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14. ABSTRACT
The goal of the "Mississippi prostate cancer HBCU Undergraduate Research Training Program" is to promote interest in careers in PCa research and care among undergraduate students from Tougaloo College (TC) and Jackson State University (JSU) at the University of Mississippi Medical Center (UMMC)-Cancer Institute (CI). During the summers of 2014 and 2015, 12 undergraduate scholars from TC and JSU, gained experience in performing PCa research at UMMC-CI. Two trainees are pursuing graduate studies in cancer biology; 10 of them are currently involved in research or pursuing graduation; 31 meeting presentations in the poster or oral format included work related to internships; trainees received numerous (8) awards; manuscripts (3) in preparation include trainees as coauthors; and 2 PCa Research Mini Symposiums have been organized. Research projects are leading to development of novel effective treatments and addressing mechanisms of resistance for men with high-risk or metastatic PCa. Likewise, these projects will eventually help distinguishing aggressive from indolent disease in men newly diagnosed with PCa. Scholars of this Program are becoming well-rounded, trained professionals. In the near future former mentees, as junior faculty will enlarge the ranks of minority researchers at TC, JSU or UMMC. They will impact their communities and will contribute to reduce PCa health disparities.

15. SUBJECT TERMS
UMMC-HBCU, Prostate Cancer, Training Grant, University of Mississippi Medical Center, Cancer Institute, Tougaloo College, Jackson State University, CDMRP, PCRP, research, care

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Annual Summary

1. Introduction

Mississippi has the second highest rate of PCa death in the country and the fourth highest incidence rate. Factors such as increased risk for African-Americans, obesity and medical distrust contribute to high rates of PCa in Mississippi. The scarcity of minority physicians and scientists is a major factor in perpetuating distrust in medicine and science among minority communities. Because of these reasons the scope of our program is to increase the number of HBCU scientists and physicians who are trained as PCa researchers. The subject is to train undergraduate students from two Historically Black Colleges and Universities, Tougaloo College (TC) and Jackson State University (JSU), so they can gain experience in performing prostate cancer (PCa) research at the University of Mississippi Medical Center (UMMC) Cancer Institute (CI). Participants will participate in a 10-week comprehensive training program in PCa research and care. Interns will perform hands on PCa research, attend regular hosting lab meetings, weekly one-on-one meetings with their mentors, attend UMMC-CI's weekly seminar series, participate in a lecture program including PCa-related lectures, shadow a physician to expose them to experiences related to PCa clinical practice, participate in a PCa Research Symposium, attend seminar series about the research programs at UMMC, postgraduate studies alternatives, graduate school application process, and will be provided opportunities in social settings to improve their networking and communication skills. Interns will also prepare a final written report. Diverse ways of tacking interns will be utilized in order to contact them, update their biographical and training information, as well as their accomplishments, awards, interest and achievements related to their approach to academic career (i.e. enter graduate school, medical school or other related health-related professions contributing to PCa research and care). Our ultimate purpose is to create a long-term partnership between TC, JSU and UMMC-CI that will produce a cadre of top-caliber minority scientists and physicians with a specific interest in PCa research, prevention, diagnosis and care.

2. Keywords

UMMC-HBCU, Prostate Cancer, Training Grant, University of Mississippi Medical Center, Cancer Institute, Tougaloo College, Jackson State University, CDMRP, PCRP, research, care, aggressive, indolent, disease, newly diagnosed.

3. Accomplishments

Major goals of the project [as stated in the approved* Statement of Work (*SOW)]:

Specific Aim 1: To, during a 2-year period, recruit 6 undergraduate trainees per year from TC and JSU.

Specific Aim 2: To provide the mentees a comprehensive training curriculum in PCa research at UMMC-CI.

Specific Aim 3: To track and coach trainees on their progress towards become biomedical Prostate Cancer researchers

What was accomplished under these goals:

During the first year of the project (8/2014 – 8/2015), we have trained 12 undergraduate students from TC and JSU. There were no technical or unexpected difficulties encountered and/or any deviations from the original SOW. Per Instruction, our training and research accomplishments following each task outlined in the approved SOW are listed as follows:

Specific Aim 1: To, during a 2-year period, recruit 6 undergraduate trainees per year from TC and JSU. Year 1, months 1-3; Year 2, months 13-15 (completed)

Selection process: The applicant pool included all sophomores and juniors enrolled in a Major in the life sciences (biology, biochemistry, chemistry, biotechnology, etc.) at TC or JSU. We also included in the selection pool seniors based on their commitment to go to Graduate School (applying or accepted in a graduate program at the time of application to our program). Our strategy of advertisement included online advertisement in the research-related section and Summer Internships and Outreach Programs in the HBCUs, UMMC-CI, UMMC-discovery U Program, and UMMC-School of Graduate Studies in the Health Sciences webpages. We also developed a webpage (http://www.umc.edu/researchtraining/). This resource has been particularly successful since includes information about eligibility requirements, program components, summer research internship, housing assistance, application packet, and contact information, list of mentors, and news **(Appendix #1)**. In addition, Flyers were placed in the two colleges and at the host institution **(Appendix #2)**. Additionally, the PI, Dr. Gomez gave talks at the schools to announce the program. The selection process was initiated 60 days prior to the beginning of the summer training course.

The following tables refer to some demographics aspects related to the applicant pool for the class of 2014 and 2015:

Applicant numbers

	2014	**2015**
JSU	15	22
TC	8	10

Gender (overall)

	2014	**2015**
Female	17	23

Male	6	9

Gender (TC)

	2014	**2015**
Female	6	8
Male	2	2

Gender (JSU)

	2014	**2015**
Female	11	15
Male	4	7

In both schools, TC and JSU, the applicant numbers increased from year 2014 [TC, N = 8; JSU, N = 15] to year 2015 [TC, N = 10; JSU, N = 22]. This result can be explained by the intensive advertisement campaign and additional advertisement support provided by interns from the 2014 class. As an example, the following figure depicts Brittany Martin, one of the 2014's class interns, promoting our 2015 Summer Course to her classmates at JSU. During a visit to JSU, Dr. Gomez (PI) asked Ms. Martin to refer to her fellow classmates about the training program. It was later noted to the PI that at several applicants to the 2015 class became interested in the training program after attending this meeting and listening Ms. Martin's experience. Involvement of interns in advertising our training program, therefore has become a very effective way to increase recruitment.

Involvement of interns in advertising our training program has become a very effective way to increase recruitment.

It is also worth noting that independent of the school, females leaded the number of applicants to our program. Overall, females represented 73.9% and 71.9% of the pool of applicants to class of 2014 and 2015, respectively. Males represented 26.1% and 28.1% of the pool of applicants to class of 2014 and 2015, respectively. The distribution was similar at the level of individual schools (note

tables above). In a recent meeting, the program advisory board noted that, provided the relevance that PCa represents to minority men, additional efforts should be done in order to promote applications of males to our program. Efforts therefore will be put into that direction when recruiting for future classes.

A question related to the academic status of applicants applying to our program is of great importance to assess the nature of the pool and its distinct component when analyzing per school.

The following tables represent the average GPA for the whole pool as well as per each individual school:

GPA (average)

	2014	**2015**
TC	3.4	3.5
JSU	3.5	3.5

GPA (TC)

	2014	**2015**
Average	3.4	3.5
Standard deviation	0.3	0.3
Median	3.4	3.4

GPA (JSU)

	2014	**2015**
Average	3.5	3.5
Standard deviation	0.2	0.3
Median	3.5	3.5

From the GPA results, a good representation of academic performance, we can propose that the application pool is homogeneous when compared between schools. This statement however, needs further validation and refinement since the standards between schools for evaluation have not been normalized at the present.

Following the selection process, 6 trainees per year were selected. Individual digitalized application packages and a well-defined set of scoring criteria was distributed to a set of five raters. Those included the PI, Program Coordinator, a research mentor and the HBCU faculty advisors. Applicants were ranked by highest to lowest based on the GPA, Personal statement and Letters of reference.

Follows the list of applicants selected for the Class of 2014:

Name	School	Classification	Major	Minor	GPA
Anthony Keyes	JSU	Sophomore	Chemistry	Mathematics	4.0
Ansley Scott	TC	Senior	Biology		3.3
Brittany Martin	JSU	Junior	Biology		3.29
Tatyana Givens	JSU	Sophomore	Biology		3.7
Joshua Agee	TC	Junior	Biology	Spanish	3.39
Diva Whalen	TC	Junior	Biology		3.4

List of applicants selected for the Class of 2015:

Name	School	Classification	Major	Minor	GPA
Adesuwa Ekunwe	JSU	Sophomore	Chemistry-Pre med		4.0
Angel Garcia	TC	Sophomore	Biology		3.9
Charles Phillips	TC	Senior	Biology		3.42
Deion Fields	JSU	Junior	Biology		3.84
Jamal Keyes	JSU	Sophomore	Chemistry	Biology	4.0
Timera Brown	TC	Sophomore	Biology		4.0

Match the student fellows with their research mentors at UMMC-CI. Year 1, months 4-5; Year 2, months 16-17 (completed for Years 1 and 2)

As planned, trainees were matched to mentors based on the mentee's research interests and following an interview between the mentee and potential mentor. Mentor assignations were completed 30 days prior to the initiation of the summer program. Use of the web-based resource (http://www.umc.edu/researchtraining/) allowed mentees to identify mentors based on research interests. Typically, the trainees selected three mentors and ranked them by order of preference. Interviews followed (including the presence of the Program Director) and a decision about the selected mentor was taken consulting the option of the mentee and prospective mentors.

Specific Aim 2: To provide the mentees a comprehensive training curriculum in Prostate Cancer research at UMMC-CI (completed)

Summer course:

The trainees participated in a 10-week comprehensive training program in PCa research and care. As outlined **(Appendix #3)**, the Course Program was completed as predicted.

The following description refers to landmarks achieved during the Summer Training Course:

PCa-specific lecture program: Included lectures were focused on Basic Cancer Biology; Cancer Pathology Pharmacology; Clinical science; Population Science; and Careers in PCa Research and Care.

Summer research project: The mentees were associated to a primary mentor. They developed their research project under direct supervision of a graduate student or postdoc.

The following table resumes mentors and mentees for the Classes of 2014 and 2015:

Mentee	School	Mentor	Project Tittle
Class of 2014			
Anthony Keyes	JSU	Drazen Raucher	Thermal Manipulation of the Elastin-Like-Polypeptide P21-E1-Bac Increases the Therapeutic Peptide's Potency Compared to the Parent Compound in vivo
Ansley Scott	TC	Yin Yuan Mo	Creating long non-codingRNA Knockouts to Determine Function in Relation to Prostate Cancer
Brittany Martin	JSU	Christian Gomez	The Role of Hepatoma Up-Regulated Protein (HURP) in resistance to prostate cancer treatment
Tatyana Givens	JSU	Chindo Hicks	Molecular Analysis of miRNA and mRNA Signatures in Prostate Cancer in African American and Caucasian Men
Joshua Agee	TC	Xinchun Zhou	C-terminal of group 3 POTES correlates with the Progression of Prostate Cancer
Diva Whalen	TC	Anait Levenson	The Effects of Synthetic Stilbenes on Metastasis Associated Protein 1 (MTA1) Levels In Prostate Cancer Cells
Class of 2015			
Adesuwa Ekunwe	JSU	Anait Levenson	Prostate-Specific MTA1 Transgenic Mice Model
Angel Garcia	TC	Christian Gomez	MICA (MHC class I polypeptide-related sequence A) as a Factor of Immunoevasion in Prostate Cancer
Charles Phillips	TC	Yin Yuan Mo	Long non-coding RNAs as potential diagnostic/prognostic markers in prostate cancers
Deion Fields	JSU	Keli Xu	Effects of NOTCH3 in Aggressiveness of Prostate Cancer
Jamal Keyes	JSU	Drazen Raucher	Testing the Anti-Proliferative Effects of Thermally Responsive Elastin-like Polypeptides on PC-3 mm and DU-145 Prostate Cancer Cell Lines
Timera Brown	TC	Xinchun Zhou	Accumulation of Cholesteryl Esters is associated with the Progression of Prostate Cancer

Students attended regular hosting lab meetings, and met weekly with their mentors. These one-on-one meetings were highly valuable to discuss the progress of the research projects. For the inaugural course, once a week, the students visited another lab involved in PCa research; in these

occasions they interacted with other PIs and lab personnel. It was intended that this activity would give the students a broader vision of the PCa research done at the Cancer Institute.

The following picture shows aspects of the wet lab centric summer research program:

The Summer Training Program is centered on a mentored hands-on a research intensive project (Diva Whalen, Class of 2015 at work with her mentor Dr. Anait Levenson, M.D., Ph.D.)

Shadowing: To expose mentees to experiences related to PCa clinical practice, they shadowed clinicians. See **Appendix #3** for list of clinical mentors involved in the shadowing activities. This activity, occurred once a week (between weeks 4-6) and included touring to Urology, Hematology-Oncology, and Radiation Oncology facilities. Shadowing exposed the mentees to the challenges related to research and care of PCa patients.

The following pictures depict mentees engaged in shadowing activities:

Shadowing exposed trainees to the challenges of their research projects for patients care. (Brittany Martin - Class of 2014 and Dr. Christopher Lahr, M.D., UMMC Cancer Surgeon.)

Scenarios for multi-disciplinary patient assessment were presented to students

(Mentees attend a tumor conference)

End of the Summer PCa Research Symposium: This activity has become a keystone of our program. The program has attracted the attention of the UMMC community at large, along with that from local academic institutions. In 2014 Fifty (50) attendants registered for the conference (**Appendix #4:** Sign-up sheet for 2014 PCa Research mini-Symposium). Speakers (**Appendix #5**; Program for the 2014 Research Conference) (10), included: Carlos Moreno, Ph.D., Emory University School of Medicine, "Biomarkers of Prostate Cancer Recurrence in Racially Diverse Populations". Freddie White-Johnson, M.P.P.A., Fannie Lou Hamer Cancer Foundation, "Community Health Advisors-Men in Black and Blue Fighting Prostate Cancer in the Mississippi Delta". Anait S. Levenson, M.D., Ph.D., UMMC-CI, "Novel epigenetic mechanisms of dietary stilbenes: can we prevent prostate cancer?". Yin-Yuan Mo, Ph.D. UMMC-CI, "Prostate cancer therapy and castration resistance"; and all (6) trainees of the UMMC-HBCU PCa Training Program. In 2015, sixty one (61) attendants registered (**Appendix #6**: Sign-up sheet for 2015 PCa Research mini-Symposium). Ten (10) speakers (**Appendix #7**; Program for the 2015 Research Conference) included: Isaac Powell, M.D., Wayne State University School of Medicine, "Prostate Cancer Molecular Biomarker Development Among African-American (AA) Compared to European-American (EA) Men". Srinivasan Vijayakumar, M.D., UMMC-CI, "Critical Fork Points and Role of Molecular Markers in Clinical Decision Making in Prostate Cancer". Mohamed Hassan, Ph.D., UMMC-CI, "Resistance Mechanisms of Prostate Cancer to Radiation Therapy". Jovanny Zabaleta, Ph.D. Louisiana State University, "Methylation markers in prostate cancer disparities"; and all (6) trainees of the UMMC-HBCU PCa Training Program. As indicated the symposium included all trainees as speakers. The Research Mini Symposium was therefore a venue for the trainees to present their research project, increase their knowledge about the different research aspects of PCa , and engage themselves in productive networking activities with seasoned PCa researchers, academic leader and PCa community advocates, among others.

Discovery U Program: To maximize the mentees' summer experience, our Program has been integrated with the Discovery U Program. This initiative oversees and promotes undergraduate outreach summer activities in biomedical research through the UMMC School of Graduate Studies in the Health Sciences. Mentees from our program interacted with top students from around the state and the country, attended to weekly seminar series (**Appendix #8**: Discovery U Lecture Programs for 2014 and 2015). Students learned about the research programs at UMMC, postgraduate studies alternatives, and graduate school application process. They also were provided numerous opportunities in social settings to improve their networking and communication skills (**Appendix #9**: Discovery U social activities program). They presented their research projects in the oral and poster format (**Appendix #10**: Discovery U research symposia, 2014 and 2015. Highlighted in the program are our students' names).

The following picture depict mentees engaged in activities of the Discovery U Program:

The Discovery U Program allowed our trainees to interact with top students from around the state and the country and learn about graduate school opportunities.

(Students attend a lecture on research biosafety)

What opportunities for training and professional development did the project provide?:

Preparation of reportable products (i.e. scientific abstracts and manuscripts) based on the trainees' research:

Trainees have worked and continue working in close contact with their mentors in summarizing their findings.

Final report: At the end of the Summer Training Course mentees prepared a final report (**Appendix #11**). The 1-page document was structured as a scientific conference abstract. Early on, mentors and mentees were instructed to refer to a very specific format for elaboration of the document (**Appendix #12**). Format requirements included extension (1-page), document type (Word file), Font (Times New Roman), Font size (12 points), Space (single), Margins (1.25"). Structure was also specified (Title, Authors, Affiliations, Body: Including introduction, main

objective or hypothesis, materials and methods, main results, discussion and future directions), and Funding sources: (i.e. grant/s from PI, DoD: W81XWH-14-1-0151).

Student presentations: Interns presented their research in the poster and/or oral format. So far thirty (31) meeting presentations in the poster or oral format included work related to internships. Trainees presented their work in local (26) and national (4) meetings such as the 2014 and 2015 UMMC PCa Research Mini Symposiums **(Appendixes #5 and #7)**, 2014 and 2015 Discovery U Summer Undergraduate Research Symposiums **(Appendix #10)**, 2014 TC Research Day **(Appendix #13)**, 2015 Dr. Sidney A. McNairy, Jr. Student Symposium **(Appendix #14)**, Sigma Xi Conference **(Appendix #15)**, the 2015 Annual Biomedical Research Conference for Minority Students (ABRCMS) **(Appendix #16**), and Recent Advances in Environmental Health Research and Thirteenth International Symposium on Metal Ions in Biology and Medicine (**Appendix #17**).

Manuscripts in preparation: So far, at least three manuscripts including trainees are under preparation. Joshua Agee (Class of 2014) and Timera Brown (Class of 2015) will be coauthors in a manuscript from Drs. Mao and Zhou (mentors). Angel Garcia (Class of 2015) will be coauthor in an article from Dr. Gomez (PI) lab. Adesuwa Ekunwe (Class of 2015) is actively working with Dr. Anait Levenson in the preparation of a manuscript including her as coauthor. Due to the relative short lifespan of our program (2 years), it is still too early to produce publications including trainees' names as authors. However, in recognition of the relevance of publications for the success of this program, the leadership is actively engaging mentors and mentees in the preparation of manuscripts. For this purpose, active mentee-mentor communication modalities have implemented. To stimulate students' continued work, they will offered part time opportunities in the host laboratories at UMMC. To formalize this process, they will be offered an academic credit-conducing Independent Study Course co-mentored by the research mentor at UMMC-CI and the faculty advisor at the HBCU. This extended mentoring mechanism has been implemented and is offered to the students of the 2015 Class.

Specific Aim 3: To track and coach trainees on their progress towards become biomedical Prostate Cancer researchers

There are different modalities to track trainees and support them. Some of them are based at the HBCUs and others are based at UMMC. The mentors and mentees maintain periodical communication. Additional constant communication occurs between Undergraduate Faculty Advisors at HBCU and mentees for evaluating academic performance and willingness to pursue graduate studies. As indicated above, the Program Director has worked closely with mentors and HBCU advisors to work on modalities to sustain communication with the mentees and achievement of program success indicators. Faculty advisors at the HBCUs have worked with the trainees in promoting their academic progress preparing them for graduate school.

To exemplify our progress on supporting our trainees in their path to pursuing PCa careers we exhibit some relevant landmarks:

Our Trainees have received numerous (8) awards. Ansley Scott: Louis Stokes Alliance for Minority Participation at JSU; Biochemistry research internship at the University of Arkansas for Medical Sciences; Second place winner at the Eleventh International Symposium on Recent Advances in Environmental Health Research and Thirteenth International Symposium on Metal Ions in Biology and Medicine. Brittany Martin: Fellowship STaRS Summer Research Program, Graduate Medical Sciences, Boston University School of Medicine; Travel award ($500) to attend the Dr. Sidney A. McNairy, Jr. Student Symposium 2015. Diva Whalen: TC Student Government President, 1st place Oral Presentation 2014 TC Research Day, and Travel Award ($2,400) UMMC-HBCU PCa Training Program **(Appendix #17: Trainees Awards)**

Two (2) trainees are pursuing graduate studies in cancer biology: Three of the students belonging to the inaugural Class of 2014 applied to graduate school. Of those, Ansley Scott (Class of 2014) is in her 2nd year at JSU LSMAMP Bridge to Doctorate Scholar Program. Diva Whalen (Class of 2014) is entering Meharry Medical College to attain a Ph.D. See **Appendix #18**: Trainees accepted in biomedical research programs.

Diverse modalities for trainees tracking have been implemented. They have been used to prepare this Annual report:

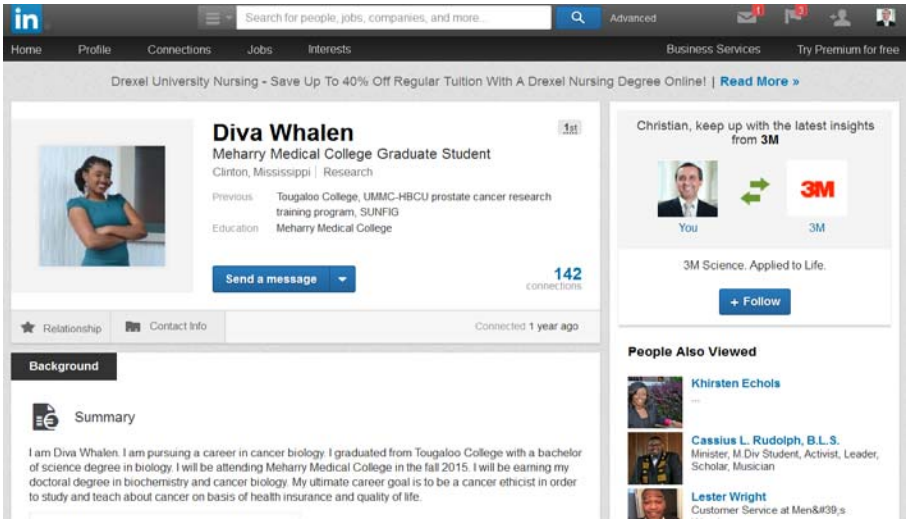
Trainees' database: We implemented a database to register trainee's contact, biographical and training information, accomplishments such as fellowships, awards, employment, education, publications, funding received, and poster and oral presentations at scientific conferences, etc. A testimonial including the most updated information for the trainees has been appended (**Appendix #19**: Trainees testimonials). Our most recent summary update based on the information archived in the database refers to the academic progress of trainees:

12 undergraduate scholars from TC and JSU, gained experience in performing PCa research at UMMC-CI. ***Two (2) trainees are pursuing graduate studies in cancer biology***. Ansley Scott (Class of 2014) is in her 2nd year at JSU LSMAMP Bridge to Doctorate Scholar Program. Diva Whalen (Class of 2014) is entering Meharry Medical College to attain a Ph.D. ***Ten (10) trainees are currently involved in research or pursuing graduation***: Class of 2014: Tatyana Givens, Rising Senior in Biology at JSU is intern for the NSF-REU Program at Alabama State University. Brittany Martin, Rising Senior in Biology at JSU is intern at Boston University Medical Center. Anthony Keyes, Rising Junior in Chemistry and Mathematics and Biology at JSU. Joshua Agee, Graduated in Biology from TC in 2015 is a research assistant at UMMC's Infectious Diseases Department. Class of 2015: Charles Phillips, is a Graduating Senior in Biology at TC. Adesuwa Ekunwe, is a Rising Sophomore in Chemistry at JSU. Angel Garcia, is a Rising Junior in Biology at TC. Deion Phillips, is a Rising Junior in Biology at JSU. Jamal Keyes, is a Rising Sophomore in Chemistry at JSU. Timera Brown, is a Rising Sophomore in Biology at TC. The Program Director, in conjunction with the faculty advisors, maintains and updates the database of all information collected.

