

**VIRGINIA-NORTH CAROLINA  
LOUIS STOKES ALLIANCE FOR  
MINORITY PARTICIPATION**

**IMPACT REPORT  
2007-2015**



# CONTENTS

<b>About the Alliance</b>	<b>3</b>
<b>Principal Investigators and Staff</b>	<b>4-5</b>
<b>Greetings</b>	<b>6</b>
<b>Alliance Impact</b>	<b>7</b>
<b>Lead Institution : University of Virginia</b>	<b>8-9</b>
<b>Bennett College</b>	<b>10-11</b>
<b>Elizabeth City State University</b>	<b>12-13</b>
<b>George Mason University</b>	<b>14-15</b>
<b>Johnson C. Smith University</b>	<b>16-17</b>
<b>Piedmont Virginia Community College</b>	<b>18-19</b>
<b>Saint Augustine's University</b>	<b>20-21</b>
<b>Virginia Commonwealth University</b>	<b>22-23</b>
<b>Virginia Polytechnic Institute and State University</b>	<b>24-25</b>
<b>Summer Research Programs &amp; News</b>	<b>26-27</b>
<b>Conferences, Symposia, &amp; Presentations</b>	<b>28-30</b>
<b>Graduate Schools &amp; Employment</b>	<b>31</b>
<b>Regional STEM Pipelines</b>	<b>32-33</b>
<b>National STEM Initiatives</b>	<b>34-35</b>

# ABOUT THE ALLIANCE



*Above: Incoming Freshmen students participating in Virginia Commonwealth University's 2015 Hybrid Summer Transition Program.*

Through the Louis Stokes Alliances for Minority Participation Program, the National Science Foundation provides funding to alliances that implement comprehensive, evidence-based, innovative, and sustained strategies that ultimately result in the graduation of well-prepared, highly-qualified students from underrepresented groups who pursue graduate studies or careers in science, technology, engineering, and math (STEM). There are currently over forty Alliances nationwide.\*

The Virginia-North Carolina LSAMP (Alliance) is led by the University of Virginia and includes the following partner institutions: Bennett College, Elizabeth City State University, George Mason University, Johnson C. Smith University, Piedmont Virginia Community College, Saint

Augustine's University, Virginia Commonwealth University, and Virginia Polytechnic Institute and State University. The Alliance's primary goal is to increase significantly the number of underrepresented minority students (UREP) earning STEM (science, technology, engineering, and mathematics) baccalaureate degrees and matriculating to graduate school.

Each of the partner institutions offers individually tailored recruitment, retention, and enhancement activities to support students such as bridge programs, stipends, symposia, tutoring, mentoring, workshops, and undergraduate research experiences. These activities are designed to maximize utilization of available resources and produce the necessary synergy among participants in order to meet the Alliance's goal.

Activities also facilitate communication and interaction among Alliance members and across disciplines, thus fostering a sense of community within partners, strengthening the Alliance structure, and providing faculty and students opportunities to build productive academic and professional networks.

\*Sources: [www.nsf.gov](http://www.nsf.gov), [lsmce.org](http://lsmce.org)



*This material is based upon work supported by the National Science Foundation under Grant Number NSF 11-543. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.*

# PRINCIPAL INVESTIGATORS AND STAFF

**Principal Investigator  
Marcus L. Martin**



Dr. Marcus L. Martin is Professor and past Chair of the Department of Emergency Medicine at the University of Virginia. He held the chair position from July 1996 to December 2006. Dr. Martin's Emergency Medicine responsibilities included the adult and pediatric emergency departments, chest pain unit, express care, Pegasus air ambulance, Blue Ridge Poison Center, paramedic training program, emergency medicine residency program, and several emergency medicine fellowship programs. During his tenure at U.Va. Dr. Martin served as Assistant Dean of the School of Medicine, Assistant Vice President for Diversity and Equity, and Associate Vice President for Diversity and Equity. On April 1, 2011 Dr. Martin was appointed Vice President and Chief Officer for Diversity and Equity.

A native of Covington, Virginia, he earned bachelor's degrees in pulp and paper technology (1970) and chemical engineering (1971) from North Carolina State University. Dr. Martin was the first African American to play varsity football at NC State. Following graduation, he was employed as a production chemical engineer at WESTVACO in Covington, Virginia. A member of the charter class of Eastern Virginia Medical School and the first African American graduate, he earned his medical degree in 1976. He is a founding member of the Board of Visitors of North Carolina State University and was named as one of "the top 100 most influential black graduates of NC State University."

Dr. Martin was commissioned by the U.S. Public Health Service and later served as General Medical Officer at the Gallup Indian Medical Center in New Mexico. He completed emergency medicine residency training at the University of Cincinnati in 1981 and held a series of staff and administrative/teaching posts at Allegheny General Hospital in Pittsburgh.

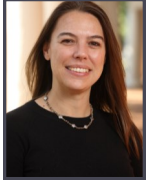
He was a Board Member for twelve years and past-president of the Society for Academic Emergency Medicine (SAEM). He is past president of the Council of Emergency Medicine Residency Directors. He received the 1994 Emergency Medicine Residents' Joseph F. Waeckerle Founders Award. He is the recipient of the 2008 SAEM Diversity Interest Group Leadership Award named the Marcus L. Martin Leadership Award in his honor. Dr. Martin serves as co-chair of the President's Commission on Slavery and the University at U.Va. His office coordinates numerous committees and councils in support of diversity and inclusion as well as the annual Charlottesville Community Health Fair and the annual Community MLK Celebration.

In service to the University and community, Dr. Martin serves on numerous committees and boards including Hospice of the Piedmont, Jefferson School Foundation, Jefferson Scholars Foundation, and Blue Ridge PACE (Medicare program which provides comprehensive care of the elderly). He also served as the founding Vice President of 100 Black Men of Central Virginia, an organization whose goal is to close the achievement gap for African American males. He also serves on the board of the Kenan Institute for Engineering Technology and Science. Dr. Martin is principal investigator for the NSF grant-funded Virginia-North Carolina Alliance. He leads an Alliance of nine Virginia and North Carolina institutions whose goal is to increase the number of underrepresented minority students receiving science, technology, engineering, and math degrees.

Dr. Martin and his wife, Donna, have four adult children (three graduates of U.Va.) and five grandchildren.

# PRINCIPAL INVESTIGATORS AND STAFF

## VA-NC Alliance Management Team



**Linda Columbus, Co-Principal Investigator**  
Associate Professor, Department of Chemistry  
University of Virginia



**Carolyn Vallas, Co-Principal Investigator**  
Director, Center for Diversity in Engineering  
University of Virginia



**Archie Holmes, Jr., Co-Principal Investigator**  
Vice Provost for Educational Innovation &  
Interdisciplinary Studies  
Professor, Electrical & Computer Engineering  
University of Virginia



**Kristin Morgan, Program Director**  
Office for Diversity & Equity  
University of Virginia



**Jessica McCauley, Program Coordinator**  
Office for Diversity & Equity  
University of Virginia



**Debra White**  
Business Manager & Grants Administrator  
Office for Diversity & Equity  
University of Virginia

## Partners

### Bennett College

Cristina Moreira, Program Director

### George Mason University

Alok Berry, Program Director

### Elizabeth City State University

Ali Khan, Program Director; Harry Bass, Interim Associate Vice Chancellor for Academic Affairs;  
Gloria Payne, Assistant Program Director; Maxine Mason, Program Coordinator

### Johnson C. Smith University

Sunil Gupta, Program Director; Mattie Marshall, Program Coordinator

### Piedmont Virginia Community College

Kathleen Hudson, Program Director; Joanna Vondrasek, Program Coordinator

### Saint Augustine's University

Mark Melton, Program Director; Sheila Spence, Program Assistant

### University of Virginia

Carolyn Vallas, Program Director

### Virginia Commonwealth University

Rosalyn Hobson Hargraves, Program Director; Lauren Griggs, Program Coordinator

### Virginia Polytechnic Institute and State University

Jody Thompson-Marshall, Program Director; Monica Hunter, Assistant Director

# GREETINGS

December 2015

Dear Friends:

The Virginia-North Carolina Louis Stokes Alliance for Minority Participation is a nine institution partnership consisting of Bennett College, Elizabeth City State University, George Mason University, Piedmont Virginia Community College, Saint Augustine's University, the University of Virginia, Virginia Commonwealth University, and Virginia Tech. The University of Virginia has served as the lead institution for the Alliance since its inception in 2007 and continues its strong commitment during the mid-level phase of the partnership.

The goal of the Alliance is to increase the quality and quantity of students from underrepresented populations who earn undergraduate degrees in science, technology, engineering and mathematics (STEM) disciplines. Institutions in the Alliance have been working hard to accomplish this goal, demonstrating the value of collaboration across institutional lines toward the advancement of knowledge and learning. The Alliance has been productive during its mid-level phase, resulting in significant increases in the number of STEM degrees earned and overall enrollment of underrepresented minorities in STEM disciplines from year one to year three.

By providing dedicated resources and creating synergy among its partner institutions, the Virginia-North Carolina Alliance supports its students through a variety of initiatives, including: bridge programs for entering freshmen, book stipends, mentoring, tutoring, annual research symposia, and an annual summer research program hosted by the University of Virginia.

Well-trained STEM professionals are a vital part of the strength of our nation. The VA-NC Alliance increases the total number of successful graduates in these fields, but it also increases the diversity of that population. The variety of perspectives provided by a more diverse population will strengthen the STEM professions and potentially increase innovation and the ability to solve complex problems faced by our global society in the twenty-first century.

This report will acquaint you with the Virginia-North Carolina Alliance partner institutions, their students, the impact they are making in STEM disciplines, and the difference they make in meeting critical regional, national, and international needs of research, industry, and education making this a better world.

