# LSANP

A Program Modeling GROUP IMPACT



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"Any opinion, 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."

#### INTRODUCTION

The National Science Foundation's (NSF) Louis Stokes Alliance for Minority Participation (LSAMP) program which began in 1991 is aimed at increasing the quality and quantity of students successfully completing science, technology, engineering and mathematics (STEM) baccalaureate degree programs and increasing the number of students interested in, academically qualified for and matriculated into programs of graduate study. LSAMP supports sustained and comprehensive approaches that facilitate achievement of the long-term goal of increasing the number of students who earn doctorates in STEM fields, particularly those from populations underrepresented in STEM fields. The program goals are accomplished through the formation of alliances of academic institutions, which have exemplary records over several years of enrolling, and retaining significant numbers of undergraduate students underrepresented in STEM disciplines.

The LSAMP program takes a comprehensive approach to student development and retention. Particular emphasis is placed on transforming undergraduate STEM education through innovative, evidencebased recruitment and retention strategies, and relevant educational experiences in support of racial and ethnic groups historically underrepresented in STEM disciplines.

While the LSAMP program supports activities that focus specifically on undergraduate STEM education, projects must also give consideration to the critical transition points in STEM education (i.e., high school-to-college; 2-year to 4-year college; undergraduate-to-workplace; undergraduate-to-graduate study; and graduate study-to-faculty career). Success of the LSAMP program has been measured by its ability to cause a significant increase in the number of students, particularly those drawn from populations that are currently underserved in science and engineering fields, who graduate with baccalaureate degrees in STEM fields and enter into programs of graduate study.

LSAMP has more than realized its goals in the past and continues on today with an increasing number of underrepresented students earning baccalaureate degrees, and entering graduate school in STEM programs. This publication is a result of information provided by the Principal Investigators (PIs) of the National Science Foundation (NSF) Louis Stokes Alliances for Minority Participation (LSAMP) program and seeks to provide a comprehensive look at the current fifty alliance programs that contribute to LSAMP's success.

Also featured are three articles: The Value of Undergraduate Research Experiences, Excellence in STEM Mentoring within the LSAMP Community and Awards for Outstanding Accomplishments.

# The Value of Undergraduate Research Experiences



Louis Stokes Alliances for Minority Participation Program

LSAMP Alum, Dr. Cindy M. Figueroa Miranda, Polytechnic University of Puerto Rico was a recent panel presenter at the United Nation's 2018 International Day of women and Girls in Science. New York City.

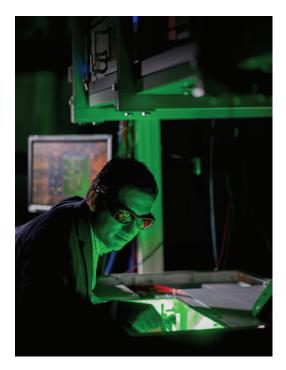




"A Former LSAMP Scholar is the First Human to Note Gravitational Waves: Mr. William Parker, BS, SUBR, MS in Mathematics and Physics, SUBR" August 2017

Mr. William Parker has continued his employment as a LIGO Detector operator since detecting the Gravitational Wave at the Laser Interferometer Gravitational-Wave Observatory (LIGO) in Livingston, Louisiana. Since detecting the gravitational wave, William has been interviewed by Louisiana and national news outlets and articles produced in national and international news media have featured him. The Southern University System Board of Supervisors at Southern University and A&M College (SUBR) has also recognized Mr. Parker for his exceptional achievement.

Dr. Franklin Dollar Former LSAMP Student- Now PhD Assistant Professor Department of Physics and Astronomy - University of California, Irvine



PHOTOGRAPHS IN THIS ARTICLE COURTESY OF SELECTED LSAMP ALLIANCES (LOUISIANA/CALIFORNIA UNIVERSITY SYSTEM/ILLINOIS/PUERTO RICO, BROOKHAVEN NATIONAL LABS, AND ORGANIZATION OF TROPICAL STUDIES).

# The Value of Undergraduate Research Experiences

There is an on-going nationwide effort to increase the number of students who study science, technology, engineering and mathematics (STEM) and related fields to meet the growing workforce needs within the United States (U.S.). In addition, there is a desire to diversify employees working in STEM to be more representative of the nation's population.<sup>1</sup> The US Census Bureau demographics project that minorities will be ~56% of the US population by 2060.<sup>11</sup> Recent employment statistics from the US Department of Labor (DOL) show roughly 90% of the fastest growing occupations in the US require training in science, technology, engineering, and mathematics (STEM). <sup>111</sup> The growth of these occupations will range from 29% to 43% by the year 2024. If the country desires to remain preeminent in science and technology it is essential that the number of STEM degree recipients increase in the US and align with the demographic shifts in the US population. While advancements have been made, important challenges remain for the U.S. associated with a mobile workforce, dynamic labor markets, global competition, and evolving technologic innovations.

According to recent NSB and NSF reports,<sup>iv</sup> in the U.S., underrepresented racial and ethnic minorities (URM) have made strides between the years of 1993 and 2013 by increasing their representation in science and engineering (S&E) occupations from 16% to 29%. However, Hispanics, Blacks and American Indians/Alaska Natives are 27% of the population but they make up only 11% of workers in S&E fields and hold only 14% of the degrees. This is compared to Asians who hold 17% of S&E occupations but are only 5% of the population and 70% of all workers are non-Hispanic Whites.

Providing more quality experiences for student participation in research can potentially strengthen our scientific workforce.<sup>v</sup> Various reports from the National Academy of Sciences indicate that students benefit significantly from undergraduate research experiences to include:

- Increased connection to and retention within the field,
- Stronger propensity for enrollment in graduate education,
- Increased employment in major-related careers,
- Greater gains in academic performance and the acquisition of professional skills (cognitive adaptation, communication, and interdisciplinary training),
- · Greater participation in other intellectual opportunities on campus, and
- Increased opportunity to overcome traditional boundaries for women, minorities, and first-generation students.

In response to this need, the Louis Stokes Alliances for Minority Participation (LSAMP) program has funded numerous awards that enable institutions to engage URM STEM students in undergraduate research experiences. One of the keys to the program's success is the individual alliance compositions which include a set of institutions that are open to the aspirations of students without bias about who are most likely to succeed.<sup>vii</sup> Accordingly, LSAMP students who enter the program with marginal preparation often go on to succeed in STEM fields, which is highly unlikely for non-LSAMP participants at the more prestigious research-intensive universities.<sup>viii</sup> This success is enabled by LSAMP mentors who have a history of teaching and mentoring students through rigorous research, which renders them more competitive upon graduation.

Since its inception in 1991, the LSAMP program has funded a bevy of awards in its portfolio that include undergraduate research experiences in multiple STEM disciplines and institutional and non-institutional settings. These experiences, both domestic and international, have afforded students the opportunity to learn techniques and characterization methods needed to engage in cutting-edge research. Furthermore, it has assisted students in the enhancement of their content knowledge by engaging them in the challenges of research, but more importantly, by making them aware of career paths of research scientists and engineers thus cultivating their S&E identity. <sup>x</sup> Notably, the **three** (3) following articles are snapshots of LSAMP strategies for enhancing undergraduate STEM educational experiences targeting URM students.

<sup>i</sup> <u>Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future (</u>2007). Washington, D.C. The National Academies Press.

ii https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf

iii https://www.bls.gov/news.release/ecopro.t05.htm

<sup>iv</sup> a) <u>Women, Minorities, and Persons with Disabilities in Science and Engineering (</u>2017). National Science Foundation. Washington, D.C.

b) National Science Board. (2018) Science and Engineering Indicators, Digest.

<sup>v</sup> a) Graham, M. J., Frederick, J., Byars-Winston, A., Hunter, A.-B. and Handelsman, J. (2013). Increasing Persistence of College Students in STEM. Science, Vol. 341, pp. 1455-56 and b) <u>Engage to Excel: Producing One Million Additional College Graduates with Degrees in</u> <u>Science, Technology, Engineering, and Mathematics (2012)</u>. Washington, D.C. President's Council of Advisors of Science and Technology.

vi a) Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads

(2010). Washington, D.C. The National Academies Press and b) <u>Partnerships for Emerging Research Institutions: Report of a Workshop</u> (2009). Washington, D.C. The National Academies Press.

<sup>vii</sup> a) Hrabowski III, F. A. (2011). <u>Boosting Minorities in Science</u>. Science, Vol. 331, p. 125 and b) Gándara, P., and Maxwell-Jolly, J. <u>Priming the Pump: Strategies for Increasing the Achievement of Underrepresented Minority Undergraduates (1999)</u>. The College Board. <sup>viii</sup> McLaughlin-Volpe, T., Mendoza-Denton, R. and Shelton, J. N. (2005). The Experience of Minority Students at

<u>Predominantly White Universities: The Role of Intergroup Friendships</u>. In G. Downey, J.S. Eccles, C.M. Chatman (Eds.), Navigating the Future: Social Identity, Coping, and Life Tasks. NY: Russell Sage.

<sup>ix</sup> a) Clewell, B. and Consentino, C. (2006). <u>Building the Nation's Scientific Capacity</u>: <u>Evidence from the LSAMP Program</u>. The Urban Institute and b) Clewell, B. C.; de Cohen, C. C.; Tsui, L.; and Deterding, N. (2006).

Revitalizing the Nation's Talent Pool in STEM. The Urban Institute.

<sup>x</sup> a) <u>Barriers and Opportunities for 2-Year and 4-Year STEM Degrees: Systemic Change to Support Students' Diverse Pathways (2016)</u>. Washington, D.C. The National Academies Press and b) Eagan, M. K., Hurtado, S., Chang, M. J., Garcia, G. A., Herrera, F. A., and Garibay, J.C. (2013). <u>Making a Difference in Science Education: The Impact of Undergraduate Research Programs</u>. American Educational Research Journal, Vol. 50(4), pp. 683–713.

Updates continued



Former LSAMP student Kimberly Romero Rosales PhD (Research Scientist). She is currently a Research Specialist for the Minority Science Programs in the laboratory of Dr. Luis Mota-Bravo, UCI School of Biological Sciences.



Former LSAMP student Tanganyika (Tangy) Wilder PhD (Assistant Professor and Research Scientist at Florida A&M State University).

Her research investigates cardiac myofilament modifications as they alter the heart function in response to altered metabolic disturbances.

# EstablishingaDiverseWorkforceat theNational Laboratories

by Kelsey Harper

National Science Foundation Louis Stokes Alliance for Minority Participation program funds student and professor research at Brookhaven National Laboratory



The 2017 visiting students and professors funded through the NSF LSAMP program, with Brookhaven program manager Noel Blackburn pictured on the far left.

In the summer of 2017, the U.S. Department of Energy's Brookhaven National Laboratory welcomed nineteen undergraduate interns and seven professors through the National Science Foundation's Louis Stokes Alliance for Minority Participation program (NSF LSAMP). These guest researchers come from all over the nation and have already leapt into research on a wide variety of topics, from gamma ray detection to wildlife conservation.

The LSAMP program works to increase the number of minority students, specifically those from populations underrepresented in science and engineering, earning high quality baccalaureate and advanced degrees in science, technology, engineering, and math (STEM). The program collaborates with universities and institutions to provide opportunities for these students to move forward in STEM, like conducting research at a national lab.

"Undergraduate research is a hallmark piece of our efforts to allow targeted minority groups to be the best that they

can be," says the director of the NSF LSAMP program, Dr. A. James Hicks. By hosting these students, Brookhaven Lab provides them with unparalleled research experience. "Nowhere are the students exposed to scientists like the scientists here, nor the equipment, the facilities, or the experiences. What they get here they won't get at their home institutions," says Deidra Hodges, an electrical engineering professor from the University of Texas at El Paso who receives LSAMP funding. She brought four undergraduate students with her to Brookhaven Lab this summer, all of who are formally conducting research for the first time.

### "They'll come away with publications and with research experience from a national lab, as an undergrad! That's life-changing."