How were the results disseminated to communities of interest?

As dissemination modalities we used Facebook and LinkedIn. Those resources have been used by our trainees as means to obtain continuous tracking, promote engagement, interaction and professional networking, help professional work's dissemination, and develop professional

presence. Social media additionally, has been used as a tool to educate the public about trainees' experience in the Program and as a way to increase public awareness of PCa research performed by minorities.
The following pictures exemplify use of social media as means of mentee tracking and program dissemination:

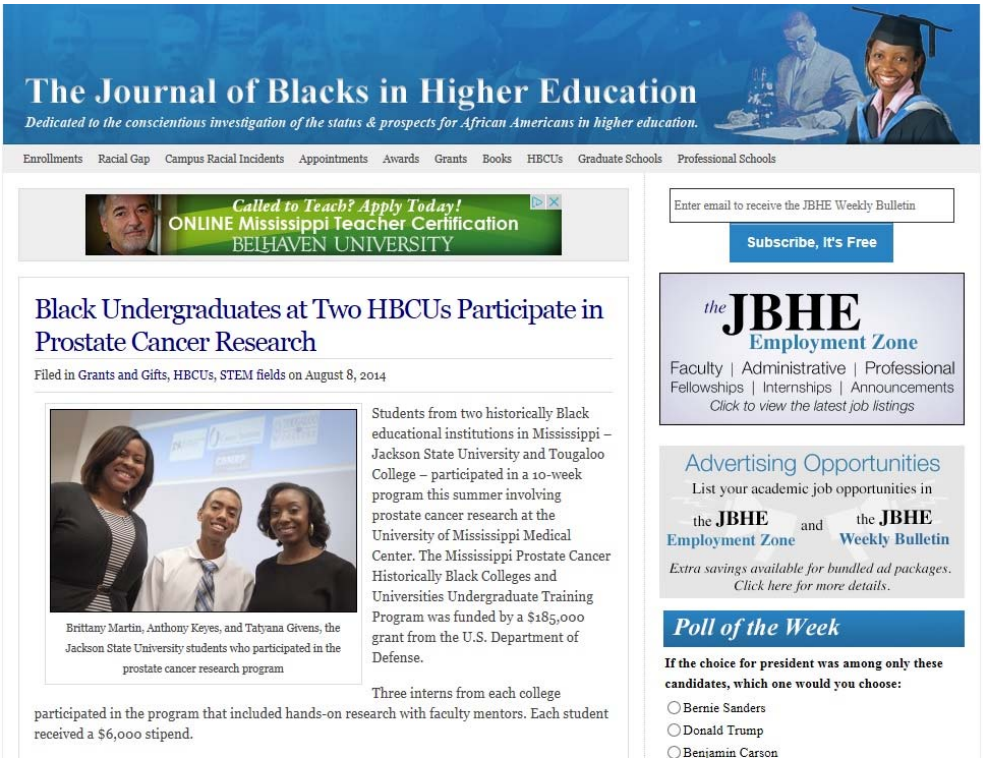


Trainees are instructed to develop their professional social profile
(Diva Whalen's- Class of 2015- most current LinkedIn update. 09/06/2015)

Social media allows outreach and Program dissemination
(Tatyana Givens, Class of 2014, shares a discussion interest in the Facebook group page)

In addition, numerous news releases have allowed the community to be engaged and informed with news from our program. The following list of links refers to examples for online program dissemination:

https://www.tougaloo.edu/cure-prostate-cancer-focus-hbcu-students%E2%80%99-research



http://www.jbhe.com/2014/08/black-undergraduates-at-two-hbcus-participate-in-prostate-cancer-research/

http://hbcudigest.com/post/116690869096/tougaloo-jackson-state-mississippi-prostate-cancer

Plans to accomplish the proposed goals: With focus on the next report, Program leadership is focused on the following aspects:

- Continuous mentee-mentor interaction. For this purpose trainees are currently being offered the academic credit-conducing Independent Study Course co-mentored by the research mentor at UMMC-CI and the faculty advisor at the HBCU.
- Meeting presentations. Our goal will be to support trainees on the submission of abstracts to local and national meetings.
- Manuscripts. As indicated, at least publications may have mentees as coauthors. The leadership team will make special emphasis on the achievement of this goal.
- Application to graduate school programs. So far, two students from the inaugural Class were accepted to graduate school programs with emphasis in cancer biology. Many of the trainees remaining as undergraduates will be in position to apply to graduate programs during this academic year. We will closely work with them on their application process.

4. IMPACT

Development of the principal discipline(s) of the project: Since UMMC-CI faculty members are engaged in a variety of research projects, trainees have had the opportunity to be trained in different areas of PCa research. However the emphasis of the training experience has been on Biomarker Development. The results generated will allow distinguishing aggressive from indolent disease in men newly diagnosed with PCa.

Since this is a training grant. One of the most relevant aspects is the training of our students in relation to achieve superior level so of PCa knowledge. In 2015, a questionnaire was applied to specifically assessment of proposed goals. An unannounced pre (before first lecture) - vs. post (after the last lecture)-evaluation test evaluated the impact of the lectures program on the trainees' knowledge about PCa. Overall, see **Appendix #20** for test results, the students exhibited a doubling of their knowledge score (average pre-training score was 41.25% correct; average post-training score was 82.92% correct). Despite the small number of questions and students, one can draw a few clear observations. Before the class, none of the students had any knowledge of FDA-approved PCa biomarkers. By the time the training ended, every student knew the correct answer. Tests such as this objectively demonstrate the achievements of our training program.

Other disciplines: As secondary area of interest the work the trainees is relevant for development of effective treatments and address of mechanisms of resistance for men with high-risk or metastatic PCa.

Technology transfer: It has been a tremendous impact of this project in allowing resource sharing between the UMMC campus and the HBCUs. UMMC, being the only academic research center in the state of Mississippi, has a unique capital of technology resources. The HBCUs have taken advantage of those resources as means to increase the value of their research programs in cancer biology, particularly PCa. As examples, many of the projects trainees have been involved utilized patient-derived materials and associated data, novel therapeutic models, agents or devices designed by UMMC researchers. As some students develop research at their HBCUs trough the academic year, they have taken knowledge and some of those resources to their schools.

Society beyond science and technology: The first ones impacted by our project have been our own trainees. They have become aware of the particularities of PCa for their own communities. As result of that (**Appendix #19**: Students testimonials), they have grown more fond of biomedical cancer research and have embraced the scientific career as a professional option. The Mississippi PCa HBCU Undergraduate Research Training Program is the first and only one in the state designed to provide undergraduate minority student training in PCa research at a research intensive environment. This Training Program has empowered HBCU undergraduates to pursue PCa careers, it has generated a pipeline for undergraduate research in PCa in Mississippi. Trainees of our program are becoming well-rounded professionals with training to thrive in PCa biomedical research, prevention, diagnosis and care. In the near future former mentees, as junior faculty will enlarge the ranks of minority researchers at TC, JSU or UMMC. They will impact their communities and will contribute to reduce PCa health disparities.

The UMMC community is very diverse and has interest in numerous disciplines of academic biomedical knowledge. Our program has generated a vibrant climate for interest in PCa research. This has been reflected in the overwhelmingly positive interest to our Prostate Cancer Research Mini Symposium. As noted by the attendance to this activity **(Appendixes #4 and #6: Signup sheets)** we have attracted a growingly diverse crowd. We have attracted not only researchers. To our activities, numerous clinicians, institutional and community leaders have attended. They have learned not only about basic and translational PCa cancer research with focus on disparities. They have also received a not complicated message on disease outcomes and behavioral intervention. As community leaders, attendant to our activities are now more complete professionals, empowered to impact their communities.

5. CHANGES/PROBLEMS:

Change in Program leadership: Soon after the completion of the inaugural training course, Dr. Kounosuke Watabe, Ph.D. original PI relocated. Dr. Christian Gomez, Ph.D. (Program Coordinator) assumed as PI and Program Director. Dr. Gomez, with academic leadership and managerial experience has directed the Program without inconveniences. He has not deviated from the proposed statement of work. Dr. Gomez has worked seamlessly with Program leadership to workout difficulties and it is anticipated that the program will achieve the proposed goals.

There are no other changes or problems to report.

6. PRODUCTS: List any products resulting from the project during the reporting period.

Presentations: Thirty (31) meeting presentations in the poster or oral format included work related to internships. Trainees presented their work in local (26) and national (5) meetings such as the 2014 and 2015 UMMC PCa Research Mini Symposiums **(Appendixes #5 and #7)**, 2014 and 2015 Discovery U Summer Undergraduate Research Symposiums **(Appendix #10)**, 2015 TC Research Day **(Appendix #13)**, 2015 Dr. Sidney A. McNairy, Jr. Student Symposium **(Appendix #14)**, Sigma Xi Conference **(Appendix #15)** and the 2015 Annual Biomedical Research Conference for Minority Students (ABRCMS) **(Appendix #16)** and Eleventh International Symposium on Recent Advances in Environmental Health Research and Thirteenth International Symposium on Metal Ions in Biology and Medicine **(Appendix #17)**.

Website(s) or other Internet site(s):
Course webpage: http://www.cancer.org/cancer/prostatecancer/detailedguide/prostate-cancer-key-statistics
The webpage informs prospective applicants about eligibility requirements, Program components, Summer Research internship, housing assistance, application packet, contact information and news (**Appendix#1;** for the Course webpage screenshot).

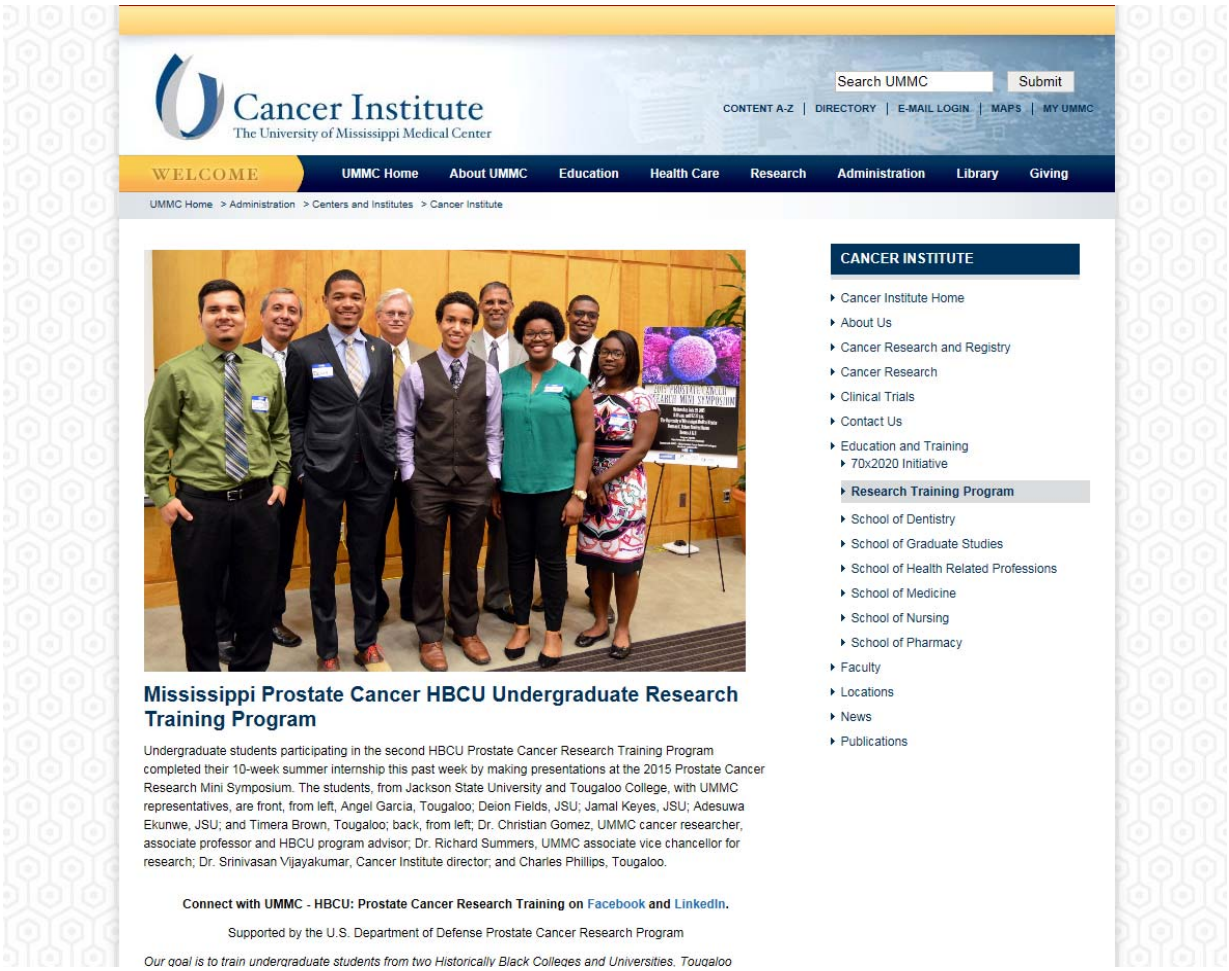
We have generated two social media resources. (**Appendix # 20** for social media resources screen shoots).

The Facebook group: https://www.facebook.com/groups/675020649225547/
The LinkedIn group: https://www.linkedin.com/grp/home?gid=6660607
These two resources provide powerful tools to obtain continuous tracking, promote engagement, interaction and professional networking, helping professional work' dissemination; and supporting developing of professional presence. Additionally, the social media resources are used as tools to educate the public about trainees' experience in the Program and as a way to increase public awareness of PCa research performed by minorities.

Educational aids or curricula: The development of the summer training course demanded an intensive curriculum. For details about the course program refer to **Appendix #3.**

7. APPENDIXES

Appendix 1: UMMC WEBPAGE



Appendix #2: Program flyers

2014 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

Summer Experience in Cancer Health Disparities
at the University of Mississippi-Cancer Institute

Supported by the U.S. Department of Defense Prostate Cancer Research Program

Purpose: To train undergraduate students from Tougaloo College and Jackson State University so they can gain experience in performing prostate cancer research at the University of Mississippi Medical Center (UMMC)-Cancer Institute.

Duration: May 27, 2014 – August 1, 2014

Description: Students will participate in a 10-week comprehensive training program in Prostate Cancer research and care, perform hands on research, attend regular hosting lab meetings and a weekly one-on-one meeting with their mentors, attend research seminar series and lectures focused on prostate cancer, shadow clinicians, participate in a prostate cancer research symposium and prepare a final written report. Trainees will be involved in campus wide activities with undergraduates from other summer programs, learn about research programs at UMMC, postgraduate studies alternatives, graduate school application process, and will be provided opportunities in social settings to improve their networking and communication skills.

Financial: Successful applicants will receive a $6,000 stipend.

Eligibility: Applicants must be U.S. citizens, permanent residents or legal aliens who are pursuing a major in the life sciences, sophomores or junior standing for the upcoming fall semester, have successfully completed one semester of math and one year of sciences (biology, chemistry or physics), science grade point average of at least 3.0 at the time of submission, and have the intention of pursuing a Ph.D. after graduation.

Application package (available at www.umc.edu/reserachtraining):

1. Complete Mississippi Prostate Cancer HBCU Undergraduate Research Training Program application form
2. A written personal statement
3. Provide resume
4. Provide two letters of recommendation (one of which is completed by a STEM instructor)
5. Official transcripts of undergraduate grades

Deadline: **March 31, 2014, 5PM CT**

Notification: On or before April 30, 2014

Information: (www.umc.edu/researchtraining)

Freda K. Turpeau UMMC Cancer Institute 2500 North State Street Jackson, MS 39216 601-815-6802 (phone) 601-815-6806 (fax) fturpeau@umc.edu	Jinghe Mao, Ph.D. Tougaloo College 500 W. County Line Rd. Tougaloo, MS 39174 601-977-4450 (phone) 601-977-7898 (fax) jmao@tougaloo.edu	Stephen I. Ekunwe, Ph.D. Jackson State University 1400 J.R. Lynch Street Jackson, MS 39217 601-979-2586 (phone) 601-979-5853 (fax) stephen.i.ekunwe@jsums.edu

2015 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

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at the University of Mississippi-Cancer Institute

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Description: Students will participate in a 10-week comprehensive training program in Prostate Cancer research and care, perform hands on research, attend regular hosting lab meetings and a weekly one-on-one meeting with their mentors, attend research seminar series and lectures focused on prostate cancer, shadow clinicians, participate in a prostate cancer research symposium and prepare a final written report. Trainees will be involved in campus wide activities with undergraduates from other summer programs, learn about research programs at UMMC, postgraduate studies alternatives, graduate school application process, and will be provided opportunities in social settings to improve their networking and communication skills.

Financial: Successful applicants will receive a $6,000 stipend.

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1. Complete Mississippi Prostate Cancer HBCU Undergraduate Research Training Program application form
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5. Official transcripts of undergraduate grades

Deadline: **March 27, 2015, 5PM CT**

Notification: On or before May 1, 2015

Information: (www.umc.edu/researchtraining)

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Appendix #3: Research Training Programs for 2014 and 2015

2014 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

May 27, 2014 – August 1, 2014

Time table:

Time Table for Summer Program Training Plan										
	wk 1	wk 2	wk 3	wk 4	wk 5	wk 6	wk 7	wk 8	wk 9	wk 10
Lab research										
Lab rotation										
Lectures										
Clinical shadow										
Presentations										

Research Mentors (refer to their webpages for more information):

Mentor	Research specialty	Teaching	Department
Azeddine Atfi, Ph.D.	Cell signaling in cancer	Mol Onc	Biochemistry Cancer Institute
Christian Gomez, Ph.D.	Tumor microenvironment in PCa	Mol Onc, Biochem	Pathology Cancer Institute
Chindo Hicks, Ph.D.	Population genetics in PCa	Bioinformatics	Medicine Cancer Institute
Kounosuke Watabe, Ph.D.	Tumor stem cell and metastasis in PCa and breast cancer	Mol Onc, Cell Biol, Virol	Microbiology Cancer Institute
Anait S. Levenson, M.D., Ph.D.	Epigenetic mechanisms in PCa progression	Mol Onc Pharmacology	Pathology Pharmacology Cancer Institute
Luis Martinez, Ph.D.	Cell signaling in cancer	Mol Onc, Biochem	Biochemistry Cancer Institute
Yin-Yuan Mo, Ph.D.	Non-coding RNA in PCa and breast cancer	Mol Onc, Cell Bio, Microbiol	Pharmacology Cancer Institute
Radhika Pochampally, Ph.D.	MicroRNA and stem cell in PCa	Mol Onc	Biochemistry Cancer Institute
Drazen Raucher, Ph.D.	Targeted drug delivery	Mol Onc, Biochem, Res Methods in Cell Bio	Biochemistry Cancer Institute
Xinchun Zhou, M.D., Ph.D.	Lipogenesis and marker discovery in PCa	Epidem, Infect Dis	Pathology Cancer Institute

Faculty Advisors:

Advisor	Institution	Department
Jinghe Mao, Ph.D., Professor	Tougaloo College	Biology
Stephen I. N. Ekunwe, Ph.D., Professor	Jackson State University	Biology

Internal Advisory Committee Members:

Member	Institution	Department
Srinivasan Vijayakumar, M.D., Professor, Director and Chairman	University of Mississippi Medical Center	Cancer Institute Radiation Oncology
Roy J. Duhé, Ph.D., Professor, Associate Director	University of Mississippi Medical Center	Pharmacology and Toxicology Cancer Education – UMMC CI

Lab rotations: Half-a-day activity. Students will visit labs involved in prostate cancer research at UMMC-Cancer Institute, Tougaloo College, and Jackson State University. Students will also attend lab meetings, discuss with lab PI or manager about the general lab research focus, and shadow a postdoc or graduate student.

Lecture program:

Location: Cancer Institute Conference Room 6th floor, G-651. Time: Mondays 9:00 a.m. – 10:00 a.m.

Mississippi Prostate Cancer HBCU Undergraduate Research Training Program-Lecture Syllabus			
Week	**Date**	**Topic**	**Instructor and Organizational Affiliation**
2	June 2, 2014	Basic Cancer Biology	Kounosuke Watabe, Ph.D., Professor, Deputy Director for Basic Science, UMMC-Cancer Institute
3	June 9, 2014	Prostate Cancer Biology	Anait S. Levenson, M.D., Ph.D., Associate Professor, Department of Pathology and Pharmacology and Toxicology, UMMC – Cancer Institute
4	June 16, 2014	Cancer Pathology	Christian Gomez, Ph.D., Associate Professor, Department of Pathology, UMMC – Cancer Institute
5	June 23, 2014	Prostate Cancer Therapeutics	Roy J. Duhé, Ph.D., Professor, Department of Pharmacology and Toxicology, Associate Director for Cancer Education, UMMC – Cancer Institute
6	June 30, 2014	Introduction to bioinformatics in prostate cancer research	Chindo Hicks, Ph.D., Associate Professor of Medicine; Director, Cancer Bioinformatics Core, UMMC-Cancer Institute
7	July 7, 2014	Prostate Cancer Clinical Science	Srinivasan Vijayakumar, M.D., D.M.R.T., F.A.C.R., Director, UMMC-Cancer Institute and Chairman of Radiation Oncology
8	July 14, 2014	Prostate Cancer Disparities in Mississippi	Deirdre B. Rogers, M.S., C.T.R., Director, Mississippi Cancer Registry, UMMC
9	July 21, 2014	Careers in Prostate Cancer Research and Round Table	Moderator: Christian Gomez, Ph.D., UMMC Cancer Institute Panelists: Srinivasan Vijayakumar, M.D, Director, UMMC Cancer Institute; Kounosuke Watabe, Ph.D., UMMC Cancer Institute; Jinghe Mao, Ph.D., Biology Department, Tougaloo College; and Stephen I. N. Ekunwe Ph.D., Biology Department, Jackson State University

Clinical Shadow:

Clinical shadow (Wednesday, weeks 4, 5, and 6): Students will shadow a clinician, resident, or staff. This activity will occur once a week and will also include touring of the PCa treatment-related facilities between 2-3 hours.