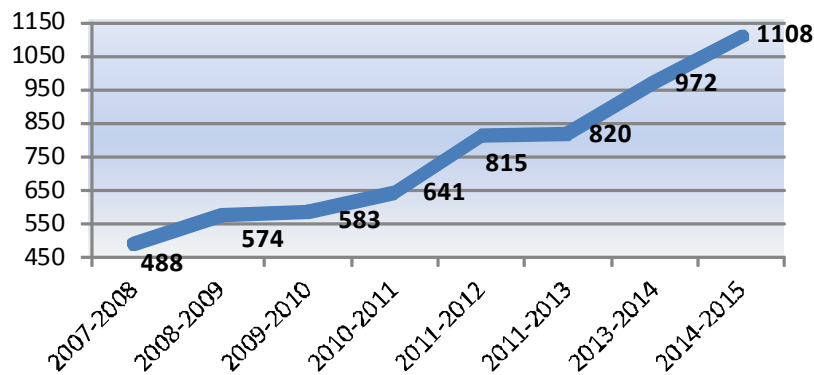
Best wishes,



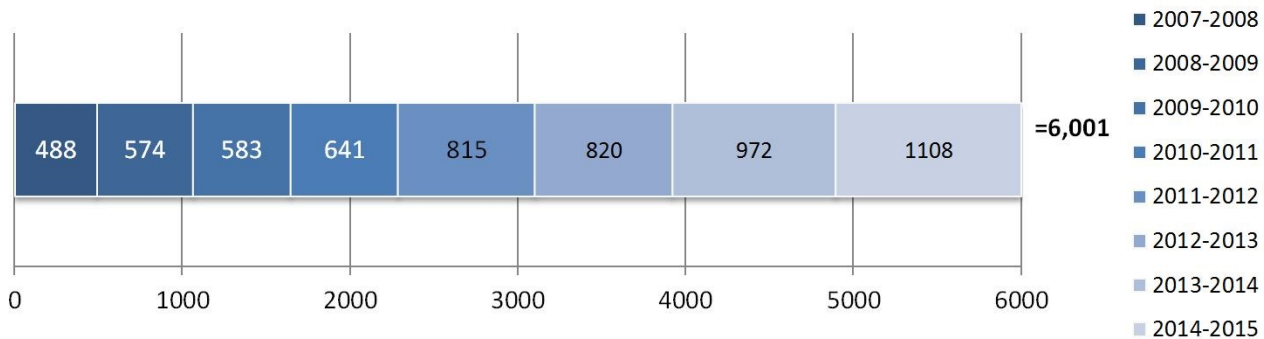
Marcus L. Martin, MD  
Vice President and Chief Officer for Diversity and Equity  
Principal Investigator, Virginia-North Carolina Alliance

## NSF and the VA-NC Alliance are making a difference with a 127% Increase in UREP STEM Degrees! 2007-2015

**Annual UREP STEM Degrees Conferred**



**Cumulative UREP STEM Degrees Conferred**



## Enrollment

Enrollment of underrepresented minority students in the Alliance grew from 3,469 students in year one to 6,340 in year eight, representing an increase of 83%.

# LEAD INSTITUTION: UNIVERSITY OF VIRGINIA



The University of Virginia is a public research institution founded by Thomas Jefferson in 1819 and located in Charlottesville, Virginia. The university sustains the ideal of developing, through education, leaders who are well-prepared to help shape the future of the nation.

## Leading the Nation in Minority Graduation

The University of Virginia's African American graduation rate has consistently remained the highest of any of the nation's flagship state universities for the past twenty years, at 82.8% in four years or less and 88.8% within five years, in 2015. Four year graduation rates stood at 86.4% for Hispanic students (90.8% within five years) and 75% for Native American students (100% within five years) in 2015.\*

The University uses multiple approaches to enhance the minority undergraduate experience, such as hosting the following programs:

- Summer BRIDGE program through the Center for Diversity in Engineering
- The VA-NC Alliance Annual Summer Research Program
- *Native Day at U.Va.* for prospective Native American students
- Graduate school preparation retreats
- One-on-one mentoring and tutoring

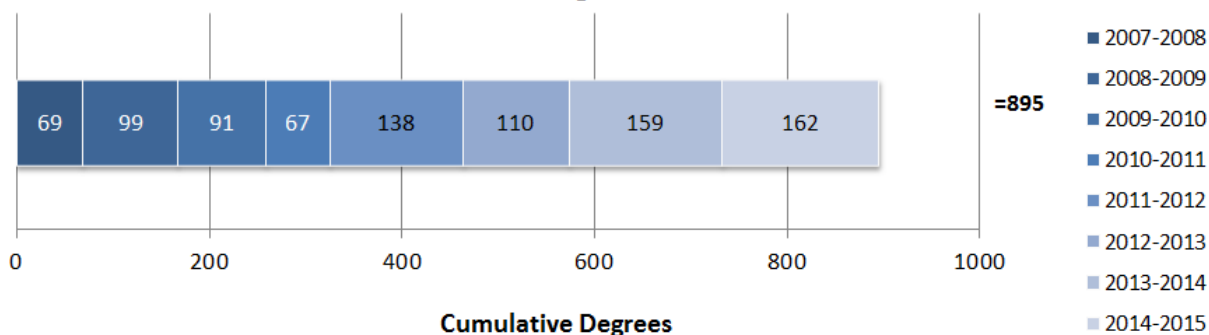
\*Source: University of Virginia Office of Institutional Assessment & Studies



## Leveraging Resources

In order to support the VA-NC Alliance Summer Research Program, the Alliance leveraged funds and resources from various departments and programs at the University of Virginia, including: the Data Science Institute, the Institute for Nanoscale and Quantum Scientific and Technological Advanced Research (nanoSTAR), the Center for Undergraduate Excellence, the Office for Graduate and Postdoctoral Affairs, and the Summer Undergraduate Research Program in the Curry School of Education.

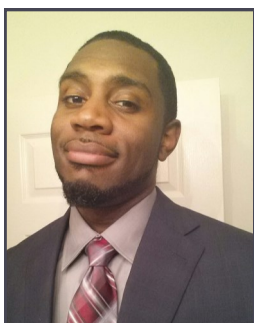
University of Virginia  
UREP STEM Degrees Conferred





## CHIKA ADIELE

Chika is a University of Virginia undergraduate, class of 2017, majoring in biochemistry. Chika participated in the 2015 VA-NC Alliance Summer Research Program and worked in the biology lab of Dr. Jay Hirsh. Chika continues to work in the lab, studying a therapeutic drug for Parkinson's disease in *Drosophila Melanogaster* fruit flies. Upon graduation, she hopes to go to medical school and become a physician.



## TERIQUE BARNEY

Terique graduated in 2013 from the University of Virginia. As an undergraduate he conducted research on combustion instabilities under the Department of Mechanical Engineering. He also held multiple leadership roles in the National Society of Black Engineers (NSBE) including Academic Excellence Chair and Senator, as well as Phi Beta Sigma Fraternity Incorporated, and the American Society of Mechanical Engineers (ASME). Terique served as a resident advisor and guide to Alliance researchers before graduating in 2013 with a bachelor's degree in aerospace engineering. He currently works as a government Test Engineer/ Project Manager for the Department of the Army in Maryland.

## BRIANA JAMES

Briana graduated from the University of Virginia in 2015 with a B.S. in engineering science. While in the Alliance, she worked on cloning and overexpressing *ansA*, the gene for the enzyme Asparaginase. She is currently a scholar of the Post-baccalaureate Research Education Program (PREP) at Virginia Commonwealth University where she is investigating the production of B1 B cells IgE during helminth infection, and its effects on allergic diseases.



## KENDRA JOBE

Kendra is an undergraduate at the University of Virginia, class of 2016, pursuing a B.S. in environmental science. She participated in the 2015 VA-NC Alliance Summer Research Program, where she conducted research focused in nanomedicine and targeted drug delivery in partnership with the nanoSTAR Institute at the University of Virginia, which she has continued into the Academic year. She has additional STEM experience participating in the Howard University SOAR Health program. Kendra will be applying to medical school after graduation.



Bennett College is a small, private, historically Black liberal arts college for women founded in 1873 and located in Greensboro, North Carolina. The College offers women an education conducive to excellence in scholarly pursuits; preparation for leadership roles in the workplace, society, and the world; and life-long learning in a technologically advanced, complex global society.

## Strengthening the Pipeline

Sisters & Brothers in Science, an initiative of Bennett’s VA-NC Louis Stokes Alliance for Minority Participation program, was created to mentor high school students from the Early/Middle College at Bennett and middle school students from Aycock Middle School. The program is funded by a grant from the Clapp Foundation.

Program director Dr. Cristina Moreira stated that this collaboration has served as a “pipeline” to recruit high school students who are interested in pursuing STEM majors. Kiana Baylor, a former Sisters-in-Science mentee, is currently an outstanding chemistry major at Bennett College. LSAMP mentors majoring in computer science currently volunteer their time with the robotics team of the Early/Middle College at Bennett.

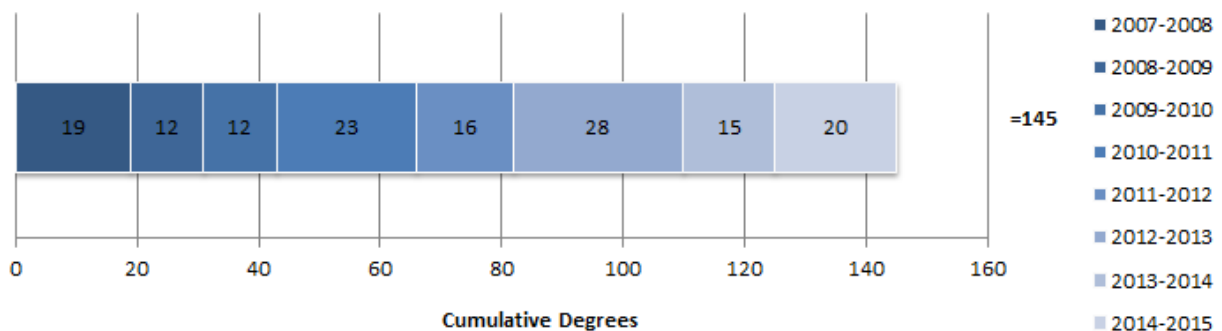


## Leveraging Resources

In 2014, Bennett College was awarded \$119,191 from the National Science Foundation as part of the Improving Undergraduate STEM Education (IUSE) program. The project, *Reforming Laboratory Instruction and Hands-on Experiences for the Millennial Learners in STEM*, will be carried out over three years at Bennett via a partnership with NC A&T State University and Elon University. All STEM majors at Bennett will benefit from IUSE funds and research collaboration with these partners.

Bennett is also the recent recipient of NSF’s \$400,000 Broadening Participation Research (BPR) award which will support research examining the effectiveness of intervention strategies on increasing the retention and graduation rates of underrepresented minority female college students in STEM. Approximately 240 students will benefit from supplemental instruction in all gateway courses, intensive faculty mentoring, and interventions identified to impact student retention and matriculation in STEM.

