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Prostate Cancer Research Training Program

PRINCIPAL INVESTIGATOR:  
David M. Lubaroff, PhD

CONTRACTING ORGANIZATION:  
University of Iowa  
Iowa City, IA

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| 14. ABSTRACT<br>The HBCU Summer Research Training Program accepted a total of 8 students from Lincoln University for each of the eight week sessions during the summers of 2016, 2017, 2018, & 2019. Due to the COVID-19 pandemic we did not have a program in 2020, but will do so in 2021, pending approval of a no cost extension. Each student was assigned to a laboratory of a participating mentor and also paired with a member of the mentor's laboratory. This laboratory member assisted with day to day aspects of the research project. During the summer the students work diligently on their research project, participate in meetings of the mentor's laboratory, attend workshops and seminars associated with our and other summer programs, and attend a special course in prostate cancer. We integrate the Lincoln students into social programs held throughout the campus for summer interns. At the end of the summer sessions the students present a poster of the research results from the summer experience. They also present the results of their research in the fall at Lincoln University. Of the students that have graduated from Lincoln, 58.3% are attending, or have attended, postgraduate programs. |                  |                          |                                      |                                                     |                                            |
| 15. SUBJECT TERMS<br>Summer research; prostate cancer; HBCU institutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                          |                                      |                                                     |                                            |
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**Introduction:**

In our initial award (W81XWH-06-1-0266), begun in 2006, we were funded for five students from Lincoln University of Pennsylvania. Because of a large number of qualified student applicants we were funded for additional three students in 2007 (W81XWH-07-1-0241), allowing our program to support a total of eight Lincoln students each summer. We applied for, and were awarded; additional grants (W81XWH-09-1-0270), W81XWH-10-1-0459, W81XWH-12-1-0117), W81XWH-13-1-0178, and this award W81XWH-16-1-0549 after the original grants had been completed. For the year reported here we had the following faculty participants: David M. Lubaroff, PhD, Principal Investigator, Paul Heidger, PhD, University of Iowa Faculty Advisor, Karen Baskerville, PhD, and Whelton Miller, PhD, Lincoln University Faculty Advisors, and the following University of Iowa mentors: James Brown, MD; Frederick Domann, PhD; Paloma Giangrande, PhD; Prabhat Goswami, PhD; Yi Luo, PhD; Susan Lutgendorf, PhD; Lyse Norian, PhD; Aliasger Salem, PhD; Michel Schultz, PhD; Andrean Simons-Burnett, PhD; Douglas Spitz, PhD; Chad Tracy, MD; George Weiner, MD; Michael Wright, PhD; and Nicholas Zavazava, MD.

**Body:****Recruitment and Admission:**

Brochures, application forms, and posters were designed and printed and sent to Drs. Baskerville and Miller at Lincoln. Thirteen applications were received for 2014, twenty for 2015, twenty-three for 2016, fourteen for 2017, and seventeen for 2018. The applications were reviewed by the Admissions Committee whose membership consisted of Dr. Lubaroff, Dr. Heidger, Dr. Simons-Burnett, Dr. Baskerville, and Dr. Miller. Admission was offered to a total of 8 students for 2016, 4 students for 2017, and four students for 2018 and 2019 since only one grant was active in the last two years. Because of the COVID-19 pandemic we did not host a summer program in 2020, but will do so in 2021, pending approval of a no cost extension. The CDMRP chose to discontinue the Undergraduate HBCU Summer Research Training Program so we are only working on one grant to support 4 students..

Students accepted for the 2016 Program

Kimoni Driver  
Nonye Ibik  
Ayana McLaren  
Chinonso Obidike  
Prisca Obidike  
Siani Snaith  
Destiney Taylor

Students accepted for the 2017 Program

Jane-Frances Aruma  
Ceryce Collie  
Nile Garner  
Ime Nkanta

Students accepted for the 2018 Program

Emmanuella Ikechukwu  
Sarina Murray  
Oreoluwa Oladimeji  
Ciara Rouse

Students accepted for the 2019 Program

Ky-Mani Miller  
Ayomide Ogunsakin  
Merilyn Palmer  
Tarik Tsegaye

Students in the 2020 Program

No students due to the pandemic.