Week	Date	Clinical Mentors	Schedules
3	June 11, 2014	Charles R. Pound, M.D., Professor, Department of Medicine, Chief of the Division of Urology	3 students-Dr. Pound 3 students-Dr. Vijay
4	June 18, 2014	R. Darryl Hamilton, M.D., Associate Professor, Department of Medicine, Division of Hematology and Oncology; Louis V. Puneky, M.D., Associate Professor, Department of Medicine, Division of Hematology and Oncology; Natale Sheehan, M.D., Assistant Professor, Department of Medicine, Division of Hematology and Oncology	Welcome-8:30-9:00 am Dr. Hamilton Dr. Puneky Dr. Sheehan (1st group 9-10:30am) (2nd group 10:30-12pm)
5	June 25, 2014	Srinivasan Vijayakumar, M.D., Director, Cancer Institute and Chairman of Radiation Oncology	3 students-Dr. Pound 3 students-Dr. Vijay

Activities related to Discovery-U Program: For more information contact Mary L. Canterbury, Director of Business Operations, School of Graduate Studies in the Health Sciences, UMMC, phone: 601-984-1199. Pizza and beverages will be served at each seminar. Program will also include a bowling night, TBA.

Week	Date	Activity	Location
1	May 29, 2014. 4:30 pm	Welcome Supper for all Summer Research students and their mentors	Student Union upstairs
1	May 30, 2014. 12:00 pm	Orientation Lecture Safety Issues	Classroom Wing Room CW308
2	June 6, 2014. 12:00 pm	Seminar – Physiology Michael Ryan, Ph.D., Associate Professor, Department of Physiology and Biophysics, UMMC	Upper Amphitheater Room R354
3	June 13, 2014. 12:00 pm	Seminar – Pharmacology Jennifer Sasser, Ph.D., Assistant Professor, Department of Pharmacology and Toxicology,	Upper Amphitheater Room R354

		UMMC	
4	June 20, 2014. 12:00 pm	Seminar Sean Didion, Ph.D., Associate Professor, Department of Pharmacology and Toxicology, UMMC. Will include M.D., Ph.D. Students	Upper Amphitheater Room R354
5	June 27, 2014. 12:00 pm	Seminar – Biomedical Materials Science Amol Janorkar, Ph.D., Associate Professor, Biomedical Materials Science- Dentistry, UMMC	Upper Amphitheater Room R354
6	July, 4	No Seminar	
7	July 11, 2014. 12:00 pm	Seminar – Biochemistry Damian Romero, Ph.D., Assistant Professor, Department of Biochemistry, UMMC	Upper Amphitheater Room R354
8	July 18, 2014. 12:00 pm	Seminar – Neuroscience Lique Coolen, Ph.D., Professor, Departments of Physiology and Biophysics, Neurobiology & Anatomical Sciences, UMMC	Upper Amphitheater Room R354
9	July 25, 2014. 12:00 pm	Seminar – Microbiology Mary Marquart, Ph.D., Associate Professor, Department of Microbiology UMMC	Upper Amphitheater Room R354
10	August, 2014. 12:00 pm	Symposium Agenda TBD. Will include short talks (typically 4 minutes) by students.	Student Union upstairs

Prostate Cancer Research Mini Symposium: Wednesday, July 30, 2014 from 9-12 pm. The symposium will be held in the UMMC Norman C. Nelson Student Union Rooms A & B. The program will include presentations by trainees, Cancer Institute PCa researchers, and invited keynote PCa researchers.

2015 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

May 26, 2015 – July 31, 2015

Time table:

Time Table for Summer Program Training Plan										
	wk 1	wk 2	wk 3	wk 4	wk 5	wk 6	wk 7	wk 8	wk 9	wk 10
Lab research										
Lab rotation										
Lectures										
Clinical shadow										
Presentation										

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Chindo Hicks, Ph.D.	Population genetics in PCa	Bioinformatics	Medicine Cancer Institute
Anait S. Levenson, M.D., Ph.D.	Epigenetic mechanisms in PCa progression	Mol Onc Pharmacology	Pathology Pharmacology Cancer Institute
Luis Martinez, Ph.D.	Cell signaling in cancer	Mol Onc, Biochem	Biochemistry Cancer Institute
Yin-Yuan Mo, Ph.D.	Non-coding RNA in PCa and breast cancer	Mol Onc, Cell Bio, Microbiol	Pharmacology Cancer Institute
Radhika Pochampally, Ph.D.	MicroRNA and stem cell in PCa	Mol Onc	Biochemistry Cancer Institute
Drazen Raucher, Ph.D.	Targeted drug delivery	Mol Onc, Biochem, Res Methods in Cell Bio	Biochemistry Cancer Institute
Xeli Xu, Ph.D.	Cancer stem cells	Mol Onc	Neurobiology & Anatomical Sciences Cancer Institute
Xinchun Zhou, M.D., Ph.D.	Lipogenesis and marker discovery in PCa	Epidem, Infect Dis	Pathology Cancer Institute

Faculty Advisors:

Advisor	Institution	Department
Jinghe Mao, Ph.D., Professor	Tougaloo College	Biology
Stephen I. N. Ekunwe, Ph.D., Professor	Jackson State University	Biology

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Roy J. Duhé, Ph.D., Professor, Associate Director	University of Mississippi Medical Center	Pharmacology and Toxicology Cancer Education – UMMC CI

Lab rotations: Half-a-day activity. Students will visit labs involved in prostate cancer research at UMMC-Cancer Institute, Tougaloo College, and Jackson State University. Students will also attend lab meetings, discuss with lab PI or manager about the general lab research focus, and shadow a postdoc or graduate student.

Lecture program:

Location: Cancer Institute Conference Room 6th floor, G-651. Time: Mondays 9:00 a.m. – 10:00 a.m.

Mississippi Prostate Cancer HBCU Undergraduate Research Training Program-Lecture Syllabus			
Lecture	**Date**	**Topic**	**Instructor and Organizational Affiliation**
1	June 1, 2015	Basic Cancer Biology	Yin-yuan Mo, Ph.D., Professor, Department of Pharmacology and Toxicology. Director, Cancer Genetics Program, UMMC – Cancer Institute
2	June 8, 2015	Prostate Cancer Biology	Anait S. Levenson, M.D., Ph.D., Associate Professor, Department of Pathology and Pharmacology and Toxicology, UMMC – Cancer Institute
3	June 15, 2015	Introduction to bioinformatics in prostate cancer research	Chindo Hicks, Ph.D., Associate Professor of Medicine; Director, Cancer Bioinformatics Core, UMMC – Cancer Institute
4	June 22, 2015	Prostate Cancer Therapeutics	Roy J. Duhé, Ph.D., Professor, Department of Pharmacology and Toxicology, Associate Director for Cancer Education, UMMC – Cancer Institute
5	June 29, 2015	Prostate Cancer Markers	Christian Gomez, Ph.D., Associate Professor, Department of Pathology, UMMC – Cancer Institute
6	July 6, 2015	Prostate Cancer Clinical Science	Satya Packianathan, M.D., Ph.D., Assistant Professor, Department of Radiation Oncology, UMMC
7	July 13, 2015	Prostate Cancer Disparities in Mississippi	Deirdre B. Rogers, M.S., C.T.R., Director, Mississippi Cancer Registry, UMMC
8	July 20, 2015	Careers in Prostate Cancer Research and Round Table	Moderator: Christian Gomez, Ph.D., UMMC Cancer Institute Panelists: Srinivasan Vijayakumar, M.D, Director, UMMC Cancer Institute; Yin-yuan Mo, Ph.D., UMMC Cancer Institute; Jinghe Mao, Ph.D., Biology Department, Tougaloo College; and Stephen I. N. Ekunwe Ph.D., Biology Department, Jackson State University

Clinical Shadow:

Clinical shadow (Wednesday, weeks 3, 4, and 5): Students will shadow a clinician, resident, or staff. This activity will occur once a week and will also include touring of the PCa treatment-related facilities between 2-3 hours.

Clinical Mentors	Week	Dates	Mentor
Charles R. Pound, M.D., Professor, Department of Medicine, Chief of the Division of Urology Srinivasan Vijayakumar, M.D., Director, Cancer Institute and Chairman of Radiation Oncology	3	June 10, 2015	3-Dr. Pound 3-Dr. Vijay
R. Darryl Hamilton, M.D., Associate Professor, Department of Medicine, Division of Hematology and Oncology; Louis V. Puneky, M.D., Associate Professor, Department of Medicine, Division of Hematology and Oncology; Natale Sheehan, M.D., Assistant Professor, Department of Medicine, Division of Hematology and Oncology	4	June 17, 2015	Welcome-8:30-9:00 am Dr. Hamilton Dr. Puneky Dr. Sheehan (1st group 9-10:30am) (2nd group 10:30-12pm)
Charles R. Pound, M.D., Professor, Department of Medicine, Chief of the Division of Urology Srinivasan Vijayakumar, M.D., Director, Cancer Institute and Chairman of Radiation Oncology	5	June 24, 2014	3-Dr. Pound 3-Dr. Vijay

Prostate Cancer Research Mini Symposium: Wednesday, July 29, 2015 from 9-12 pm. The symposium will be held in the UMMC Norman C. Nelson Student Union Rooms A & B. The program will include presentations by trainees, Cancer Institute PCa researchers, and invited keynote PCa researchers.

Appendix #4: 2014 Mini Symposium Sign in Sheets

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JSU Jackson State | Cancer Institute | Tougaloo College | CDMRP

2014 Prostate Cancer Research Mini Symposium
Wednesday, July 30, 2014

University of Mississippi Medical Center
Norman C. Nelson Student Union

Jackson, Mississippi

Name	Organization/School
Freddie White Johnson	MS Network for Cancer Control/ The University of Southern MS / FLHC
Helen Bolden Johnson	Fannie Lou Hamer Cancer Foundation
Willie Johnson	Fannie Lou Hamer Cancer Foundation (FLHCF)
Abdelouahid Elkhattouti	UMMC Cancer Institute
S. VIJAYAKUMAR	UMMC
[illegible] Mao	Tougaloo
Stephen Ekunwe	JSU
DAVID S PASCO	NCNPR-OXFORD-U.MISS
Ritika Ramani	UMMC Cancer Inst
Chindo Hicks	CI
[illegible]	CI
Bibbin Tom Paul	CI
[illegible]	CI
[illegible] M Shelly	CI
Krishna Chauhan	UMC Biochem
Luis Martinez	UMC Biochem
Jiangwu Huang	UMC Biochem

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2014 Prostate Cancer Research Mini Symposium
Wednesday, July 30, 2014

University of Mississippi Medical Center
Norman C. Nelson Student Union

Jackson, Mississippi

Name	Organization/School
Ainsley Scott	Tougaloo College
Joshua Agee	Tougaloo College
Tatyana Givens	Jackson State University
Anthony Keyes	Jackson State University
VADIVEL DEVARAJU	Radiology / UMMC
Carlos Moreno	Emory University
Willie J. Johnson	Men in Black & Blue (Samuel Chapel)
Helen Johnson	CHARP
Roy J. Duhé	UMMC
Xinchun Zhau	Comm Pathology
Madhu Kollareddy	Cancer Institute (UMC)
Zuwanya I. Carter	" "
Donald Okoye	" "
Yolanda Knicks	Student
Maurice A. Whalen Sr	Visitor
Terri Whalen	Visitor
Radhika Pochampalli	UMMC.
Ophelia Carter	Visitor

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2014 Prostate Cancer Research Mini Symposium
Wednesday, July 30, 2014

University of Mississippi Medical Center
Norman C. Nelson Student Union

Jackson, Mississippi

Name	Organization/School
Brittany Martin	Jackson State
Ingrid Espinoza	Cancer Institute / UMMC
[illegible]	UMMC CI / writer/editor
Vani Vijayakumar	UMC SOM / Radiology
Sakeli Hall	Jackson State University
Keli Xu	UMMC Cancer Inst.
Wen-Chey Chung	UMMC Cancer Inst.
Tsui-Ting Ho	UMMC Cancer Inst.
PK	UMMC Cancer Institute
Machiel Jones	Visitor / Tougaloo College
Daniel Blanchard	Cancer Inst.
Robert [illegible]	Visitor
SAMIRA GRIFONI	Cancer Institute
Maurice A. Whalen, Jr	Tougaloo college
Benjamin Bates	UMC
Swati Dhar	Cancer Institute, UMMC
Avinash Kumar	Cancer Institute, UMMC
John Sweeley	Cancer Institute, UMMC

2014 Prostate Cancer Research Mini Symposium
Wednesday, July 30, 2014

University of Mississippi Medical Center
Norman C. Nelson Student Union

Jackson, Mississippi

Name	Organization/School
Diva Whaley	HBCU-UMMC / Tougaloo
Mahamed Ibrahim	UMC FC.

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Appendix #5: 2014 Prostate Cancer Mini Symposium Poster and Agenda

AGENDA

2014 Prostate Cancer Research Mini Symposium

Wednesday, July 30, 2014

University of Mississippi Medical Center
Norman C. Nelson Student Union
Rooms A & B
2500 North State Street
Jackson, MS 39216

8:30 – 8:45 a.m. ***REGISTRATION***

8:50 – 9 a.m. ***WELCOME AND INTRODUCTION***

Kounosuke Watabe, Ph.D., Professor of Microbiology and Biochemistry, Deputy Director for Basic Science of the Cancer Institute, member of the Cancer Institute Cancer Genetics Program, Principal investigator UMMC – HBCU: Prostate Cancer Research Training Program

9 – 9:45 a.m. ***SPECIAL LECTURE***

"Biomarkers of Prostate Cancer Recurrence in Racially Diverse Populations"

Carlos Moreno, Ph.D.

Associate Professor
Department of Pathology & Laboratory Medicine
Emory University School of Medicine

9:45 – 9:55 a.m. Discussion — Stephen I. N. Ekunwe, Ph.D.
Professor of Biology
Jackson State University

Session 1: Novel therapeutics approaches for prostate cancer

10 – 10:40 a.m. — **Moderator:** Christian R. Gomez, Ph.D.
Associate Professor of Pathology and of Radiation Oncology, and member of the Cancer Institute Tumor Cell Biology Program,

	Coordinator UMMC – HBCU: Prostate Cancer Research Training Program
10 – 10:15 a.m.	**Novel epigenetic mechanisms of dietary stilbenes: can we prevent prostate cancer?** **Anait S. Levenson, M.D., Ph.D.** Associate Professor of Pathology and of Pharmacology and Toxicology, member of the Cancer Institute Tumor Cell Biology Program
10:15 – 10:20 a.m. Discussion	
10:20 – 10:35 a.m.	**Prostate cancer therapy and castration resistance** **Yin-Yuan Mo, Ph.D.** Professor of Pharmacology and Toxicology, Cancer Institute Cancer Genetics Program Director
10:35 – 10:40 a.m. Discussion	
10:40 – 11 a.m.	***COFFEE BREAK***

Session 2: Career Development

11– Noon	**Moderator:** Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College. Undergraduate Faculty Advisor UMMC – HBCU: UMMC – HBCU: Prostate Cancer Research Training
11 – 11:10 a.m.	Student presentation: **Joshua Agee**, Tougaloo College. Mentor Xinchun Zhou, M.D., Ph.D., Assistant Professor of Pathology, member of the Cancer Institute Tumor Cell Biology Program
11:10 – 11:20 a.m.	Student presentation: **Tatyana Givens**, Jackson State University. Mentor: Chindo Hicks, Ph.D., Associate Professor of Medicine and Director of the Cancer Institute Bioinformatics Core
11:20 – 11:30 a.m.	Student presentation: **Anthony Keyes**, Jackson State University. Mentors: Drazen Raucher, Ph.D., Professor of Biochemistry and member of Cancer Institute Molecular Cancer Therapeutics Program, Kounosuke Watabe, Ph.D., Professor of Microbiology and Biochemistry, Deputy Director for Basic Science of the Cancer Institute, member of the Cancer Institute Cancer Genetics Program, Principal investigator UMMC – HBCU: Prostate Cancer Research Training Program

11:30 – 11:40 a.m.	Student presentation: **Brittany Martin**, Jackson State University. Mentor: Christian Gomez, Ph.D., Associate Professor of Pathology and of Radiation Oncology, and member of the Cancer Institute Tumor Cell Biology Program, Coordinator UMMC – HBCU: Prostate Cancer Research Training Program
11:40 – 11:50 a.m.	Student presentation: **Ansley Scott**, Tougaloo College. Mentor: Yin-Yuan Mo, Ph.D., Professor of Pharmacology and Toxicology and Director of the Cancer Institute Cancer Genetics Program
11:50 – Noon	Student presentation: **Diva Whalen**, Tougaloo College. Mentor: Anait Levenson, M.D., Ph.D., Associate Professor of Pathology and Pharmacology, and member of the Cancer Institute Tumor Cell Biology Program

Noon – 12:20 p.m. ***SPECIAL LECTURE***

"Community Health Advisors-Men in Black and Blue
Fighting Prostate Cancer in the Mississippi Delta"

Freddie White-Johnson, M.P.P.A.

Program Director of the Mississippi Network for Cancer Control and Prevention
University of Southern Mississippi
Founder and President of the Fannie Lou Hamer Cancer Foundation

12:20 – 12:25 p.m. Discussion

12:25 – 12:30 p.m. ***CLOSING REMARKS***

Christian Gomez, Ph.D.
Associate Professor of Pathology and of Radiation Oncology, and member of the Cancer Institute Tumor Cell Biology Program, Coordinator UMMC – HBCU: Prostate Cancer Research Training Program

12:30 – 12:40 p.m. ***ADJOURN***

12:40 – 1 p.m. ***STUDENTS COMPLETE EVALUATION QUESTIONNAIRES***

2014 Prostate Cancer Research Mini Symposium

Mississippi Prostate Cancer HBCU Undergraduate Research Training Program Class of 2014. Depicted are from left to right Kounosuke Watabe, Ph.D., Anthony Keyes, Xinchun Zhou, M.D., Joshua Agee, Brittany Martin, Christian Gomez, Ph.D., Tatyana Givens, Chindo Hicks, Ph.D., Srinivasan Vijayakumar, M.D., Diva Whalen, Anait Levenson, M.D., Ph.D., Yin-yuan Mo, Ph.D. and Ansley Scott.

2015 Prostate Cancer Research Mini Symposium

Sign-In Sheet

July 29, 2015
University of Mississippi Medical Center
Norman C. Nelson Student Union, Rooms A&B
Jackson, Mississippi

NAME	SIGNATURE	ORGANIZATION/AFFILIATION
Atfi, Dr. Azeddine		
Beech, Dr. Bettina		
Brown, Timera	[signature]	HBCU Prostate Cancer Research
Bruce, Dr. Marino		
Dodd, Latania	Latania Dodd	Fannie Lou Hamer Cancer Foundation
Duhé, Dr. Roy	Roy J. Duhé	UMMC Cancer Institute
Ekunwe, Adesuwa	present	
Ekunwe, Dr. Stephen	[signature]	JSU CSET-BIOLOGY
ElShamy, Dr. Wael		
Espinoza, Dr. Ingrid	Ingrid Espinoza	UMMC - Cancer Inst.
Fields, Deion	Deion Fields	HBCU PCRP

PCR Sign-In Sheet 1

NAME	SIGNATURE	ORGANIZATION/AFFILIATION
Garcia, Angel	Angel Garcia	
Gomez, Dr. Christian	present	
Granger, Dr. Joey		
Hamilton, Dr. R. Darryl		
Hassan, Dr. Mohamed	present	
Henegan, Dr. John		
Hennington, Dr. Bettye		
Hicks, Dr. Chindo		
Johnson, Freddie White		
Kannuthurai, Vijay		
Keyes, Jamal		
Lage, Dr. Janice		
Levenson, Dr. Anait	Anaelevenson	Career Institute

PCR Sign-In Sheet 2

NAME	SIGNATURE	ORGANIZATION/AFFILIATION
Lewin, Dr. Jack		
Mao, Dr. Jinghe	Jinghe Mao	Tougaloo College
McGinnis, Dr. Richard		
Mo, Dr. Yin-Yuan		UMMC
Ogunbe, Dr. Ifedayo		
Packianathan, Dr. Satya		
Pasco, Dr. David		
Phillips, Charles		HBCU UMMC PCRP
Pochampally, Dr. Radhika		VMMC
Pound, Dr. Charles		
Powell, Dr. Isaac		
Puneky, Dr. Louis		
Ratliff, Preston	Preston Ratliff	Fannie Lou Hamer Cancer Foundation

PCR Sign-In Sheet 3

NAME	SIGNATURE	ORGANIZATION/AFFILIATION
Raucher, Dr. Drazen		
Rogers, Deirdre		
Romero, Dr. Damien		
Ryan, Dr. Michael		
Sakiyama, Marcelo	Marcelo Sakiyama	C. I.
Sheehan, Dr. Natalie		
Shirley, Terrence	Terrence M Shirley	
Subraumony, Dr. Charu		
Sullivan, Dr. Lisa		
Summers, Dr. Richard		
Surmeli, Amy	Amy Surmeli	
Tchounwou, Dr. Martha		
Tchounwou, Dr. Paul	Paul Tchounwou	JSU

NAME	SIGNATURE	ORGANIZATION/AFFILIATION
Turner, Timothy		JSU Biology
Turpeau, Freda		
Vijayakumar, Dr. Srinivasan		OMMC CI
Vijayakumar, Dr. Vani		
Walker, Dr. Larry		
Xu, Keli Dr.		UMMC CI
Zabaleta, Dr. Jovanny		LSU HSC - Peds - Genetics
Zhou, Dr. Xinchun		

2015 Prostate Cancer Research Mini Symposium

Sign-In Sheet

July 29, 2015

University of Mississippi Medical Center

Norman C. Nelson Student Union, Rooms A&B

Jackson, Mississippi

NAME	ORGANIZATION/AFFILIATION
Saree Hsu	
Wen-Cheng Chung	Cancer Institute
[illegible] Hassan	Cancer Institute
Xu Zhang	Cancer Institute.
Clement Yedjou	Jackson State.
Yuefeng Wang	Rad Onc
Chandler Lee	Student, Ole Miss
Erin Hudnall	Student, Ole Miss
MUNDRA ESWARA KUMAR	Rad onc, Fellow
Jeanann Suggs	Rad onc Resident
Rahul Bhandari	Rad onc Resident
Krishna Chauhan	UMC Cancer Inst.
Toms Thomas MD	Rad onc Fellow
Lynette Ekunwe	Jackson Heart Study
Jamil Ibrd	JHS
Vijay Kannuthurai	School of Med.