**Bennett College  
UREP STEM Degrees Conferred**





## SHYAINNE BELL

While pursuing her degree in computer science with a concentration in information technology and a minor in entrepreneurial studies, Shyainne has interned for the U.S. Department of Energy with the Minority Educational Institution Student Partnership Program (MEISPP). Shyainne has recently been accepted as a UNCF 2015 HBCU ICE Innovation Summit Fellow and participates in a tech trek that connects her with tech startups in Silicon Valley, California. She aspires to attend the University of Michigan School of Information Science to pursue a master's degree in human computer interaction.



## (BROTHELY) MALIQUE JONES

Junior biology major/psychology minor from Spartanburg, South Carolina, Malique is currently a fellow for the UNCF Mellon Mays Undergraduate Fellowship and the Ann Julia Cooper/ Africana Women Studies Fellowship. She spent her 2015 summer at Emory University for the Mellon Mays Undergraduate Summer Institute Engaging Minority Students developing her research project: Engaging Minority Students in the Environment Sciences at an Early Age. Malique is currently developing her project with preschoolers at the Martin Dixon Intergenerational Center at Bennet College (picture). Her plans involve pursuing a Ph.D. in environmental engineering.

## OLIVIA LEAVEN

Olivia is a biology major, international affairs minor, and Michigan State University Summer Research Opportunities Program alumna. She is also the first place oral presentation recipient at the 8th Annual VA-NC Alliance Research Symposium. In Spring 2016, she will be conducting research in Zanzibar-Tanzania with a focus on natural resource management. After graduating from Bennett, she plans to pursue a Ph.D. in community sustainability from Michigan State University. Her ultimate goal is to create and manage a non-governmental organization that acts as an ombudsman for indigenous and underrepresented peoples and environmental stakeholders.



## BRITTANY SANDERS

Brittany is pursuing a master's degree in biology at North Carolina A&T State University. Her research focuses on cytolethal distending toxins from *Haemophilus ducreyi*. She has developed a passion for microbiology and is interested in pursuing a doctoral degree in Microbiology and Immunology, focusing on the molecular mechanisms of bacterial pathogenesis. Being accepted into the Bridge to Doctorate program reassured her that she is making a positive contribution for woman empowerment in STEM fields.

# ELIZABETH CITY STATE UNIVERSITY



Elizabeth City State University, a constituent institution of the University of North Carolina founded in 1891, offers baccalaureate, graduate, and professional programs for a diverse student body. Located in Elizabeth City, North Carolina, the institution's rich heritage provides a firm foundation for its educational endeavors, as well as its role in serving the needs and aspirations of individuals and society.

## Engaging in Research

Research Week at Elizabeth City State University is an annual program in the Department of Natural Sciences, Pharmacy, & Health Professions that includes research presentations by faculty and students to the university and community through week-long seminars, poster sessions, guest speakers, and a research fair.

The goal of Research Week is not only to showcase existing projects, but to also provide a stimulus for future collaborations, internships, curriculum enhancements, research, discovery and economic development. Major research institutions exhibit at the research fair and provide information about internships and graduate programs.

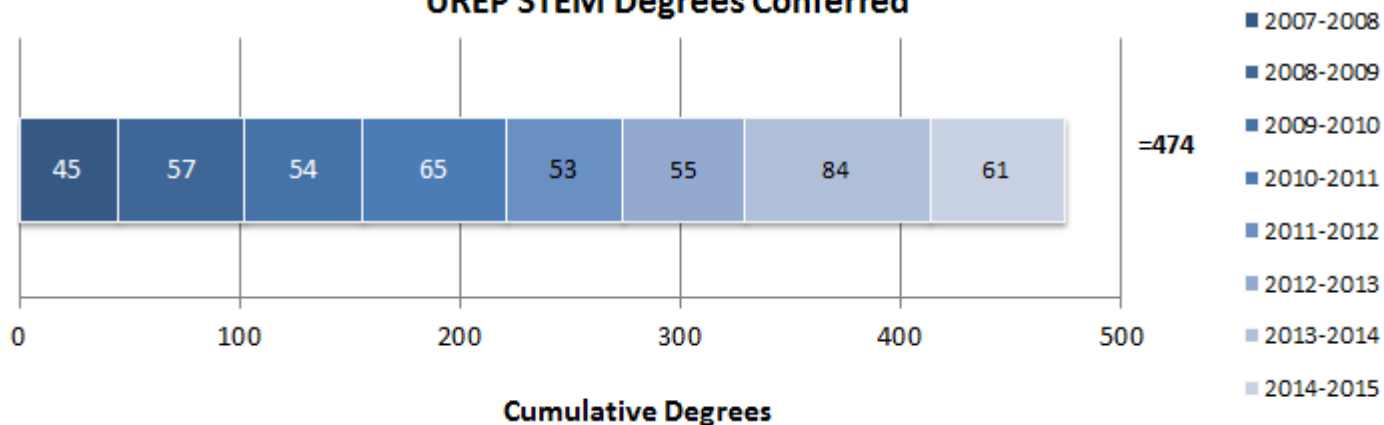
Research Week also serves as an outreach program to the local community and K-12 schools, as well as a direct pipeline to enrolling future STEM majors at ECSU. Hundreds of local students visit campus to view poster sessions and presentations. It is anticipated that the students who both attend and participate will become future trailblazers in research as we proceed to the next decade.

## Leveraging Resources

Elizabeth City State University's Academic Research Training (ART) Program is designed to provide an opportunity for STEM students to become engaged in a proven practice that enhances persistence in the major and critical thinking skills. LSAMP students are invited to participate in ART where they will receive assigned faculty research mentors during the academic year and summer session. All participants are required to attend and present their findings at a major research conference.

ART students have utilized tutorial and travel resources from the NSF HBCU-UP Vikings Enhancing STEM Grant. Major equipment such as Capillary Electrophoresis, Real -Time PCR Detection System and a Shimadzu HPLC purchased from Title III SAFRA funds have been used to train LSAMP students.

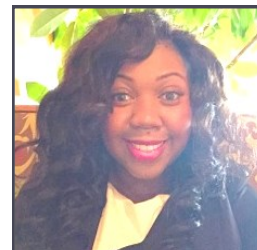
**Elizabeth City State University  
UREP STEM Degrees Conferred**





## AVA BOSTON

Ava graduated in 2015 with her Bachelor of Science degree in biology. She is currently pursuing her M.S. in biological sciences at North Carolina A&T State University in Greensboro, NC. Ava is a Research Initiative for Scientific Enhancement (RISE) Fellow. RISE scholars participate in faculty-mentored research, summer research internships, and present at professional conferences at North Carolina A&T and other scientific meetings. Ava's goal is to obtain her Ph.D. in biomedical sciences.



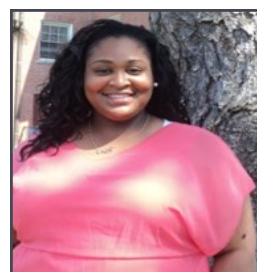
## JAIMI BOSTON

Jaimi is a chemistry major scheduled to graduate from Elizabeth City State University in December, 2015. At ECSU she is a member of the United Black Colleges and University and Future MBA Associations. She has accepted a position as a laboratory technician at Global Laboratory Research in Wilson, NC. Jaimi will work in the chemistry lab performing chemical analyses on tobacco. Her future goal is to pursue a Ph.D. in cosmetic chemistry.



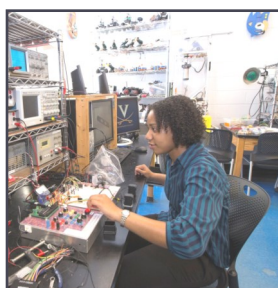
## KENYA ROBINSON

Kenya Robinson graduated in 2014 with her Bachelor of Science degree in mathematics from Elizabeth City State University. Kenya is currently employed as a mathematics teacher at Currituck High School and is pursuing her master's degree in mathematics at Elizabeth City State University. While at ECSU, she was a member of the ECSU Gospel Choir and AKA Sorority. Kenya's long-term goal is to continue teaching mathematics.



## SHUNAFRICA WHITE

Shunafrika is a senior majoring in engineering technology with a concentration in mechanical engineering at ECSU. Shunafrika spent her summer at the University of Virginia conducting research through the 2015 VA-NC Alliance Summer Research Program. She worked in the Department of Aerospace and Mechanical Engineering's Mechatronics Lab where she investigated the application of mechatronics to an affordable robotic arm. She is currently conducting research on recycled composite materials. Shunafrika is a member of the Technology Club and ECSU band. She plans to pursue a graduate degree in biomechanics.





George Mason University, founded in 1972 and located in the heart of Northern Virginia's technology corridor near Washington, D.C., is an innovative, entrepreneurial institution with national distinction in a range of academic fields. With strong undergraduate and graduate degree programs in engineering, information technology, biotechnology and health care, Mason prepares its alumni to succeed in the workforce and meet the needs of the region and the world.

## Industry Connections

GMU is dedicated to supporting a highly diverse body of students and maximizing partnerships with surrounding STEM industry in proximity to the Washington-metro area. During the Eighth Annual VA-NC Alliance Research Symposium, students from all partner schools had the opportunity to network with young GMU alumni currently working in local STEM industry, current graduate students and admissions counselors, and industry professionals.

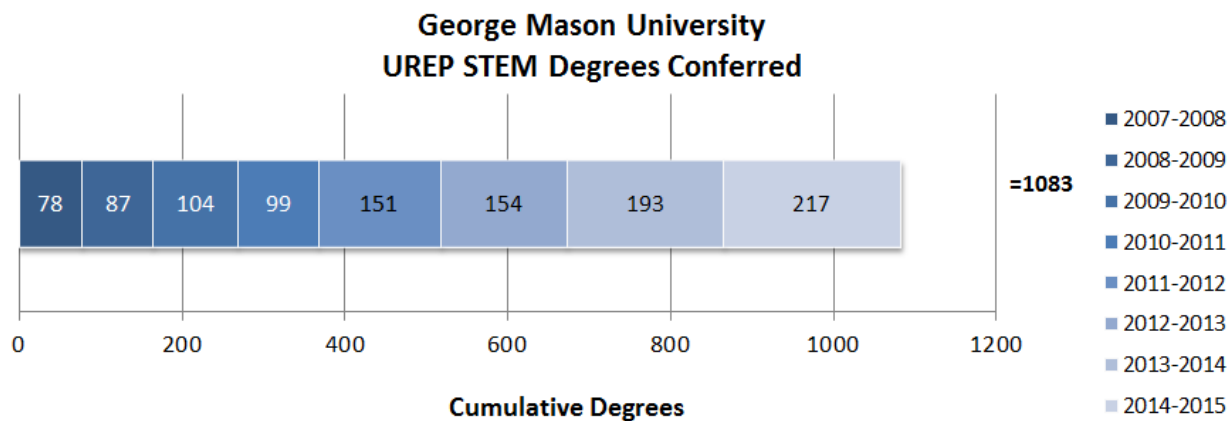
*What's Next: A Panel Discussion about Transitions in STEM* was presented by faculty, current graduate students, and recent LSAMP alumni. The panel, *How to Advance Professionally and Balance Your Personal Life* was presented to all Symposium attendees and included presentations by Mr. Dwight K. Yamada, Sector Director for Global Supply Chain Business Development at Northrop Grumman, Dr. Rosemary Hunziker, Director of the Tissue Engineering/Regenerative Medicine and Biomaterials Programs at the National Institute of Health, and Mr. Winson Heng, Principal Partner at Deloitte Consulting at Deloitte. Alliance students were invited to apply to internships and network further with these industry experts.