Deidra Hodges

The visiting students and faculty have travelled here from Alabama A&M, Cheyney University, Howard University, Lincoln University, Southern University at New Orleans, Texas Southern University, University of Texas at El Paso, and University of Puerto Rico Rio Piedras. They are already deep in their summer research, with highly diverse focuses in nuclear physics, scientific computing, climate science, structural biology, mechanical and electrical engineering, and materials chemistry. With Brookhaven Lab's resources, they have opportunities to make incredible discoveries and leave the summer with plenty to show for it.

"They'll come away with publications and with research experience from a national lab, as an undergrad!" says Hodges, "That's not the norm. That's life-changing." Many are conducting research at facilities like the National Synchrotron Light Source II, the Center for Functional Nanomaterials, and the Relativistic Heavy Ion Collider all world-class research facilities that host some of the best researchers from around the world.

But the experiences at Brookhaven Lab that LSAMP provides aren't just about the research outcomes. They're about educating and inspiring "some of the best and brightest students" to be the next generation of leaders in STEM, says Hicks. If America hopes to maintain its strength and heft in science, it needs a field comprised of diverse minds. "We are making a major contribution to America's science and engineering enterprise," says Hicks, "It's a great opportunity to ensure that America's talent pool will be ready for all challenges as we move forward."

The program is doing its job well. A number of interns, including those who hadn't done research before, are now looking to move deeper into their STEM education. One of Hodges' electrical engineering students, Jenny Lopez, says, "I didn't have a goal in mind before coming to Brookhaven Lab, but now I really want go to grad school and do research." Even those who aren't sure what career path lies ahead get the chance to explore the enormous spread of cutting-edge research at Brookhaven Lab. "This is a unique experience that the program is giving me as a minor-ity," says Andrea Ramirez-Puentes, an undergraduate from the University of Puerto Rico, "It is going to help me define my interests and know if I want to pursue a career in science."

Noel Blackburn, the program's manager at Brookhaven Lab, insists that the benefits of this program go both ways. "We know the value of this program to the students, but the Brookhaven Lab scientists and engineers enjoy mentoring these talented scholars too, as they bring enthusiasm and a questioning mind. This is vital to good research." Overall, the NSF LSAMP program sets up these students, the Lab, and our nation for a strong future in science.

#### The LSAMP-funded professors and undergraduates hosted by BNL in the summer of 2017 are:

Alabama A&M University: Dr. Mebougna Drabo, Myles Moore, Derrius Plair Cheyney University: Dr. Abdelaziz Bior, Abioye Mohammed, Brendyn Van Demark, Miesha Wilson Howard University: Dr. Marcus Alfred, Gaylon Robinson, Abigail Paysinger Lincoln University: Rumeel Jessamy, Ronald Lashley Southern UniversityatNew Orleans: Dr. Murty Kambhampati, Trevor McIntosh, Precious Williams, TreWise TexasSouthern University: Dr. Mark Harvey, Kalifa Kelly, Jessie Zapata University of Puerto Rico, Rio Pierdras Campus: Dr. Olga Mayol-Bracero, Kevin Santana-Rodruiquez, Andrea Ramirez Puentes University of Texas at El Paso: Dr. Deidra Hodges, Jenny Lopez, Jazmin Munoz, Robert Sifuentes



# Strengthening a Global LSAMP Research Workforce in France

The NSF LSAMP/Chemistry International REU. by Randy Duran, David Spivak and Alison Satake



June 2017, LSAMP attendees at US/France workshop in Bordeaux, France with American and French organizers, R. Duran (left) and O. Sandre (right).

Over the spring and summer of 2017, an outstanding group of LSAMP undergraduates, graduate students, faculty mentors and directors participated in research projects in 10 different laboratories in Toulouse, Bordeaux and Grenoble, France. Each participant was nominated by a U.S. LSAMP faculty mentor to work in a specific

multiple spin-off companies as well as Solvay and the University of Bordeaux's "laboratory of the future" facility. multiple spin-off companies as well as Solvay and the University of Bordeaux's "laboratory of the future" facility. world-class French research group that most ideally fit the participant's research skills and aspirations. Students worked a minimum of 12 weeks up to six months on their projects and were challenged to accomplish enough to merit eventual co-authorship on a peer-reviewed publication.

"Representing SUNY LSAMP, Mississippi LSAMP, Louisiana LSAMP, CSU LSAMP, Texas LSAMP, KY/WV LSAMP, Peach State LSAMP, Illinois LSAMP, this group established a number of first-ever accolades for our program," said Randy Duran, LSU Gordon A. Cain Endowed Chair for STEM Literacy and PI of the program.

### " this group established a number of first-ever accolades for our program,"

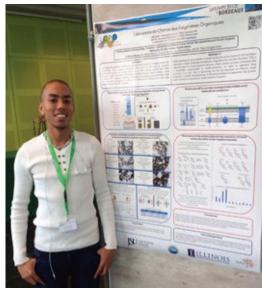
### - Randy Duran

- The 2017 cohort of LSAMP students became the "first-ever" to make an open invitation to the entire U.S. LSAMP community, inspiring an overall turn out of some 60 people at this summer's July 6-8 in-country workshop in Bordeaux, France. The LSAMP students then hosted a "fireside chat" satellite event sharing international best practices to younger students who came from the U.S.
- The 2017 program had a "first-ever" keynote presentation from an editor of Science Magazine! Sean Sanders presented on international research and career development at the spring pre-departure meeting hosted at the French Embassy in Washington, D.C.
- Anthony Keyes of the 2017 cohort became the "first-ever" international REU student to obtain a European Master's Equivalence He composed, submitted and orally defended a thesis after more than six months of research in the format of the European "M2" master's, which is assessed by the French Doctoral program com-

mittee responsible for determining qualifications of all M2 students. Keyes is also a winner of a 2017 NSF GRFP award.

Denise Yates of the University of Illinois at Chicago, and presenter at the July 2017 in-country meeting in Bordeaux said: "The workshop offered UIC Bridge to the Doctorate Fellow and NSF GRFP awardee Deisy Arrington the chance to showcase her Chemical Engineering research (Vikas Berry Lab) in 3D imaging, share her graduate school experience with undergrads in attendance, meet with potential collaborative PI Phillipe Poulin and to be exposed for the first time to the wonderful French culture."

#### Anthony Keyes



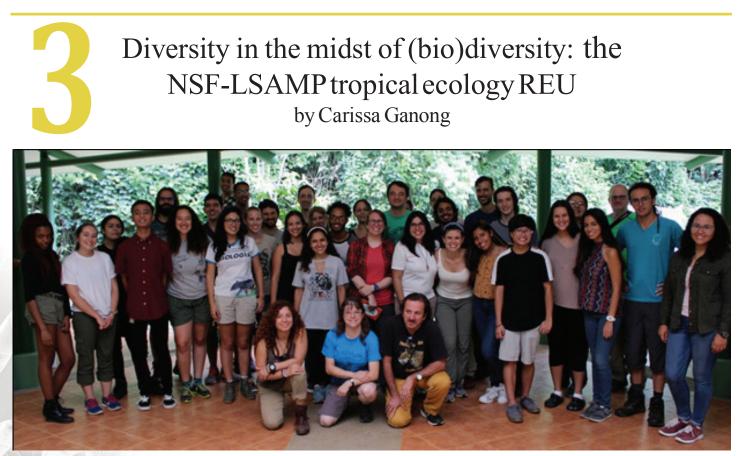
In addition to the distinctive cultural benefit of the three French locations, each research institution has an impressive concentration of science as well as a translational chemistry character: Grenoble has one of the best synchrotron/neutron/microfabrication facilities in the world; Toulouse is an aerospace industry hub; Bordeaux hosts a flexible electronics fabrication hub, multiple spin-off companies as wella as Solvay and the University of Bordeaux's "laboratory of the future" facility.

Anthony Keyes, a chemistry major from Jackson State University and MS LSAMP defending his research, titled "Optimization of Polyol Synthesis for Production of Magnetic Iron Oxide Nanoparticles Grafted with a Thermosensitive Drug Linker" with the Bordeaux Master's students. He will submit two co-authored publications on this work, and is a 2017 NSF GRFP awardee.

#### The 2017 iREU students, co-funded by LSAMP and the chemistry division at NSF are:

CSU, Fresno: Emeline Pano; U.S. Mentor Joe Ross; French Mentor Cristel Carles Jackson State University: Anthony Keyes; US Mentor Paresh Ray; French Mentor Olivier Sandre SUNY Binghamton: Aurelie Niyongabo and U.S. Mentor Bill Bernier SUNY Binghamton: Maggie Fox; U.S. Mentor Wayne Jones; French Mentor Said Sadki SUNY Stonybrook: Jessica Flores; U.S. Mentor Barbara Rosati; French Mentor Mireille Blanchard Desce University of Georgia: Nettie Brown; U.S. Mentor Hitesh Handa; French Mentor Veronique Coma University of Kentucky: Sarah Hodges; U.S. Mentor Eduardo Santillan-Jimenez; French Mentor Gerard Mortha University of Texas, El Paso: Jose Rosales; U.S. Mentor Mahesh Narayan; French Mentor Emmanuel Gras University of Texas, El Paso: Rosa Perez; U.S. Mentor Manuel Miranda; French Mentor Jerome Baufreton Xavier University, LA: Anjulique Jones; U.S. Mentor Anderson Sunda-Meya; French Mentor Sebastien Gauthier

This opportunity was provided with support from the National Science Foundation (Award # 1560390).



The summer 2017 La Selva NSF-LSAMP and NSF site REU awardees and mentors.

For the past four summers, outstanding URM undergraduate students and experienced tropical ecologist research mentors have traveled to Costa Rica to spend nine weeks conducting field research in the rainforest of La Selva Biological Station, one of three Costa Rican field stations run by the Organization for Tropical Studies (OTS). Each mentor guides one or two students in designing, conducting, and analyzing data from an independent research project. At the end of the summer, students present their results in a formal oral symposium and submit manuscript-style written reports (which many students and mentors later revise and publish).



### Catherine White, a biology major at Oklahoma State University, lays a transect in a forest plot.

This year's projects spanned a range of topics from quantification of amphibians' optimal temperatures to how forest struc-

ture changes with flooding to impacts of land use on fish communities. Students also learn about (and experience) different cultures and develop professional contacts as well as long-lasting friendships. The program is intensive, but participants find the experience to be amazing, unforget-table, and often life-changing. Shauntae St. Clair (REU 2017), a rising sophomore at Aaniiih Nakoda College, says, "This really was a once-in-a-lifetime chance, and knowing there are other minorities here made me sort of feel at home."

The La Selva LSAMP REU program, run concurrently with an NSF site REU program, has graduated 36 students from across the United States

and territories since summer 2014. The La Selva program is unique in its combination of URM-undergraduatedriven science, international culture, and location in the incredibly biodiverse rainforest of one of the world's best-known tropical field stations. Established in 1968, La Selva includes 1536 ha of rainforest, 64 km of trails, upto-date laboratory facilities, and the opportunity to meet researchers from around the world.

While conference presentations and publications are important to many students' future careers, the greatest benefit of the program is the experience of conducting their own research: students enter the program in June excited and uncertain and depart in August as capable field researchers who have developed not only scientific skills, but also confidence, maturity, and (in many cases) a desire to continue doing scientific research. As Leticia Classen Rodríguez (REU 2015, now the program TA and a beginning Masters student) says of the program, "I wish all minority students could have this opportunity to grow both as a researcher and as a person."

#### 2017 LSAMP REU students

Adrian Manansala (University of Guam), mentored by Dr. Justin Nowakowski (University of California, Davis)

**Catherine White** (Oklahoma State University), mentored by Dr. Amanda Wendt (Organization for Tropical Studies)

**Gustavo Acevedo** (University of Puerto Rico, Río Piedras), mentored by Dr. Darko Cotoras (California Academy of Sciences and University of California, Santa Cruz)



Shauntae St. Clair, an environment science major at Aaniiih Nakoda College, surveys stream fish communities. Juana María Rivera-Ordóñez (University of Washington), mentored by Dr. Justin Nowakowski (University of California, Davis) Natalia Figueredo (Barnard College), mentored by Dr. Erin Kuprewicz (University of Connecticut) Owen Duffy (University of Massachusetts, Amherst), mentored by Dr. Reuben Goforth Shauntae St. Clair (Aaniiih Nakoda College), mentored by Dr. Reuben Goforth (Purdue University) Yorelyz Rodríguez Reyes (University of Puerto Rico, Río Piedras), mentored by Ángel Fernández Bou (University of California, Merced)

> What do you call a Program that helps generate more Diverse Human Capital in STEM Fields than any other in the Country? A NATIONAL ASSET?