(34)

2015 Prostate Cancer Research Mini Symposium

Sign-In Sheet

July 29, 2015
University of Mississippi Medical Center
Norman C. Nelson Student Union, Rooms A&B
Jackson, Mississippi

	NAME	ORGANIZATION/AFFILIATION
1	[illegible] MD	UMC / KARMANOS Cancer Ctr
2	Subhi Talal Younes	School of Medicine (M2)
3	Divya Shenoy	"
4	Gloria Emily	CI
5	Jamal Keyes	HBCU
6	Adesuwa Ekunwe	HBCU
7	Vennica Mayes	Cancer Institute
8	Juan Li	Cancer Institute
9	Hairong Lin	cancer institute
10	Krishna C Vallabhaneni	Cancer Institute
11	VADIVEL DEVARAJU	Radiology
12	RODA, MANOHAR	Radiology
13	Cynthia Wells	CI
14	Tsui-Ting Ho	CI.
15	SAMIRA GRIFFIN	UMMC - CI
16	SHANKAR GIRI	Rad. Onc

2015 Prostate Cancer Research Mini Symposium

Sign-In Sheet

July 29, 2015

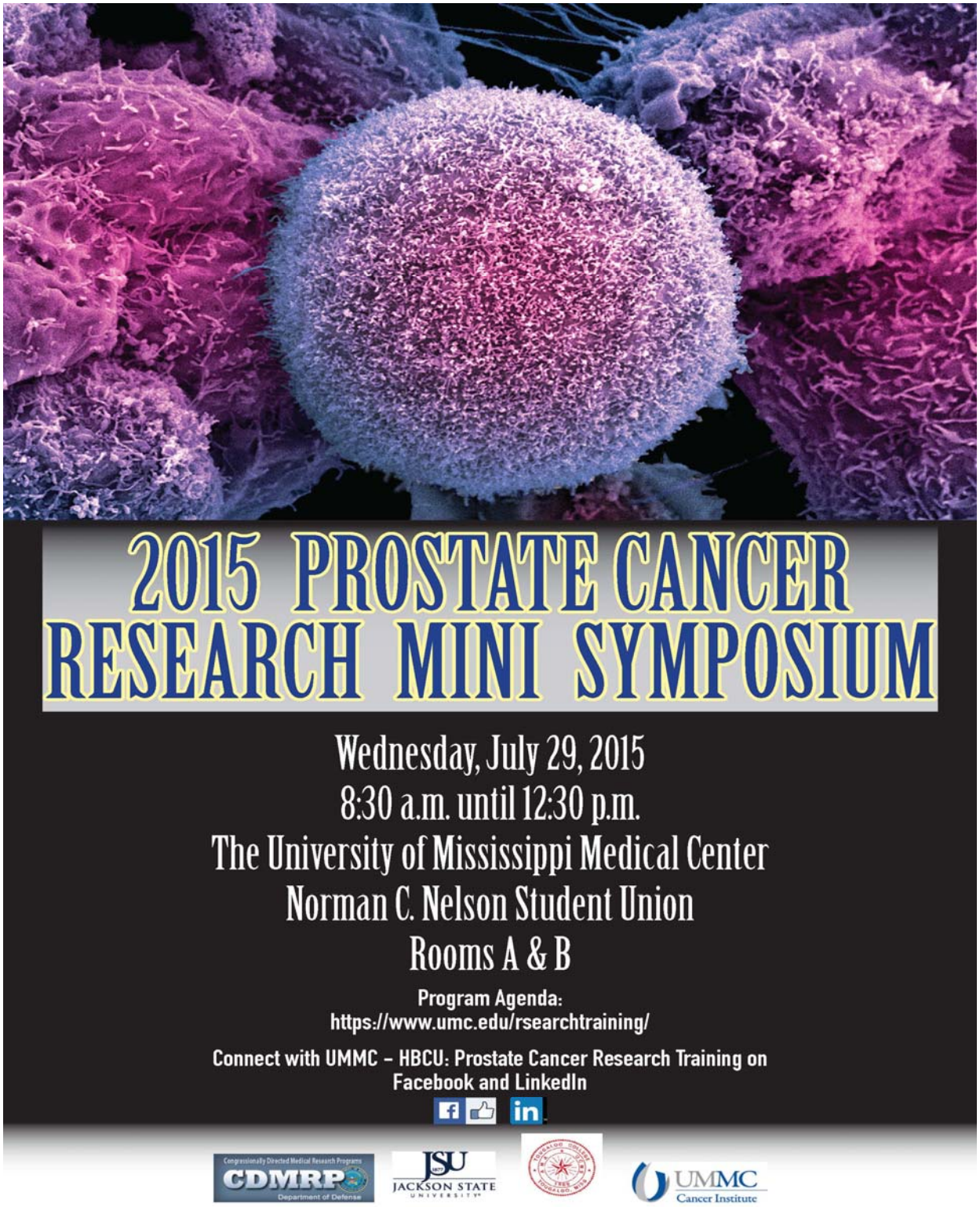
University of Mississippi Medical Center

Norman C. Nelson Student Union, Rooms A&B

Jackson, Mississippi

NAME	ORGANIZATION/AFFILIATION
Ryan JIMENEZ	School of Medicine
Avinash Kumar	Cancer Institute
Nasir Butt	Cancer Institute
Swati Dhar	Cancer Institute
Jung Su Ryu	Biochemistry
Lianna Li	Tougaloo College
Richard Summers	
Prabhodh Koirala	Biochemistry/cancer Inst.

Appendix #7: 2015 Prostate Cancer Mini Symposium Poster and Agenda



Appendix Z: 2015 Prostate Cancer Mini Synposium Agenda

AGENDA

2015 Prostate Cancer Research Mini Symposium

Wednesday, July 29, 2015

University of Mississippi Medical Center
Norman C. Nelson Student Union
Rooms A & B
2500 North State Street
Jackson, MS 39216

8:30AM – 8:45AM

REGISTRATION

8:50AM – 9:00AM

WELCOME AND INTRODUCTION

Christian Gomez, Ph.D. Principal Investigator UMMC – HBCU: Prostate Cancer Research Training Program

9:00AM – 9:25AM

SPECIAL LECTURE

"Critical Fork Points and Role of Molecular Markers in Clinical Decision Making in Prostate Cancer"
Srinivasan Vijayakumar, Director UMMC-Cancer Institute
Professor and Chairman, Department of Radiation Oncology
University of Mississippi Medical Center (UMMC)

9:25AM – 9:30AM Discussion: Prostate Cancer Research
Stephen I. N. Ekunwe, Ph.D.
Professor, Department of Biology, Jackson State University
Undergraduate Faculty Advisor UMMC – HBCU: Prostate Cancer Research Training Program

Session 1: Novel markers and therapeutics approaches for prostate cancer

9:30AM - 10:10AM	**Moderator:** Christian R. Gomez, Ph.D. Associate Professor Department of Pathology UMMC Cancer Institute
9:30AM – 9:45AM	**"Resistance Mechanisms of Prostate Cancer to Radiation Therapy"** Mohamed Hassan, Ph.D. Postdoctoral Fellow UMMC-Cancer Institute
9:45AM – 9:50AM	Discussion
9:50AM – 10:05AM	**"Methylation markers in prostate cancer disparities"** Jovanny Zabaleta, Ph.D. Assistant Professor of Pediatrics Stanley S. Scott Cancer Center, Louisiana State University Health Sciences Center
10:05AM – 10:10AM	Discussion
10:10AM – 10:30AM	***COFFEE BREAK***

Session 2: Career Development

10:30AM – 11:30PM	**Moderator:** Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College. Undergraduate Faculty Advisor UMMC – HBCU: Prostate Cancer Research Training Program
10:30AM – 10:40AM	Student presentation: **Adesuwa Ekunwe**, Jackson State University. Mentor: Anait Levenson, M.D., Ph.D., Professor of Pathology, member of the Cancer Institute Tumor Cell Biology Program
10:40AM – 10:50AM	Student presentation: **Angel Garcia**, Tougaloo College. Mentor: Christian Gomez, Ph.D., Associate Professor of Pathology and of Radiation Oncology, and member of the Cancer Institute Tumor Cell Biology Program, Program Director UMMC – HBCU: Prostate Cancer Research Training Program

10:50AM – 11:00AM	Student presentation: **Charles Phillips**, Tougaloo College. Mentor: Yin-Yuan Mo, Ph.D., Professor of Pharmacology and Toxicology and Director of the Cancer Institute Cancer Genetics Program
11:00AM – 11:10AM	Student presentation: **Deion Fields**, Jackson State University. Mentor: Keli Xu, Ph.D., Assistant Professor of Neurobiology & Anatomical Sciences, member of the Cancer Institute Tumor Cell Biology Program
11:10AM – 11:20AM	Student presentation: **Jamal Keyes**, Jackson State University. Mentor: Drazen Raucher, Ph.D., Professor of Biochemistry and member of Cancer Institute Molecular Cancer Therapeutics Program
11:20AM – 11:30PM	Student presentation: **Timera Brown**, Tougaloo College. Mentor Xinchun Zhou, M.D., Ph.D., Assistant Professor of Pathology, member of the Cancer Institute Tumor Cell Biology Program

11:30PM – 12:10PM

SPECIAL LECTURE

"Prostate Cancer Molecular Biomarker Development Among African American Compared to European American Men"

Dr. Isaac Powell, M.D.
Professor
Wayne State University - School of Medicine
Karmanos Cancer Institute

Introduction by Srinivasan Vijayakumar, M.D.
Director UMMC-Cancer Institute
Professor and Chairman, Department of Radiation Oncology UMMC

12:10PM – 12:15PM Discussion

12:15PM – 12:30PM

CLOSING REMARKS

Richard Summers, M.D.
Associate Vice Chancellor for Research UMMC, Professor of Medicine

12:40PM – 1:30PM

LUNCH/DESSERTS RECEPTION

2015 Prostate Cancer Research Mini Symposium

Undergraduate students participating in the second HBCU Prostate Cancer Research Training Program completed their 10-week summer internship this past week by making presentations at the 2015 Prostate Cancer Research Mini Symposium. The students, from Jackson State University and Tougaloo College, with UMMC representatives, are front, from left, Angel Garcia, Tougaloo; Deion Fields, JSU; Jamal Keyes, JSU; Adesuwa Ekunwe, JSU; and Timera Brown, Tougaloo; back, from left; Dr. Christian Gomez, UMMC cancer researcher, associate professor and HBCU program advisor; Dr. Richard Summers, UMMC associate vice chancellor for research; Dr. Srinivasan Vijayakumar, Cancer Institute director; and Charles Phillips, Tougaloo.

Appendix #8: Summer Students Activities 2014 and 2015

School of Graduate Studies in the Health Sciences

Summer Research Seminar Schedule 2014
NOON

1. **May 30 (Classroom Wing Room CW308)**
   Safety Issues

2. **June 6 (Upper Amphitheater—Room R354)**
   Mike Ryan - Physiology

3. **June 13 (Upper Amphitheater—Room R354)**
   Jennifer Sasser - Pharmacology

4. **June 20 (Upper Amphitheater—Room R354)**
   Sean Didion and MD/PhD Students

5. **June 27 (Upper Amphitheater—Room R354)**
   Amol Janorkar- Biomedical Materials Science

6. **July 4---No Seminar**

7. **July 11 (Upper Amphitheater—Room R354)**
   Damian Romero - Biochemistry

8. **July 18 (Upper Amphitheater—Room R354)**
   Lique Coolen - Neuroscience

9. **July 25 (Upper Amphitheater—Room R354)**
   Mary Marquart - Microbiology

10. **August 1 Symposium (Student Union---Upstairs)**

SAFETY SEMINAR
May 30, 2014
CW308 Classroom Wing

Name:	**Amanda Kinslow**
Title:	**IACUC Training Coordinator**
Department:	**Pathology, LAF (Laboratory Animal Facility)**
Topics:	**Rules and Regulations governing the Privilege of Using Live Animals in Research**
Time needed:	10-15 minutes

Name:	**Yolanda Griffin**
Title:	**Biological Safety Officer**
Department:	**Environmental Health and Safety**
Topics:	**Blood Borne Pathogens, Hazardous Material and Lab Safety**
Time needed:	10 minutes

Name:	**Vicky Tygart**
Title:	**Supervisor and Safety Officer**
Department:	**Environmental Health and Safety**
Topics:	**General Safety, Fire safety procedures and Use of Fire Extinguishers**
Time needed:	10 minutes

Names:	**Vicky Tygart, Supervisor and Safety Officer**
Department:	**Environmental Health and Safety**
Topics:	**Radiation Safety and Laser Safety**
Time needed:	20 minutes

School of Graduate Studies in the Health Sciences

Summer Research Seminar Schedule 2015
All Seminars will be held at Noon
Symposium time is TBD

1. **May 29 (Upper Amphitheater—Room R354)**
   Safety Issues

2. **June 5 (Upper Amphitheater—Room R354)**
   Mike Ryan - Physiology

3. **June 12 (Upper Amphitheater—Room R354)**
   Jennifer Sasser - Pharmacology

4. **June 19 (Upper Amphitheater—Room R354)**
   Eva Bengten - Microbiology

5. **June 26 (Upper Amphitheater—Room R354)**
   Amol Janorkar- Biomedical Materials Science

6. **July 2 (Thursday--Upper Amphitheater—Room R354)**
   Damian Romero - Biochemistry

7. **July 10 (Upper Amphitheater—Room R354)**
   Sean Didion and MD/PhD Students

8. **July 17 (Upper Amphitheater—Room R354)**
   Donna Platt - Neuroscience

9. **July 24 (Upper Amphitheater—Room R354)**
   Ryan Darling – Clinical Anatomy

10. **July 31 Symposium (Student Union---Upstairs)**
    Student Poster and Oral Presentations

SAFETY SEMINAR
May 29, 2015
R354 Classroom Wing

Name:	**Amanda Kinslow**
Title:	**IACUC Training Coordinator**
Department:	**Pathology, LAF (Laboratory Animal Facility)**
Topics:	**Rules and Regulations governing the Privilege of Using Live Animals in Research**
Time needed:	10-15 minutes

Name:	**Yolanda Griffin**
Title:	**Biological Safety Officer**
Department:	**Environmental Health and Safety**
Topics:	**Blood Borne Pathogens, Hazardous Material and Lab Safety**
Time needed:	15 minutes

Name:	**Jeff Pinter**
Title:	**Fire Safety Specialist**
Department:	**Environmental Health and Safety**
Topics:	**General Safety, Fire safety procedures and Use of Fire Extinguishers**
Time needed:	15 minutes

Name:	**Dale Tallman**
Title:	**Safety Officer, Radiation/Laser**
Department:	**Environmental Health and Safety**
Topics:	**Radiation Safety and Laser Safety**
Time needed:	15 minutes

The UMMC School of Graduate Studies
in the Health Sciences
presents

Making the Case for Graduate School

Monday, June 8, 2015 at 3:00 pm in R153

Presented by

Howard G. Adams, Ph.D.

Founder and President of H.G. Adams & Associates, Inc.

A leading expert on mentoring and mentorship program development and has written, lectured, and consulted extensively on career, educational, personal, and professional development.

Please direct questions to Mary Canterbury at mcanterbury@umc.edu

Appendix #9: Extracurricular activities 2014 and 2015


Networking
Game Night
Wednesday, June 10, 2015
4:30 pm
Student Union Gymnasium
All Summer Research Students are invited
Food and drinks
will be provided


Bowling Night
Fannin Lanes
Wednesday, July 29, 2015
6:00 pm – 8:00 pm

Appendix #10: Summer Research Symposium 2014 and 2015

2014

School of Graduate Studies in the Health Sciences
Summer Research Symposium
August 1, 2014

Welcome.....**Dr. Michael Ryan**
Co-Director, Discovery U Program

Mary Canterbury
Program Administrator, Discovery U Program

	Name	Department	Mentor
1	**Ashley King**	Biomedical Materials Science	Dr. Denise Krause
2	**Niketa Thompson**	Biomedical Materials Science	Dr. Denise Krause
3	**Rochelle Corbitt**	Anatomy	Dr. Doug Vetter/ Dr. Kathleen Yee
4	**LeAndrea Mitchell**	Anatomy	Dr. Doug Vetter/ Dr. Kathleen Yee
5	**Courtney Sims**	Microbiology	Dr. Mary Marquart
6	**Jessica McKenzie**	Pharmacology	Dr. Babbette LaMarca
7	**Orianna Odell**	Cancer Institute	Dr. Anait Levenson
8	**Diva Whalen**	Cancer Institute	Dr. Anait Levenson
9	**Donald O'koye**	Biochemistry	Dr. Luis Martinez
10	**Brianca Fizer**	Pharmacology	Dr. Jan Williams
11	**Tre Taliaferro**	Physiology	Dr. Lique Coolen
12	**Arthi Reddy**	Neuroscience	Dr. Lique Coolen
13	**Sallie Lin**	Physiology	Dr. Lique Coolen
14	**Claresa Youngblood**	Microbiology	Dr. Larry McDaniel
	10-minute Break		
15	**Ben Melancon**	Biochemistry	Dr. Radhika Pochampally
16	**Kelli Hartman**	Biochemistry	Dr. Drazen Raucher

	Name	Department	Mentor
17	**Logan Didier**	Biomedical Materials Science	Dr. Michael Roach
18	**Ian Blakely**	Biomedical Materials Science	Dr. Michael Roach
19	**Justin Mathew**	Biomedical Materials Science	Dr. Amol Janorkar
20	**Rodney Kipchumba**	Biomedical Materials Science	Dr. Amol Janorkar
21	**Laney Casella**	Biomedical Materials Science	Dr. Amol Janorkar
22	**Alexis Huddleston**	Microbiology	Dr. Chris Meade
23	**Skyler Gordon**	Physiology	Dr. Heather Drummond
24	**Olivia McNeal**	Physiology	Dr. Barbara Alexander
25	**Katarina Pittman**	Physiology	Dr. David Stec
26	**Sydney Clark**	Pathology	Dr. Julius Cruse
27	**Cindy Nguyen**	Biochemistry	Dr. Yin-yuan Mo
28	**Ansley Scott**	Cancer Institute	Dr. Yin-yuan Mo
29	**Anthony Keyes**	Cancer Institute	Dr. Drazen Raucher
30	**Brittany Martin**	Cancer Institute	Dr. Christian Gomez
31	**Joshua Agee**	Cancer Institute	Dr. Xinchun Zhou
32	**Tatyana Givens**	Cancer Institute	Dr. Chindo Hicks
33	**John Suedel**	Biochemistry	Dr. Wael Elshamy
34	**Taylor Moehling**	Neuroscience	Dr. Junming Wang
35	**Bria Burt**	Microbiology	Dr. Ashley Robinson
36	**Alexis Himel**	Physiology	Dr. Joey Granger
37	**Bijal Patel**	Biochemistry	Dr. Damian Romero
38	**Sherman Jones**	Neuroscience	Dr. Donna Platt/ Dr. James Rowlett
39	**Jessica Milner**	Neuroscience	Dr. Susan Warren/ Dr. Paul May
40	**Anna Marie Dulaney**	Microbiology	Dr. Mary Marquart
41	**Andrew Asante**	Microbiology	Dr. Ritesh Tandon
42	**Daniel Glover**	Microbiology	Dr. Ritesh Tandon
43	**Jeremiah Reese**	Microbiology	Dr. Eva Bengten

Name	Department	Mentor
10-minute Break		
44 **Caleb Reese**	Biochemistry	Dr. Lee Bidwell
45 **Brittnei Earl**	Pharmacology	Dr. Jenny Sasser
46 **Graham Husband**	Physiology	Dr. Robert Hester
47 **Akil Strawder**	Physiology	Dr. Mike Ryan
48 **Kevin Garmin**	Physiology	Dr. Eric George
49 **Christian Bruno**	Physiology	Dr. Mike Ryan
50 **Akriti Kaur**	Neuroscience	Dr. Craig Stockmeier
51 **Camilla Wright**	Neuroscience	Dr. Lir-Wan Fan
52 **DesTenee Green**	Pharmacology	Dr. Jan Williams
53 **Max Schwam**	Microbiology	Dr. Chris Meade
54 **Matt Mosley**	Biochemistry	Dr. Maureen Wirschell
55 **Amit Tzivion**	Biochemistry	Dr. Azeddine Atfi
56 **Morgan LeDoux**	Biochemistry	Dr. Parminder Vig
57 **Muz Khawaja**	Neuroscience	Dr. Kevin Freeman

DISCOVERY U ADMINISTRATION

Dr. Joey Granger, Dean
School of Graduate Studies in the Health Sciences

Dr. Mike Ryan, Associate Dean
Co-Director Discovery U Program

Dr. Mike Garrett, Co-Director
Discovery U Program

Mary Canterbury, Program Administrator
Discovery U Program

Discovery U Support Staff
Danice Miller
Shanna Moulds

ACKNOWLEDGEMENT

A very special thanks to all of the students and mentors who participated in the Summer Research Programs.

2015

SUMMER UNDERGRADUATE RESEARCH SYMPOSIUM

DISCOVERY

UMMC SCHOOL OF GRADUATE STUDIES IN THE HEALTH SCIENCES

JULY 31, 2015
Norman C. Nelson Student Union

SUMMER UNDERGRADUATE RESEARCH SYMPOSIUM
JULY 31, 2015

9:00 - 9:30 **BREAKFAST RECEPTION**
Student Union Conference Center

9:30 - 12:00 **ORAL PRESENTATIONS**
Student Union Conference Center

1. Andrew Asante
Microbiology - Ritesh Tandon

2. Nathan Campbell
Pharmacology - Babbette LaMarca

3. Jackson Coole
Biochemistry - Michael Hebert

4. Sherman Jones
Neuroscience - Donna Platt/James Rowlett

5. Jamal Keyes
Cancer Institute - Drazen Raucher

6. Alana Kron
Radiology - Andrew Smith

7. David Lee
Biomedical Materials Science
Michael Roach

8. Destiny Mitchell
Physiology - Romain Harmancey

9. Aaron Blocker
Microbiology - Larry McDaniel

10. Courtney Harrison
Biochemistry - Maureen Wirschell

11. Jeanne Ishimwe
Pharmacology - Mallikarjuna Pabbidi

12. Nora Newcomb
Neuroscience - Lique Coolen

13. Charles Phillips
Cancer Institute - Yin-Yuan Mo

14. Faizan Tahir
Radiology - Andrew Smith

15. Evan Theilman
Biomedical Materials Science
Yuan Yuan Duan

16. Erin Wilson
Physiology - Joey Granger

12:00 - 1:00 **LUNCHEON**
By Invitation Only - Student Union Conference Center

1:00 - 2:30 **POSTER PRESENTATIONS/DESSERT RECEPTION**
Student Union Conference Center

1. Anna Adorno
CHS - Hamed Benghuzzi

2. Marina Ali
Biochemistry - David Brown

3. Andrew Asante
Microbiology - Ritesh Randon

4. Kandice Bailey
Biochemistry - Parminder Vig

5. Allison Barnes
Neuroscience - Kedra Wallace

6. Anna Bicker
Microbiology - Larry McDaniel

POSTER PRESENTATIONS (cont.)