## Leveraging Resources

Alliance personnel at GMU are collaborating with the Learning Services Office and faculty in the Department of Mathematics to offer the 2015 GMU Bridge program as a new hybrid on-campus and online program. The hybrid model will allow students to come to GMU's campus for one out of the five weeks for in-person math instruction and tutoring. GMU anticipates that this method will provide more individualized attention and face-to-face networking for students, as well as keep costs manageable with the online portion. Students' housing on the GMU campus for the duration of the program was provided by LSAMP funds.

GMU has developed this innovative curriculum to address issues of funding, flexibility, and increased access not always available in traditional on-campus bridge programs. The Online Bridge Program was created by testing universal design criteria, pedagogical principles, feasibility and time-management analysis.

Using Blackboard technology for program delivery, the online version of Bridge features greater use of multimedia and increased accessibility, engagement, and collaboration among new students, who developed a peer network prior to arriving at their physical campus.





## CHRISTIAN ADOUNVO

Christian received his B.S. in computer engineering with a minor in business from George Mason in 2013. He was an intern at Intel in summer of 2011 as well as a peer advisor for the GMU LSAMP program. He is currently working with Northrop Grumman. He is currently obtaining a Master of Science degree in management and secure information systems at George Mason University.



## ANDREA FRASER

Andrea graduated from GMU in 2014 as an honors student with a B.S. in civil and infrastructure engineering and was on the Dean's List for seven semesters. She has interned at SYSTRA USA, MZM Construction Co. Inc., Balfour Beatty Construction. She continued her undergraduate research with the Reston Microbiology Lab at U.S. Geological Survey. She is currently a Ph.D. student at Johns Hopkins University studying environmental microbiology.



## ESTHER HOWARD (JACKSON)

Esther graduated as an honors student and University Scholar from GMU in 2013 with a B.S. in Mathematics with a concentration in actuarial science and a piano music minor. She was accepted into the accelerated master's degree program in mathematics, but deferred admission to complete an Associate of the Society of Actuaries. She was a student trainee with the United States Office of Personnel Management (OPM), where she is working currently.



## SETH ROBERTSON

Seth graduated from GMU in 2015 with a B.S. in electrical engineering. He was an intern at BAE Systems in summer 2012 as well as from May 2013 until January 2014. His senior design project "*Wave Extinguisher*" with another GMU student gained him national recognition and was featured in the Washington Post, CNN, and on the Tonight Show with Jimmy Fallon where he demonstrated the device. He currently is working at the United States Department of Defense.



# JOHNSON C. SMITH UNIVERSITY



Johnson C. Smith University is a private liberal arts university located in Charlotte, North Carolina. Founded in 1867, the university enrolls approximately 1,500 students each year, maintaining proud HBCU traditions and a future aimed at diversity.

## Johnson C. Smith Science Center

Johnson C. Smith University opened the doors to their new Science Center during the 2015 fall semester. This 62,000-square-foot facility is funded by a \$25 million gift from The Duke Endowment and it will enable the College of STEM to increase enrollment and create an optimal learning environment. This is a concrete reflection of JCSU's commitment to preparing students for STEM-related fields.

According to former Dean of the College of Science, Technology, Engineering and Mathematics, Dr. Magdy Attia, *"At JCSU we are building a unique model for colleges by expanding beyond the traditional STEM education model and incorporating a multidisciplinary, market-driven approach in our curricula."*

The new Science Center will house four of six newly created education centers including:

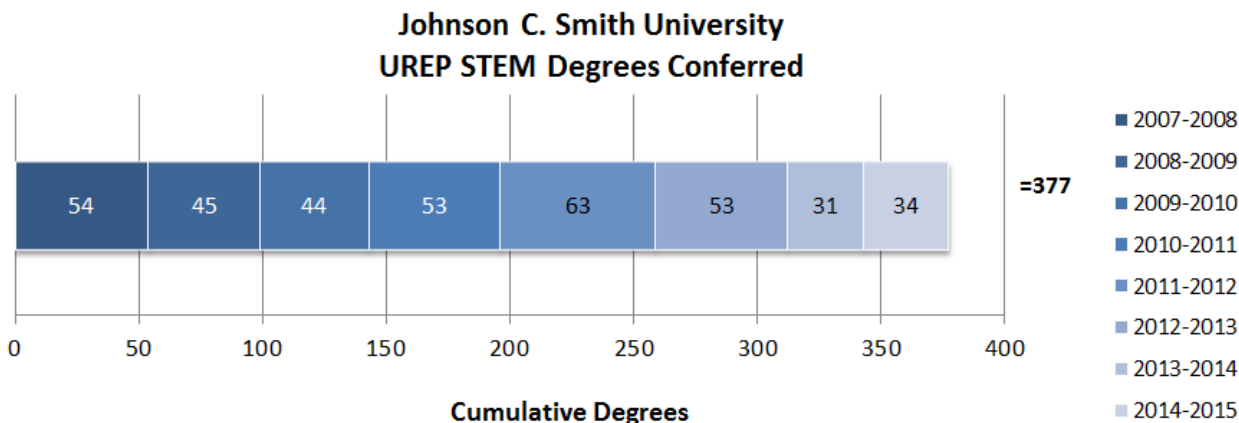
- The Center for Renewable Energy
- The Center for Medical Informatics
- The Center for Analytics
- The Center for Bioinformatics

## Leveraging Resources

Johnson C. Smith University has been identified by the Bill & Melinda Gates Foundation as one of 35 high-potential Institutional Partnership (IP) Sites committed to transforming its organization to ensure that more students—especially low-income and first-generation students and students of color—graduate at higher rates with high-quality degrees or certificates.

With this designation comes a four-year commitment to JCSU and the other designated IP Sites to help the institutions get more students to and through college. Specific goals include:

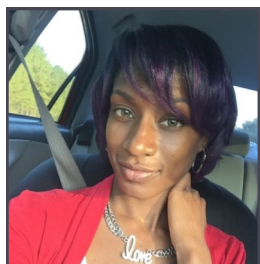
1. Accelerating the production of degrees and credentials by an average of 4.5% per year
2. Collecting, sharing and scaling learning with partners through deliberate and consistent strategies.
3. Refining and improving particular interventions and the deployment of them.
4. Accelerating implementation through a networked approach to engaging with partners.





## ANDREW ALEXANDER

Andrew Alexander graduated in 2015 with a Bachelor of Science degree in biology and a chemistry minor. He is currently a first year medical student at the University of North Carolina at Chapel Hill. Andrew participated in the Summer 2012 Medical and Dental Education Program (SMDEP) at Duke University. In 2014, he co-published two articles in the Journal of Zoo and Wildlife Medicine and presented this research at the 2014 National Conference of Undergraduate Research at the University of Kentucky, the 2015 LSAMP symposium at George Mason University, and the 2015 Emerging Researchers National Conference in Washington, D.C.

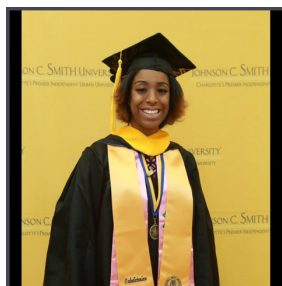


## JASMINE MAYS

Jasmine Mays graduated with a Bachelor of Science in general biology, and received her master's degree in physiology from North Carolina State University. Jasmine was selected to participate in the VA-NC Summer Bridge program and summer internship at the University of Virginia. She also worked as a Cannon Scholar at Carolina Medical Center and as a research assistant for RTI International. Jasmine is currently in her first year of a physician assistant program at Methodist University.

## KOREY SMITH

Korey Smith is a biology and psychology double major, graduating in Spring 2016. He conducted research at the University of Virginia through the VA-NC Alliance Summer Research Program and participated in the 2015 Stress and Resiliency Project at JCSU funded by The Duke Endowment. Korey won first place in the poster presentation category for two consecutive years at the VA-NC Alliance Annual Research Symposium, and also presented his research at the 2014 Clinton Global Initiative Annual Meeting at Arizona State University hosted by President Bill Clinton and Hilary Clinton. Korey has studied in Turkey and is a 2016 Focus Scholar at Georgia Tech.



## REATNA TAYLOR

Reatna Taylor graduated valedictorian of her class at Johnson C. Smith University in 2015. She participated in two research internships at the East Carolina University Summer Biomedical Research Program and at JCSU. She has presented research at major conferences, including the National Conferences on Undergraduate Research at the University of Kentucky in April 2014.

# PIEDMONT VIRGINIA COMMUNITY COLLEGE



Piedmont Virginia Community College (PVCC) is a nonresidential two-year institution of higher education that serves Central Virginia - principally residents of the City of Charlottesville and the counties of Albemarle, Buckingham, Fluvanna, Greene, Louisa and Nelson. PVCC is one of 23 community colleges in Virginia that comprise the Virginia Community College System (VCCS).

## Research in Action

A team of three Piedmont Virginia Community College biology students (Candice Tomlinson, Maya Fraser-Butler, and Stephen Hazen) and Biology Department faculty member, Dr. Anne Allison are among ten finalists for the 2015 NSF Community College Innovation Challenge (CCIC) for their research project: *"Water Health as Assessed by Surveying Protists (PVCC Water Health)."* The CCIC challenged community-college students to propose innovative science, technology, engineering and mathematics (STEM)-based solutions to perplexing, real-world problems. Community colleges from across the country participated in the challenge. They were invited to identify key problems and propose innovative solutions in areas with potential for solving. In June, Candice, Maya, and Stephen attended the four-day CCIC Innovation Boot Camp with other finalists on Capitol Hill in Washington, D.C.