NSF LSAMP: Aiming High and Making a Difference!

### **BROOKHAVEN NATIONAL LABORATORY**

This landscape is set with two groups: NSF sponsored students, college faculty and the Department of Energy (DOE) – Brookhaven National Laboratory scientists and staff.



GRAPHIS BY: JERMAINE SELBY

#### **EXCELLENCE IN STEM MENTORING WITHIN THE LSAMP COMMUNITY**

Mentoring is a proven strategy to retain students in science, technology, engineering and mathematics (STEM) disciplines and careers. Retention of historically underrepresented minority students at all pathways (kindergarten through STEM doctoral degree completion and into the workforce) positively impacts the diversity of the Nation's scientific workforce and its competitiveness.

Within the Louis Stokes Alliances for Minority Participation (LSAMP) community several faculty and administrators have received the nation's highest honor in STEM mentoring. The honor bestowed to these recipients is the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring – otherwise known as the PAESMEM award.

The names and affiliations of exceptional STEM mentors who received the PAESMEM award at LSAMP institutions during the period 1996-2013 are provided below:

Awardee	Institution	Alliance
David Allison Daniel Akins Winston Anderson Earlene Armstrong Juan Arratia Diola Bagayoko Frank Bayliss Solomon Bililign Laura Bottomley Goldie Byrd D. Allan Butterfield R. David Bynum Anthony Carpi George Castro Carlos Castillo-Chavez Peggy Cebe Meera Chandrasekhar Chellu Chetty Suzzette Chopin Roy Clarke Luis Colon James Cotter Isaac Crumbly Lesia Crumpton-Young	University of Alabama-Birmingham City University of New York Howard University University of Maryland-College Park Universidad Metropolitana Southern University-Baton Rouge San Francisco State University North Carolina A&T State University North Carolina State University North Carolina A&T State University University of Kentucky SUNY-Stony Brook John Jay University San Jose State University Arizona State University Tufts University University of Missouri-Columbia Savannah State University Texas A&M University University of Michigan SUNY-Buffalo University of Minnesota Fort Valley State University Tennessee State University	Alabama New York City Washington-Baltimore-Hampton Roads University of Maryland System Puerto Rico Louisiana California State University System North Carolina North Carolina North Carolina North Carolina Kentucky-West Virginia SUNY City University of New York California State University System WAESO Northeast Missouri Peach State Texas A&M University System Michigan SUNY North Star Peach State Tennessee
Lesia Crumpton-Young Louis Dale	Tennessee State University University of Alabama-Birmingham	Tennessee Alabama
Patricia DeLeon Harold Deutschman Sarwan Dhir Clinton Dixon Anne Donnelly	University of Delaware New Jersey Institute of Technology Fort Valley State University Fort Valley State University University of Florida	Greater Philadelphia Greater Philadelphia Peach State Peach State Florida-Georgia

**Frances Draughon** Nancy Elwess **Billy Joe Evans** David Ferguson Lorraine Fleming **Benjamin Flores** Joseph Gardella Juan Gilbert Rosemary Gillespie Fiona Goodchild Aubrey Gorbman **Christine Grant** Steven Greenbaum **Charlena Grimes** Vallie Guthrie Carlos Gutierrez Jo Handelsman Linda Hayden **Douglass Henderson** Janet Herman Freeman Hrabowski Sheila Humphreys **Ellis Ingram** Cora Ingrum **Bruce Jackson** Ricardo Jacquez Shaik Jeelani **Raymond Johnson** Ashanti Johnson Johnnye Jones Jong Lee Susan Kauzlarich **Glenn Kuehn Raymond Landis** Marigold Linton Philip Kutzko **Richard Ladner** Ram Lamba Susan Lasser Jerzy Leszczynski Calvin Mackie **Therese Markow** Martha Mecartney John Matsui Gary May Saundra McGuire **Robert Megginson** 

University of Tennessee SUNY-Plattsburg University of Michigan **SUNY-Stony Brook** Howard University University of Texas-El Paso SUNY-Buffalo University of Florida University of California-Berkeley University of California-Santa Barbara University of Washington North Carolina State University **CUNY-Hunter College** Washington State University North Carolina A&T State University California State University University of Wisconsin-Madison Elizabeth City State University University of Wisconsin-Madison University of Virginia University of Maryland-Baltimore Cty University of California-Berkeley University of Missouri-Columbia University of Pennsylvania University of Massachusetts-Lowell New Mexico State University **Tuskegee University** University of Maryland-College Park University of Texas-Arlington/IBP Hampton University SUNY-Old Westbury University of California-Davis New Mexico State University California State University-Los Angeles University of Kansas Murty S. Kambhampati Southern University at New Orleans University of Iowa University of Washington Carlos Albizu University **Clemson University** Jackson State University **Tulane University** Arizona State University University of California-Irvine University of California-Berkeley Georgia Institute of Technology Louisiana State University Michigan State University

Tennessee SUNY Michigan SUNY Washington-Baltimore-Hampton Roads University of Texas System SUNY Florida-Georgia University of California System University of California System Pacific Northwest North Carolina New York City **Pacific Northwest** North Carolina California State University System Wisconsin Virginia-North Carolina Wisconsin Virginia-North Carolina University of Maryland System University of California System Missouri **Greater Philadelphia Urban Massachusetts** New Mexico Greater Alabama Black Belt Region University of Maryland System University of Texas System/Maine Washington-Baltimore-Hampton Roads SUNY University of California System New Mexico California State University System Kansas Louisiana **IINSpire Pacific Northwest** Puerto Rico South Carolina Mississippi Louisiana WAESO University of California System University of California System Peach State Louisiana Michigan

Mary Anne Nelson Jesse Nicholson **Beth Olivares** Joe Omojola Steven Oppenheimer David Pagni Karen Panetta Su-Seng Pang Elizabeth Parry Sandra Petersen Lisa Pruitt Ashok Puri Armando Rodriguez Jeffrey Russell Kenneth Sajwan Herb Schroeder Abdulalim Shabazz Herbert Silber Joseph Skrivanek Mary Lou Soffa Julio Soto **Carlos Spaht Michael Summers Charles Thompson** Andrew Tsin Sheryl Tucker William Velez Luis Villarreal Sara Wadia-Fascetti Isiah Warner Steven Watkins Karan Watson Max Warshauer Melvin Webb M. Werner-Washburne University of New Mexico Sara Young

University of New Mexico Howard University Rochester Institute of Technology Southern University of New Orleans California State University-Northridge California State University-Fullerton **Tufts University** Louisiana State University North Carolina State University University of Massachusetts-Amherst University of California-Berkeley University of New Orleans Arizona State University University of Wisconsin-Madison Savannah State University University of Alaska-Anchorage Lincoln University San Jose State University SUNY University of Virginia San Jose State University Louisiana State University-Shreveport University of Maryland-Baltimore Cty University of Massachusetts-Lowell University of Texas-San Antonio University of Missouri-Columbia University of Arizona University of California-Irvine Northeastern University Louisiana State University Louisiana State University Texas A&M University **Texas State University Clark-Atlanta University** University of Montana California State University-Northridge

New Mexico Washington-Baltimore-Hampton Roads Upstate Louisiana California State University System California State University System Northeast Louisiana North Carolina Northeast University of California System Louisiana WAESO Wisconsin Peach State Alaska **Greater Philadelphia** California State University System SUNY System Virginia-North Carolina California State University System Louisiana University of Maryland System **Urban Massachusetts** University of Texas System Missouri WAESO University of California System Northeast Louisiana Louisiana Texas A&M University System Houston Georgia New Mexico All Nations California State University System

Source: www.paesmem.net

Maria Elena Zavala

Notes: Affiliations are for awardees in the Individual category only. Organizational awardees/representatives are not included above. Affiliations may have changed since time of award.



Jeromie Tucker (center), associate director of development at the OSU Foundation, accepts this year's inclusive workplace award from Marilyn Ihloff, Mosaic chair, and Michael S. Neal, Tulsa Regional Chamber president and CEO.

#### Oklahoma State University Receives Regional Award As Inclusive Workplace

Oklahoma State University has been named among the region's 2017 Top Inclusive Workplace Cultures based on a survey by Mosaic, the Tulsa Regional Chamber of Commerce's diversity business council.

OSU was ranked among the top tier of employers receiving the Five-Star Inclusive Workplace Award for its programs that strengthen diversity and inclusion in the workplace. "OSU is honored to again be recognized with this award as an inclusive workplace," said Jason Kirksey, vice president and chief diversity officer for the OSU Division of Institutional Diversity.

"While there is work to do, the university is committed to enrich and fortify its efforts to promote a culture of inclusion within the campus community."

Jeromie Tucker, associate director of development for the OSU Foundation, accepted this year's award from Mosaic officials during the council's annual Economic Inclusion Forum held recently at the BOK Center in Tulsa. OSU was among 24 five-star recipients this year, which also included 5 four-star winners, and 14 three-star recipients.

Twelve companies were designated as "rising stars," meaning they're demonstrating an increased commitment to diversity and inclusion but in need of additional work in certain

areas.

The primary focus of Mosaic is to create awareness about the competitive advantage of having a diverse and inclusive business climate in the region.



Oklahoma State University Division of Institutional Diversity



Alexander Gates, NJ LSAMP PI, and Rochelle Hendricks, the NJ Secretary of Higher Education

### GARDEN STATE LSAMP RECEIVES EQUITY TRAILBLAZER AWARD

**The Garden State LSAMP** received the Equity Trailblazer Award as part of the "65 by '25: Many Paths, One Future" program sponsored by the State of New Jersey. The program was launched in September of 2017 and is part of the Partnership for Action, led by Lieutenant Governor Kim Guadagno and the Council on Innovation and the State Employment and Training Commission. It is one of a few such efforts nationwide. Led by the New Jersey Department of Labor and Workforce Development and the Office of the Secretary of Higher Education, the program aims to increase the number of the working-age New Jersey residents who have attained a level of postsecondary education, whether a college degree, a certificate or an industry-recognized credential, from the current 50.1% to 65% by the year 2025. Part of the project is an Equity Imperative to especially increase the percentage of underrepresented minority residents with post-secondary education because that group currently lags behind

the state average. The Garden State LSAMP was one of four award recipients and was recognized for contributing to the success of underrepresented minority students in STEM disciplines. The Equity Trailblazer Award is given to programs and organizations that demonstrate innovative and exemplary efforts towards promoting and achieving equity and closing diversity gaps in opportunity and attainment in the 65 by '25 goal. The ceremony was held at the Educational Testing Center (ETS) facilities in Princeton, New Jersey on November 2017, and attended by a number of New Jersey college presidents, senior administrators from New Jersey government and representatives from industry among others. More information about the 65 by '25 project is available at <u>www.manypathsonefuture.org</u>.

# Louis Stokes Midwest Center of Excellence

The Louis Stokes Midwest Center of Excellence (LSMCE) was created in 2012 to communicate evidence-based program effectiveness garnered from the Louis Stokes Alliances for Minority Participation (LSAMP) consortium to a broader audience.

#### GOAL

The goal of LSMCE is to serve as a national hub of information for scholars to access data, models, and funding opportunities in broadening the participation of underrepresented minority (URM) students in Science, Technology, Engineering, and Mathematics (STEM). The Center is comprised of three lead institutions: Chicago State University, Indiana University-Purdue University Indianapolis and Department of Energy-Argonne National Laboratory. The leadership team also includes Guardians of Honor as developer of the LSAMP Broadening Participation digital library.

#### **OUR PARTNERS**

LSMCE has recruited twenty six institutional partners with the shared commitment to increase diversity in STEM. Each partner signed a Memo of Understanding (MOU) which outlined the overall goals of the partnership. The selected institutions have a the selected institutions have a high percentage of enrolled minority students with a lower graduation rate relative

to the non-minority population.