7. Estelle Blair
Physiology - Joey Granger

8. Aaron Blocker
Microbiology - Larry McDaniel

9. Nicholas Bohannon
Physiology - Barbara Alexander

10. Latoya Brantley
Pharmacology - Stan Smith

11. Timera Brown
Cancer Institute - Xinchun Zhou

12. Joshua Campbell
Neuroscience - Kedra Wallace

13. Nathan Campbell
Pharmacology - Babbette LaMarca

14. Ashley Carson
Microbiology - Chris Meade

15. Graham Casey
Neuroscience - Lique Coolen

16. Ron Cassada
Neuroscience - Ian Webb

17. Jackson Coole
Biochemistry - Michael Hebert

18. Robert Cragon
Pharmacology - Mallikarjuna Pabbidi

19. Ramanda Dace
Biochemistry - Radhika Pochampally

20. Davesha Doty
Radiology - Andrew Smith

21. Adesuwa Ekunwe
Cancer Institute - Anait Levenson

22. Deion Fields
Cancer Institute - Keli Xu

23. Austin Finney
Biochemistry - Drazen Raucher

24. Christopher Fisher
Pharmacology - Sydney Murphy

25. Sarah Fitzgerald/Annie Hou
Biomedical Materials Science - Amol Janorkar

26. Brianca Fizer
Pharmacology - Jan Williams

27. Jasmeka Foster
Neuroscience - Ian Paul

28. Angel Garcia
Cancer Institute - Christian Gomez

29. Caroline Garraway
Neuroscience - Junming Wang

30. DesTenee Green
Pharmacology - Jan Williams

31. Devin Guillory
Neuroscience - Ian Paul

32. Kelli Gutter
Medicine - Donna Sullivan

33. Courtney Harrison
Biochemistry - Maureen Wirschell

34. Jordan Hester
Physiology - Drew Pruett

35. Cecil Hill, Jr.
OB/GYN - Kedra Wallace

36. Trianna Humphrey
Pharmacology - Stan Smith

37. Michayla Hunter
Medicine - Donna Sullivan

38. Carley Hydrick
Neuroscience - Ian Paul

39. Jeanne Ishimwe
Pharmacology - Mallikarjuna Pabbidi

40. Javarcia Ivory
Physiology - Joey Granger

POSTER PRESENTATIONS (cont.)

41. Sherman Jones
Neuroscience - Donna Platt/James Rowlett

42. Jamal Keyes
Cancer Institute - Drazen Raucher

43. Alana Kron
Radiology - Andrew Smith

44. Tracey Thuy Phuong Le
Biochemistry - Radhika Pochampally

45. David Lee
Biomedical Materials Science
Michael Roach

46. Chloe McCarthy
Microbiology
Chris Meade

47. Jessica McKenzie
Pharmacology - Babbette LaMarca

48. Douglas McLaurin
Physiology - Heather Drummond

49. Destiny Mitchell
Physiology - Romain Harmancey

50. Nora Newcomb
Neuroscience - Lique Coolen

51. ThuyVi Nguyen
Radiology - Andrew Smith

52. Casey Park
Biochemistry - Damian Romero

53. Charles Phillips
Cancer Institute - Yin-Yuan Mo

54. Katarina Pittman
Physiology - David Stec

55. Ta'Shariah Robinson
Pharmacology - Jenny Sasser

56. Abdullah Shaheen
Neuroscience - Junming Wang

57. De'Aries Shannon
Physiology - Merry Lindsey

58. Redin Spann
Neuroscience - Bernadette Grayson

59. Akil Strawder
Physiology - Mike Ryan

60. Faizan Tahir
Radiology
Andrew Smith

61. Evan Theilman
Biomedical Materials Science
Yuan Yuan Duan

62. Eliza Thomas
Microbiology - Mary Marquart

63. Givanta Tribit
Microbiology - Chris Meade

64. Emily Turbeville
Neuroscience - Lir-Wan Fan

65. Erin Wilson
Physiology - Joey Granger

66. Logan Wilson
Physiology - Eric George

67. Shenequa Wilson
OB/GYN - Kedra Wallace

68. Judson Womack
Pharmacology - Jan Williams

69. Yoni Youn
Neuroscience - Eric Vallender

70. Austin Zamarripa
Neuroscience - Bernadette Grayson

A very special thank you to all of the mentors, postdocs and graduate students who guided the summer undergraduate researchers during the summer of 2015.

Appendix #11: Final papers 2014 and 2015

Final papers 2014

Creating long non-codingRNA Knockouts to Determine Function in Relation to Prostate Cancer

Scott, Ansley E.[1], and Mo, Yin Yuan[2,3,4]

[1]Tougaloo College; [2]School of Medicine, University of Mississippi Medical Center, Jackson, MS, [3]Cancer Institute, University of Mississippi Medical Center, Jackson, MS, [4]Department of Pharmacology and Toxicology , University of Mississippi Medical Center, Jackson, MS

Abstract

Dr. Mo's lab focus in the study of the role of non-coding RNAs (ncRNA) in cancer. Protein-coding genes are only a small part of the human genome, whereas the majority of transcripts are non-coding RNAs including long non-coding RNAs (lncRNAs). LncRNAs, are sequences with a size of over 200bp. Some of their functions include serving as molecular decoys and mediators in signaling pathways that regulate cell cycle, cellular differentiation, gene expression and translation. LncRNAs could play a critical role in regulation of cellular processes such as cell growth and apoptosis as well as cancer progression and metastasis. This study focused on making lncRNA knockouts to determine their relationship with prostate cancer. Briefly, lncRNA sequences were assigned and primers were then designed using different web pages, which included Human Blat Search, Web Map Preferences, and DNA 2.0 CRISPR gRNA Design Tool. Then, the amplification of the lnRNAs was performed using PCR and the DNA was visualized and extracted from agarose gel. Cloning was performed using a gRNA vector cut with the restriction enzyme SAP1, and both commercially made and labs made competent cells were used to amplify the plasmids. After cloning, colonies were selected from the agarose plate and grow in liquid media for amplification and later DNA extraction using standard lab procedures. The DNA concentration was measured using a nanodrop machine. Finally, the plasmid containing the gene was checked using restriction enzymes and visualization in agarose gels. Results showed an amplification and cloning of the specific knockouts lnRNAs. Thus, my contribution during this summer to Dr. Mo's research creating knockout lncRNA genes is part of the first step to future studies to determinate their relationship with the diagnosis, progression, or treatment of prostate cancer. The lab will next use the knockout genes that were made to perform *in vivo* experiments for prostate cancer.

Financial Support: PC131783 (HBCU-UMMC PCRP)

Thermal Manipulation of the Elastin-Like-Polypeptide P21-E1-Bac Increases the Therapeutic Peptide's Potency compared to the Parent Compound *in vivo*

Anthony Charles Keyes [1], Kounosuke Watabe [2,3,4] and Drazen Raucher [2,3,4]

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Abstract:

Dr. Rauche's lab have been working, for more than a decade, in generating better drug delivery systems using cell penetrating peptides (CPPs) to target tumor cells. These peptides have been used in conjunction with elastin-like polypeptides (ELPs) to increase the delivery of drugs to cancerous cells and tumors. ELPs are well known for their unique thermal responsive properties. Above the transition temperature, ELPs aggregate into solid globules, while below the transition temperature, ELPs are in solution. This thermal property create an effective drug delivery system that actively targets specific areas using local hyperthermia. Once the ELPs aggregate on the target site, the CPPs are responsible for entering the cells. In the cell, the drug can bind with targets to achieve a therapeutic effect. In this project working underneath my mentor Dr. Raucher with support from Dr. Watabe, I was able to test whether ELPs have any anti-proliferative effect on prostate cancer cells. First, the polypeptide chains conjugated to P21 peptide (P21-E1-Bac) or to a scrambled peptide (Scrambled P21-E1-Bac) were synthesized within BLR-*E. coli*. The proteins were extracted and then purified from *E. coli* using an established protein purification protocol from the lab. Then the antiproliferative effect of these peptides was determinated on metastatic prostate cancer cells (PC3MM) using a MTT assay. PC3MM cell line is a metastatic version of the PC3 human prostate cancer cell line. Results showed that at 37°C, P21-E1-Bac and the scrambled peptide have a similar antiproliferative effect on the cells. Nevertheless, at 42°C, P21-E1-Bac showed greater anti-proliferative effect at the low concentration of 10uM. As expected, the effect of P21-E1-Bac was higher at 42° C where the ELP was aggregated, compared to 37° C, where the ELP was still in solution. The drug delivery system established from using ELPs in tandem with CPPs is a very powerful approach when it comes to novel treatment ideas. Specifically for cancer, the thermal properties of ELPs allow for active targeting using High-intensity focused ultrasound. While heating a tumor, the ELP will only aggregate on that site in the body. Not only that, but ELPs are able to pass the Blood Brain Barrier, and allow for delivery of molecules that alone would not be able to penetrate such barrier. My studies have been *in vitro* and are at the beginning stages of creating an effective compound to combat prostate cancer. With animal studies being done by my mentor, Dr. Drazen Raucher, I have no doubt that ELPs will be able to make it to clinical studies.

Financial Support: PC131783 (HBCU-UMMC PCRP)

The Role of Hepatoma Up-Regulated Protein (HURP) in resistance to prostate cancer treatment

Brittany Nicole Martin[1], Tangeng Ma[2], Abdelouahid Elkhattouti[2], Christian Gomez[2-4]

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Prostate Cancer (PCa) can be treated with radiation, chemotherapy, and hormonal therapy. Chemotherapy is a systematic treatment in which drugs are distributed throughout the body to kill cancerous cells. However, one of the limitations of chemotherapy is chemoresistance, which can be inherently attributed to cancer cells or extrinsically developed in response to treatment. Hepatoma Up-regulated Protein (HURP), a cell cycle regulated, microtubule associated protein has been reported in Dr. Gomez lab as an independent biomarker of aggressive PCa disease. Studies show when HURP is over expressed in LNCaP cells they are more resistant to chemo drugs *(El-Khattouti, A., Ma T and Gomez CR, unpublished observations)*. Additionally, analysis of key proteins involved in the modulation of pathways suggest that HURP increases chemo-resistance in PCa cells and has an oncogenic role in the development of PCa. These experiments support the notion that HURP is a factor of chemoresistance in PCa and allow us to predicate that cells with low levels of HURP will be less resistant to chemo drugs. The hypothesis underlining this project is the following: If HURP is silenced in PCa cells; they will be less resistant to chemotherapy drugs.

To test this hypothesis we utilized LnCaP cells infected with a lentiviral Tet-on inducible system for HURP short hairpin (sh)-RNA (shHURP LnCaP cells). Next cells were incubated with docetaxel, the antineoplastic chemo drug and anti-microtubule agent used to treat metastatic Prostate Cancer. Using an MTT Assay to measure the drug sensitivity on the cells, we observed a slightly increased resistance to docetaxel in cells with silenced HURP relative to control cell expressing normal levels of HURP [IC_{50} in shHURP-LNCaP (+Dox)= 0.18 (0.03-1.0) nM; IC_{50} in shHURP-LNCaP (-Dox)= 1.7 (1.24-2.36) nM]. Western blot analysis evidenced expressed that Docetaxel is more effective in HURP when doxycycline is added.

In Docetaxel treated LNCaP cells the silencing of HURP does not affect cell viability. At this point we do not have strong evidence to conclude that shHURP-LNCaP will be less resistant to Docetaxel treatment. If we demonstrate that HURP silencing reduces chemoresistance, we will be in better position to define the role of HURP as a factor of treatment resistance in PCa.

Acknowledgements: The University of Mississippi Medical Center, HBCU Summer Research Training Program and the Gomez lab. Financial Support: PC131783 (HBCU-UMMC PCRP).

The Effects of Synthetic Stilbenes on Metastasis Associated Protein 1 (MTA1) Levels in Prostate Cancer Cells

Diva Whalen [1], Benjamin Bates [2], Swati Dhar [3], Avinash Kumar [3], Agnes M. Rimando [4], and Anait Levenson [3, 5]

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Abstract:

Earlier findings discovered in Dr. Levenson's laboratory have shown that Resveratrol and Pterostilbene have an inhibiting effect on the tumor progression metastasis associated protein 1 (MTA1). Resveratrol and Pterostilbene (PTER) are natural compounds found in red wine and blueberries. These compounds are able to inhibit tumor progression by reducing the amount of MTA1 produced by the prostate cancer cells. This discovery is important; yet, because of low bioavailability and quick metabolism in the body, Resveratrol does not remain available long enough to effectively reduced in MTA1 levels in the body. On the other hand, PTER has a higher bioavailability because of its molecular structure. Thus, this study was designed to analyze the potency and effectiveness of PTER's derivatives against the protein MTA1. By treating the most aggressive prostate cancer cell line, prostate cancer bone metastasis 3 (PC3M), we hope to not only see a reduction in cancer cells which could translate into a reduction in MTA1 but also a stronger potency in lower concentration (<50μM/mL) which means a smaller amount of the compound could be administered. We analyzed the potency of all the compounds by growing the cells, creating protein lysates, and running two different western blots with the MTA1-a11 and MTA1 cell signaling antibody on each of the compounds. In future studies, we hope to study the effectiveness of the best derivatives in the other prostate cancer cell lines, brain metastatic cell line, DU145, and lymph node metastatic cell line, LNCaP. The compounds must be studied in these cell lines because these two cell lines show different characteristics such as the metastatic aggressiveness and sensitivity to a male hormone, androgen. We would continue investigating the pathways of compounds through proliferation assays so we can make sure that the MTA1 is being down regulated. After selecting the most potent compounds, the compounds would then be tested in a mice model whose body stimulates an aggressive form of prostate cancer.

Financial Support: PC131783 (HBCU-UMMC PCRP)

C-terminal of group 3 POTES correlates with the Progression of Prostate Cancer

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Prostate cancer is the second leading cause of cancer among men, so research in this area is very important so that we may find better treatments and eventually find a cure. The most common test is the Prostate Specific Antibody (PSA) test, which correlates with prostate cancer. However high PSA levels can also correlate patients with no malignant diseases such as prostatitis or benign prostate hyperplasia. Because of this, extensive research is taking place on trying to find more reliable biomarkers for prostate cancer. The POTE is a gene newly discovered by the NCI research team in an attempt to find prostate specific genes and also molecular targets for immunotherapy. It is expressed in the prostate, ovary, testis, and placenta. According to immunohistochemistry stain done previously in Dr. Zhou's lab an antibody against the POTE gene for the C-terminal common to group three POTES (CtG3P) stained the nucleoli, without staining the cytoplasm, as prostate cancer progressed. We also see that the full length POTE is stained by the antibody against the N-terminal which is observed as the diffusion of the stain increases in the cytoplasm. Based on our discovery that C-terminal common to group three POTEs (CtG3P) is localized in the nucleoli of malignant cells, we hypothesize that the full length of the POTE protein should be expressed in the cytoplasm and that the group three POTEs correlate with the progression of prostate cancer through nuclear translocation of the CtG3P into the nucleoli. PC3 prostate cancer cell line were used and cultured them in the incubator at 37ºC with 5% CO_2. We then used a transfectant to allow siRNA into the cells. The siRNA is meant to knockdown the mRNA for POTE protein. We had a control with no siRNA, scrambled negative with siRNA nonspecific to the POTE gene, siRNA specific to the C-terminal, and siRNA specific to the N-terminal, ankyrin repeat motifs, and the C-terminal. After this we extracted protein from the nuclear and cytoplasmic portion of the cells and performed Western Blot. The results show that the N-terminal (Ab79) only was expressed in the cytoplasmic proteins. Specific bands for the C-terminal were only expressed in the nuclear region when using antibody against the C-terminal (Ab76). We also see that when we combine the siRNA for the N-terminal, ankyrin repeat motifs, and C-terminal the POTE gene is knocked down. A truncated protein found around 20 kda was observed only in the control PC3 cells. This could be because the concentrations of the cells from the experiment was low. This also explains why the actin bands aren't consistent throughout as compared to the housekeeping beta actin protein. We found out a higher protein band between 100-150 kda. These results are only preliminary and we will continue and run more experiments to get them more accurate. Single siRNA doesn't seem to knock down the protein, but all three parts does. The antibody against the N-terminal showed full length protein only expressed in the cytoplasm. Antibody against the C-terminal showed truncated portion and full length large proteins present in the nucleus. Our data indicate that C-terminal of group 3 POTES correlates with the progression of prostate cancer.

Financial Support: PC131783 (HBCU-UMMC PCRP)

Molecular Analysis of miRNA and mRNA Signatures in Prostate Cancer in African American and Caucasian Men

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African American (AA) men have significantly higher age adjusted incidence and mortality rates compared to men of European ancestry (EA). Gene expression profiles of Prostate tumors (PCa) from AA and EA men may affirm the biological differences between the two ethnic populations. Recently, MicroRNAs (miRNA), the small noncoding RNAs that regulate gene expression have gained prominence as potential clinically actionable biomarkers. Thus far the role of miRNAs in health disparities is unclear because information is lacking about the association of miRNA and their mRNA targets in AA and EA men with and without PCa. This exploratory study was conducted to identify and functionally characterize miRNA and mRNA signatures in PCa.

We used publicly available miRNA expression data on AA and EA men with PCa and control samples (GSE8126 and GSE6956). miRNA expression data was analyzed to identify the miRNA associated with prostate cancer in AA and EA men, and to identify significantly differentially expressed miRNAs that distinguish the two ethnic populations. Supervised analysis allowed comparison of miRNA expression levels using t-test to identify significantly ($P<0.05$) differentially expressed miRNAs for each the data sets. Differentially expressed miRNAs were examined to identify their mRNA targets using the IPA MiRNA Target Filter tool.

We identified 654 target genes for the AA data, of which, 456 were present in the expression data. For the EA we identified 546 target genes, of which, 409 were present in the expression data. For PCa, we identified 341 target genes, of which 245 were present in expression data. A signature of 92 significantly ($P<0.05$) differentially expressed miRNA between cases and controls in AA men was identified. Comparison between cases and controls in EA men revealed a signature of 85 significantly ($P<0.05$) differentially expressed miRNAs. Comparison of miRNA expression levels between AA and EA men with PCa revealed a signature of 34 significantly ($P<0.05$) differentially expressed miRNAs from a total of 627 miRNAs evaluated. Unsupervised analysis using hierarchical clustering revealed functional relationships and similarities in patterns of expression profiles among the miRNAs examined. Supervised analysis revealed significant differences in mRNA/gene expression levels between cases and controls in both populations. We identified significantly differentially expressed genes distinguishing cases from controls. The analysis also revealed significant differences in mRNA expression levels between AA and EA men. Unsupervised analysis on the sets of significantly differentially genes revealed functional relationships and similarities in patterns of gene expression profiles.

We have shown that miRNAs are differentially expressed between cases and controls in either population. Our analysis also revealed that miRNAs are significantly differentially expressed between AA and EA men, suggesting that miRNAs may play a role in health disparities. miRNAs and their mRNA targets could function as potential biomarkers and targets for the development of new therapeutics and early intervention strategies to eliminate health disparities in PCa between AA and EA men. More studies are needed to validate these findings in AA and EA men with PCa.

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Final papers 2015

Prostate-Specific MTA1 Transgenic Mice Model

Adesuwa Ekunwe [1], Nasir Butt [2], Swati Dhar [2], Avinash Kumar [2], and Anait S. Levenson [2, 3]

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Abstract:

In the United States, prostate cancer is a major health problem. It is the second leading cause of cancer death in American men. About 1 in every 7 men will be diagnosed with prostate cancer in their lifetime. Efforts have been made to improve the management and treatment of prostate cancer, but the concern of overtreatment and under treatment still remains. Better understanding of molecular mechanisms that play role in development and progression of prostate cancer is needed. We have previously shown that the high levels of metastasis-associated protein 1 (MTA1) are correlated with higher-grade tumor recurrence, metastasis, and poor prognosis and may serve as a potential prognostic biomarker for aggressive PCa in African American men. While the role of MTA1 in advanced PCa is well established, the causative role of MTA1 in PCa tumorigenesis remains unknown. To assess the role of MTA1 in the initiation and development of prostate cancer, we generated a prostate-specific MTA1 overexpression in transgenic mice model. Transgenic mice allow for the manipulation of genes within the body system. We expressed MTA1 and luciferase under the control of Probasin-Cre4. MTA1 genes regulate tumor growth and development. Pb-Cre4 secures expression of MTA1 specifically in the prostate. Luciferase expression by prostate epithelial cells allows monitoring the changes in the prostate and tumor growth in live animals without sacrificing. After series of carefully designed breeding strategies and genotyping, we collected MTA1 transgenic male mice for our experiments. Bioluminescent imaging of prostate specific MTA1 transgenic mice showed increased luciferase signal at 13 weeks of age versus normal prostate controls. *Ex vivo* images of urogenital system from MTA1 transgenic mouse showed GFP expression compared to control normal prostate. Next, we confirmed prostate specific expression of the MTA1 transgene. For this, we isolated protein from the homogenized prostate and performed western blot analysis using MTA1 and GFP antibodies. We demonstrated specific overexpression of ectopic MTA1 in the prostate of MTA1 transgenic mouse compared to its littermate control normal prostate (Pb-Cre4-). Further histological evaluation of the prostate tissue of the MTA1 transgenic mouse demonstrated the link between the expression of MTA1 and development of atypical proliferating lesions. Indeed, MTA1 overexpressing prostate showed signs of precancerous, high-grade prostatic intraepithelial neoplasia (PIN). We also detected differences in cell proliferation determined by Ki67 immunofluorescent staining. Taken together, our data demonstrate that prostate specific overexpression of MTA1 results in the development of PIN at 13 weeks of age. While this work is in progress, we expect to obtain information on the biological relevance of MTA1 as possible driver of prostate cancer tumorigenisis.

