Disparities (poster)	N/A	Still enrolled at Claflin University.
Ms. Mina Gunter University of South Carolina	<b>Mentor:</b> Philip Howe, Ph.D.  <b>Research Project:</b> Role of ER-Golgi Trafficking Genes in Breast Cancer Metastatic Progression	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium	N/A	Still enrolled at the University of South Carolina as a Biology Major

**Students Supported by Leveraged Funding Sources (continued)**

<b>Student Name</b>	<b>Summer Research Project</b>	<b>Funding Source</b>	<b>Publications, Presentations and Honors</b>	<b>GRE Status</b>	<b>Graduate School Admission</b>
Ms. NiAsia Hazelton  University of South Carolina – Beaufort	<b>Mentor:</b> Marvella E. Ford, Ph.D.  <b>Research Project:</b> Assessing an Intervention to Increase Cervical Cancer Knowledge and HPV Vaccination Knowledge in SC	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium  <b>Honors:</b> Trio Spirit Award  Sand Shark Scholars Mentor/ Teacher Assistant  Gamma Beta Phi Honor Society  Alpha Mu Gamma Foreign Language Honors Society  Ronald McNair Scholar  President of University of South Carolina-Beaufort’s Human Service Club.	Took the GRE in Summer of 2016	Graduated from the University of South Carolina-Beaufort in May 2017.  Currently enrolled in an MPH Program, with a focus on health services policy and management at USC, with a fall 2017 start date.
Ms. Brianna Jacobs  University of South Carolina	<b>Mentor:</b> Danyelle Townsend, Ph.D.  <b>Research Project:</b> The Effect of Redox Enzymes and Polymorphisms on Triple Negative Breast Cancer in African-American Women	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium  <b>Honors:</b> Graduated with leadership distinction: <ul style="list-style-type: none"> <li>• Diversity &amp; Social Advocacy</li> <li>• Leadership</li> </ul>	Has taken the GRE	Graduated from the University of South Carolina in December 2016.  Currently enrolled in an MPH Program, at the University of Michigan – Ann Arbor, with a fall 2017 start date.
Mr. Malik Leach (Dual Year Participant 2015/2016)  Voorhees College	<b>Mentor:</b> Kathleen Cartmell, Ph.D., MPH  <b>Research Project:</b> A Systematic Review of Patient Navigation Interventions To Improve Patient Education and Enrollment in Cancer Clinical Trials	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium	N/A	Transferred to Coastal Carolina University in Fall 2016.

**Students Supported by Leveraged Funding Sources (continued)**

<b>Student Name</b>	<b>Summer Research Project</b>	<b>Funding Source</b>	<b>Publications, Presentations and Honors</b>	<b>GRE Status</b>	<b>Graduate School Admission</b>
Mr. Daniel Patterson University of South Carolina	<b>Mentor:</b> Steven Rosenzweig, Ph.D.  <b>Research Project:</b> NEDD9 Mutations Affect Levels of Protein Expression in Head and Neck Squamous Cell Carcinoma	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium  2016 Hollings Cancer Center Research Retreat (poster)  The Perry Halushka 2016 MUSC Research Day (oral)	N/A	Still enrolled at the University of South Carolina.
Ms. Nakea Pennant South Carolina State University	<b>Mentor:</b> Kristin Wallace, Ph.D.  <b>Research Project:</b> Somatic Genetic Mutations in African American and Caucasian American Patients with Colorectal Cancer	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium	N/A	Still enrolled at South Carolina State University.
Ms. Taylor Trachtenberg University of South Carolina	<b>Mentor:</b> Howard Becker, Ph.D.  <b>Research Project:</b> The Effect of Repeated Stress on Brain Stress Systems: Implications for Cancer Development	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium	N/A	Still enrolled at the University of South Carolina.
Ms. Jerrica Walden University of South Carolina	<b>Mentor:</b> Victoria Findlay, Ph.D.  <b>Research Project:</b> miR-204 Expression Disrupts Normal Lactation in Mammary Gland Development	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium	Took the MCAT in Summer of 2017	Still enrolled at the University of South Carolina.
Mr. Thomas Wallace University of South Carolina	<b>Mentor:</b> Bart Smits, Ph.D.  <b>Research Project:</b> Mutations of TOX3 affect Breast Cancer Susceptibility in Non-Hispanic White and African-American Women	NIH/NCI R25E	<b>Publications:</b> No publications to date  <b>Presentations:</b> 2016 MUSC SC CHEC Research Colloquium	N/A	Still enrolled at the University of South Carolina.

## **Appendix J: SC CHEC Mentor Program Evaluations**

**SUMMARY RESULTS OF MENTOR EVALUATIONS 2016 (n=4)**

Survey Item	N	%	N	%	N	%	N	%
	1. How would you rate the SC CHEC Program?	<b>Excellent</b>	<b>Very Good</b>	<b>Good</b>	<b>Poor</b>			
	3	75.0	1	25.0	0	0.0	0	0.0
2. How would you describe the quality of your experience as a participant in the SC CHEC Program?	<b>Excellent</b>	<b>Very Good</b>	<b>Good</b>	<b>Poor</b>				
	2	50.0	2	50.0	0	0.0	0	0.0
3. Would you volunteer to serve as a SC CHEC Mentor again next year or in the future?	<b>Yes</b>	<b>Possibly</b>	<b>Not Sure</b>	<b>No</b>				
	2	50.0	1	25.0	0	0.0	1	25.0
4. Did the SC CHEC mentor orientation session help you prepare for your mentoring experience?	<b>Yes</b>	<b>Somewhat</b>	<b>Not Sure</b>	<b>No</b>				
	2	50.0	2	50.0	0	0.0	0	0.0
5. Would you have liked additional training for mentors?	<b>Yes</b>	<b>Maybe</b>	<b>Probably Not</b>	<b>No</b>				
	1	25.0	1	25.0	1	25.0	1	25.0
6. How clearly defined were your mentor responsibilities?	<b>Very Clear</b>	<b>Moderately Clear</b>	<b>A Little Unclear</b>	<b>Very Unclear</b>				
	3	75.0	0	0.0	1	25.0	0	0.0
7. The SC CHEC Program Coordinators were accessible and easy to talk to and seek advice from when necessary.	<b>Always</b>	<b>Somewhat</b>	<b>Not Much</b>	<b>Never</b>				
	3	75.0	1	25.0	0	0.0	0	0.0
8. How would you describe your relationship with your mentee?	<b>Very Good</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>				
	3	75.0	1	25.0	0	0.0	0	0.0
9. Do you think that the time you spent with your mentee was sufficient?	<b>Yes</b>	<b>Almost</b>	<b>Not Really</b>	<b>No</b>				
	2	50.0	2	50.0	0	0.0	0	0.0
10. Do you think that the time you spent together was helpful for your mentee?	<b>Yes</b>	<b>Somewhat</b>	<b>Not Really</b>	<b>No</b>				
	3	75.0	1	25.0	0	0.0	0	0.0
11. Did you gain personally from this relationship?	<b>Yes</b>	<b>Somewhat</b>	<b>Not Much</b>	<b>No</b>				
	3	75.0	1	25.0	0	0.0	0	0.0
12. I would have preferred to meet less often with my mentee.	<b>Yes</b>	<b>Sometimes</b>	<b>Rarely</b>	<b>No</b>				
	0	0.0	0	0.0	1	25.0	3	75.0
13. I would have preferred to meet more often with my mentee.	<b>Yes</b>	<b>Sometimes</b>	<b>Rarely</b>	<b>No</b>				
	0	0.0	4	100.0	0	0.0	0	0.0