### 26 Non-LSAMP Partner Schools



Partner Institution	Location	
Benedictine University	Llisle, Illinois	
Bowling Green State University	Bowling Green, Ohio	
Bradley University	Peoria, Illinois	
Denison University	Granville, Ohio	
Dominican University	River Forest, Illinois	
Eastern Illinois University	Charleston, Illinois	
Eastern Michigan University	Ypsilanti, Michigan	
Harris-Stowe State University	St. Louis, Missouri	
Indiana State University	Terre Haute, Indiana	
Lincoln University	Jefferson City, Missouri	
Loyola University Chicago	Chicago, Illinois	
Marian University	Indianapolis, Indiana	
Marquette University	Milwaukee, Wisconsin	
Marygrove College	Detroit, Michigan	
Northern Illinois University	DeKalb, Illinois	
Roosevelt University	Chicago, Illinois	
Rose-Hulman Institute of Technology	Terre Haute, Indiana	
Triton College	River Grove, Illinois	
University of Akron	Akron, Ohio	
University of Illinois - Springfield	Springfield, Illinois	
University of Indianapolis	Indianapolis, Indiana	
University of Missouri - St. Louis	St. Louis, Missouri	
University of Toledo	Toledo, Ohio	
Valparaiso University	Valparaiso, Indiana	
Waubonsee Community College	Sugar Grove, Illinois	
Western Illinois University	Macomb, Illinois	

#### **CENTER OUTCOMES**

1. Annual conferences provide LSMCE partners and the LSAMP community an opportunity to network, share program models, celebrate students, and be a platform for student researchers to present current research in a supportive environment.

2. LSMCE information hub disseminates best practices in broadening participation, STEM teaching, program development and networked resources for the LSMCE and LSAMP community.

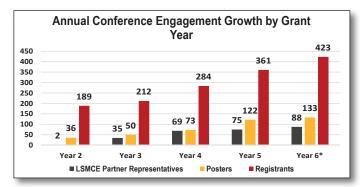
3. Faculty engagement in broadening participation efforts by creating high impact programs, obtaining and promoting STEM students' growth and success across institutions.

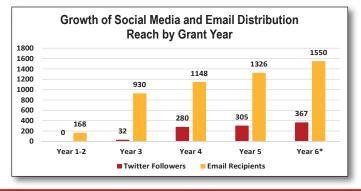
4. Online webinars and student workshops focus on developing and supporting the growth of student professional skills.

5. Key industry partnerships provide student internship opportunities and support LSMCE initiatives and student awards.

#### **OUTREACH & ENGAGEMENT GROWTH**

The LSMCE annual conference grew in attendance, engagement and impact with increases in the number of presenters, student poster presenters, and distribution of LSAMP and non-LSAMP attendees.





94% of non-student attendees rate the conference as Excellent or Good \*\*\*\*



Networking is rated as the highest valued conference activity by both faculty and students \*\*\*\* Images top right to bottom left: 1) Faculty Workshops; 2) Student Poster Session; 3) Bridge to the Doctorate Fellows (Drs. Geovannie Ojeda Torres and Shalina Taylor) present at the LSMCE Conference; 4) LSMCE Website; 5) Annual Conference Engagement Graph; 6) Growth of Social Media and Outreach

#### **EVALUATION FINDINGS\*\***

"LSMCE provides a viable dissemination strategy to address a widespread demand for information, resources, and networks to ameliorate the drastic underrepresentation of URM students in the STEM fields in higher education."

"The LSMCE Annual Conferences have successfully promoted collaboration and information sharing among faculty, staff, administrators and students for LSAMP alliances and numerous insitutions that are new to the LSAMP network."

\*\* Excerpts from the 2016 LSMCE Center Evaluation Report prepared by Creative Research & Evaluation \*\*\* 2017 Conference Evaluation Report prepared by Creative Research & Evaluation



"Pilot Regional Louis Stokes Center: Midwest Center of Excellence," is funded by the National Science Foundation grant number HRD-1202563 (BD 2012-2018)

# Alabama Louis Stokes Alliance for Minority Participation

#### alsamp.eng.ua.edu

The Alabama LSAMP Program is designed with the overall goal to implement and study innovative, evidence-based, sustainable best practices in STEM education and research experiences for undergraduates designed to increase the quality and quantity of underrepresented minority students by enhancing the STEM educational experience. The state of Alabama has had an alliance that has been continuously funded by the LSAMP Program since 1991. The alliance consists of 4-year institutions, community colleges, high schools, and industry. The objectives of the program are:

- Increase the number of students from underrepresented minority groups who earn STEM degrees, with emphasis on STEM undergraduate degrees
- Enhance the STEM educational experience for underrepresented minority students
- Increase retention and progression of underrepresented minority students to baccalaureate degrees
- Enable successful transfer and matriculation of underrepresented minority students from 2-year to 4-year institutions in STEM programs
- Increase access to high quality undergraduate research experiences
- Facilitate seamless transition of underrepresented minority students into STEM graduate programs







Dr. Kevin Whitaker Principal Investigator



Dr. Viola L. Acoff Co-PI & Project Director

Principal Investigator Dr. Kevin Whitaker Executive Vice President and Provost The University of Alabama kwhitaker@ua.edu

**Co-PI & Project Director** Dr. Viola L. Acoff *Associate Dean for Undergraduate and Graduate Programs* College of Engineering The University of Alabama vacoff@eng.ua.edu



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**The University of South Alabama** Dr. John Steadman jsteadman@southalabama.edu

# Alabama LSAMP's Impact

The impact of the LSAMP program on LSAMP affiliated institutions in Alabama has been significant. The underrepresented minority student STEM enrollment has increased by 68.38% from the 1992-1993 reporting year (4,549 students) to the 2013-2014 reporting year (7,660 students). The corresponding degree production increased by 123.64% (increased from 626 to 1,400 degrees). Alabama LSAMP has been very successful with the matriculation of underrepresented minority students who transfer from community colleges to major in STEM disciplines at Alabama LSAMP institutions. For the period 2009-10 to 2013-14, 339 degrees were awarded to underrepresented minority students who were community college transfers. For the 2014 reporting year, degrees awarded to underrepresented minority students who were community college transfers accounted for 12.4% of the B.S. STEM degrees that were awarded to underrepresented minority students at the institutions in Alabama LSAMP.

The goals and objectives of Alabama LSAMP are achieved through a number of different programs and strategies, including:

- Summer bridge program (for incoming freshmen)
- Community college to 4-year institution bridge program
- Performance-based stipends
- Faculty-mentored undergraduate research
- Spring research conference
- Summer research experiences for high school students
- Outreach to middle school students











- Ten members of the Alabama LSAMP (students, coordinators, and alliance partners) were selected to attend the Alaska Native Science & Engineering Program (ANSEP) Broadening Participation in Engineering Dissemination Conference in Anchorage, AK
- Two students and one faculty member participated in the Brookhaven National Laboratory (BNL) summer research program

#### **LSAMP** Alaska Alliance



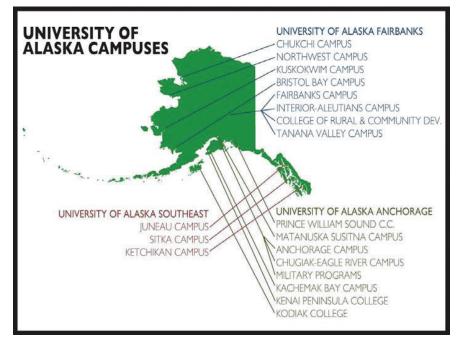
The University Success Component of the Alaska Native Science & Engineering Program (ANSEP)

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University of Alaska Fairbanks Brian Rasley, PhD <u>btrasley@alaska.edu</u> (907) 474-5029

University of Alaska Southeast Keith Cox, PhD mkcox@uas.alaska.edu (907) 789-6603

Our objective is to effect a systemic change in the hiring patterns of Alaska Natives in the STEM professions.





LSAMP engineering students work through a math problem during a study group in the learning center that was built to support LSAMP students on the campus at the University of Alaska Anchorage.

# ANSEP

#### LSAMP Alaska Alliance The University Success Component of the Alaska Native Science & Engineering Program (ANSEP)

#### **LSAMP Impact in Alaska**

- 1. In 2006 we opened our canoe shaped learning center on our campus.
- 2. Using private funds, in 2010 we started building our longitudinal model down into middle school by focusing on academic and social preparation for college success. Our students now come into the university hyperprepared for science and engineering BS degree programs. Approximately 500 new middle school students are participating annually. 77% of our middle school students



LSAMP students celebrate in front of our Learning Center when it opened in October 2006.

successfully complete algebra 1 prior to eighth grade graduation. The national average for all students is 26% (Nord et al., 2011).

- 3. In August 2016, with donated funds, we established a year-round Acceleration High School as an extension of the summer time Acceleration Academy which we have been operating since 2010. In our Acceleration components, students earn university credits that count towards BS degree programs in classes taught by University faculty. At the new high school students can graduate with up to 45 credits earned that count toward BS STEM degree programs. Acceleration students arrive at the university socially and academically hyper-prepared for success.
- 4. Since our first LSAMP award in 2001, we have graduated 801 minority STEM students and increased the average annual underrepresented STEM BS graduate number from a pre LSAMP number of 16.67 to 53.4. The Urban Institute (2015) has found that 75% of our students enrolled in BS STEM degree programs since 2010 have either graduated or are still enrolled.
- 5. We have built our graduate success component with support from the Sloan Foundation and others.
- 6. We have developed state and other funding streams to support a full time professional staff of 13 and a temporary staff of up to 60 during peak periods of pre-college activity.
- 7. In 2008 our partner organizations provided the funding for the Dr. Herbert P. Schroeder endowed chair so that there will be a faculty advocate for minority students in perpetuity.
- 8. We have developed a 'Grow our own PhD' component where students earn PhDs and return to join the tenure track faculty. Two graduates have done this so far, are on the University of Alaska Anchorage College of Engineering faculty, and are LSAMP CO-PIs. One is the only civil engineering PhD in the world who happens to be Alaska Native and the other is the only engineering education PhD in the world who happens to be Alaska Native. They are the first ever tenure track underrepresented minority faculty in engineering.

Percentage of Alaska LSAMP students who have graduated or are currently enrolled according to the Urban Institute (2015)

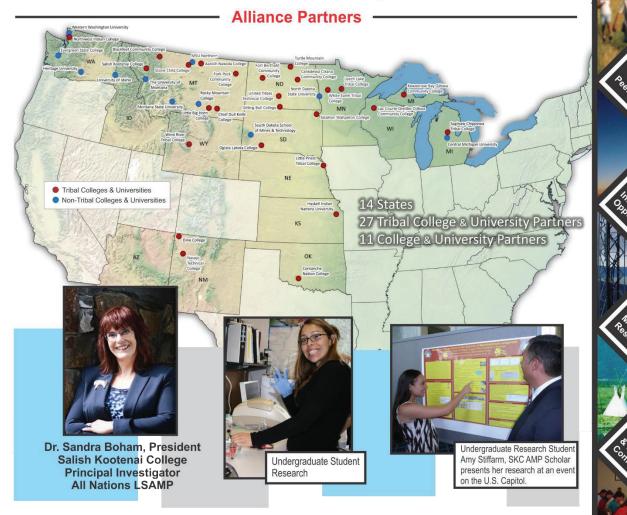




The All Nations Louis Stokes Alliance for Minority Participation (ANLSAMP) program is the only Alliance focusing on the Native American (NA) undergraduate students in the science, technology, engineering, and mathematics (STEM) disciplines. The United States continues to fall short in graduating enough STEM professionals to meet this nation's growing demand, especially NA and other under-represented minorities (URM). To help address this continuing national crisis, the ANLSAMP will continue to improve and grow the pipeline for NA and other URM STEM students through its established network of collaborating partner institutions.

#### Alliance Impacts

- American STEM graduates since 1994, in addition to 7,263 additional URM.
- The ANLSAMP has produced 1,730 Native International research opportunities for ANLSAMP Scholars continue to expand. We have increase participation by over 500% since 1994.