Piedmont Virginia Community College also held two Science Poster Sessions showcasing second-year science students' research as part of their capstone requirement for the Associate of Science Degree. Thirty-two students participated in supervised independent research projects and presented their research at one of the two poster sessions held in December 2014 and May 2015.

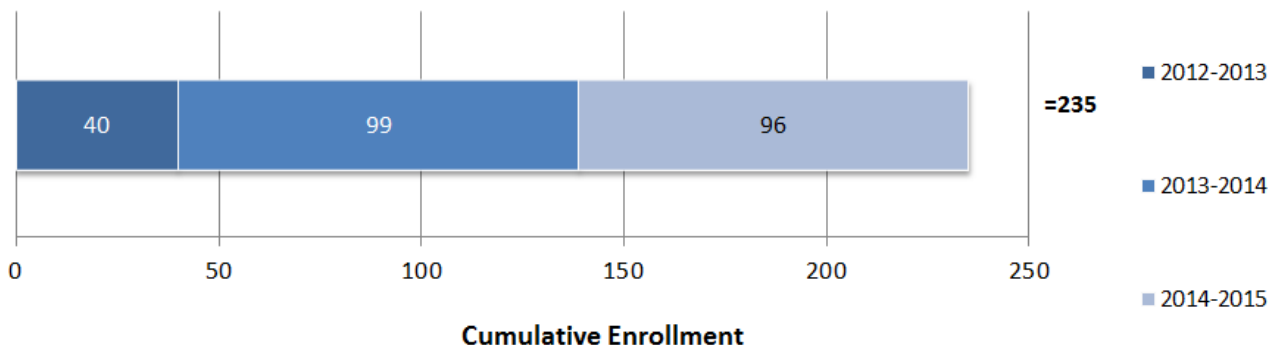


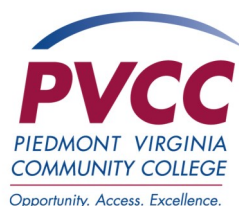
Finalists Candice Tomlinson, Maya Fraser-Butler, and Stephen Hazen at the CCIC Innovation Boot Camp on Capitol Hill.

## Leveraging Resources

PVCC used LSAMP funds in conjunction with a grant from The Carl D. Perkins Career and Technical Education Act to offer their 2015 Summer STEM Academy to high school students and recent graduates. Students engaged in hands-on activities exposing them to college life and STEM research. Additionally, participants toured science labs and took fieldtrips to local businesses, including the Charlottesville Center for Open Science and several app development industries.

## Piedmont Virginia Community College UREP STEM Enrollment





## MAYA FRASER-BUTLER

Maya gained a deep understanding of science foundations at PVCC. From cell biology to genetics, she has excelled thanks to her determination and the unwavering support of professors. She was a member of a winning team in the 2015 National Science Foundation Community College Innovation Challenge. She participated in independent study, executing an original experiment testing bacterial transformation through the process of cross-species conjugation. After earning her Associate of Science degree at PVCC, Maya will transfer to a four-year institution to complete her bachelor's degree, and plans to pursue an M.D./Ph.D. in the future.



## RAVEN MORRIS

Raven began her studies at PVCC in 2012. She enrolled in the engineering degree program in order to combine her love of engineering, computer graphics, and film. In 2015, Raven participated in the 2015 VA-NC Alliance Summer Research Program at the University of Virginia where she designed a multiparty dialogue system to be used in a virtual humans tool to train clinicians in inter-professional education. After graduating from PVCC, Raven hopes to pursue a degree in computer modeling and simulation to reach her goal of creating video games and animated feature films.

## ANGELA NEBEL

Angela is a native of Santiago, Chile. She began her study at PVCC in 2013. She has lived all over the world, including in Korea and in Honduras where she raised her family. While working on a class project last spring, she discovered a 500 million-year-old fossil at Sherando Lake in Waynesboro, VA, the first and oldest of its kind ever discovered in the area. She presented her findings in November at the 2015 Geological Society of America's annual meeting in Baltimore. Upon graduation, she plans to transfer to James Madison University to continue her education in geology.



*Students pose for a photograph at the 2015 PVCC Summer Stem Academy in Charlottesville, VA.*

# SAINT AUGUSTINE'S UNIVERSITY



St. Augustine's University is a four-year institution preparing students for leadership roles in a complex, diverse, and rapidly changing world. It was founded in 1867 and is located in Raleigh, North Carolina. The school's mission is to sustain a learning community in which students can prepare academically, socially and spiritually for leadership in a complex, diverse and rapidly changing world.

## Measurable Outcomes for Graduate Placement

The School of Sciences, Mathematics & Public Health (SSMPH) has realized good success related to preparing more than twenty students for matriculation into graduate STEM programs in the past five years. Students have graduated or are currently enrolled in M.S. and Ph.D. programs ranging from computer science, biomedical engineering, mechanical engineering, electrical engineering, and applied mathematics. These students go on to gain employment in a wide variety of STEM fields. Many students opt to forgo graduate school and have had great success in moving directly into the STEM workforce.

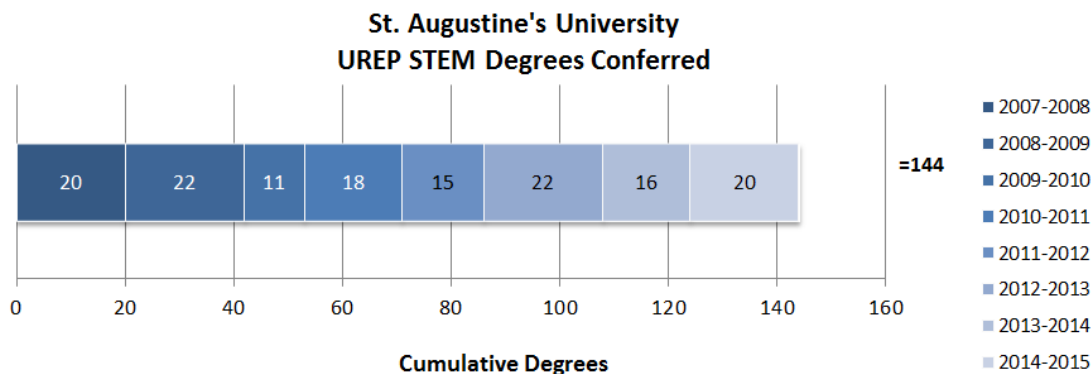
LSAMP funds are used to provide scholarships for academically talented, but financially challenged STEM majors. Students are required to participate in at least one summer research or academic enrichment internship. Following the completion of their research experiences, LSAMP scholars are required to present their findings at a least one local, regional, or national STEM conference. At the SSMPH Annual Research Day, LSAMP seniors present their final independent research project, which serves as the culminating academic requirement for graduation.

## Leveraging Resources

In 2014, St. Augustine's University received a total of \$800,000 in grants from the National Science Foundation's Historically Black Colleges and Universities Undergraduate Program (HBCU-UP). The first \$200,000 was received under the program's Research Initiation Awards for a two-year period, and the second for \$600,000 will be awarded over a four-year period to fund thirty full-time underrepresented minority students majoring in biology, chemistry, forensic science, engineering mathematics, mathematics or computer science with the goal of increasing enrollment and retention rates and reducing the time it takes for them to graduate.

Students will participate in a science seminar series and receive tutoring sessions, summer internship opportunities, in-service learning activities, field trips, faculty-student collaborative research, alumni mentoring, comprehensive career counseling and the opportunity to attend conferences.

LSAMP Program Director and Dean of the School of Sciences, Mathematics, and Engineering, Dr. Mark Melton, serves as the PI for HBCU-UP.





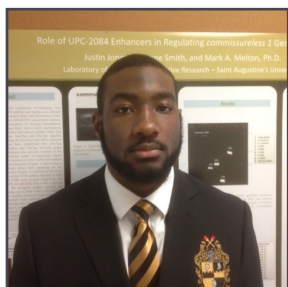
## BRITTANY DUNIGAN

Brittany Dunigan graduated from Saint Augustine's University in May 2014, with a major in biology. She is originally from Chicago Illinois, and is currently enrolled in a Master of Science in Public health program at the Campbell University College of Pharmacy and Health Sciences.



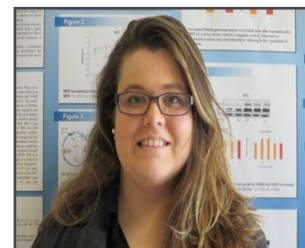
## JUSTIN JONES

Justin Jones will graduate from Saint Augustine's University in May 2016 with a degree in biology. He is the 1st place winner in Developmental Biology and Genetics at ABRCMS. He is a poster presentation winner for the SAU Laboratory of Genetics & Integrative Research at Melton.



## NICOLE SCIORTINO

Nicole Sciortino graduated from Saint Augustine's University in May 2015 with a degree in chemistry. She is from Raleigh, North Carolina and is currently pursuing her M.S. in chemistry at North Carolina Central University.

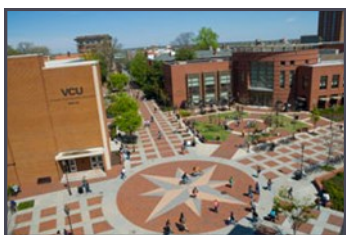


## BRANDON SCOTT

Brandon Scott graduated from Saint Augustine's University in May 2014 with a degree in engineering mathematics. He is from Midway, Georgia and is currently a graduate student in computer science at North Carolina A&T, where he received the NSF Cyber Defender Scholarship. He was a 1st place winner at the 2012 VA-NC LSAMP Symposium and the ABRCMS in the Engineering, Mathematics, and Physics Division.



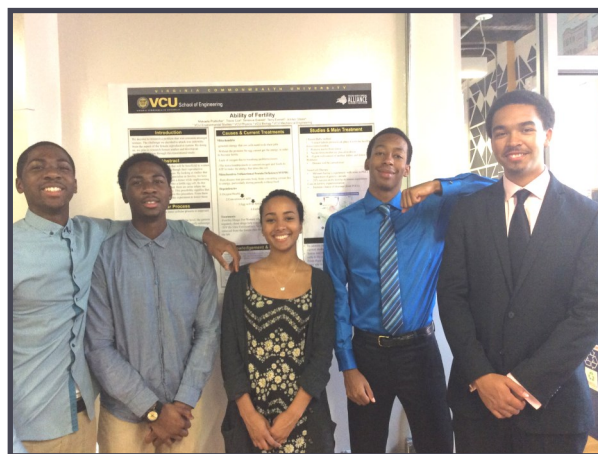
# VIRGINIA COMMONWEALTH UNIVERSITY



Situated in the heart of Richmond, the state capital, Virginia Commonwealth University is one of the nation's top research universities and enrolls more than 32,000 students on two campuses.