**Advance Preparation and Information Distribution:**

Following acceptance of the students into the program we assigned each student a mentor based upon his/her choices listed in their applications. Each mentor then assigned a member of the lab as a “big brother/big sister,” a person that partners with the student during the 8 week summer session. The mentor also prepared a portfolio of articles covering the area of research the student would be working on, including published papers by the mentor. These materials were sent to the students in advance of their arrival at the University of Iowa.

A six-week course on Prostate Cancer was organized with six faculty assigned to deliver lectures. The following represents the course schedule with lecturers:

**Iowa-Lincoln Summer Research Training Program - 2016**  
**Prostate Cancer Course**  
**Room – 2156 MERF\***

| Lecture | Date    | Time    | Subject                               | Lecturer |
|---------|---------|---------|---------------------------------------|----------|
|         |         |         |                                       |          |
| Week 1  | June 14 | 9:00 am | Introduction to cancer                | Spitz    |
| Week 2  | June 21 | 9:00 am | Epidemiology of prostate cancer       | Gupta    |
| Week 3  | June 28 | 9:00 am | Pathology of prostate cancer          | Dahmouch |
| Week 4  | July 5* | 9:00 am | Genetics of prostate cancer           | Qi       |
| Week 5  | July 12 | 9:00 am | Clinical treatment of prostate cancer | Nepple   |
| Week 6  | July 19 | 9:00 am | Immunotherapy of prostate cancer      | Lubaroff |

**Summer Research Training Program - 2017**  
**Course on Cancer**

| Lecture | Date    | Time    | Subject                               | Lecturer        |
|---------|---------|---------|---------------------------------------|-----------------|
|         |         |         |                                       |                 |
| Week 1  | June 12 | 9:00 am | Introduction to prostate cancer       | Spitz           |
| Week 2  | June 20 | 9:00 am | Epidemiology of prostate cancer       | McDowell & West |
| Week 3  | June 27 | 9:00 am | Pathology of prostate cancer          | Dahmouch        |
| Week 4  | July 5  | 9:00 am | Genetics of prostate cancer           | Qi              |
| Week 5  | July 10 | 8:00 am | Clinical treatment of prostate cancer | Nepple          |
| Week 6  | July 18 | 9:00 am | Immunotherapy of prostate cancer      | David Lubaroff  |

**Summer Research Training Program - 2018**  
**Course on Cancer**

| Lecture | Date    | Time    | Subject                      | Lecturer        |
|---------|---------|---------|------------------------------|-----------------|
|         |         |         |                              |                 |
| Week 1  | June 12 | 9:00 am | Introduction to cancer       | Spitz           |
| Week 2  | June 19 | 9:00 am | Epidemiology of cancer       | McDowell & West |
| Week 3  | June 26 | 9:00 am | Pathology of cancer          | Dahmouch        |
| Week 4  | July 3  | 9:00 am | Genetics of cancer           | Spies           |
| Week 5  | July 10 | 9:00 am | Clinical treatment of cancer | Nepple          |
| Week 6  | July 17 | 9:00 am | Immunotherapy of cancer      | Lubaroff        |

**Summer Research Training Program - 2019**  
**Course on Cancer**  
**Room 2166 MERF**

| Lecture | Date    | Time    | Subject                      | Lecturer        |
|---------|---------|---------|------------------------------|-----------------|
|         |         |         |                              |                 |
| Week 1  | June 11 | 9:00 am | Introduction to cancer       | Spitz           |
| Week 2  | June 18 | 9:00 am | Pathology of cancer          | Dahmouch        |
| Week 3  | June 25 | 9:00 am | Epidemiology of cancer       | McDowell & West |
| Week 4  | July 2  | 9:00 am | Genetics of cancer           | Spies           |
| Week 5  | July 9  | 9:00 am | Clinical treatment of cancer | Nepple          |
| Week 6  | July 16 | 9:00 am | Immunotherapy of cancer      | Lubaroff        |