Lead Institution - Salish Kootenai College - PO Box 70 - 58138 Highway 93 Pablo, Montana 59855 - Phone: (406) 275-4800 - Fax: (406) 275-4807

#### SCIENCE • TECHNOLOGY • ENGINEERING • MATHEMATICS



# bythe NUMBERS





# **1994** The year ANLSAMP started

# 160

The number of STEM focused programs ANLSAMP helped build at 37 different partner institutions before 2005

Native Americans have achieved STEM

baccalaureate degrees from our partner institutions

The number of Tribal Colleges offering STEM bachelor's degrees in 1994

# 104

The number of ANLSAMP supported projects at Tribal Colleges that helped create STEM offerings





# 1000+

Native Americans enroll in STEM programs at our partner institutions each year

**20** The number of years ANLSAMP has sponsored organized, and operated scientific poster & oral competitions at national conferences With support from many, including ANLSAMP, today:

1 Tribal Colleges offer a STEM bachelor's degree

> offer multiple STEM degrees

offers a STEM Master's degree



All Nations Louis Stokes Alliance for Minority Participation P.O. Box 70, 58138 Hwy. 93, Pablo, Montana 59855 406-275-4998



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University of Arkansas at Pine Bluff\* Dr. Anissa E. Buckner bucknera@uapb.edu (870) 575-7113





**ARK-LSAMP Arkansas Louis Stokes Alliance for Minority Participation** 

> Dr. Anissa Evans Buckner Principal Investigator/ Project Director University of Arkansas at Pine Bluff Lead Institution





Dr. Charles R. Colen, Jr. Co-Principal Investigator University of Arkansas at Pine Bluff Lead Institution

> Pictured Left: ARK-LSAMP students participating in Pre-First Year activities.

ARKANSAS

Economic Development Commission

SCIENCE & TECHNOLOGY

Pictured Below: ARK-LSAMP Pre-First Year Enrichment Trip to Biloxi, MS



Pictured Below: Annual ARK-LSAMP Spring Research Conference in Little Rock, Arkansas





Pictured Left to Right: ARK-LSAMP students Yari Mosley (left) and Dustin Ford (center) presenting their research experiences and registration for the Annual Spring Research Conference.

The Arkansas Louis Stokes Alliance for Minority Participation (ARK-LSAMP) is a collaborative alliance of nine Arkansas institutions (with NSF support), which has a goal of increasing the number of minority students in Science, Technology, Engineering, and Mathematics (STEM) areas and increasing the pool of baccalaureate, masters and doctoral degree graduates in STEM disciplines in Arkansas' workforce.



#### **ARK-LSAMP** Highlights

The ARK-LSAMP program consists of a Pre-First Year Institute, mentoring, research internships, faculty development, curricula redesign, and infrastructure enhancements.

The ARK-LSAMP Pre-First Year Summer Institute is a six-week program that offers skills and knowledge to precollege high school graduates to help make a seamless transition to college. Participants receive room, board and a paid STEM laboratory experience.

#### **ADK-I SAMD Student News**

\* Ashlyn Carlton- Animal Science major-University of Arkansas at Pine Bluff. During the spring and summer of 2016, Ashlyn assisted in an on-going animal/poultry research projects in Guyana. Ashlyn participated in routine animal related activities including feeding, collecting and analyzing data in the lab and performing other animal/poultry husbandry activities alongside her professors and coworkers.





Pictured Left: Ashlyn Carlton and her coworker are carrying out an ear tagging procedure on a goat kid. This procedure is used as a means of individual animal identification. It is important to implement identification using tags to insure to help with animal management especially because goats are managed together in flocks

**Pictured Right:** Display the process by which one would determine the botanical composition of a forage sample. Here, the sample (left) is separated into four categories namely: grass, legumes, dead material and weeds. Another sample (bottom) has been completely separated into three components, grass, weeds and dead material, but no legume. Performing this procedure helps to determine what kind of forage that animals are consuming in a given pasture.



### **ARK-LSAMP Impact**

Some notable accomplishments of Alliance member campuses include:

- Established STEM clubs
- Community Service
- STEM Days
- Nobel Laureate Guest Lecturers
- Presentations to the Board of Trustees
- Presentations to Arkansas Legislators
- Elections by ARK-LSAMP students for campus leadership positions
- Research internship experiences for the students
- Several internships with seven international research experiences
- Introduction of students to diverse research models, sites and STEM disciplines
- 100+ students have participated in research experiences and job internships external to their campus in research labs and corporate management
- \* Several oral or poster presentations at professional meetings (e.g. the NSF Emerging Researchers National (ERN) Conference in STEM in Washington, D.C.; Arkansas EPSCoR; and Research Day at the Capitol in Little Rock, Arkansas.

### **Enrollment & Graduation Data**

- ARK-LSAMP has 230 STEM majors
- \* As of Spring 2015, the Alliances' average retention rate among the four year institutions was 64% with the range among institutions being 25% to 95%.
- In May 2012, the first cohort of students graduated
- Over 70 graduates in STEM fields since 2012

### **UNIVERSITY OF CALIFORNIA** ~ Louis Stokes California Alliance for Minority Participation





#### CAMP UC SYSTEMWIDE LEADERSHIP, UC IRVINE LEAD INSTITUTION

Howard Gillman, Ph.D., Chancellor Principal Investigator, California LSAMP

Derek Dunn-Rankin, Ph.D., Professor Mechanical & Aerospace Engineering, Project Co-Director, California LSAMP

Marjorie DeMartino, M.F.A. Project Co-Director, California LSAMP

#### **Meaningful Opportunities - Outstanding Outcomes**

#### **GROUP IMPACT**

Faculty mentoring is the University of California Alliance's exemplary strength impacting student commitment and retention in a STEM major and establishing a strong foundation for graduate education. Undergraduate engagement in laboratory research is a life-changing experience that provides students with hard skills and competencies in computer technology and data mining software, and develops soft skills such as independence and communications proficiency.

#### UNDERGRADUATE RESEARCH

In 2016-17, including Fall 2017, **384** CAMP students conducted laboratory research; **160** presented at national STEM conferences, and **37** won national recognition for excellence in research. Conferences attended: SACNAS, AAAS Pacific Division, ABRCMS, SHPE, WoPHYS, ERN, MAES, GEM, Louis Stokes MCE, and the Joint Symposium on Neural Computation.

Additionally International Research was conducted at Kings College, London

and at Centro de Biologia Severo Ochoa, Madrid through collaboration with the MHIRT program (UCI); Tokyo Institute of Technology and at the Leibniz Institute for New Materials, Saarbruecken, Germany, through the Cooperative International Science and Engineering Internship Program (UCSB).

#### EVIDENCE OF LONG-TERM IMPACT

University of California LSAMP impact is evident in systemwide enrollment of historically underrepresented students: **21,235** URM STEM students are enrolled at UC LSAMP partners. UC campuses enroll increasing numbers of URM students, with four campuses having Hispanic Serving Institution status: UC Riverside, UC Irvine, UC Santa Barbara, and UC Merced.

#### URM STEM B.S. DEGREE PRODUCTION

Since start-up in 1991-92, CAMP has helped achieve a **541%** increase in degree production, including **3,943** B.S. degrees awarded in 2017.

All partners contribute to proven practices in retention, and share data management and assessment strategies on their respective campuses. The program provides the tools, peer networks and support for minority students to achieve a bachelor's degree and prepare for graduate education and STEM careers.



#### **CAMP FACULTY CONTACTS**

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#### UC Santa Cruz

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### STEM CAREERS

# Nine campuses strong, the California LSAMP is helping students reach their highest ambitions.

#### CSU-LSAMP Alliance - Campus Coordinators

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<u>CSU Stanislaus</u> - Melanie Martin (209) 667-3787 • mmartin@csustan.edu

### CALIFORNIA STATE UNIVERSITY LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION www.csus.edu/csu-lsamp

The California State University Louis Stokes Alliance for Minority Participation, with NSF support, was initiated in 1994 to serve as a comprehensive, statewide program dedicated to broadening participation in STEM disciplines. The Alliance includes all 23 campuses of the California State University (CSU), the largest university system of public higher education in the world, located in one of the most populous and most diverse states in the nation.

CSU-LSAMP's overall goal for the project is to contribute to the development of a STEM workforce, which is broadly inclusive, globally competitive, and prepared to participate at the frontiers of science. Specifically, CSU-LSAMP aims to:

(1) enhance the academic and professional preparation of CSU-LSAMP participants, most of whom are students from underrepresented minorities (URM), for careers in STEM;

(2) further improve persistence and graduation rates for CSU-LSAMP participants;

(3) increase aggregate production of STEM degrees awarded by the CSU to URM students;

(4) increase the number of CSU-LSAMP students who advance to STEM graduate study; and

(5) document, disseminate, and replicate undergraduate intervention models that increase access to, and success in STEM baccalaureate degree programs and facilitate admissions to STEM graduate programs.

Dr. Monica Moreno (Cal State LA BD-5 Cohort) Currently a Post-Doctoral Scholar at Stanford University



**CSU-LSAMP STATEWIDE OFFICE:** 6000 J Street, SQU 534, Sacramento, CA 95826 (916) 278-3838 Fax: (916) 278-3854



Robert Nelsen, PI President Sacramento State nelsen@csus.edu



Lisa Hammersley, Co-PI/PD Associate Dean, College of Natural Sciences & Mathematics Sacramento State hammersley@csus.edu



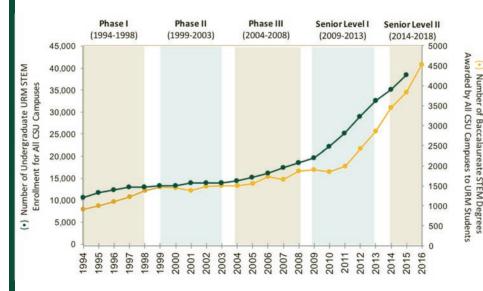
Semarhy Quiñones-Soto Director, Student Research Center Sacramento State e.quinones-soto@csus.edu

# CALIFORNIA STATE UNIVERSITY LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

CSU-LSAMP has evolved over the years from a program that primarily supported lower-division students through supplemental instruction and summer bridge programs, to one that now also provides research opportunities, international opportunities and professionalization activities. This comprehensive approach to student development and success would not be possible if the Alliance campuses had not invested in the LSAMP model by institutionalizing activities shown by CSU-LSAMP to be highly successful.

Notable achievements of the alliance include:

- Since 1994, CSU-LSAMP has served 25,132 participants, including 21,025 URM students
- CSU-LSAMP participants are 1.8 times more likely than non-participants to graduate with STEM degrees within 6 years
- In 2015-16, more than 900 CSU-LSAMP students engaged in research on their own campuses, at national laboratories, and internationally.
- 42% of CSU-LSAMP graduates persisted at the post-baccalaureate level. And, 13% of these participants earned master's degrees, 3% earned doctorates, and 26% remain enrolled.



Sources: CSU Analytic Studies Division ERS enrollment files, WebAMP Reverse Site Reports, and WebAMP ExACT Reports. Enrollment data for fall 1993 (the first year of the Alliance) is not currently available. Excludes International Program and non-resident alien enrollment.



Left: Sharon Patray (Cal State San Marcos), B.S., Biochemistry, 2017; currently in a Ph.D. program at Johns Hopkins.

Right: Juan Salcedo (Sonoma State) traveled to Tashkent, Uzbekistan, to do research at the Institute of Mathematics of the Uzbekistan Academy of Sciences.