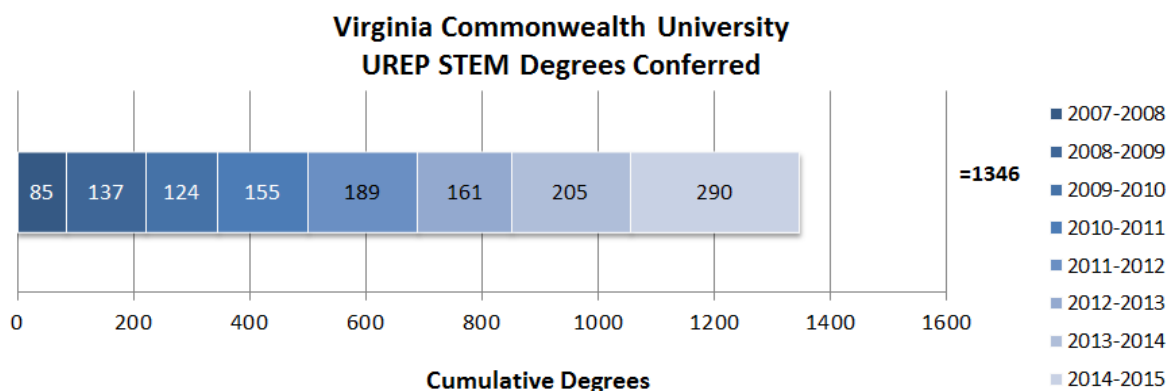
## VCU Hybrid Summer Transition Program

The Hybrid Summer Transition Program (STP) offered an on-campus academic training component for one week and an online component for six weeks to incoming LSAMP freshmen. The program uses an adaptive web-based intelligent assessment and learning tool called Assessment and Learning in Knowledge Spaces (ALEKS), to teach both the chemistry and calculus preparation courses. A third online study skills course was also offered. In ALEKS, the instructors chose the areas they wished to emphasize during the course and focused on students' mastery of those specific topics. During the on-campus portion of the program students completed a high-ropes challenge course, heard from panels and guest speakers, toured laboratories, and tackled a team design/research project which culminated in a poster presentation. In addition to coursework, students also participated in social and networking activities to help familiarize them with college life. Forty-two freshmen completed the program and earned stipends between \$100 - \$300 as determined by their level of completion for each of the three hybrid courses. Following their experience in the STP, students also participated in a weekly Academic Success Seminar during the fall semester of their freshman year.



## LEVERAGING RESOURCES

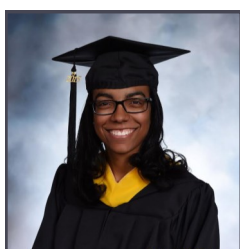
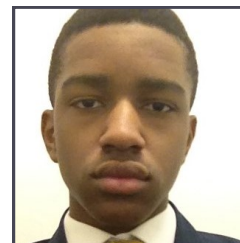
The VCU LSAMP team has a close relationship with several other NSF and NIH funded programs at VCU, including Bridges to Baccalaureate: Dream to Goal, the Initiative for Maximizing Student Diversity, Minority Access to Research Careers, Post-Baccalaureate Research Education Program, da Vinci S-STEM Scholars, and the Noyce Program. They also partner with VCU units like Residence Life, the Office of Multicultural Student Affairs, Career Services, the Well Center, the Virginia Mentoring Partnership, VCU Acceleration, the ASPIRE Program, and Student Advising. These resources enhance the experience for VCU's LSAMP scholars.





## JEREMIAH AMOS

A member of the VCU class of 2018, Jeremiah is currently majoring in mechanical engineering. He is currently the founder and president of Minorities Increasing Participation in STEM (MIPS), was the president of his student hall in the spring of 2015, and is also a calculus tutor. He is on the Dean's List (3.85 GPA) and plans to attend graduate school after he finishes his undergraduate degree. He is a LSAMP mentor and was a dorm counselor for the 2015 Summer Transition Program.

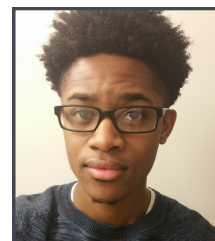


## SAMYA DYER

After participating in the LSAMP STP program, Samya completed three years of research in the VCU Pauley Heart Center as an Initiative for Maximizing Student Diversity and Minority Access to Research Careers scholar. During this time, she studied methods to increase the efficacy of chemotherapy drugs, while simultaneously protecting the patient's heart from the devastating side effects. As a member of VCU's Class of 2015, Samya graduated with a dual degree in biology and psychology, as well as with University Honors in both subjects. She is currently applying to veterinary school.

## MARK HAIRSTON

Mark is the first in his family to pursue a bachelor's degree. He is a senior majoring in biology. After his first Summer Research Program, he joined the Academic Scholars Program in Real Environments (ASPIRE), receiving the President's Volunteer Service Award. He is currently involved in the Initiative for Maximizing Student Diversity as a research scholar in the Massey Cancer Center. He studies developmental gene regulation and globin switching as a model system with a focus in identifying the DNA elements regulating embryonic globin gene expression. Mark recently presented a poster on his research at the 2015 Annual Biomedical Research Conference for Minority Students (ABRCMS) in Seattle.



## ANWAR MUHAMMAD

Anwar Muhammad is a sophomore studying chemical and life science engineering. She is currently a resident assistant, along with being international chair for the VCU student chapter of the National Society of Black Engineers (NSBE) and vice-president/co-founder of Minorities Increasing Participation in STEM (MIPS). Upon graduation, Anwar plans to work overseas in either Dubai or Qatar after gaining a few years of work experience in the United States.

# VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY



A leading research institution, Virginia Tech offers 215 undergraduate and graduate degree programs to more than 30,000 students. The university fulfills its land-grant mission of transforming knowledge to practice through technological leadership and by fueling economic growth and job creation locally, regionally, and across Virginia.

## Helping Students

Virginia Tech's LSAMP program provides students a variety of resources and workshops during the school year to support them. Workshops have included the following topics:

- Time Management
- Selecting the Right Graduate Programs
- Finding Summer Internships
- Working with Faculty Mentors
- Writing Effective Resumes
- Behavioral Interviews
- Financial Planning

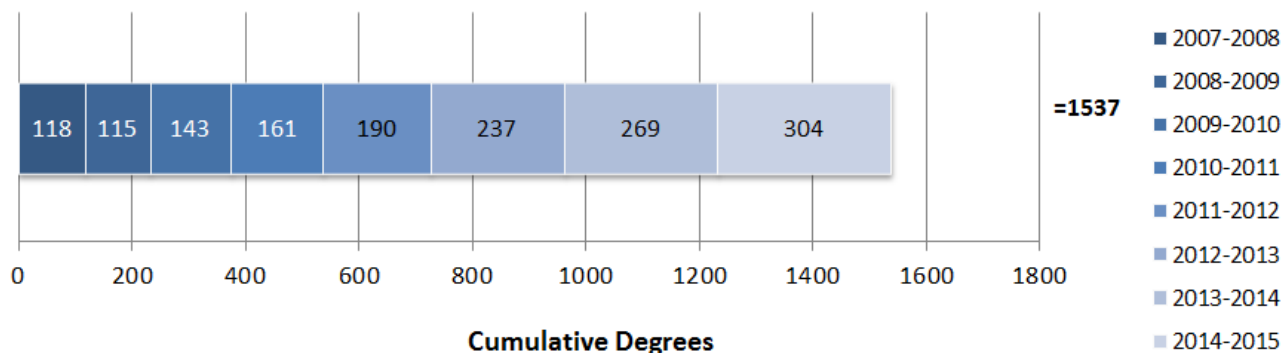
LSAMP has also assisted other groups on campus and in the community with programming, including the McNair Scholars Program, University Office of Undergraduate Research, Biological Sciences, College of Engineering, and Alpha Kappa Alpha Sorority. The LSAMP program has hosted the Alliance Symposium and the Graduate School Retreat and has contributed support to the Undergraduate Research Conference, the Molecular Biophysics Symposium, Society for Hispanic and Professional Engineers' High School Visitation Program, and the STEM Summer Workshop for Middle School Students.

## Leveraging Resources

The LSAMP Program at Virginia Tech is housed in the Multicultural Academic Opportunities Program (MAOP). MAOP provides undergraduate scholarships to many of the LSAMP students in the program. The Virginia General Assembly provides funding for MAOP. MAOP has worked with every college on campus to provide research opportunities on campus. During the summer, LSAMP students at Tech and other institutions are eligible to participate in the MAOP Summer Research Internship. Many colleges and departments on campus have assisted the programs with resources and financial support.

For students interested in biomedical research, the Virginia Tech LSAMP program has partnered with the Initiative to Maximize Student Development (IMSD), an NIH program, to provide research opportunities for students. Both programs partner to send students to regional and national conferences.

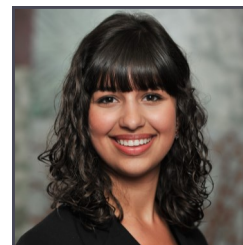
Virginia Polytechnic Institute  
UREP STEM Degrees Conferred





## MARISSA BOCCHER

Marissa is a senior majoring in aerospace engineering. She has been in LSAMP since her freshmen year and is a mentor liaison for the Galileo-Hypatia Engineering Living & Learning Community. She is founding president of Women Inspiring the Next Generation to Soar (WINGS), which connects collegiate women in engineering with female mentors currently working in industry. She has been a summer intern with Deloitte, GE Aviation and will intern for Rolls-Royce abroad as an intern in Summer 2016.



## DAVID VASQUEZ

David graduated from Virginia Tech in May 2015 with a degree in biological sciences. He is currently a PREP Scholar at the University of Missouri. His research journey began as a sophomore, when he participated in the VA-NC Alliance Summer Research Program at the University of Virginia. While at U.Va., he and his lab members discovered a new molecule in space. Once David returned to Tech, he participated in ecology research and in the Initiative for Maximizing Student Development, a NIH funded program. David has presented his research at the National Conference on Undergraduate Research and the Annual Biomedical Research Conference for Minority Students.