**No Course in 2020**

**Key Research Accomplishments**

Each of the students worked on research projects that were part of an overall program within the laboratory of their mentors. As such, it is difficult to identify key research accomplishments for each student research project. Continuation of the research program by each mentor will certainly produce important research findings, aided in part by the summer research of the Lincoln University students. What is key is the mentoring and counseling of the students to aid in their future as scientists in the area of prostate cancer research. The high percentage of the students that are graduate programs or medical schools is an outstanding accomplishment as these future scientists will most certainly provide key research accomplishments in the years to come.

**Reportable Outcomes:**

The students have reported their findings to the University of Iowa faculty, to the faculty and students at Lincoln University, and at national competitions and conferences. The student's research resulted in her being an author on publications.

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### Lincoln Student Follow-Up

| Name                                | Year | Outcome               | School                            | Current Status                               |
|-------------------------------------|------|-----------------------|-----------------------------------|----------------------------------------------|
| Oluwaseun Adekanye                  | 2006 | medical school        | U. Michigan                       | Physician                                    |
| Shaynah Browne                      | 2006 | graduate school       | U. Mass                           | research scientist at Mt. Sinai Med. Ctr.    |
| Nikesha Haynes                      | 2006 | graduate school       | U. Rochester                      | research scientist at the Univ. of Rochester |
| Shivaughn Johnson                   | 2006 | medical school        | Ross University Medical School    | working                                      |
| Briquel Sherman                     | 2006 | medical school        | University of West Indies         | Physician                                    |
| Shaan Spence                        | 2006 | graduate school       | U. South Florida                  | graduate school                              |
| Bisola Awoyemi                      | 2007 | graduate school       | Univ. of the District of Columbia | research associate at Dana Farber            |
| Seme Diallo                         | 2007 | graduate school       | Drexel University                 | Research scientist at Medimmune              |
| Caroline Dias                       | 2007 | working               | none at this time                 | working                                      |
| Titilope Idowu                      | 2007 | working               | Morehouse College                 | Consultant                                   |
| Patrick Ndungu                      | 2007 | graduate school       | University of Iowa                | research scientist at Catalyst, Inc          |
| Elizabeth Okyne                     | 2007 | nursing school        | U. Iowa                           | nursing                                      |
| Katrina Proberbs                    | 2007 | graduate school       | Adelphi University                | working in healthcare                        |
| Bukola Fatunmbi (Now Kole Fatunmbi) | 2008 | graduate school       | U. Mass                           | working in science industry                  |
| Katherine Foster                    | 2008 | laboratory research   | Fox Chase Cancer Center           | research assistant in science                |
| Theon Francis                       | 2008 | teaching science      | none at this time                 | teaching science                             |
| Michelle Gray                       | 2008 | graduate school       | Johns Hopkins                     | graduate school                              |
| Julia Greenfield                    | 2008 | graduate school       | U. Maryland                       | graduate school                              |
| Gladys Murage                       | 2008 | graduate school       | U. Mass                           | graduate school                              |
| Brittany Stokes                     | 2008 | working in healthcare | none at this time                 | working in healthcare                        |
| Stacy-Ann Wright                    | 2008 | medical school        | Ross University Medical School    | medical school                               |
| Kaylene Baugh                       | 2009 | nursing school        | Duke Univ.                        | nursing school                               |
| Christina Chisolm                   | 2009 | graduate school       | U. Mass                           | graduate school                              |
| Seme Diallo                         | 2009 |                       | see 2007                          |                                              |
| Elizabeth Okyne                     | 2009 |                       | see 2007                          |                                              |
| Stephen Sangster                    | 2009 | teaching science      | none at this time                 | teaching science                             |
| Keyana Tyree                        | 2009 | graduate school       | Delaware State U./Nebraska        | graduate school                              |
| Neja White                          | 2009 | working in healthcare | none at this time                 | working in healthcare                        |