CSU-LSAMP NSF NATIONAL GRADUATE RESEARCH FELLOWSHIP AWARDEES -- 2017 Erin L. Aiello (Cal Poly) Life Sciences - Ecology California Polytechnic State University, San

California Polytechnic State University, S Luis Obispo

**Bushra M. Bibi (SFSU)** Life Sciences - Biochemistry University of California, San Francisco

#### Jose O. Castellon (CSUCI)

Life Sciences - Biochemistry California State University, Los Angeles

Jessica T. Cortez (CSUCI)

Life Sciences - Physiology University of California, San Francisco

*Judith Flores (CSUSM)* Chemistry - Chemistry of Life Processes California State University, San Marcos

*Eric R. Gonzalez (SDSU)* Life Sciences - Systems and Molecular Biology University of California, San Francisco

*Heather Neldner (Cal Poly)* Life Sciences - Ecology California Polytechnic State University, San Luis Obispo

*Bianca Y. Ruiz (CSUF)* Life Sciences - Evolutionary Biology University of Washington School of Medicine

**Pingdewinde N. Sam (SFSU)** Life Sciences - Cell Biology Johns Hopkins University

*David Vega (CPP)* Engineering - Optical Engineering University of Arizona

*Fauna Yarza (SJSU)* Life Sciences - Microbial Biology University of California, San Francisco



# CO-W/Y AMP

**Colorado - Wyoming Alliance for Minority Participation** 



Linking diverse students to educational opportunities in science, technology, engineering and mathematics.

### PARTNER INSTITUTIONS

#### Adams State University



Dr. Renee Beeton rbeeton@adams.edu

#### Central Wyoming College



#### Jacki Klancher jklanche@cwc.edu

#### **Colorado School of Mines**



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Arlene Nededog arlene.nededog@ colostate.edu

#### Colorado State University - Pueblo



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#### Fort Lewis College



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#### Metropolitan State University of Denver



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#### Dr. Ernest Chavez Co-Principal Investigator

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#### **ALLIANCE GOALS AND OBJECTIVES**

- Goal 1: Increase retention and subsequent attainment of baccalaureate degrees.
- Goal 2: Increase the quality and quantity of students transferring from 2-year to 4-year institutions by providing skill-building interventions to strengthen students' mathematical knowledge and Summer Bridge experiences to enrich STEM achievement.
- Goal 3: Facilitate pure and applied undergraduate research experiences both domestic and international and develop summer research experiences at both 2 and 4-year institutions.
- **Goal 4:** Expand capacity for preparation and matriculation into graduate programs.

#### www.cowyamp.colostate.edu







Northeastern Junior College





Cyndinoline

#### **Otero Junior College**



Pat Malott Pat.Malott@ojc.edu

#### Trinidad State Junior College

TRINIDAD STATE

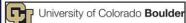
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llege Judy MacLaren

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#### University of Colorado at Boulder



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University of Colorado Colorado Springs

> Dr. Dave Khaliqi dkhaliqi@uccs.edu

#### University of Colorado at Denver



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#### University of Denver



Anthea Johnson Rooen anthea.johnson@ du.edu

#### University of Wyoming



Dr. Doug Wachob wachob@ uwyo.edu



# **CO-WY AMP Impact**

#### Changing students' lives through quality STEM education in Colorado

CO-WY AMP is an innovative consortium between sixteen institutions of higher education that increases the quality of education for underrepresented minorities in STEM fields and builds the infrastructure for collaborative programs and activities.

#### **Impact Statement**

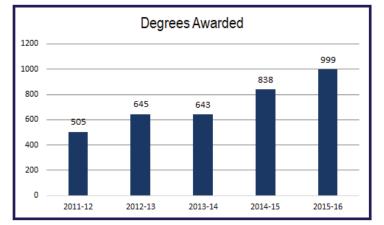
During the last twenty-one years of quantifiable successes, the LSAMP program in Colorado-Wyoming has significantly impacted participants to make profound changes in their academic careers and lives. Since its inception in 1995, CO-WY AMP has built upon its past successes of collaborative programs and activities, systems experience, and record of institutionalization to utilize strategies identified as best practices that recruit, retain, and provide educational experiences for underrepresented minority students graduating with baccalaureate degrees in STEM fields and broadening participation in the STEM workforce.

#### **Student News**

In 2017, CO-WY AMP expanded its development of International Research Experiences (IRE) by emphasizing field/laboratory experiences, obtaining structured support for international research activities, and increasing current collaboration with other programs such as, Engineers Without Borders and Humanitarian Engineering.

CO-WY AMP sponsored twenty-two students in international locations, including Nicaragua, Peru, Brazil, Mexico, Guatemala, and Spain during summer 2017. Examples of these IRE student projects include:

- Twelve students from Fort Lewis College participated in international field projects in Nicaragua;
- One student from University of Colorado Boulder participated in field work on a solar powered pump in Peru;
- One University of Colorado Boulder student participated in a field experience in Brazil;
- Four Colorado State University students participated in field work at CSU's Todos Santos Center in Mexico;
- One Colorado State University student traveled to Spain to collect river data;
- Two Colorado School of Mines students worked on landslide risk management projects in Guatemala;
- One Colorado School of Mines student traveled to Peru on a Humanitarian Engineering project to replace mercury in local mining.





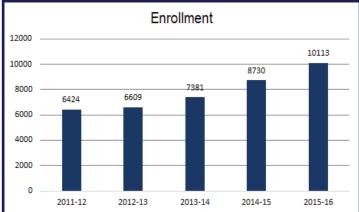
#### www.cowyamp.colostate.edu

#### Accomplishments and Highlights 2017-2018

- CO-WY AMP was awarded \$4.8 million from the National Science Foundation to expand the consortium to sixteen institutions of higher education, including two new partners in Wyoming, becoming the Colorado-Wyoming Alliance for Minority Participation.
- Five CO-WY AMP students completed REUs at Colorado School of Mines and Colorado State University. A freshman student from University of Colorado Boulder completed a Science Undergraduate Laboratory Internship (SULI) at the U.S. Department of Energy's National Renewable Energy Laboratory (Golden, CO). Seventeen additional CO-WY AMP students completed summer research with direct financial support from partner institutions.

#### Five-Year Historical Enrollment and Graduation Data

- 97.8% Increase in UREP STEM degrees awarded, from 505 in 2011-12 to 999 in 2015-16.
- 57.4% Increase in UREP undergraduate minority STEM enrollment, from 6,424 in 2011-12 to 10,113 in 2015-16.



## Florida-Georgia Alliance for Minority Participation (FGLSAMP)

#### **Program Overview:**

The Florida Georgia Louis Stokes Alliance for Minority Participation (FGLSAMP) is a collaborative of 14 colleges and universities throughout Florida (13) and Georgia (1) with a mission to significantly increase the number of underrepresented minority students statewide who complete undergraduate degrees in science, technology, engineering, and mathematics fields (STEM). FGLSAMP proposes to significantly expand its STEM talent pool through greater collaboration among the 14 partner institutions and enhanced practices that:

- Increase student retention and graduation in STEM disciplines
- Matriculate A.A. degree students to STEM B.S. degree programs
- **Provide significant STEM international research opportunities**
- Prepare STEM students for graduate education and professional career opportunities



- Albany State University John Williams iohn.williams@asurams.edu
- Bethune-Cookman University Danyell Wilson wilsonda@cookman.edu
- Florida A&M University Edna Cofield edna.cofield@famu.edu
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- University of South Florida **Bernard Batson** bbatson@eng







#### Dr. Maurice Edington, PI FGLSAMP Vice President for Strategic Planning and Analysis and Institutional Effectiveness



Mr. Byron Greene, Assoc. Dir. **FGLSAMP** Florida A&M University byron.greene@famu.edu

### Supported Activities:

- STEM Learning Community
- Peer Mentoring
- Undergraduate **Research and Training**
- STEM Professional Development
- Summer Research Experiences
- Graduate School Preparation
- Specialized STEM Workshops
- Engagement with STEM Professionals





# TRANSFORMATIONAL

"...I remember various araduate universities, as well as commercial and *qovernment employers* being in attendance at each conference. There were opportunities to not only speak with representatives, but to also apply and interview for positions on the spot. I would not have known that any f those opportunities existed beyond undergrad if I had not been a part of LSAMP program."

# Karmethia Thompson, Bethune Cookman University Alum

Currently employed at Johns Hopkins Applied Physics Lab



"...FGLSAMP provided a space for us to study, run simulations, write our papers, and to take refuge when "life happens." The unique algorithm which left me no choice but to be successful. I still apply those lessons learned in my current position at NASA."

Quenton Bonds, PhD, Electrical Engineering University of South Florida Alum

*Currently employed at NASA Goddard Space Flight Center* 







Florida –Georgia Louis Stokes Alliance for Minority Florida A&M University 500 Gamble Street, Rm 418C Tallahassee, Florida 850-561-2679 www.fglsamp.com





Florida –Georgia Louis Stokes Alliance for Minority Participation is a Sponsored Program of the National Science Foundation HRD-1201981

# GS-LSAMP Alliance Program Coordinators

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# **Rutgers University**

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# GARDEN STATE - LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

The Garden State – Louis Stokes Alliance for Minority Participation, begun in 2009, serves as a learning community to increase success and opportunity in STEM fields and to increase the retention, graduation and success of students from minority groups that are traditionally underrepresented in STEM. The Alliance includes eight institutions, seven 4year and one 2-year. GS-LSAMP is only the second Alliance in the history of LSAMP to double its number of underrepresented minority (URM) STEM graduates in only 4 years (a 5-year goal), with two schools reaching this goal in just 3 years. It performed this remarkable success by developing a transformative system of recruitment and retention based primarily upon innovative use of online education resources and research experiences coupled with best practices. The Phase II project focuses on 1) assisting community college students to successfully transfer to four-year programs, 2) preparing and assisting students to matriculate into graduate programs and 3) increasing student opportunities in international experiences. In 2015, GS-LSAMP offered its students 196 research experiences, the most ever offered in LSAMP history. That same year, the Alliance was chosen as a White House *Bright Spot in Hispanic Education*.

### Dr. Alexander Gates, Pl

Board of Governors Distinguished Service Professor

Rutgers University - Newark agates@newark.rutgers.edu

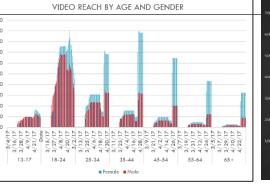




# FACEBOOK & INSTAGRAM: Social Media Experiment for Dissemination and Recruitment

During March and April 2017, three videos spotlighting student success stories were produced and posted on Facebook and Instagram. A total of six students appeared in these videos to share their experiences prior to joining LSAMP, their activities in LSAMP and what they have achieved as a result of this involvement. These videos were professionally produced and edited through a grant from Facebook. The students each had between 350 and 1,600 Facebook friends; this organic reach resulted in as many as 12,281 views. Senator Cory Booker shared the third video on Instagram. The project reached nearly 60,000 people and resulted in almost 48,000 views.







# Annual GS-LSAMP/NNJ-B2B **STEM Research Conference**

- 6<sup>th</sup> Annual (2014): keynote address by Sen. Cory Booker
- 7<sup>th</sup> Annual (2015): included over 600 students and 150 posters by 262 student researchers.
- $\mathbf{8}^{\mathsf{th}}$  Annual (2016): keynote address by Hon. Rochelle Hendricks, NJ Secretary of Higher Education
- 9<sup>th</sup> Annual (2017): included a Graduate School Primer and Admissions Fair with representatives from 14 institutions present

# **GS-LSAMP** Supported Activities:

- Summer and Academic Year Research Experiences
- **GRE** prep courses
- Academic Success Boot Camps to help students raise GPAs and prepare for calculus and general chemistry
- Specialized Advising with LSAMP staff .
- Opportunities to be LSAMP ambassadors .
- Cross-Campus Mentoring Program (4 year students mentor 2-year students)
- Peer-to-peer mentoring, tutoring, and learning groups .
- Bridge to the Doctorate
- Career workshops and panels with STEM professionals

# **Annual Transfer Day**

Since 2015, GS-LSAMP has held an annual Transfer Day, in conjunction with Northern New Jersey-Bridges to the Baccalaureate. This event provides community college students with information on the transfer policies and degree offerings of GS-LSAMP 4-year schools. In addition, a panel of LSAMP mentors, themselves transfer students, provides personal stories of going from a 2-year school to a 4-year one, and answers pressing questions for community college students. Over 200 students participate each year.



100% in its second year compared to the baseline (2012).