## MALAYSHIA LUMPKIN

Malayshia Lumpkin is a senior majoring in geography with a minor in watershed management. She has been involved with the Sustainable Food Corps and Minorities in Agriculture, Natural Resources and Related Sciences. In the summers of 2014-2015, Malaysia was a scholar with the Doris Duke Charitable Foundation at the University of Washington, where she completed a project on harvesting rainwater to irrigate Seattle's community gardens. Malayshia will graduate in 2016.



## ALI ROGHANIZAD

Ali is a senior majoring in mechanical engineering. He is currently researching explanted medical devices in biomedical engineering. Besides LSAMP, Ali is involved in the Society of Asian Scientists and Engineers, Leadership Tech, and Design for America. He was a committee member in spring 2015 for the Islamic Worlds Festival on campus. He has presented his research at the Annual Biomedical Research Conference for Minority Students and has been accepted into the graduate program in mechanical engineering at Virginia Tech.

# SUMMER RESEARCH PROGRAMS

## Virginia-North Carolina Alliance Summer Research Program



Intensive eight-week experience hosted at the University of Virginia with faculty in nationally recognized programs in biology, chemistry, computer science, mechanical and aerospace engineering, pharmacology and nanotechnology

## Sample Research Projects

**Designing a Multiparty Dialogue System for a Virtual Humans Tools**  
*Raven Morris, Piedmont Virginia Community College*

**Height detector: A Component of Energy Efficient Homes**  
*Kyle Long, Virginia Tech*

**The Application of Mechatronics to an Affordable Robotic Arm**  
*Shunafra White, Elizabeth City State University*

**Characterization of Sphingolipid Metabolism  
using Crispr/Cas9 Knockouts of Ceramide Synthase**  
*Kendra Jobe, University of Virginia*

**The Characterization of a Novel Genetic Ablation Tool for  
Myelination Around Glial Cells**  
*Robert Johnson, Johnson C. Smith University*





The summer student-intern sat at a long desk in a University of Virginia engineering building, the computer screen in front of her showing codes and calculations, electrical equipment to her left, where she tested a micro-controller for the revolving servomotor she plans to use in making a robotic arm.

While many college students enjoy vacations or work part-time jobs, Shunafra White and seven other students are spending eight weeks at U.Va., deep in hands-on research in science, technology, engineering and math – the so-called “STEM” disciplines.

The group is this summer’s cohort of the Virginia-North Carolina Alliance for Minority Participation, a U.Va.-led program that aims to help increase the number of underrepresented and minority students in STEM fields. The summer research program provides internships in a range of fields: biology, chemistry, computer science, mechanical and aerospace engineering, pharmacology and systems engineering.

The alliance, formed by U.Va. in 2007 and funded by the National Science Foundation, comprises nine college and university partners in the two states, and serves to provide enrichment activities to students who are pursuing STEM degrees. The goal: recruit and retain more students in these disciplines and encourage them to continue to graduate studies and related careers.

The alliance is part of an NSF umbrella program, the Louis Stokes Alliance for Minority Participation, which sponsors multi-institution programs all over the country.

The nine partner institutions – Bennett College in Greensboro, North Carolina; Elizabeth City State University in Elizabeth City; George Mason University in Fairfax; Johnson C. Smith University in Charlotte; Piedmont Virginia Community College in Charlottesville; Saint Augustine’s University in Raleigh; Virginia Commonwealth University in Richmond; and Virginia Tech in Blacksburg, plus U.Va. – offer individually tailored recruitment, retention and research activities all year long to support students, such as bridge programs, stipends, symposia, tutoring, mentoring, workshops and research experiences. “We hear from some of our past summer researchers,” alliance program coordinator Jessica McCauley and director Kristin Morgan wrote in an email. “A number of them have continued to obtain research experiences and pursue graduate school in STEM or related fields.”

The research internship marks the most intensive part of the program, teaming the undergraduate students with faculty mentors and graduate students. The student-interns learn the routines of working in a lab, learn how to use sophisticated computer programs and connect math to practical applications.

White, a student at Elizabeth City State who is from Atlanta, is spending her days in the Mechatronics Lab run by faculty mentor Gavin Garner, an assistant professor of mechanical and aerospace engineering in U.Va.’s School of Engineering and Applied Science.

“This is my first opportunity to work on robotics,” White said, adding that she has always liked science and appreciates working with the sophisticated equipment in the U.Va. lab. For her research project, she was testing the computer code for a propeller chip to talk to the microcontroller in the motor that will ultimately direct the movements of a prosthetic arm.

White is looking for a way to build a less expensive model that would be available to more people. Right now, a prosthetic robotic arm costs about \$2 million, she said. She also plans to make a training module for students and, like her alliance peers, to give a presentation on her research toward the end of the program.

The faculty mentors, along with graduate students’ participation, emphasize well-defined research goals, frequent communication and the development of presentation skills. In addition to research presentations, the program offers a writing workshop, guest speakers focused on STEM topics, and a graduate school talk with Keisha John, director of diversity programs in U.Va.’s Office of the Vice President for Research.

Besides mechatronics, other areas the students are working in – through co-sponsorships with U.Va.’s Data Science and nanoSTAR institutes – include medical informatics, nanotechnologies for targeted drug delivery and computing for energy-efficient smart buildings. Under the wing of assistant systems engineering professor Laura Barnes, Piedmont Virginia Community College sophomore Raven Morris is testing a simulated virtual patient application for her research project.

“The application, which functions like a computer game, will be used to train nurses and doctors to work with patients who have chronic obstructive pulmonary disease,” she said. “I think it’s amazing to work with University faculty and graduate students, handle real data and conduct research on a level unavailable to undergraduate students until their fourth year or later. It’s been a pleasure to meet other students with similar academic interests, attend faculty-led seminars and participate in fun field trips.” Morris wanted to learn more about the emerging field of data science and its societal implications, she said. She’s also drawn to the interdisciplinary nature of “big data,” as it’s often called, which brings in computer science, engineering, robotics and statistics.

The summer will give her valuable experience toward the career she has in mind, she said – combining her love of engineering, film and computer graphics in animation and computer simulation.

Kyle Long, born and raised in Charlotte, North Carolina, also is excited about using computer science to contribute to an interesting research project. A rising sophomore in computer science at Virginia Tech, he sees the summer program as helping him develop more as a computer science student and researcher. Under the supervision of Associate Professor of Computer Science Kamin Whitehouse, whose work focuses on energy-efficient buildings, Long is writing a computer program to determine people’s physical details and how they use energy in the household with an eye toward better conservation.

“I like the way things flow in the lab,” Long said. “When everyone is focused and is working well, I can feel the energy which contributes to the successful work environment.” Since taking a computer science course in high school, he has been “captivated by the discoveries and freshness computer science offers,” he said. “I am an aspiring computer scientist because I would like to contribute to developing new technologies and software that may progress mankind to an era that was once unthought-of. ... That is the beauty of computer science; exploring the unknown, line by line, idea by idea.”



*Intern Shunafra White, center, tells a group of area middle school students with the M-Cubed program (“Math, Men and Mission”) about her research improving upon a robotic arm.*

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# CONFERENCES, SYMPOSIA, & PRESENTATIONS

## Annual Alliance Symposia



*Korey Smith receives the first place poster award from Dr. Marcus Martin at the 2015 Symposium*

The Virginia-North Carolina Alliance holds annual research symposia each spring semester. Partner schools rotate as the host institution. Each symposium features oral and poster research competitions, keynote speakers, panel discussions, representatives from graduate schools, and the opportunity to tour facilities at the host school.

Partner institutions often combine forces with existing conferences or competitions scheduled for their locations, in order to achieve economies in logistics and scale, and leverage resources.

These symposia are frequently the first opportunity for many students to present their research in front of judges and peers, offering an opportunity for feedback and critique before submitting work at other academic and professional venues.

## Symposia Sites and Themes

April 2008, Saint Augustine's University:

*A Partnership to Develop the Next Generation of Leader*

April 2009, Virginia Tech:

*Undergraduate Research & Graduate Student Conference*

April 2010, Bennett College:

*Embracing Academic Diversity through Effective Research*

April 2011, University of Virginia:

*Presidential Inaugural Research Competition & Academic Symposium*

March 2012, Johnson C. Smith University:

*Pathways to Success in STEM*

April 2013, Virginia Commonwealth University:

*Solving Tomorrow's Problems, Today*

April 2014, Elizabeth City State University:

*Showcasing STEM Research and Scholarly Activities*

March 2015, George Mason University:

*Successful STEM Pathways Towards Graduate School & Industry*

The Ninth Annual VA-NC Alliance Research Symposium will be co-hosted by the University of Virginia and Piedmont Virginia Community College on April 10-11, 2016 in Charlottesville, VA.

## Oral & Poster Research Competition Winners 2015 VA-NC Alliance Symposium George Mason University

### First Place Poster Presentation

Korey Smith, Johnson C. Smith University,  
*Examining Working Memory Capacity and Neural  
Activity in Prefrontal and Posterior Parietal Cortices*

### First Place Oral Presentation

Olivia Leaven, Bennett College,  
*Serious Psychological Distress Disparities  
by Sex and Age*

### Second Place Poster Presentation

Ama Agyapong & Tanviben Patel, Elizabeth City State,  
*Optical Properties of Niobium (Nb) and Tantalum (Ta)  
Doped Vanadium Dioxide (VO<sub>2</sub>) Thin Films*

### Second Place Oral Presentation

David Vasquez, Virginia Tech,  
*Examining the Relationship Between Dominance  
Status and Disease Transmission in House Finches*

### Third Place Poster Presentation

Tai'Brionne Dozier, Johnson C. Smith University,  
*Developmental Cannabinoid Exposure Alters  
MAP2 and Nf-200 Expression in Zebra Finch Song Regions*

### Third Place Oral Presentation

Alia Woffard, Elizabeth City State,  
*Early Effects of Chloroquine in  
Embryonic Chickens*



*Award recipients together at the 2015 Symposium held at George Mason University*

## Alliance Scholars Present Research Across the Nation

**VA-NC Alliance scholars have presented at conferences and symposia across multiple disciplines, including:**

Annual Biomedical Research Conference for Minority Students (Charlotte, NC)  
Virginia Society for Microbiology Annual Meeting (Lynchburg, VA)  
International Engineering Research Conference (Reno, NV)  
Mathematical Association of America, Southeastern Section, Annual Meeting (University of Alabama)  
National Conference on Undergraduate Research (Ithaca, NY)  
University of Baltimore County Chemistry & Biochemistry Undergraduate Research Conference (Baltimore, MD)  
Minorities in Agriculture, Natural Resources & Related Sciences Annual Meeting (Kansas City, MO)  
State of North Carolina Undergraduate Research & Creativity Symposium (Charlotte, NC)  
Revolutionary Aerospace System Concepts Academic Linkages Competition (Merritt, FL)  
Society for Hispanic Professional Engineers  
Leadership Alliance National Symposium  
Historically Black Colleges and Universities – Undergraduate Program (HBCU-UP)  
National Society of Black Engineers (NSBE) Research Conference

## Student Spotlight: Racheida Lewis

Racheida Lewis, a Washington, DC native, is a first year Ph.D. student in engineering education at Virginia Polytechnic Institute and State University. She has been a part of the LSAMP program since her involvement in the Summer Transition Program at Virginia Commonwealth University where she received her Bachelor of Science in electrical engineering. During the summer preceding her sophomore year, she participated in an LSAMP-sponsored undergraduate research experience at the University of Virginia which motivated her to pursue and attain her master's degree at U.Va. During her time at VCU and U.Va., she has been involved in the National Society of Black Engineers in which she currently holds the position of National Public Relations Chair. Her research interests involve exploring the differences amongst first year engineering programs and how they affect the retention of engineering students. In the future, Racheida wants to secure a tenure-track faculty position in electrical and computer engineering.