|                      |      |                       |                                |                               |
|----------------------|------|-----------------------|--------------------------------|-------------------------------|
| Akede, Theresa       | 2010 | graduate school       | U. Maryland Baltimore          | research scientist            |
| Awoyemi, Christiana  | 2010 | graduate school       | U Texas-Dallas                 | graduate school               |
| Sangster, Stephen    | 2010 |                       | see 2009                       |                               |
| Rand, Stephanie      | 2010 | medical school        | Thomas Jefferson               | resident physician            |
| McKnight, Danielle   | 2010 | working               | none at this time              | working                       |
| Markes, Jhanelle     | 2010 | graduate school       | U. of Iowa                     | research associate            |
| Holsey, Danielle     | 2010 | graduate school       | Xiamen Univ.                   | graduate school               |
| Diallo, Chalwe       | 2010 | laboratory research   | Penn State                     | research assistant in science |
| Brown, Nakita        | 2010 | post baccalaureate    | U. Pittsburgh                  | working in healthcare         |
| Baugh, Kaylene       | 2010 |                       | see 2009                       |                               |
| Cooper, Jhoneil      | 2011 | graduate school       | Drexel University              | graduate school               |
| Doubt-Swinton, Darah | 2011 | working in healthcare | none at this time              | research assistant in science |
| Foster, Jodi-Ann     | 2011 | working in science    | none at this time              | research assistant in science |
| Ihejirika, Patrick   | 2011 | graduate school       | univ of delaware               | graduate school               |
| Lynch, Candice       | 2011 | graduate school       | Nova Southeastern Univ         | graduate school               |
| Raeburn, Ayanna      | 2011 | nursing school        | Lincoln                        | nursing                       |
| Sangster, Nathaniel  | 2011 | teaching science      | none at this time              | research assistant in science |
| Davis, Lauri-Ann     | 2012 | teaching science      | Lincoln                        | working in science            |
| Diallo, Chalwe       | 2012 |                       | see 2010                       |                               |
| Ebanks, Shauna       | 2012 | graduate school       | Penn State                     | graduate school               |
| Ellis, Ashley        | 2012 | nursing school        | Lincoln                        | nursing school                |
| Jones, Shakeema      | 2012 |                       | ???                            | unknown                       |
| Lynch, Candice       | 2012 |                       | see 2011                       |                               |
| Markes, Jhanelle     | 2012 |                       | see 2010                       |                               |
| Smith, Rasheid       | 2012 | graduate school       | U of Iowa                      | graduate school               |
| Appeah, Daniel       | 2013 | medical school        | St. George's & Northumbria     | medical school                |
| Cummings, Precious   | 2013 | graduate school       | U of South Florida & U of Iowa | graduate school               |
| Foster, Jodi-Ann     | 2013 |                       | see 2011                       |                               |
| Linkins, Jehnae      | 2013 | graduate school       | U. of Delaware                 | graduate school               |
| Onukwhuga, Chinenye  | 2013 |                       | Lincoln                        | not yet graduated             |
| Raeburn, Ayanna      | 2013 |                       | see 2011                       |                               |
| Sangster, Nathaniel  | 2013 |                       | see 2011                       |                               |
| Wahome, Josphat      | 2013 | post baccalaureate    | Fox Chase Cancer Center        | post baccalaureate            |
| Brower, Jasmine      | 2014 | graduate school       | Wilmington University          | graduate school               |