Financial Support: PC131783 (HBCU-UMMC PCRP)

MICA (MHC class I polypeptide-related sequence A) as a Factor of Immunoevasion in Prostate Cancer

Angel Garcia[1], Christian Gomez[2], Marcelo Jun Sakiyama[2]
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Background Prostate cancer (PCa) remains the most common cancer in men in the U.S. High levels of soluble MHC class I polypeptide-related sequence A (sMICA), which is cleaved from the membrane of the cells, have been found in several types of cancer, such as lung, gastrointestinal, gynecologic, breast, and renal. Expression of sMICA was also detected in human PCa cell lines PC-3 and DU145. Recent research shows that sMICA plays an important role in the mechanism of immunoevasion by downregulating the receptors of NK cells and subpopulations of T cells. Through previous research, HURP (Hepatoma up-regulated protein) has been found in large numbers in PCa samples. It has been confirmed that PCa cells with high levels of HURP treated with radiation or chemotherapy are more likely to survive than cells with lower levels of HURP. In the ten weeks of my program, I tested the levels of sMICA, which are released in the medium where PCa cells were cultured. This would open up possible experiments for further understanding of its association in the context of immunoevasion and resistance to therapy.

Methods LNCaP cells were cultured under different oxygen levels. 2x105 cells were plated in T25 flasks. Some cells were cultured at 20% O2 (normoxia), while others were cultured at 2% O2 (hypoxia). After 24 hours of plating, the cells were trypsinized and counted using a NeuBauer chamber and the media were removed and stored at 0 hours, 24 hours, and 48 hours. The presence of sMICA in culture supernatants were detected by DuoSet ELISA (enzyme-linked immunoSorbant Assay) Development System by R&D Systems. 1.2x106 cells were grown in 10cm dishes under hypoxia and normoxia conditions. After 24 hours, the cells were lysated starting from 0 hours, 24 hours, and 48 hours. The lysates were used in western blot analysis to detect the cytoplasmic MICA.

Results

sMICA was detected by DuoSet ELISA. We found that after forty eight hours, the cells grown in hypoxia expressed about five times more sMICA than cells grown in normoxia. When analyzed by Western blot, normal oxygen levels (20% O2) increased MICA by 3.5-fold. Hypoxia reduced MICA expression by 11%.

Conclusion & Discussion From the results, we suggest that different oxygen levels have an effect in the expression of sMICA. Although our initial experiments with MICA suggest that lower oxygen levels affect MICA expression in LNCaP cells, further experiments are required to validate this conclusion. If we can validate the results shown in published literature, then we may be able to find a relationship between MICA and HURP.

Financial Support: PC131783 (HBCU-UMMC PCRP)

Long non-coding RNAs as potential diagnostic/prognostic markers in prostate cancers

Charles Phillips[1,2] and Yin-Yuan Mo, PhD[2]

[1]Biology Department, Tougaloo College, Tougaloo, MS [2]Cancer Institute, University of Mississippi Medical Center, Jackson, MS Introduction

Abstract:

Currently, most prostate cancers are found during screening by usage of a prostate-specific antigen (PSA) blood test and/or a digital rectal exam (DRE). In the event that cancer is suspected, the actual diagnosis will be made via a prostate biopsy. Recently, gene alterations have come into investigation for the diagnosis of prostate cancer. Diagnostic markers are biological parameters that aid in the diagnosis of disease. The investigation of alterations in genes could encourage the efficacy of using the presence of gene alterations as a diagnostic marker for prostate cancer. The chief objective of this preliminary investigation was to determine if expression of long non-coding RNAs are altered in individuals diagnosed with prostate cancer. Genes were grouped based on the differences between the altered and unaltered states as well as the number of times these alterations occurred. TCGA (the Cancer Genome Atlas) prostate cancer dataset at cBioPortal was used as a source for 191 listed genes, and those with alterations were recorded and all other genes were excluded. For genes showing alterations, overall survivability and disease free survivability data were taken and genes that did not show a significant difference in survivability were excluded. Following the exclusion of non-significant genes, there were 20 altered genes that were found to have a significant effect on the survivability in prostate cancer incidences. Of these genes, only 5 (DLEU2, SNHG6, PVT1, CASC8, FENDRR) were found to be altered in greater than or equal to 10% of the cases observed. Our study suggests that TCGA prostate cancer dataset is a valuable source for identification of long non-coding RNAs associated with prostate cancer.

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Effects of NOTCH3 in Aggressiveness of Prostate Cancer

Deion Fields[A], Wen-cheng Chung[B], Keli Xu[B, C]

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In Dr. Xu's lab previously, data was obtained that ascertained the Lunatic Fringe (*Lfng*) has a tumor suppressive role in the prostate. Presence of *Lfng* in a healthy prostate enhanced Notch3 activation. The increase was accompanied by an increase in the expression of Nkx3.1 tumor suppression gene and the prevention of Prostatic Intraepithelial Neoplasia (PIN). Deletion of *Lfng* in healthy prostate showed increased rates of PIN and a down regulation of Notch3. Deletion of *Lfng* also caused sarcomatoid carcinoma of the prostate, a very aggressive form of disease, in a very small percentage of mice. Knockdown of *LFNG* in DU-145, a human prostate cancer cell line, showed increased expression of Notch3. The purpose of the experiment performed and described in this report is to see if overexpression of Notch3 in DU-145 increased the aggressiveness of the cells. Two methods were used to test. First the cells were grown to confluence and then transfected with Notch3, and a control group of cells not transfected was used for comparison. After successful culture the first method performed was a "wound-healing assay" to measure cell migration. The second method was Western Blot analysis to test for signs of Epithelial-Mesenchymal Transition (EMT). EMT is a process by which epithelial cells, which most prostate cancers are found in, lose their polarity and adhesion properties and become more migratory mesenchyme cells. EMT is linked to metastasis of cancer, because it allows cells to travel to other parts of the body via lymph or blood. EMT has also been linked to the presence of tumor initiating cells. After cell lysates were obtained after transfection, Western Blot analysis was performed to test the levels of vimentin (expressed highly in mesenchymal cells, and E-cadherin (expressed highly in epithelial cells). Control cells were also tested for comparison. Results showed no change in E-cadherin or Vimentin levels. However there was down regulation of β-actin control inNotch3 transfected samples. Another control GAPDH was used to confirm these results. In published literature there has been linkage to increased levels of β-actin observed in highly invasive variants of several different tumor cell lines. This could be the basis of future studies regarding Notch3 and a tumor suppressive role. These experiments were done *in vitro* where cells react differently than they do in vivo when they can react with surrounding cells and environment. The importance of using animal models to study cancer is beneficial because of this interaction of cells in the body. Currently in the lab we are in the process of generating mice with deletion of *Lfng* as well as *p53*. *p53* is a tumor suppressor gene that is often mutated in cancer. The goal of this double deletion is to establish a model of aggressive prostate cancer that displays sarcomatoid features. This model could be used for treatment studies as well as monitoring the progression from indolent to aggressive disease.

Financial Support: PC131783 (HBCU-UMMC PCRP)

Testing the Anti-Proliferative Effects of Thermally Responsive Elastin-like Polypeptides on PC-3 mm and DU-145 Prostate Cancer Cell Lines

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Elastin-like polypeptides (ELPs) have been employed in a wide variety of cancer models as a vehicle for drug delivery due to its high pharmacokinetic properties and its ability to make anti-cancer drugs essentially specific. TPs that are known to cause cell cycle deregulation have been conjugated with ELP in order to increase cellular uptake and decrease drug dispersal throughout healthy tissues in the body. ELPs conjugated with cell cycle-inhibiting **therapeutic peptides (TPs)** and **cell-penetrating peptides (CPPs)** are being used to treat tumorous sites by increasing the retention effect of therapeutic drugs through external thermal applications. By prolonging the retention effect of anti-cancer drugs at tumor sites, drug concentration throughout the rest of a patient's body will decrease, reducing the side effects of non-specific anti-cancer drugs. Increased retention time along with increased cellular drug uptake due to CPPs allow for a more effective treatment whilst mitigating the negative side effects of anti-cancer drugs. ELP, a derivative of tropoelastin, is widely familiar due to its thermal responsiveness. As a solution containing ELP approaches its **transition temperature (Tt),** it will begin to precipitate and form an aggregate with other ELPs. After this transition occurs, CPPs facilitate entry into the cell where TPs then locate targets of interest for treatment. These classes of drugs have achieved multiple successes in both in vitro and in vivo models. During my 12 week internship, the anti-proliferative effects that **p21-ELP-Bac** would have on **DU-145** and **PC-3 mm** prostate cancer cell lines were closely studied. Aside from cell study, a large portion of my time was focused on protein synthesis and purification followed by characterization by means of Western blot and Tt determination. Because p21-ELP-Bac contains a cell cycle inhibitor, p21, it is believed that by utilizing thermally responsive ELP conjugated with a TP and CPP, one could attain an even higher cell death count as opposed to treating without a thermal responsiveness because of increased retention time, and therefore intracellular drug uptake. To state my hypothesis, if we utilize ELP conjugated with p21 (an anti-cancer peptide) and Bac (a cell-penetrating peptide), then we will be able to increase intracellular drug uptake, resulting in an increased cytotoxicity and therefore cell death because of ELPs' ability to cause an increased localization of TPs and CPPs.At the conclusion of my research, it was found that the thermally responsive properties of ELPs do in fact have the largest effect on cell proliferation when compared to the treatment groups at normal incubation temperatures. From our data, we can clearly see that cells treated with p21-ELP-Bac at 42°C have a high death rate compared to the cells treated in the 37°C incubator. We also see an increased cytotoxicity with increasing drug concentrations in both temperatures. This is important because seeing a correlation between cellular death and drug concentration removes the possibility of an increase in temperature being the key contributor to cellular death. In regards to future studies, I will need to run more experiments to confirm my finding and ensure that my results are repeatable. After this, I would like to move on to animal studies to see if our model mirrors the data we received in our *in vitro* studies.

Financial Support: PC131783 (HBCU-UMMC PCRP)

Accumulation of Cholesteryl Esters is associated with the Progression of Prostate Cancer

Timera Brown[1] , Jinghe Mao [1] , Lianna Li [1] , Josh Agee [1] , Alex Thompson [1],Xinchun Zhou [2,3]

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[3]Department of Pathology, University of Mississippi Medical Center, Jackson, MS

Background: Prostate cancer is the most diagnosed cancer, and the second leading cause of cancer death in men. When treating patients with prostate cancer, no ideal biomarkers for the differentiation of indolent and malignant cases at time of diagnosis, and no effective therapy for castration resistant prostate cancer are two most prominent challenges among others. Thus, discovering specific predictive biomarkers and new therapeutic interventions for prostate cancer will be of great significance. Cholesteryl esters are mainly considered as a storage form of energy. However, recently, cholesteryl esters have been recognized to be associated with many pathological changes, such as atherosclerosis, Wolman Disease, and cancers. This study is aimed to explore the association of cholesteryl esters with prostate cancer.
Methods: Three methods will be employed in this study: 1) ESI/MS-MS on 47 fresh-frozen prostatic tissues for global lipid profiling; 2) Real-time PCR on 16 fresh-frozen prostatic tissues for the expression level of genes related to the pathogenesis of prostate cancer and metabolism of cholesteryl esters; and 3) immunohistochemistry on 165 formalin-fixed and paraffin embedded prostatic tissues for the expression level of ACAT1 and LAL.
Results: We found the lipids in category of total lipids, total neutral lipids, cholesteryl esters and free fatty acids are higher in prostatic tissues than in benign prostatic tissues. Among them, cholesteryl esters increased most (5.8-fold) in prostate cancer. The real-time PCR results indicated that the expression level of genes Pten, LIPA and ABCA1 (but not ACAT1) are obviously lower in high grade than in low grade prostate cancer. It is interesting that the proteins ACAT1 and LAL are reversely expressed: In prostate cancer, ACAT1 is highly expressed, but LAL is not expressed. In contrary, in benign ACAT1 is not expressed, but LAL is highly expressed.
Conclusion and Significance: Accumulation of cholesterol esters in prostate cancer cells correlate with the progression of prostate cancer. The mechanism of accumulation of cholesteryl esters in prostate cancer cells could be a result of mixed effect of anabolism and catabolism for cholesteryl esters. These results suggest that cholesteryl esters could be potential prognostic biomarkers in differentiating indolent from aggressive cases of prostate cancer, and therapeutic targets for treatment of advanced prostate cancer, including castration resistant prostate cancer.

Financial Support: PC131783 (HBCU-UMMC PCRP)

Appendix #12: Final Paper Requirements

Christian R. Gomez

From:	Christian R. Gomez
Sent:	Monday, June 15, 2015 11:40 AM
To:	'Timera Brown'; 'Charles Phillips'; Deion Fields; Adesuwa Ekunwe; Angel Garcia; 'Jamal.keyes01@gmail.com'; 'Deion Fields'; 'Angel Garcia'; 'adesuwa ekunwe'
Cc:	Anait Levenson; Yin-yuan Mo; Xinchun Zhou; Keli Xu; Drazen Raucher; Freda K. Turpeau
Subject:	Final paper UMMC-HBCU
Attachments:	WMIC CRG 032013.pdf; Abstract.pdf; Diva Whalen.docx

Dear all, as we enter in week four, I would like to get your attention on an important requirement. Our interns have to prepare a final report referring to their project and main findings. Besides their formal relevance, the reports will be used by me when preparing my annual account to the funding agency.
There are few format-related points that will make things flow better:

1. We need a 1-page Word document
2. Font: Times New Roman, Font size: 12 points, Space: single, Margins: 1.25”
3. Structure: Title
   Authors
   Affiliations
   Body: Including introduction, main objective or hypothesis, materials and methods, main results, discussion and future directions
   Funding sources: (i.e. grant/s from PI, DoD: W81XWH-14-1-0151)

There are few examples attached for your review. Please let me know if you need more information or clarification.
Best
CRG

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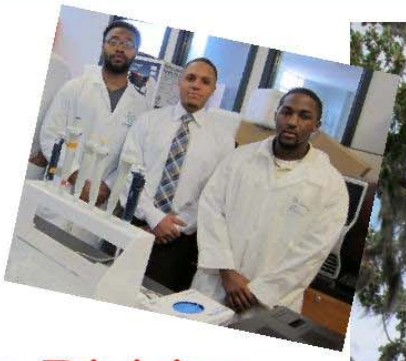
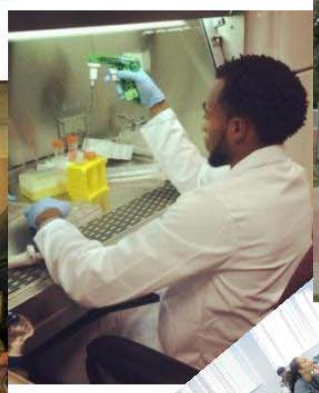
Appendix #13: 2014 13th TC Research Day

TOUGALOO COLLEGE
13th Research Symposium on Students' Summer Research Series



2014 Abstracts

Natural Science Division
Tougaloo College



Tougaloo MS 39174
October 17-18, 2014

Sponsored by: HHMI/Kincheloe Society

2014 13th TC Research Day Program ctd.

Poster Demonstrations

Kincheloe Hall

October 17th 2014

10:00-11:00 AM; 12:00-1:00 PM

Page	Name	Major	Research Institution
1	Irene Arguello	Biology	Tougaloo College and University of Mississippi Medical Center
2	Waynesha E. Blaylock	Biology	University of Texas Southwestern Medical Center
3	Elrica Brown	Biology	Tougaloo College
4	Marcus Brumfield	Math and Computer Science	University of Mississippi
5	Ineshia Coleman	Biology	Brown University
6	Acacia Cooper	Biology	Purdue University
7	Rochelle Corbitt	Biology	University of Mississippi Medical Center
8	Donald Davis	Chemistry	Brown University, Tougaloo College
9	Dominique Foster	Biology	Tougaloo College
10	Johnathan Grayson	Biology	Tougaloo College
11	Brandon Hackett	Biology	Tougaloo College
12	Kisa Harris	Chemistry	University at Buffalo
13	Jasmine Jennings	Biology	University of Mississippi Medical Center
14	Ashley King	Biology	University of Mississippi
15	Eybriunna Lewis	Chemistry	Jackson State University
16	Jessica McKenzie	Biology	University of Mississippi Medical Center
17	Dyffreyon McGowan	Biology	Tougaloo College
18	Le Andrea Mitchell	Biology	University of Mississippi Medical Center
19	DaChiron Robinson	Biology	Tougaloo College and University of Mississippi Medical Center
20	Courtney Sims	Chemistry	University of Mississippi Medical Center
21	Jonathan Taylor	Math and Computer Science	Texas State University
22	Denise Ward	Biology	Purdue University
23	Aurora Washington	Biology	Brown University
24	Claresa Youngblood	Biology	University of Mississippi

2014 13th TC Research Day Program ctd.

Oral Presentations

Kincheloe 106 Lecture Room

October 18th 2014

8:30-11:30 AM

Page	Name	Major	Research Institutions
25	Joshua Agee	Biology	Tougaloo College, NASA
26	Trianna Humphrey	Biology	University of Georgia
27	Jonathan Moore	Biology	Brown University
28	Charles Phillips	Biology	Tougaloo College
29	Margie Rayford	Chemistry	Harvard Medical School
30	Denisha Spires	Biology	University of Mississippi Medical Center
31	Alexandria Thompson	Biology	Tougaloo College, NASA
32	Terika Tillman	Chemistry	University of Mississippi
33	Diva Whalen	Biology	University of Mississippi Medical Center

Appendix #14: 2015 Dr. Sidney A. McNairy, Jr. Student Symposium

Subject: Re: Travel Award - Dr. Sidney A. McNairy, Jr. Student Symposium
Reply-To: stephen.i.ekunwe@jsums.edu

Congratulations! Forward this to Dr. Gomez to see if they have money to pay for this before we try to hurry up to do anything from the JSU end.

Ekunwe.

On Thu, Mar 5, 2015 at 4:42 PM, Brittany Martin <martin.brittany94@yahoo.com> wrote:

Sent from my iPhone

Begin forwarded message:

From: "Croft, Cheryl" <ccroft@cau.edu>
Date: March 5, 2015 at 4:36:45 PM CST
To: Brittany Martin <martin.brittany94@yahoo.com>
Cc: "crgomez@umc.edu" <crgomez@umc.edu>
Subject: Travel Award - Dr. Sidney A. McNairy, Jr. Student Symposium

Greetings:

On behalf of the Center for Cancer Research and Therapeutic Development, I am pleased to inform you that you have been selected to receive a travel award and to give an oral student presentation at the Dr. Sidney A. McNairy, Jr. Student Symposium 2015 being held on March 16, 2015. The total presentation should be 20 minutes long – 15 minutes for the actual presentation and 5 minutes for oral discussion. You will also receive a travel award reimbursement of ***up to*** $500 with receipts. Please contact either Ms. Cheryl Croft, ccroft@cau.edu, at (404) 880- 6741 or Ms. Martha Edwards, medwards@cau.edu, at (404) 880- 6755, for further information regarding any forms that you may need to complete beforehand. If for any reason you are unable to commit to giving the oral presentation, please advise us ***no later than*** Monday, March 9, 2019.

I wish you the best of luck and look forward to seeing you at the *Dr. Sidney A. McNairy, Jr. Student Symposium*.

Best regards,

Shafiq A. Khan

Director, CCRTD

2

Cheryl R. Croft, Project Manager II

Center for Cancer Research and

Therapeutic Development

Clark Atlanta University

223 James P. Brawley Drive, SW

Atlanta, Georgia 30314

404-880-6741 (office)

404-880-6756 (fax)

ccroft@cau.edu

Appendix #15: 2014 Sigma Xi Annual Meeting & International Research Conference

Diva Whalen's registration for Sigma Xi

Actions

Diva Whalen

10/01/14

To: wendywhite2001@yahoo.com, bkelly@tougaloo.edu

2014 Sigma Xi Annual Meeting & International Research Conference
Registration Summary
November 6-9, 2014
(Student Events Nov. 7-8)
Renaissance Glendale Hotel
Glendale, Arizona USA
Date Submitted: 10/1/2014 7:09:22 PM (EDT)
Name: Diva Sarde Whalen
Registration Type: Student Registration
Total Amount Submitted: $195.00
Payment Method: Mailed Check

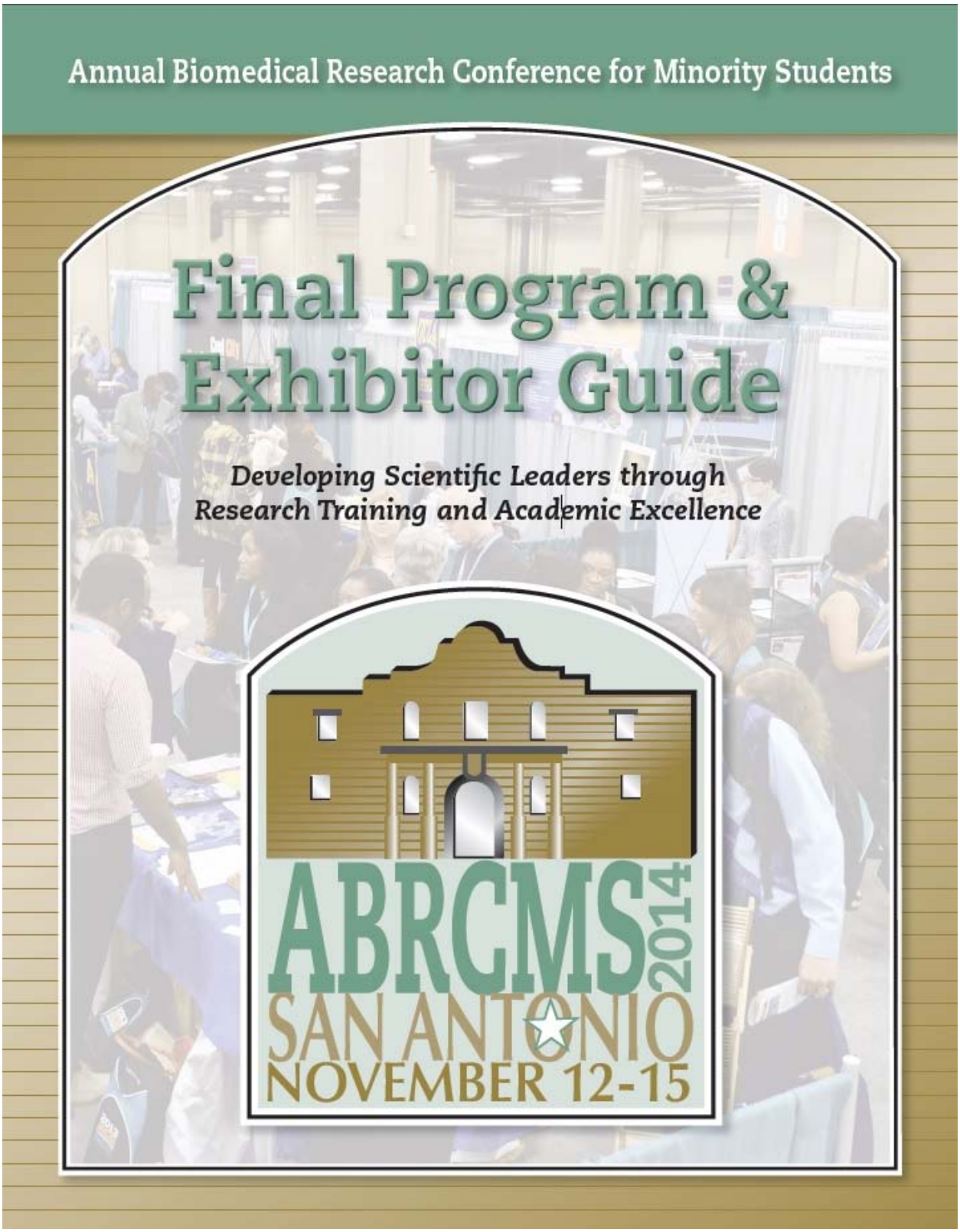
Please make check payable to 'Sigma Xi' and mail it to the address below along with a copy of this web page.