## Where Are They Now?

**2015 VA-NC Alliance scholars have been accepted at graduate schools across the country and abroad, including:**



Alabama A&M University  
Albany College of Pharmacy and Health Sciences  
Chicago State University College of Pharmacy  
East Carolina University  
George Washington University  
Hampton University  
Maastricht University (Netherlands)  
Mississippi College  
Morehouse School of Medicine  
North Carolina A&T State University  
North Carolina State University  
Saint Augustine's University  
South University  
Tulane University  
University of Arkansas  
University of California Santa Cruz  
University of Massachusetts, Worcester  
University of North Carolina-Chapel Hill  
University of Oklahoma  
Virginia Commonwealth University  
Xavier University School of Medicine (Aruba)

**The Alliance's recent cohorts are beginning to enter the public and private workforce, at employers such as:**

U.S. Army Space and Missile Defense Command  
Abbott Laboratories  
Intel Corporation  
Exxon Mobil  
National Institute of Environmental Health Sciences  
Inova  
ChemTreat  
Booz Allen Hamilton  
National Institutes of Health  
Hewlett Packard  
Accenture  
Ingersoll Rand  
Solstas Lab Partners  
U.S. Air Force



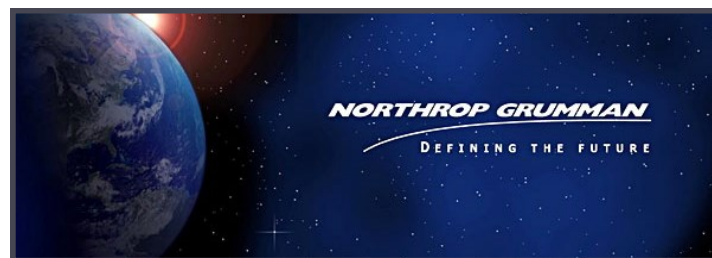
## NSTA and Northrop Grumman Foundation Unveil the Northrop Grumman Foundation Teachers Academy for Middle School Science Educators

October 27, 2015

The National Science Teachers Association and the Northrop Grumman Foundation have joined together to promote student achievement in science, technology, engineering, and math through a comprehensive education initiative: the Northrop Grumman Foundation Teachers Academy. Launched today, the Northrop Grumman Foundation Teachers Academy is a program for middle school science, engineering, and technology teachers designed to help enhance teacher confidence and classroom excellence in science, engineering and technology, while increasing teacher understanding about the skills needed for a scientifically literate workforce.

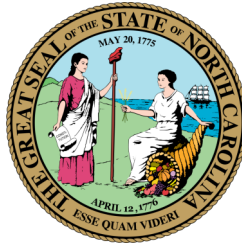
During their fellowships, recipients will:

- Participate in a five-day workshop at a Northrop Grumman facility during the summer of 2016, where they will discuss teaching strategies for integrating effective and authentic engineering design practices in their classroom;
- Attend the NSTA National Conference on Science Education in Nashville, March 31-April 3, where they will engage in the latest instructional practices related to the Next Generation Science Standards (NGSS); and
- Participate in a two-week summer externship at a Northrop Grumman facility, where they will be paired with an engineer/technologist to observe daily activities and learn the foundational and industry-specific skills required for success in the field.



*"We are very excited about the Academy and its potential impact to expand and enhance the pipeline of diverse, talented STEM students," said Sandra Evers-Manly, Northrop Grumman Vice President of Global Corporate Responsibility and President of the Northrop Grumman Foundation. "Our educators are fundamental to creating and sustaining our children's interest in STEM and we hope the Academy will support that effort."*

Source: [www.businesswire.com](http://www.businesswire.com)



## North Carolina Board of Education recognizes STEM Schools of Distinction

November 8, 2015

The North Carolina State Board of Education has recognized seven public schools as STEM Schools of Distinction for exemplary leadership and instruction in Science, Technology, Engineering and Mathematics (STEM) education.

Schools were either recognized as meeting the Prepared Level of Achievement or the Model Level of Achievement.

In order to be chosen, these schools must exemplify outstanding leadership and learning, which empower keen creative thinking, reasoning, and teamwork. Schools recognized under the Model Level of Achievement go even further by systemically interweaving science, technology, engineering, and mathematics into complementary arts, career and technical education, language arts, and world history courses.

"In today's world, quality education means solving problems, thinking creatively and adapting to changing environments. In my mind, STEM stands for Strategies That Engage Minds," said Dr. Sam Houston, President and CEO of the N.C. Science, Mathematics & Technology (SMT) Education Center, which worked with N.C. Department of Public Instruction and the William and Ida Friday Institute for Education Innovation to create the Schools of Distinction Program.

"These STEM Schools of Distinction are the best at engaging young minds every day, and we are happy the State Board of Education is helping other schools throughout the state work with them and learn from their success."

"Focusing on STEM is how schools are preparing students for careers in the fields that help sustain today's economy," said North Carolina Superintendent of Public Instruction June Atkinson. "I commend these schools for their commitment to ensuring that our graduates finish school with a solid foundation on which they can strengthen and expand the many unique skills demanded in STEM professions."

Overall, twenty applications were submitted for possible recognition. To receive this honor, schools underwent a rigorous application process that required detailed responses covering forty key elements: examples of strategic class documents and video, a self-assessment, identification of the school's best practice of educational excellence, and a site visit from reviewers.

Source: [www.ncstemcenter.org](http://www.ncstemcenter.org)

## STEM Degrees and Community Colleges

***"If we want America to lead in the 21st century, nothing is more important than giving everyone the best education possible — from the day they start preschool to the day they start their career." —President Barack Obama***

In an increasingly competitive world economy, America's economic strength depends upon the education and skills of its workers. In the coming years, jobs requiring at least an associate's degree are projected to grow twice as fast as those requiring no college experience. To meet this need, President Obama set two national goals: by 2020, America will once again have the highest proportion of college graduates in the world, and community colleges will produce an additional five million graduates.

Last July, President Obama proposed the American Graduation Initiative to invest in community colleges and help American workers acquire the skills and credentials they need to succeed. The Health Care and Education Reconciliation Act includes two billion dollars over four years for community college and career training. These resources will help community colleges and other institutions develop, improve, and provide education and training, suitable for workers who are eligible for trade adjustment assistance. The initiative will be housed at the Department of Labor and implemented in close cooperation with the Department of Education. With these resources, community colleges across the country will:

- create business partnerships
- create education partnerships
- teach basic skills
- meet students' individual needs
- develop online courses



***"We are halfway to my goal of training 100,000 new STEM teachers by the end of the decade. We're on track to connect 99 percent of our students to high-speed Internet before the end of the decade. And over the past six years, our "Educate to Innovate" campaign has raised \$1 billion to support STEM programs nationwide, including 80 other Astronomy Nights happening right now, all across the country."***

**—President Obama, October 2015**

Source: [www.whitehouse.gov](http://www.whitehouse.gov):  
Building American Skills Through  
Community Colleges, October 8, 2015  
Remarks by the President at Astronomy  
Night, October 20, 2015



## Advancing Equity for Women and Girls of Color



*Participants at the White House Council on Women and Girls forum on “Advancing Equity for Women and Girls of Color” on November 13, 2015.*

The White House Council on Women and Girls released the progress report, “Advancing Equity for Women and Girls of Color,” which highlights commitments to close opportunity gaps faced by women and girls, specifically women and girls of color. Inclusive STEM education was among its areas of commitment.

Significant opportunity gaps exist in STEM education and careers for women, especially for women and girls of color. Although more women graduate from college and participate in graduate programs than men, women’s participation in science and engineering significantly differs by field of study, at both the undergraduate and graduate level. In 2012, for example, underrepresented minority women received only 11.2% of bachelor’s degrees in science and engineering, 8.2% of master’s degrees in science and engineering, and 4.1% of doctoral degrees in science and engineering. The Administration recognizes implicit biases and stereotypes may play a prominent, if still often unrecognized, role in STEM disparities, and has committed to the following actions:

- Enhancing pathways that engage underrepresented women in quality STEM programs and education.
- Encouraging STEM participation by highlighting the accomplishments of girls and women from diverse communities, and by encouraging academic institutions and programs to recruit and retain diverse talent in STEM fields.

STEM jobs are expected to outpace non-STEM jobs over the next ten years. Engaging underrepresented girls and young women in STEM opens additional economic opportunity. Career and technical training opens access to high skilled, high demand careers, which provide a route to the middle-class.

Research indicates that diverse teams and organizations outperform those that are less diverse on a number of financial metrics. Diversity makes good economic sense for America.

To help address the lack of visible role models in STEM, the White House launched a website ([www.whitehouse.gov/women-in-stem](http://www.whitehouse.gov/women-in-stem)) that highlights some of the untold history of women in science and technology. The website features the voices of prominent women who tell the stories of some of their heroes in STEM who have changed history.

Sources: [www.whitehouse.gov](http://www.whitehouse.gov):  
Fact Sheet: Advancing Equity for  
Women and Girls of Color,  
November 13, 2015;  
[www.colorlines.com](http://www.colorlines.com)





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**ALLIANCE**  
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**Elizabeth City State University**  
**George Mason University**  
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