Garden State-Louis Stokes Alliance for Minority Participation Smith Hall – Room 135, 101 Warren Street, Newark, NJ 07102



### **CAMPUS COORDINATORS**

Atlanta Metropolitan State College Alvin Harmon, Ph.D. 404-756-4056 aharmon@atlm.edu

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J.F. Drake State Community College Ms. Tomeka Cross 256-551-7264 Tomeka.cross@drake.edu

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Spelman College Tiffany Oliver, Ph.D. 404-270-5727 toliver4@spelman.edu

# University of West Georgia

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# Georgia-Alabama Louis Stokes Alliance for Minority Participation



The Georgia Louis Stokes Alliance for Minority Participation (GA-AL LSAMP) was established in 1997. The Alliance which was expanded in 2013-2014, academic year, is currently comprised of nine partner institutions: Clark Atlanta University (CAU, Lead institution/HBCU), Atlanta Metropolitan State College (community college), Georgia State University, J.F. Drake Community and Technical College Lawson State Community College, Morehouse College, University of West Georgia, Paine College, and Spelman College.

The expanded alliance has developed a cohesive strength and synergy over the past four years, towards ensuring that the program serves as a catalyst to increase the number of underrepresented minority (URM) students, in this case predominantly African Americans, who graduate with BS degrees in science, technology, engineering, and mathematics (STEM). The alliance employs a wide range of intervention strategies including a) undergraduate research, (b) summer research explorers program (SREP), (c) an interdisciplinary mentoring program, (d) LSAMP Peer tutoring, (e) annual student professional development workshop and (f) an Annual Emerging Scientists Research Symposium.



Ronald Johnson, Ph.D., Pl, President, CAU rjohnson@cau.edu



Conrad Ingram, Ph.D. Program Director Professor of Chemistry, CAU cingram@cau.edu

- Over 330 presentations by LSAMP scholars at scientific meetings since 2013
- Over 120 scholars engaged in research and related activities during the academic year

# Annual Spring GA-AL LSAMP STEM Research Symposium

- (2015): 149 attendees, 16 oral and 60 poster presentations
- (2016): 117 attendees, 16 oral and 57 poster presentations; Professor Manu Platt (GA Tech), Keynote speaker
- (2017) 108 attendees, 16 oral and 64 poster presentations
- Increase in Minority STEM enrolment from 5870 in 2013 to over 6140 in 2016
- Over 2490 Minority STEM BS degrees awarded since 2013



Former GA-AL LSAMP scholar, Sederra Ross (2<sup>nd</sup> left), enrolled in the Ph.D. program in chemistry in 2016 at Boston University with full scholarship. Sederra won an award for poster presentation in chemistry at the 2015 ERN conference

Former LSAMP scholar, Ayana Jones (2<sup>nd</sup> right), enrolled in the Ph.D. program in chemistry in 2016 at Georgia Institute of Technology.

GA-AL LSAMP hosts an annual professional development workshop and panel for scholars, with STEM professionals.



Topics covered include:

- Time management
- Application for graduate school
- The graduate school experience
- Overcoming obstacles
- STEM and you
- Preparing for 2-yr to 4-yr college transfer
- Importance of mentoring
- Understanding research
- Scientific presentation skills
- Strategies for progression and graduation with STEM BS degree



Esmeralda Castaneda's (2<sup>nd</sup> left) scientific publication was the cover featured article on a 2016 issue of the Royal Society of Chemistry journal, *Crystengcommun* (DOI: 10.1039/C4CE025).



Former GA-AL LSAMP scholar, Johnny Troung, is currently enrolled in the Ph.D. program in chemistry at the University of California-Berkeley.



Former GA-AL LSAMP scholar, Lishann Ingram, is currently a Ph.D. candidate in biomedical sciences at the University of Georgia



Current GA-AL LSAMP scholar, Donte Samuels (right) won an award for best poster presentation in chemistry at the 2017 Emerging Researchers Network (ERN) symposium.



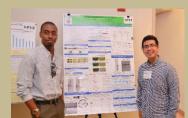
GA-AL LSAMP Program Manager Ms. Carolyn Taylor <u>ctaylor@cau.edu</u>, (404) 880-6737





GA-AL LAMP hosts an annual research symposium where scholars conduct oral and poster presentations.





Georgia-Alabama Louis Stokes Alliance for Minority Participation Thomas W. Cole Jr. Research Center for Science and Technology – Room 2033, 223 James P. Brawley Drive, Atlanta GA 30314. www.cau.edu/research-sponsored-programs/ga-al-Isamp/index.html

# GREATER ALABAMA BLACK BELT REGION LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION (GABBR LSAMP)

# Website: https://cws.auburn.edu/apspi/pm/LSAMP

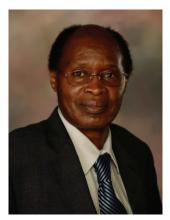
## Email: <a href="mailto:lsamp@auburn.edu">lsamp@auburn.edu</a>

# The GABBR LSAMP Alliance was established in 2017 with the following goals:

- 1. Increase the quantity and quality of underrepresented minority (URM) STEM degrees,
- 2. Increase the quantity and quality of underrepresented minority undergraduates (URMs) entering graduate school, and
- 3. Investigate and disseminate the GABBR LSAMP model's impact on recruitment, retention, success and graduation of target students from a social science research perspective.

# The GABBR Alliance is made up of eight institutions from the Greater Alabama Black Belt Region:

- Auburn University (Dr. Overtoun Jenda, jendaov@auburn.edu)
- Auburn University Montgomery (Dr. Glen Ray, gray@aum.edu)
- Alabama State University (Dr. Carl Pettis, cpettis@alasu.edu)
- Enterprise State Community College (Dr. Tyler Simmons, tsimmons@escc.edu)
- Southern Union State Community College (Mr. Gary Branch, Jr., gbranch@suscc.edu)
- Troy University (Dr. Govind Menon, gmenon@troy.edu)
- Tuskegee University (Dr. Mohammed Qazi, mqazi@tuskegee.edu)
- University of West Alabama (Dr. Ketia Shumaker, kshumaker@uwa.edu)



# **Principal Investigator:**

Dr. Overtoun Jenda Assistant Provost and Professor of Mathematics Auburn University jendaov@auburn.edu





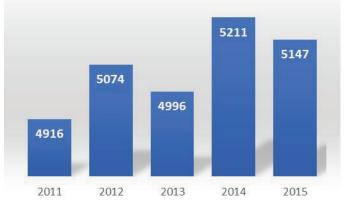


GABBR encompasses seventeen counties in the Alabama Black Belt (Barbour, Bullock, Butler, Choctaw, Crenshaw, Dallas, Greene, Hale, Lowndes, Macon, Marengo, Montgomery, Perry, Pike, Russell, Sumter, Wilcox) and three surrounding counties (Coffee, Dale, and Lee).

In its first year of implementation, 89 undergraduate students participated in Bridge programs across the alliance. The first annual GABBR LSAMP research conference will be held in April 2018. The GABBR Alliance aims to increase the number of STEM URM Bachelor degrees in GABBR Alliance institutions by 100% (to 844) and STEM URM Associate degrees by 100% (to 182) in five years. The Alliance also aims to double the number of minority STEM transfers from community colleges to GABBR four-year institutions, from 159 to 314 in five years.



# Minority Undergraduate STEM Enrollment Totals



# Key Interventions for LSAMP Scholars:

- Scholarships
- Peer mentoring
- Research Internship opportunities
- Travel to research conferences
- Summer Bridge programs
- Summer and Saturday Academies
- Study abroad opportunities
- Mathematics enrichment initiatives
- Academic workshops

# Minority STEM Bachelor Degree Totals



41



Greater Philadelphia Region Louis Stokes Alliance for Minority Participation Drexel University | 3141 Chestnut Street, 240 Randell Hall | Philadelphia, PA 19104 Phone: 215-895-2203 | Fax: 215-895-2098 | Web: www.philadelphiaamp.org | Email: philaamp@drexel.edu

### **CENTRAL MANAGEMENT** (Drexel University)



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Senior Research Specialist and Project Coordinator *Ms. Veniece Keene* P: 215-895-2014 vwk22@drexel.edu

Administrative Assistant *Ms. Maria Kim* P: 215-895-2203 myk28@drexel.edu

COMMUNITY COLLEGE

The Greater Philadelphia Region Louis Stokes Alliance for Minority Participation (Philadelphia AMP), now in its twenty-fourth year of operation, represents a diverse alliance of public and private, 2- and 4-yr, research and non-research, Historically Black Colleges and Universities (HBCUs) and majority institutions.

The major goals of the current Philadelphia AMP Initiative are to intensify its on-going efforts to substantially increase the quantity and quality of African American, Hispanic or Latino, Native American, and Native Hawaiian or Pacific Islander students receiving baccalaureate degrees in science, technology, engineering and mathematics (STEM), and subsequently, entering graduate school to attain doctoral degrees.



Lincoln AMP students, **Devin Bracey** and **Kwasi Graham** investigating wastewater treatment for irrigating crops at the American Farm School in Thessaloniki, Greece.



**De'Andrea Mazyck**, AMP student, Delaware State University presenting her research project conducted at the University of Science and Technology in Bydgoszcz, Poland to judges during the 19th Annual Philadelphia AMP Research Symposium and Mentoring Conference, October 14, 2017.



**Ms. Yulanda Essoka**, Associate Director, Office of Diversity and Inclusion, School of Engineering and Applied Science, University of Pennsylvania, speaks to students from Community College of Philadelphia about STEM program offerings.

### **ALLIANCE PARTNERS**

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# Greater Philadelphia Region Louis Stokes Alliance for Minority Participation

Through synergistic collaboration, the Philadelphia AMP, as a tri-state, nine institution consortium, has utilized its operational infrastructure to increase the capacity of its partner institutions to recruit, retain and graduate more underrepresented minority STEM students by substantially expanding their capabilities to attract, develop and support STEM student talent. Historically, Philadelphia AMP has more than tripled its annual minority STEM B.S. degree rate of production which has risen from 201 degrees to 1,047 degrees as of 2017, and is providing direct services to over 3,100+ students on an annual basis. The Alliance's minority STEM undergraduate enrollment and B.S. degree production for the last five years are included in Table 1 below.

Table 1: Philadelphia AMP Minority STEM Undergraduate Enrollment and B.S. Degree Production from 2012-2017

Academic Year	2012-13	2013-14	2014-15	2015-16	2016-17
Minority Undergraduate STEM Enrollment	4,949	5,536	6,205	5,522	6,450
Minority STEM B.S. Degrees Awarded	676	709	954	1,032	1,047

Currently, with LSAMP funding, as well as by leveraging funding from partner institutions and other federally-funded programs, over two hundred (200) students annually are attending national STEM professional conferences, over one hundred (100) students annually participate in undergraduate research activities on partner institutions campuses, at national LSAMP and non-partner Research-one institutions, national research laboratories and other research facilities. Also, as of August 2017, one hundred and thirty-six (136) students have engaged in international research experiences in Brazil (4), China (59), Austria (2), Switzerland (1), Jamaica (10), Chile (1), Serbia (2), Madagascar (1), Africa (9), Poland (20), Korea (2), The Republic of Trinidad and Tobago (13), and Greece (12).

### **STUDENT NATIONAL AWARDS / RECOGNITIONS:**

Table 2: Philadelphia AMP NSF Graduate Research Fellowship (GRFP) Award Recipients

Name / Award Year	Baccalaureate Institution	Field of Study / Graduate Institution	
Oladayo Ibukunoluwa Adewole / 2015	University of Pennsylvania	Bioengineering / University of Pennsylvania	
Lydia Atangcho / 2015	University of Pennsylvania	Chemical Engineering / University of Michigan Ann Arbor	
Kasey Lavon Campbell / 2015	Lincoln University	Materials Research – Polymers / University of Massachusetts-Amherst	
Keywan Alexander Johnson / 2015	University of Delaware	Chemistry - Chemical Catalysis / University of Rochester	
Jefferson Cuadra / 2012 *	New Jersey Institute of Technology	Mechanical Engineering / Drexel University	
David Diaz / 2012 *	New Jersey Institute of Technology	Biomedical Engineering / Drexel University	
Andrew McDonald / 2015 *	Drexel University	Comp/IS/Eng - Machine Learning / Drexel University	
Giordano Salvador / 2015	University of Pennsylvania	Comp/IS/Eng - Computer Architecture / University of Pennsylvania	
Chey Marcel Jones / 2017	Temple University	Chemistry - Models and Computational Methods Temple University	
Jonathan Humberto Galarraga / 2017	University of Delaware	Materials Research – Biomaterials / University of Pennsylvania	
Dianna Breanna Kitt / 2017	University of Delaware	Engineering - Environmental Engineering / University of Delaware	

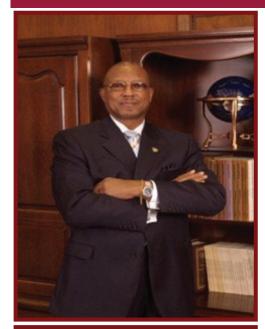
\* LSAMP Bridge to the Doctorate Fellowship recipients. GRFP award used to complete doctoral studies once two-year BTD fellowship award ended.