|                      |      |                                   |                           |                              |
|----------------------|------|-----------------------------------|---------------------------|------------------------------|
| Frimpong, Kojo       | 2014 | graduate school                   | Thomas Jefferson          | graduate school              |
| Joseph, Tisha        | 2014 |                                   | Lincoln                   | not yet graduated            |
| Lindsay, Brittany    | 2014 | medical school                    | UK                        | medical school               |
| Onukwhuga, Chinenye  | 2014 |                                   | Lincoln                   | not yet graduated            |
| Payne, Cashel        | 2014 | teaching science                  | Lincoln                   | teaching science             |
| Smith, Rasheid       | 2014 | graduate school                   | U of Iowa                 | graduate school              |
| Edi, Seighe          | 2015 | graduate school                   | Lincoln                   | graduate school              |
| Endoni, Benney       | 2015 | graduate school                   | U of Delaware & U of Iowa | graduate school              |
| Hason, Lai Quannah   | 2015 | graduate school                   | Drexel University         | graduate school              |
| Ihejirika, Nnamdi    | 2015 | medical school                    | Lincoln                   | U Pitt                       |
| Little, Abreah       | 2015 | graduate school                   | Drexel University         | graduate school              |
| Mwanza, Lisa         | 2015 | working in science                |                           | working in science           |
| Slater, Hasan        | 2015 | medical school                    | Lincoln                   | not yet graduated            |
| Yakie, Joy           | 2015 | research chemist; graduate school | CDC; Univ. of Michigan    | working; now graduate school |
| Driver, Kimoni       | 2016 | medical transcrip                 | Lincoln                   | working                      |
| Ibik, Nonye          | 2016 | med school                        | Foot & ankle center       | Penn State                   |
| McLaren, Ayanna      | 2016 | working in healthcare             |                           | applying to medical school   |
| Obidike, Chinonso    | 2016 |                                   | Lincoln                   | not yet graduated            |
| Obidike, Prisca      | 2016 | med school                        | Lincoln                   | Penn State                   |
| Snaith, Siani        | 2016 |                                   | Lincoln                   | not yet graduated            |
| Taylor, Destiney     | 2016 | medical transcrip                 | Lincoln                   | working                      |
| Aruma, Jane-Frances  | 2017 | med school                        | Lincoln                   | Penn State                   |
| Collie, Ceryce       | 2017 | graduate school                   | Lincoln                   | Univ of Sussex               |
| Garner, Nile         | 2017 |                                   | Lincoln                   | not yet graduated            |
| Nkanta, Ime          | 2017 |                                   | Lincoln                   | not yet graduated            |
| Rouse, Cieara        | 2018 |                                   | Lincoln                   | not yet graduated            |
| Oladimeji, Oreoluwa  | 2018 |                                   | Lincoln                   | not yet graduated            |
| Murray, Sarina       | 2018 | applying to graduate school       | Lincoln                   | applying to graduate school  |
| Ikechukwu, Emmanuela | 2018 |                                   | Lincoln                   | not yet graduated            |
| Miller, Ky-Mani      | 2019 |                                   | Claflin University        | not yet graduated            |
| Ogunsakin, Ayomide   | 2019 |                                   | Lincoln                   | not yet graduated            |
| Palmer, Merilyn      | 2019 |                                   | Winthrop University       | not yet graduated            |
| Tsegaye, Tarik       | 2019 |                                   | Lincoln                   | not yet graduated            |

As is evident from the table, of the 77 students that have graduated from Lincoln, 12 (15.6%) are, or have, attended medical schools; 33 (42.9%) are, or have, attended graduate schools; the great majority of the remaining students are in some aspects of science and healthcare (22 or 28.6%). These latter include nursing school, laboratory research, post baccalaureate programs, teaching science, or working in the healthcare environment. Only a relatively few have not continued in science (2 or 2.5%). We are proud of the fact that 58.5% of the graduated students entered medical or graduate schools and overall greater than 97.5% have moved into a medical science career.

It should be noted that all of the students do graduate from Lincoln University. We are basing our calculations on those that have finished matriculating at the school.

## **Conclusion**

This award was highly successful as evidenced by the amount of work accomplished by each student and by their motivation to continue in a science career. The PI applied, and received funding, for an additional HBCU training grant that will enable us to continue accepting students for a number of years, thus increasing the number of African American scientists in the area of prostate cancer.