Your registration is only valid once your check is received.
Meeting Registration
Sigma Xi, The Scientific Research Society
P.O. Box 13982
Research Triangle Park, NC 27709

Thank you for your submission and we look forward to seeing you at the meeting!

Sincerely,
The Sigma Xi Administrative Office

Appendix #16: 2014 Annual Biomedical Research Conference for Minority Students



Author Index

O presentation denotes oral presentations

James, Hadiya S.	Microbiology: Bacteriology	F129
Jasper, Robyn	**Cell Biology: Cell Biology**	**O059**
Jasper, Shanese L.	Microbiology: Bacteriology	F009
Jenkins, Andrea M.	Immunology: Immunology	E090
Jennings, Jasmine I.	Physiology: Physiology	C041
Jideama, Stephanie C.	Social and Behavioral Sciences and Public Health: Public Health and Epidemiology	E021
Jimenez, Angel G.	Neuroscience: Neurobiology	E060
Jimenez, David	Developmental Biology and Genetics: Genetics	C118
Jimenez, Isabel A.	Immunology: Immunology	C094
Jimenez, Vanessa	Neuroscience: Neuroscience	B006
Jocelin, Sabine	Biochemistry: Biochemistry	G268
Johnson, Abraham N.	Cell Biology: Cell Biology	E149
Johnson, Da'Kuawn	Microbiology: Bacteriology	G109
Johnson, Dante' T.	Biochemistry: Biochemistry	E177
Johnson, Darren C.	Immunology: Immunology	C091
Johnson, Erin	**Molecular and Computational Biology: Genomics**	**O033**
Johnson, Jalen I.	Engineering, Physics and Mathematics: Material Sciences	E098
Johnson, Jevon D.	Engineering, Physics and Mathematics: Mathematics	B154
Johnson, Kendra V.	Biochemistry: Biomolecules	A255
Johnson, Michelle	Neuroscience: Neurobiology	F024
Johnson, Nia Cancer	Biology: Cancer Biology	B230
Johnson, Oshea D.	Social and Behavioral Sciences and Public Health: Public Health and Epidemiology	B043
Johnson-Gray, Myles J.	Molecular and Computational Biology: Computer Sciences	G014
Joiner, Breanna J.	Cancer Biology: Cancer Biology	F241
Jones, Alana Cell	Biology: Cell Biology	B226
Jones, Derick D.	Chemistry: Analytical Chemistry	C014
Jones, Edith	Cell Biology: Cell Biology	B217
Jones, Elizabeth	Biochemistry: Biochemistry	F260
Jones, Ilenna S.	Neuroscience: Neurobiology	E050
Jones, Jasmine M.	Cancer Biology: Cancer Biology	D158
Jones, Justin	Molecular and Computational Biology: Computational Biology	B098
Jones, Keldric C.	Social and Behavioral Sciences and Public Health: Public Health and Epidemiology	G044
Jones, Kendra R.	**Engineering, Physics and Mathematics: Bioengineering**	**O070**
Jones, Steven	Social and Behavioral Sciences and Public Health: Psychology	E028
Jones, Tamara	Engineering, Physics and Mathematics: Biophysics	G151
Jordan, Elizabeth	**Molecular and Computational Biology: Genomics**	**O081**
Joseph, Ivor G.	Microbiology: Mycology	G003
Joseph, Kohrissa	Social and Behavioral Sciences and Public Health: Psychology	B032
Joseph, Lorne S.	Chemistry: Inorganic Chemistry	A202
Joseph, Serena	Microbiology: Parasitology	F133
Joseph, Tisha S.	Cancer Biology: Cancer Biology	C162
Joshi, Piyush	Neuroscience: Neurobiology	F087
Jusino, Shirley	Microbiology: Virology	G007
Kamaha, Roussel	Engineering, Physics and Mathematics: Bioengineering	F148
Kapadia, Sahista	Chemistry: Organic Chemistry	F191
Karanja-Senge, Wanjiru	Neuroscience: Neurobiology	D047
Katz, Brittany M.	Neuroscience: Neurobiology	A065
Kay, Amber M.	Chemistry: Pharmaceutical Chemistry	F207
KC, Asmini	Cell Biology: Cell Biology	G220
Kebede, Yonatan A.	Biochemistry: Biochemistry	G260
Keita, Hamidou	Neuroscience: Neurobiology	E057
Kelley, Alexandria	Microbiology: Bacteriology	A111
Kennedy, Kendall J.	Cancer Biology: Cancer Biology	F234
Kennewick, Kelly	**Cell Biology: Cell Biology**	**O058**
Keyes, Anthony	Cancer Biology: Cancer Biology	C160
Khattab, Reem	Cancer Biology: Cancer Biology	F236
Khusial, Richard D.	Chemistry: Environmental Chemistry	F209
Kibui, Julie	Cell Biology: Cell Biology	A215

Appendix #17: Awards

June 25, 2014

Ms. Ansley Scott

Dear Ms. Scott:

Congratulations! I am pleased to inform you that you have been selected to receive a fellowship in the Louis Stokes Mississippi Alliance for Minority Participation (LSMAMP) Bridge to the Doctorate Program and join Cohort 11. This program is funded by the National Science Foundation (NSF.) Your program will begin in August, 2014. This program lasts for up to two years and, for at least 20 hours a week of lab work, provides payment of tuition and a monthly stipend.

This is a very rigorous program (please see the requirements listed on the next page,) which is geared to students who are preparing for studies at the doctoral level and the achievement of a PhD. Although the award will be for up to two years of support, it is expected that you will continue your studies through to the completion of your doctoral degree in your chosen STEM field. You are asked to sign a contract indicating your intention of pursuing the PhD.

An acceptance form and the contract are attached. Please sign them and return them to a LSMAMP staff member to indicate your acceptance of the fellowship. Again, we congratulate you on this significant achievement and look forward to having you join us at Jackson State University.

Sincerely,

Ashton Hamme II, Ph.D.
Professor of Chemistry
Program Director

Encl.

JSU
JACKSON STATE UNIVERSITY

LSMAMP Bridge to the Doctorate Program – P.O. Box 18119, Jackson, MS 39217 – 601-979-2024

REQUIREMENTS FOR THE BRIDGE TO THE DOCTORATE PROGRAM

In the first year of the program, at a minimum, you will be required to:

- Complete the departmental course requirements in your field with a Grade of A or B.
- Attend weekly meetings of your Cohort and arrive on time
- Participate in mentoring sessions
- Take part in special topics courses
- Prepare and present journal articles
- Participate in the Bridge to the Doctorate Speaker's Series of prominent scientists
- Choose a research advisor
- Learn new research techniques
- Prepare and present your long run (five year) research and academic plans to the faculty of the College of Science, Engineering & Technology
- Attend professional conferences, workshops and seminars
- Apply for and attend an external summer research internship at a national lab, research center or university
- Prepare for the GRE

In the second year of the program, at a minimum, you will be required to:

- Attend weekly meetings of your Cohort and arrive on time
- Complete elective courses in your field of interest with a Grade of A or B.
- Take the GRE
- Work closely with your advisor on your research
- Implement and complete your Masters Thesis research
- Complete your Masters degree
- Apply for at least three (3) fellowships to continue your studies, one of which must be the NSF Graduate Fellowship, copies of the applications must be submitted to the LSMAMP office
- Apply to graduate schools for the Ph.D. program. If other than Jackson State University, you must apply for a minimum of 4 doctoral programs, copies of the applications must be submitted to the LSMAMP office

In the third year and throughout the completion of your doctorate, you will be required to:

- Maintain contact with the Bridge to the Doctorate program office on a semi-annual basis
- Notify the Bridge to the Doctorate program office upon the completion of your doctorate and supply us with the specifics of:
    - Your acceptance of a post-doctoral position or
    - Your acceptance of employment

From: Ansley Scott [mailto:ansleyscott@yahoo.com]
Sent: Tuesday, March 03, 2015 2:36 PM
To: Hudson, Brittany
Subject: Re: SURP acceptance

Good afternoon,

I am replying to confirm my intent to participate as a SURP fellow. Thank you for the opportunity to participate in the program and I am looking forward to it!

Best,

Ansley E. Scott
LSMAMP Bridge to Doctorate Scholar
M.S. in Biology Student
Jackson State University

On Tuesday, March 3, 2015 1:37 PM, "Hudson, Brittany" <BHudson@uams.edu> wrote:
Dear Ansley,

Congratulations! We are very pleased to inform you that you have been selected to participate in our NIH-NHLBI sponsored**UAMS Summer Undergraduate Research Program (SURP) to Increase Diversity in Research**. The selection committee was most impressed with your application. The program dates will be June 1-July 31, 2015, inclusive, and you need to be able to attend the entire period. All participants will receive a salary of $3600 for the nine week period (equivalent to $10/hr for 9, 40 hr weeks). An additional $2400 is available on an as needed basis only. If you do not live in the greater Little Rock metropolitan area, these funds will be used for housing which we will locate for you. In addition, if you do not live in the greater Little Rock metropolitan area and will be travelling here to participate in the program, we will reimburse you for your travel expenses to our campus and when you leave at the end of the summer. Funds may also be allocated to the research laboratory you work in and for travel to a scientific meeting. Meals for the summer are not included in the $2400.

You were selected from a very large number of very competitive applications. Therefore, it is important for you to confirm your intent to participate as a SURP Fellow by **4:30 PM (Central Standard Time) on Tuesday, March 17**. Please make note that if we do not hear from you by March 17 your position will offered to another applicant. If you already know you will not be participating, please respond immediately so we may offer your slot to another participant.

If you have any questions regarding the program or need assistance in making a decision, please contact me.

Thank you and once again congratulations!

Brittany Hudson
Program Coordinator
UAMS Graduate School
501-686-5906

JACKSON STATE UNIVERSITY®
P. O. Box 18750
JACKSON, MISSISSIPPI 39217-1050

OFFICE OF THE DEAN
COLLEGE OF SCIENCE, ENGINEERING & TECHNOLOGY

PHONE: (601)979-0777
FAX (601) 979-0570

September 20, 2014

Ansley E. Scott
4906 Hwy 61 S
Mound Bayou, MS 38762

Re: Student Poster Award Winner - Eleventh International Symposium on Recent Advances in Environmental Health Research and Thirteenth International Symposium on Metal Ions in Biology and Medicine

Dear Ansley Scott:

Congratulations! We are pleased to announce that you are the Second Place winner in the Masters division of the student poster competition held during the Eleventh International Symposium on Recent Advances in Environmental Health Research and Thirteenth International Symposium on Metal Ions in Biology and Medicine. Your poster presentation was excellent. The symposium planning committee commends you and your mentor for the hard work demonstrated through your scientific findings. The award amount for Second Place in the Masters division is $225. A check is being requested on your behalf.

If you have any questions concerning this award, please contact Inez K. Johnson via email at inez.k.johnson@jsums.edu or by phone (601)979-2095. I wish you the best in future scientific endeavors.

Sincerely,

Paul B. Tchounwou, Sc.D., F.A.B.I., I.O.M.
Symposium Chair
Associate Dean for Graduate & International Programs
College of Science, Engineering & Technology
Presidential Distinguished Professor
Director, NIH-RCMI Center for Environmental Health

On Mar 4, 2015, at 12:07 PM, Wallace, Lynese N <lynesewa@bu.edu> wrote:

<image001.png>

STaRS Summer Research Program
Graduate Medical Sciences
Boston University School of Medicine

March 4, 2015

Dear Brittany:

Congratulations! We are pleased to offer you acceptance to the Division of Graduate Medical Sciences Summer Training as Research Scholars (STaRS) program located on Boston University's Medical Campus. The program dates are June 1, 2015 – August 7, 2015, with a move-in date set for Friday, May 30, 2015.
Your summer research internship includes two weeks of off-campus preparation plus ten weeks of on-campus daily research in a laboratory; mentorship by a GMS faculty mentor and designated members of the laboratory community; participation in our annual summer research symposium; weekly professional development seminars and enrichment activities in and around Boston, our college-oriented city.
As a research intern you will live in apartment-style housing (double occupancy) on Boston University's Charles River Campus, which is within walking distance of the Back Bay neighborhood. Additionally, you will receive a $4,800 stipend, housing, and travel to and from the city of Boston, as well as travel support to attend a national conference. (Please Note: We do not recommend that research interns bring a vehicle to Boston for the summer internship. Boston is a walkable, "bike-friendly" city with an excellent public transportation system.)
We hope that you will choose to join our cohort for your 2015 summer research experience. Please confirm your acceptance to our offer by emailing Lynese Wallace (lynesewa@bu.edu) on or before **Wednesday, March 11, 2015**. Also, please do not hesitate to contact us with questions regarding the program.
We look forward to meeting you this summer!
Very truly yours,

<image002.png>
William Cruikshank, Ph.D.
Director, STaRS summer research program

<image003.jpg>

Linda E. Hyman, Ph.D.
Associate Provost, Graduate Medical Sciences

Christian R. Gomez

From:	Brittany Martin <martin.brittany94@yahoo.com>
Sent:	Saturday, March 07, 2015 9:45 PM
To:	Freda K. Turpeau
Cc:	Christian R. Gomez
Subject:	Fw: Travel Award - Dr. Sidney A. McNairy, Jr. Student Symposium
Attachments:	Brittany Martin Abstract.docx; Picture.png

On Thursday, March 5, 2015 4:36 PM, "Croft, Cheryl" <ccroft@cau.edu> wrote:
Hello Ms. Freda, I'm applying for the travel award. I have attached my abstract, acceptance letter, and picture.

Thanks,

Brittany Martin

Greetings:
On behalf of the Center for Cancer Research and Therapeutic Development, I am pleased to inform you that you have been selected to receive a travel award and to give an oral student presentation at the Dr. Sidney A. McNairy, Jr. Student Symposium 2015 being held on March 16, 2015. The total presentation should be 20 minutes long – 15 minutes for the actual presentation and 5 minutes for oral discussion. You will also receive a travel award reimbursement of ***up to*** $500 with receipts. Please contact either Ms. Cheryl Croft, ccroft@cau.edu, at (404) 880- 6741 or Ms. Martha Edwards, medwards@cau.edu, at (404) 880- 6755, for further information regarding any forms that you may need to complete beforehand. If for any reason you are unable to commit to giving the oral presentation, please advise us ***no later than*** Monday, March 9, 2019.

I wish you the best of luck and look forward to seeing you at the Dr. Sidney A. McNairy, Jr. Student Symposium.

Best regards,

Shafiq A. Khan
Director, CCRTD

Cheryl R. Croft, Project Manager II
Center for Cancer Research and
Therapeutic Development
Clark Atlanta University
223 James P. Brawley Drive, SW
Atlanta, Georgia 30314
404-880-6741 (office)

Christian R. Gomez

From: Diva Whalen <dwhaln@live.com>
Sent: Sunday, September 13, 2015 4:34 PM
To: Christian R. Gomez
Subject: FW: Thank You...HBCU SGA President Spotlight!!

Subject: Thank You...HBCU SGA President Spotlight!!
From: michelle@youniversitydrive.com
Date: Tue, 10 Mar 2015 11:46:10 -0400
CC: rashad@youniversitydrive.com
To: demauri@sbcglobal.net; keonte_turner@yahoo.com; shameka.kelley509@my.lincolnu.edu; akelly184@hornets.hssu.edu; adriankellyjr@gmail.com; gernishap@gmail.com; dtmitchell.2011@jcmail.jcsu.edu; dwhaln@live.com; harrisjason08@yahoo.com; saward@umes.edu; dylenj17@gmail.com; djho0604@my.suno.edu

Greetings SGA Presidents!

Many thanks for participating in YOUniversity Drive's inaugural #HBCUSGAPres Spotlight! I received such positive feedback from colleagues, business professionals, parents, and students who were inspired by your stories. We are very grateful for the opportunity to share your great talent with the world!

Just a few things:

1. We would love to send you one of our signature YD T-shirts. Please let me know if your mailing address has changed since you submitted your profile information to us. Once you receive your t-shirt, please take a pic of you wearing it and share with us / tag us!

2. We are in the process of kicking off the second wave of this initiative so if you know of any other HBCU SGA Presidents who would like to be profiled, please send them our way!

Again thank you for participating and please keep us posted on your continued success!!

Keep Driving,
Michelle

Michelle R. Horton
Founder & CEO | YOUniversity Drive, LLC
office 704.246.4516 | fax 704.947.6791
401 Hawthorne Lane | Ste 110-124 | Charlotte, NC 28204-2358
michelle@YOUniversityDrive.com | www.YOUniversityDrive.com

On Nov 25, 2014, at 9:05 AM, YOUniversity Drive <michelle@youniversitydrive.com> wrote:

Greetings SGA Presidents!

My name is Michelle Horton and I am the Founder and CEO of YOUniversity Drive, LLC. I wanted to take a moment to thank you for your participation in our inaugural #HBCUSGAPres Spotlight! I thoroughly enjoyed reading your profiles and was very much inspired by your stories. I am appreciative of the opportunity to showcase the incredible talent and leadership we have in the pipeline.

I recently attended the Thurgood Marshall College Fund Leadership Institute in Washington, DC where I met a few of you / representatives from your schools. Dylen, it was nice meeting you at the Sister to Sister session; Seth, I chatted with Ms. Aundra' Roberts from your campus and she spoke very highly of you; and Gernisha, I met one of your classmates, David Lawrence! Hopefully I will get to connect with all of you at some point in the future now that you are a part the YOUDrive Family!

In terms of next steps, the profiles have been completed and are currently live on the YOUniversity Drive website --> http://youniversitydrive.com/students/hbcupres_spotlight/ We will launch the entire initiative over the next week and then profile each of you in a weekly blog post (here is Dylen's blog post as an example of what this will look like --> http://youniversitydrive.com/dylen-johnson/). Please be on the lookout on social media and help spread the word of our 2014-2015 #HBCUSGAPres lineup by retweeting, reposting, etc.

Please let me know if you have questions or need any additional information. Thank you again for allowing Team YOUDrive to #elevate, #celebrate and #congratulate you for your accomplishments!

I hope you and yours have a wonderful Thanksgiving holiday!

Keep Driving,
Michelle

Michelle R. Horton
Founder & CEO | YOUniversity Drive, LLC
mobile 336.408.1324 | office 704.246.4516 | fax 704.947.6791
401 Hawthorne Lane | Ste 110-124 | Charlotte, NC 28204-2358
michelle@YOUniversityDrive.com | www.YOUniversityDrive.com

Diva Whalen: TC 1st place Oral Presentation 2014 TC Research Day

August 4, 2015

Dear Diva:

It is our pleasure to inform you that you have been selected as recipient of the 2015 Travel Award given by the Mississippi Prostate Cancer HBCU Undergraduate Research Training Program. Supported by the U.S. Department of Defense Prostate Cancer Research Program, you will receive a $2,400 check. This award is given to you in recognition of your outstanding participation at the Arizona Sigma Xi conference with your work "The Effects of Synthetic Stilbenes on Metastasis Associated Protein 1 (MTA1) Levels In Prostate Cancer Cells", developed by you in Dr. Anait Levenson' s laboratory during the Summer of 2014 as fellow of our Summer Training Program.

In addition to congratulating you by being the awardee of this travel award, we would like to wish you the best as an entering Graduate Ph.D. Student in Biochemistry and Cancer Biology at the Meharry Medical College in August of the present year. Those accomplishments are the best representation of our programmatic mission which is to help promote the generation of a cadre of top-caliber minority scientists and physicians with a specific interest in prostate cancer research, prevention, diagnosis and care. Our congratulations also go to the outstanding mentorship team at Tougaloo College and the University of Mississippi Medical Center – Cancer Institute.

Please notify Ms. Freda K. Turpeau at fturpeau@umc.edu by August 10, 2015 if you are willing to accept this award. If you are withdrawing your fellowship, please sign a letter of withdrawal and send it to Freda K. Turpeau, UMMC Cancer Institute, 2500 North State Street, Jackson, MS 39216.

Again, congratulations on your travel award. Please direct any questions to Ms. Freda K. Turpeau at fturpeau@umc.edu or (601) 815-6802.

Fondly,

Christian R. Gomez

Christian R. Gomez, Ph.D. Program Director
Mississippi Prostate Cancer HBCU Undergraduate Research Training Program
Associate Professor in Pathology and Radiation Oncology
Cancer Institute
University of Mississippi Medical Center
2500 N. State St., Suite G657
Jackson, MS 39216
Tel: 601-815-3060
Fax: 601-815-6806
Email: crgomez@umc.edu

CC: Jinghe Mao, Stephen Ekunwe, Anait Levenson, Srinivasan Vijayakumar, Roy Duhé, Richard McGinnis, Beverly Wade Hogan, Asoka Srinivasan, Bianca Garner

Appendix #18: Trainees in Cancer Biology Graduate Studies

The attached document refers to Ansley Scott's acceptance into JSU's Bridge to the Doctorate Program

June 25, 2014

Ms. Ansley Scott

Dear Ms. Scott:

Congratulations! I am pleased to inform you that you have been selected to receive a fellowship in the Louis Stokes Mississippi Alliance for Minority Participation (LSMAMP) Bridge to the Doctorate Program and join Cohort 11. This program is funded by the National Science Foundation (NSF.) Your program will begin in August, 2014. This program lasts for up to two years and, for at least 20 hours a week of lab work, provides payment of tuition and a monthly stipend.

This is a very rigorous program (please see the requirements listed on the next page,) which is geared to students who are preparing for studies at the doctoral level and the achievement of a PhD. Although the award will be for up to two years of support, it is expected that you will continue your studies through to the completion of your doctoral degree in your chosen STEM field. You are asked to sign a contract indicating your intention of pursuing the PhD.

An acceptance form and the contract are attached. Please sign them and return them to a LSMAMP staff member to indicate your acceptance of the fellowship. Again, we congratulate you on this significant achievement and look forward to having you join us at Jackson State University.

Sincerely,

Ashton Hamme II, Ph.D.
Professor of Chemistry
Program Director

Encl.

JSU
JACKSON STATE UNIVERSITY

LSMAMP Bridge to the Doctorate Program – P.O. Box 18119, Jackson, MS 39217 – 601-979-2024

The attached document refers to Diva Whalen's acceptance into the School of Graduate Studies and Research at Meharry Medical College

MEHARRY®
MEDICAL COLLEGE

Maria F. Lima, Ph.D.
Dean, School of Graduate Studies & Research

May 26, 2015

Ms. Diva Whalen
1231 Cherry Street
Clinton, MS 39056

Dear Ms. Whalen:

I am pleased to inform you that your application for admission to the doctoral program in biomedical sciences, in the School of Graduate Studies and Research at Meharry Medical College has been approved for the 2014 Fall Term. New student registration/orientation is scheduled for Thursday and Friday August 6-7, 2015 at 8:00 A.M.

Please be advised that acceptance as a member of the doctoral program is contingent upon final verification of all of your academic credentials including: an official college transcript indicating receipt of the Bachelor's degree, physician documentation of immunizations and a physical examination within the last year, and successful completion of a criminal background check. Official transcripts from all universities/colleges attended must be forwarded to the Office of Admissions and Recruitment no later than June 26, 2015.

Eligible graduate students (U.S. Citizens / Permanent Residents / Green Card Holders) are provided a predoctoral fellowship that covers full tuition and fees and support for living expenses. This support may be continued in further years of the Ph.D. program. From the second year of matriculation and beyond, students are encouraged to submit applications to federal and private agencies for pre-doctoral training awards. You will hear more about these opportunities during our Fall Orientation. If you plan to matriculate in the School of Graduate Studies and Research for Fall 2015, please sign this acceptance letter and submit a pdf version of the letter with signature to the Office of Admissions and Recruitment via fax at (615) 327-6228 / via email at admissions@mmc.edu/ or via postal mail no later than June 5, 2015.

On behalf of the students, faculty, and administration in the School of Graduate Studies and Research, I bid you an enthusiastic welcome to the Meharry family. We look forward to hearing from you soon.

Sincerely,

Maria de Fatima Lima, Ph.D.
Dean, School of Graduate Studies and Research

cc: Evangeline Motley, Ph.D., Associate Dean, School of Graduate Studies and Research
Malynda E. Gaines, M.Ed., Student Officer, School of Graduate Studies and Research
Roslyn White, Director, Office of Admissions and Recruitment

1005 Dr. D.B. Todd Jr. Boulevard
Nashville, Tennessee 37208-3599
T: 615.327.6533 • F: 615.321.2933 • www.mmc.edu

Appendix #19: Testimonials students Class of 2014 and 2015

Class of 2014

Ansley Scott

Current status: She graduated with honors from Tougaloo College in May of 2014, earning a Bachelor of Science in Biology. She is currently entering her second year Jackson State University, where she pursuing a Masters in Biology with focus on cancer biology.
Mentor: Yin Yuan Mo, Ph.D.
Project Title: Creating long non-coding RNA Knockouts to Determine Function in Relation to Prostate Cancer.
Recent accomplishments: She was afforded a fellowship with the Louis Stokes Alliance for Minority Participation at Jackson State University. She was also given an opportunity to work at the University of Arkansas for Medical Sciences for the summer of 2015, where she did research in the Biochemistry Department.
Personal statement: The UMMC – HBCU Prostate Cancer Training Research Program was an awesome opportunity. We were able to gain not only valuable lab experience, but insight into the treatment and management of cancer. It was enlightening to have the opportunity to shadow urologists, oncologists and radiologists, observing the ins and outs of some of their day to day duties, which included dealing with patients and managing charts. This program helped to deepen my love and appreciation for research, and more specifically prostate cancer research, which I had some experience with previously. It shed light on the value of research to the quest of understanding the mechanisms and disparities of prostate cancer occurrence. The Prostate Cancer Training Research Program has had a major impact on my decision to pursue a career in cancer research.

Anthony C. Keyes

Current status: He is a rising Junior at Jackson State University. He is pursuing a dual major in Chemistry and Mathematics. He is a member of the American Chemical Society, a MARK U-STAR scholar, and also a peer tutor at the Richard Wright Center for Rhetoric, Writing, and Research.
Mentor: Drazen Raucher, Ph.D.
Project Title: Thermal Manipulation of the Elastin-Like Polypeptide P21-E1-Bac Increases the Therapeutic Peptide's Potency Compared to the Parent Compound in vivo.
Recent accomplishments: He traveled to San Antonio for the ABRCMS conference where he presented my HBCU-UMMC prostate

cancer training program research. He also did a summer research program at UIUC working in an organic chemistry, still headed towards the goal of receiving his Ph.D. in Chemistry.
Personal statement: The UMMC – HBCU Prostate Cancer Training Research Program granted me the opportunity to see biochemistry in the presence of medicine. I was able to shadow doctors while also working in a lab setting. This let me know the need for more researchers who could supply doctors with a larger arsenal of medicine and techniques to diagnose and treat diseases. The lectures provided me with information on jobs I have never thought of, and helped solidify my belief that I wanted to become a Chemistry researcher. I believe that by exposing students to what research looks like from multiple angles, many students can be inspired to obtain higher degrees of education and even continue down a path of research such as myself.

Brittany Nicole Martin

Current status: Is a graduating senior at Jackson State University. Currently, she is participating in a summer internship at Boston University Medical Center in Boston, MA. She works in the department of Pharmacology under the mentorship of Dr. Hui Feng, Ph.D., studying the role of sphingosine-1-phospate (S1P) signaling in triple negative breast cancer.
Mentor: Christian Gomez, Ph.D.
Project title: The Role of Hepatoma Up-Regulated Protein (HURP) in resistance to prostate cancer treatment.
Recent accomplishments: She received a travel award to the Dr. Sidney A. McNairy, Jr. Student Symposium 2015. During the fall of she worked with Dr. Stephen Ekunwe (Undergraduate Faculty Advisor of the UMMC-UBCU Prostate Cancer Research raining Program) at JSU, identifying the bioactive compounds and chemically separated fractions in extracts of leaves of the West African basil, *Ocimum gratissimum Og*, which could be formulated into potential prostate cancer treatment with reduced unwanted side effects.
Personal statement: This experience enhanced my knowledge about the symptoms and treatments that are used for prostate cancer. Also, I learned how to perform basic techniques such as Western blot analysis. In addition, the program gave me insight on various studies being done on prostate cancer. Lastly, internship allowed me to see the importance of time management when planning experiments.

Diva Whalen

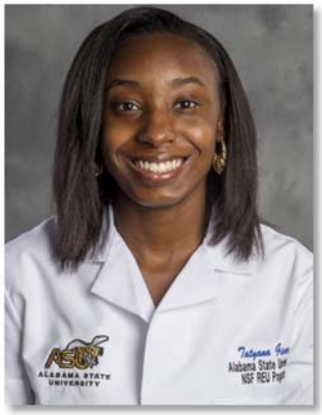
Current status: She completed her academic journey at Tougaloo College and earned a bachelor of science in biology. She graduated with honors and academic honors society. She was the Student Government President, involved in several organizations such as Beta Beta Beta, Sigma Xi, Alpha Lambda Delta, NAACP.
Mentor: Anait Levenson, M.D., Ph.D.
Project Title: The Effects of Synthetic Stilbenes on Metastasis Associated Protein 1 (MTA1) Levels In Prostate Cancer Cells.
Recent accomplishments: She travelled to Arizona for the Sigma Xi conference where she presented her HBCU-UMMC prostate cancer training program research.
She also presented her research at Tougaloo College where she placed 1st in oral presentation. She is the awardee of the 2015 Travel Award from the UMMC-HBCU Prostate Cancer Training Program. She will be entering Meharry Medical College in August where she will attain a Ph.D. in biochemistry and cancer biology.
Personal statement: The UMMC – HBCU prostate cancer training research program granted me the opportunity to see medicine in every angle. I saw medicine bedside and bench side. Shadowing oncologists, radiologists, surgeons showed me how importance research is. Without research, cancer diagnosis and treatments would not exist. I enjoyed the meetings and lectures, the program had as it related to all things prostate cancer: diagnosis, pharmacology, and health disparities. The program inspired me to pursue why cancer in minority is different. I want to understand what is the underlining cause or causes; this means understand the public health side as all. I hope this will inspired others to join in research side of science.

Joshua Earl Agee

Current status: Joshua received his Bachelor of Science in Biology May 3, 2015 from Tougaloo College. He is currently working in the infectious disease Department at the University of Mississippi Medical Center.
Mentor: Xinchun Zhou, Ph.D.
Project Title: C-terminal of group 3 POTEs correlates with the progression of Prostate Cancer.
Recent accomplishments: Mr. Agee travelled to San Antonio, Texas where the Annual Biomedical Research Conference for Minority Students was held. There he presented his HBCU-UMMC prostate cancer training program research. He is currently preparing for to take the MCAT to apply for medical school. During his year off, Joshua will continue to work in UMMC's Infectious Diseases Department.

Personal statement: Going into the HBCU-UMMC prostate cancer training program, I knew that it was going to be challenging. It turned out to be not only that, but also eye opening and inspiring. I was surrounded by great scholars and we pushed each other. We were like a family of researchers. While I would be looking for a new biomarker for prostate cancer another fellow researcher would be working on an efficient drug delivery system. We were able to share new experiences with one another, and also learned different techniques that our cohorts practiced in their respective labs. I was never aware of how disproportionately African Americans were affected by prostate cancer. My goal is to help reduce disparities in health care for underserved populations. Jackson, MS has some of the highest rates of HIV incidence with the highest rates of infection occurring in African American males. We must produce innovative prevention methods powered by increased education and strong leadership in the black community.

Tatyana Givens



Current Status: She is currently a rising Senior at Jackson State University. She plans on taking her PCAT the fall of 2015 school year and applying early to the Pharmacy Schools of her choosing.
Project Title: Molecular Studies of miRNa and mRNA Signatures in Prostate Cancer in African American and Caucasian Men.
Mentor: Chindo Hicks, Ph.D.
Recent Accomplishments: This summer she interned for the NSF-REU program at Alabama State University, working under Dr. Pillai, researching the Molecular Effects Silver coated- Carbon Nanotubes have on Pathogenic Bacteria. Currently, sje is drafting an abstract on this research to be submitted to the 2015 NanoBio Summit held at the University of Alabama at Birmingham.
Personal Statement: I had an amazing experience interning at the HBCU-UMMC Prostate Cancer Training Program. What I loved the most about this program was that it gave us the opportunity to shadow Oncologists and Urologists while also working alongside in my reseach project with Postdocs in the lab. This internship kept us active and informed on all things Prostate Cancer and was an amazing program to be a part of. I now know that the need for advocacy in African American rural areas about testing and diagnosis could be prevalent to the decrease of aggressive Prostate Cancer diagnosis in African American men. Interning for The Prostate Cancer Training Program was an amazing accomplishment for me because I am now more informed on the topic of Prostate Cancer and can advise others on the importance of getting tested.

Class of 2015

Adesuwa Ekunwe

Current Status: Is a rising sophomore at Jackson State University. She is seeking to obtain a bachelor's of science in chemistry.
Mentor: Anait Levenson, M.D., Ph.D.
Project Title: Prostate-Specific MTA1 Transgenic Mice Model.
Recent Accomplishments: She is a returning member of the Partnership for Research and Education in Materials at Jackson State University where she will be conducting research on nanoparticles in the upcoming semester.
Personal Statement: This program has been an invaluable asset to my research career. Over the course of the program I have learned so many laboratory skills, life lessons, and the impact of prostate cancer in the United States. The most important lesson I have learned has been that if you do not ask you will never know. This program has enhanced my thirst for knowledge and has made me question *why* more frequently. Weekly seminars and shadowing experiences have also heightened my knowledge of life beyond college. Recently, I have seriously began to look into various programs and careers that involve biomedical research. Currently, I aspire to obtain an M.D., Ph.D., however, I am unsure of what specialties I will pursue. As an HBCU student, I am grateful that this opportunity has been granted to our students who otherwise would not be able to obtain the necessary skills to be successful in a scientific future.

Angel G. Garcia

Current status: Incoming Junior at Tougaloo College, pursuing a Bachelor of Science in Biology. Additionally, a member of the research organization Howard Hughes Medical Institute (HHMI).
Mentor: Christian Gomez, Ph.D.
Project Title: The Effect of Environmental Stress Conditions on MICA Concentrations.
Recent accomplishments: As a member of HHMI, he is encouraged to present his research as much as possible. In April 1-4, 2015, he prepared and presented a poster about his research at Tougaloo College. Also, on July 9 he presented his a research seminar based on a published paper related to his summer research project at the UMMC-HBCU Prostate Cancer Research Program.
Personal statement: Coming into the program I had some knowledge of prostate cancer and the symptoms from it, and had an idea of what I would do in the lab. I learned much more than what I expected. Now I am coming out of this program knowing how to perform procedures, such as

western blots, cell culture, and ELISA, to apply them to my future research. Also, knowing the high risk factors, I now feel more prepared to inform others of the importance of prostate cancer awareness. This is especially true for my Hispanic community, as many of them are unaware of how crucial it is to get regular checkups after the age of fifty. My dream is to become a surgeon in order to aid people that suffer from conditions such as cancer. In one of my experiences at a radiation oncology clinic, provided by the research program, I was able to witness a patient suffering from prostate cancer. It was inspiring to watch how the patient put his health in the hands of the doctor; that is how I would like to treat my future patients. I am grateful for this summer research, as it has given me a unique experience, pushing me to think outside-the-box while keeping my project and goal in mind.

Charles Phillips

Current status: Is a graduating senior at Tougaloo College. He is on track to completing his academic journey at Tougaloo College earning a bachelor of science in biology, where he is a student leader.
Mentor: Yin-Yuan Mo, Ph.D.
Project Title: Long non-coding RNAs as potential diagnostic/prognostic markers in prostate cancers.
Recent accomplishments: He plans to use this experience towards the progression of his career decisions. An abstract as well as varying forms of documentation geared towards presentation are being developed. Prior to participation in the Prostate Cancer Research Program, Charles has been a Jackson Heart Study Scholar at Tougaloo College since 2012. As a scholar, he has had many opportunities for research. The most notable opportunities Charles has taken include an internship at NIH with the DEOB of NIDDK as well as research with Tougaloo College with *Bacillus bacteria* and pediatric brain malignancies. He has been listed as an author on papers from the lab of Dr. Bianca Garner of Tougaloo College.
Personal statement: Over the summer of 2015, I have had the esteemed privilege of working under the direction of Dr. Yin-Yuan Mo of UMMC. This program provided HBCU students, such as myself, and opportunity to broaden our knowledge base by educating us on the prevention, diagnosis, and care of individuals afflicted with prostate cancer. A program such as this is very beneficial to me as my future plan is to attend medical school; however, I am not opposed to doing a Ph.D. program. Opportunities such as this help to alleviate any doubt I may have had of entering the biomedical field, regardless of it being via Ph.D. or M.D. As a participant in this program, not only was I able to learn the basics of prostate cancer research, I was able to delve deeper into the inner workings of cancer. Specifically, I was able to learn about cancer on the genomic level, an opportunity not available to many small HBCU campuses. The major takeaway I feel that I achieved from this experience is the ability to independently think and observe, giving me the confidence needed to be a researcher. This summer has allowed me to view yet another facet of the biomedical field confirming my current thoughts on the continuation of my education.

Deion Fields

Current Status: Is a junior at Jackson State University Majoring in Biology. He is Vice President of the Beta Kappa Chi chapter at Jackson State University.
Mentor: Keli Xu, Ph.D.
Project Title: Effects of Notch3 in Aggressiveness of Prostate Cancer.
Recent Accomplishments: Learned process behind PCR, Gel-electrophoresis, and Western Blot methods. Intends to apply to Veterinary School/Ph.D. program Starting Spring 2016 and focus on cancer biology.
Personal Statement: Before I came to this program the only thing I knew about prostate cancer was that my grandfather had it and that you had to start getting checked for it around 40 or so. Since my training my knowledge of the disease has vastly increased. I am now more versed in the clinical side of prostate cancer through my shadowing experience as well as the research side thanks to my mentor. Also, my general knowledge on not just cancer but many other biological entities has broadened greatly. This program makes me excited to go back to school so I can learn more and further myself professionally. Probably my most relevant experience this summer was exposure. The exposure to expert researchers who could explain and teach things to me, exposure to clinicians and researchers who were knowledgeable about my future research interests, and most importantly exposure to just how serious prostate cancer really is and why more people need to be educated on it.

Jamal J. Keyes

Current status: Jamal Keyes is a rising sophomore at Jackson State University originally from Colorado Springs, CO. He is continuing on his path to earn a Bachelor of Science in Chemistry degree. Jamal is currently a board member of the NSCS at JSU.
Mentor: Drazen Raucher, Ph.D.
Project Title: Utilizing Thermally Responsive Elastin-like Polypeptides to Treat Prostate Cancer.
Recent accomplishments: During the 2014-2015 school year, he was nominated as the top freshman chemist at Jackson State University. During his freshman year, he also presented research from the supramolecular chemistry lab in which he works at five separate research symposiums around the state. He hopes to continue this trend with the research experience obtained from UMMC. Jamal plans to have several publications upon graduation.
Personal statement: My greatest take away from this HBCU-UMMC partnership is that you can always be doing more to enhance your educational experiences. This unique program educated its students on the prevention, diagnosis, and care for prostate cancer. One of the more unusual facts

I learned during the summer is that if a man lives long enough, he will most likely develop prostate cancer. However, most men will die with prostate cancer, not from it. Due to the nature of the disease, investigating prostate cancer is especially important in African American communities, hence the partnerships with HBCUs. Improving the quality of life of those afflicted by disease is the main concern for prostate cancer, as opposed to preventing early death. This made me incredibly motivated to become more involved in prostate cancer research during the near future because of the unusual circumstances that we dealt with on a regular basis. Because of my involvement in this program, I know now that I chose correctly when beginning my career in STEM research.

Timera Brown.

Current Status: Timera Brown is a sophomore at Tougaloo College where she majors in biology. She is the president of Alpha Lambda Delta, the freshman honor society, on Tougaloo campus. She is also a Howard Hughes Medical Institute Scholar and Jackson Heart Study Scholar.
Mentor: Xinchun Zhou, M.D., Ph.D.
Project Title: The Association of Cholesteryl Ester (CE) with the Pathogenesis and Racial Disparity of Prostate Cancer.
Recent Accomplishments: She was selected to be a member of the Tougaloo Journal Club for the summer of 2015.
Personal Statement: The UMMC Prostate Cancer HBCU Undergraduate Research and Training Program offered me a very enriching and entertaining summer experience. It pushed me to become a better critical thinker while also allowing me to meet and form bonds with people who will remain lifelong friends. I will take the vast amount of knowledge that I learned from this research back to Tougaloo College with me in hope of adding more to it. Not only do I plan to expound upon the research I conducted in the near future, I also plan on focusing on health crises like cancer in the future once I achieve my goal of becoming a medical doctor.

Appendix #20: Prostate Cancer Knowledge Assessment

Prostate Cancer Knowledge Assessment

July 20, 2015

YOUR NAME (Please print legibly):_____

MULTIPLE CHOICE SECTION (Circle the BEST answer).

1) The majority of men in the U.S.A. diagnosed with prostate cancer in the current era have

A) a small chance of being cured with current therapies.

B) cancers that are found incidentally on imaging studies done for another reason.

C) few to no symptoms to suggest the presence of cancer.

D) severe symptoms that lead to the diagnosis of prostate cancer.

E) None of the above are correct.

2) Which prostate cell type(s) are most likely to be the cells from which prostate cancers originate?

A) Basal cells only

B) Luminal cells only

C) Neuroendocrine cells

D) Both basal and luminal cells

F) Both basal and neuroendocrine cells

3) Which of the following is ***NOT*** one of the seven standard medical therapies for treating prostate cancer?

A) Hormone therapy

B) Magnetic therapy

C) Radiation therapy

D) Surgery

E) Watchful waiting or active surveillance

4) Which of the following drugs used to treat prostate cancer results in a reduced production of testosterone as a consequence of its primary mechanism of action?

A) Cabazitaxel

B) Denosumab

C) Goserelin

D) Sipleucel T

E) Zoledronic acid

TRUE/FALSE SECTION: Circle TRUE or FALSE for each of the following statements.

5) Processed sugar in the American diet is the primary cause of rising prostate cancer rates. (TRUE or FALSE)

6) If he lives long enough, almost every male will develop prostate cancer. (TRUE or FALSE)

7) Human papilloma virus (HPV) causes cervical cancer in females and prostate cancer in males. (TRUE or FALSE)

SHORT ANSWER SECTION: Write the MOST CORRECT short answer in the space provided.

8) Name at least 4 risk factors for prostate cancer:

_____

_____

9) List at least one of the functions of the prostate gland

_____

_____

10) Name a prostate cancer biomarker approved by the U.S. Food and Drug Administration.

_____

_____

Question	Correct Answer	Student 1 6-1-2015	Student 1 7-20-2015	Student 2 6-1-2015	Student 2 7-20-2015	Student 3 6-1-2015	Student 3 7-20-2015	Student 4 6-1-2015	Student 4 7-20-2015	Student 5 6-1-2015	Student 5 7-20-2015	Student 6 6-1-2015	Student 6 7-20-2015	Average pre-course	Average post-course
1	C	1	1	1	1	1	1	1	1	1	1	1	1		
2	D	0	1	0	1	0	0	0	1	0	1	0	1		
3	B	1	1	0	1	1	1	1	1	1	1	0	1		
4	C	0	0	0	0	0	0	0	0	1	0	0	0		
5	FALSE	1	1	0	1	0	1	0	1	1	1	1	1		
6	TRUE	0	1	0	1	1	1	0	1	1	1	0	1		
7	FALSE	1	1	0	0	0	1	0	1	1	1	0	1		
8	Age, Family History, Race, Diet	0.75	0.75	1	0.75	0.5	1	0.5	0.75	0.5	0.75	0.5	0.75		
9	(Acceptable answers: to produce seminal fluid; to produce the substances in semen which maintain healthy sperm. Incorrect answer: to produce sperm)	0	0	1	1	0	1	1	1	1	1	0	1		
10	(Acceptable answers: PSA; Prostate Serum Antigen; Best answer: Prostate Health Index (phi) which combines total PSA, free PSA and [-2]proPSA into a single score.)	0	1	0	1	0	1	0	1	0	1	0	1		
	Final Score	47.50%	77.50%	30.00%	77.50%	35.00%	80.00%	35.00%	87.50%	75.00%	87.50%	25.00%	87.50%	**41.25%**	**82.92%**
	Improvement		**163%**		**258%**		**229%**		**250%**		**117%**		**350%**		**201%**

Appendix #21: Social media resources

Facebook group screenshot

LinkedIN group screenshot