### 2017-2018 Alliance Highlights:

- Tahlia Casey, AMP scholar, Delaware State University has co-authored two papers in scholarly international journals related to her one-month study abroad research experience in the late spring of 2016 at the University of Science and Technology (UTP) in the Polish city of Bydgoszcz: a) "Hyaluronic Acid and Phospholipid Interaction Useful for Repaired Articular Cartilage Surface A Mini Review Toward Tribological Surgical Adjuvants," co-authored by Stanislaw Jung, Aneta Petelska, Piotr Beldowski, Wayne K. Auge II, Tahlia Casey, Dominik Walczak, Krzysztof and Adam Gadomski. Published in Spring Journal, Colloid Polymer Science; b) "Dynamical Systems Theory in Quantitative Psychology and Cognitive Science: A Fair Discrimination between Deterministic and Statistical Counterparts is Required," co-authored by Adam Gadomski, Marcel Ausloos and Tahlia Casey. Published in Nonlinear Dynamics, Psychology, and Life Sciences.
- Former UPenn AMP scholar and sub-matriculant, Tyrell McCurbin, MSE degree, Robotics, 2017, co-developed an app that could change the way in which consumers shop online and directly. His "Main Street" app provides biographies highlighting storeowners' personal backgrounds and charities of choice, so customers can be more informed and support people and causes that appeal to them. The app was a finalist for University of Pennsylvania President Amy Gutman's Innovation Prize.



# Houston Louis Stokes Alliance for **Minority Participation Program (H-LSAMP)**



Principal Investigator Dr. Bobby Wilson wilson bl@tsu.edu 713.313.7452

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Ms. Sharon Sledge

UNIVERSITY of

SAN JACINTO COLLEGE

EXAS STATE

UNIVERSITY

## **H-LSAMP Senior Alliance Goals**

Texas Southern University, a historically black college and university (HBCU) serves as the "*lead*" institution for the Houston Louis Stokes Alliance for Minority Participation (H-LSAMP) Senior Alliance and Dr. Bobby Wilson serves as the Principal Investigator for H-LSAMP. The participating institutions include the University of Houston, University of Houston Downtown, University of Houston Clear Lake, Texas State University, Houston Community College and San Jacinto College.

The Houston Louis Stokes Alliance For Minority Participation is in the 4<sup>th</sup> year of Phase IV 2017-2018.

As stated by the External Evaluators, "As a senior-level alliance, H-LSAMP will support new efforts in student transition, student support mechanisms for non-traditional students, the inclusion of social support mechanisms to facilitate STEM retention, and the institutionalization of high-impact practices developed during earlier LSAMP funding. Over the five-year project, the Houston LSAMP Senior Alliance will:

- Graduate 4,000 minority students in STEM disciplines;
- Provide all directly supported students with the opportunity to participate in research activities;
- Have at least sixty percent of directly supported students attend professional or graduate school; and
- Retain at least eighty percent of minority STEM undergraduates, including transfer students, in STEM majors.

Upon completion of the award period, the H-LSAMP Project will have provided the opportunity for all supported students to meaningfully participate in research activities, including international research."











# **H-LSAMP AT A GLANCE**

# **H-LSAMP IS STUDENT FOCUSED**

- Over 80% of H-LSAMP Scholars completed summer internships at various universities, government labs, industry, or professional corporations.
- Institutionalization of H-LSAMP throughout the consortium.
- Over 50% of H-LSAMP graduates are in graduate or professional programs.
- LSAMP Scholars have received funding from the following:
  - Bridge to Doctorate Fellowships
  - National Science Foundation Graduate **Research Fellowships**
  - **GAANN Fellowships**
  - **EPA** Fellowships
  - Other University Fellowships
- Scholars participated in local and national research conferences throughout the year.

### **H-LSAMP Impact Statement**

The H-LSAMP has awarded a total of 12,868 bachelor degrees, 1,920 masters degrees, and 376 doctoral degrees to UREP students in STEM disciplines. Bachelor degree production has been consistent across each of the four year

phases. The Alliance nearly doubled the number of UREP STEM degrees award ed during Phase I and even increasing that level of production ir Phases II and III. Phase IV is on pace to award 4,100 degrees, an increase of

Percent Change in UREP STEM Bachelors Degrees '98-99 to '15-16					
Discipline		II-LSAMP	National		
Computer & Info.	Sci.	111%	80%		
Engineering		79%	72%		
Mathematics		166%	74%		
Physical Science	re -	161%	83%		
Total		121%	89%		

22% as compared to Phase I.

H-LSAMP UREP STEM bachelors degree production has increased in each of the four main disciplines targeted by this NSF project. Degree production has doubled (growth factor of 1.1) in computer & information science and has increased by a growth factor of 1.6 in mathematics and

physical science. When compared with national data, the H-LSAMP has outpaced degree production in each of these three areas along with engineering, with an overall growth factory of 1.21 compare with

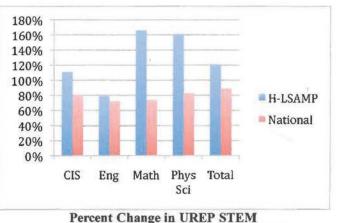
H-LSAMP UREP STEM Bachelors Degrees by Phase			
Phase I	335 <sup>2</sup>		
Phase II	3633		
Phase III	3819		
Phase IV to date	4958		

national average of 0.89.





H-LSAMP UREP STEM bachelors degree productions has increased in each of the four main disciplines targeted by this NSF project. Degree production has doubled (growth factor of 1.1) in computer & information science and has increased by a growth factor of 1.6 in mathematics and in physical science. When compared with national data, the H-LSAMP has outpaced degree production in each of these three areas along with engineering, with an overall growth factor of 1.21 compare with the national average of 0.89.



Bachelors Degrees from 1998-99 to 2015-16



# Illinois LSAMP

# **LEADERSHIP TEAM**

Diversifying the Spectrum of Opportunities in STEM

## **HISTORY & BACKGROUND**

The Illinois Alliance for Minority participation (ILSAMP) was established in 1993. The ILSAMP is a diverse group of public and private institutions in urban and rural settings throughout the state of Illinois and include one federal laboratory. Together, this group participates in a collaborative effort to provide programs that improve the quality of STEM education for underrepresented minority (URM) students. Each of these organizations has made a commitment of faculty, staff, research facilities and technical assistance to ensure successful opportunities for students participating in Illinois LSAMP programs. As a senior alliance, the alliance has a Bridge to the Doctorate (BD) activity at the University of Illinois at Chicago (UIC). This activity was established in 2006.

# Principal Investigator



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### Co-Principal Investigator & Project Director



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### Bridge to the Doctorate Co-PI



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### **PROJECT GOALS & OBJECTIVES**

ILSAMP supports and sustains comprehensive approaches to broadening participation by increasing the number of underrepresented students who: choose and persist in science, technology, engineering and mathematics (STEM) disciplines; attend graduate school in STEM disciplines; and are prepared to teach or occupy professional positions in the STEM workforce. The major objectives of the alliance are to:

1. Institutionalize effective activities begun during earlier levels of ILSAMP;

2. Improve the quality and numbers of underrepresented minority students matriculating in STEM disciplines;

3. Increase the emphasis on student progression and completion of the Ph.D. through preparation and development of pathways to graduate study for STEM baccalaureate recipients; and

4. Establish international opportunities that will enable students to understand and participate successfully in global science endeavors.



### **OUR APPROACH**

Based on thorough understanding of programmatic approaches shown to be successful and cost effective in meeting the needs of underrepresented minority students, ILSAMP adopted a comprehensive set of activities aimed at enhancing the growth of the STEM community and strengthening linkages and partnerships in STEM education throughout Illinois. Our activities are formulated around the following strategies:1) pre-college and community college bridge programs to ease the transition and better prepare freshman and transfer students; 2) faculty and peer-mentoring to help retain students in STEM disciplines; 3) supplemental instruction (study groups, tutorials, workshops, study skills training) to strengthen students' ability to succeed in gatekeeper courses; 4) academic year and summer faculty/undergraduate research to prepare and develop students for graduate school; 5) internships and 6) international connections for study and research abroad. At each step of recruitment, retention and preparation for graduation, students were provided with carefully designed opportunities to help them individually reach their personal goals.





### **KEY OUTCOMES**

The following are the key outcomes:

1. A number of positions within ILSAMP Alliance partner institutions were either supported in-part or institutionalized;

2. Well over 1,600 B.S. degrees in STEM have been awarded to ILSAMP students;

3. ILSAMP students received prestigious awards, including the National Science Foundation (NSF) Graduate Fellowship for outstanding research work;

4. Students participated in several local, state, national and international conferences and symposiums, including the ILSAMP Annual Symposium in STEM, that enabled them to build confidence and networking skills;

5. The program expanded international collaborative exchanges and partnerships which enhanced instructional and research opportunities for students, and

6. To-date, a total of 66 students have enrolled in the ILSAMP Bridge to the Doctorate at UIC, 31 of whom are currently enrolled while 28 of them (all minorities) have completed Ph.D. degrees from 17 different STEM disciplines.

# IN LSAMP

# BUILDING A COMMUNITY OF STEM SCHOLARS

Indiana STEM Louis Stokes Alliance for Minority Participation (IN LSAMP) was formed in 2016 with an award from the National Science Foundation (HRD 1618408). The alliance comes together with a single shared goal of doubling the number of STEM Bachelor's degrees earned by underrepresented minority (URM) students at each campuses.

The alliance focuses on URM students' academic preparation, increasing engagement in their STEM disciplines on our campuses, retaining students in STEM majors to graduation, transitioning students from community colleges to four-year institution, and preparation for STEM careers and graduate school.

To achieve our goal the alliance implements three broad strategies across six campuses:

- engage in High-Impact Practices (HIPs) to increase the retention rate of first-year, fulltime URM students by 2% per year at each institution,
- facilitate seamless transition into STEM undergraduate and graduate degree programs
- design a website dedicated to alliance communication and dissemination of IN LSAMP best practices.

# HIGH IMPACT PRACTICES

- > Peer Mentoring
- > Summer Research
- > Summer Bridge
- > Learning Communities
- > Peer Tutoring and Resource Centers
- > Annual Research Conference
- STEM Summer Program for HS Students

Lead Institute: IUPUI, 755 W. Michigan St, UL 1140, Indianapolis, IN 46202

Alliance Director Dr. Kim S. Nguyen knguyen@iupui.edu

Program Director Michelle Quirke mvquirke@iu.edu



Phone: 317-278-9115 Email: inlsamp®iupui.edu Website: http://inlsamp.org

For more information about the work of IN LSAMP follow @INLSAMP on Twitter.

# IN LSAMP Leadership Team

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# IN LSAMP SCHOLARS

IN LSAMP Summer Research Scholars engage in exciting research where they are able to receive faculty mentorship, build relationships, and gain experience in STEM research. These students continue their learning beyond the lab through submission of research abstracts and poster presentations of their summer research project.

Keon Jones (below), IUSB Summer Research Scholar, and Celia Ochoa (right), IUPUI Level One Scholar, presenting at the 2017 LSMCE Annual Conference. Both scholars have continued their research journey through participation at 2018 The Scripps Research Institute DiVERGE program.

During the academic year, IN LSAMP supports STEM tutoring centers located in our campus learning communities. Our IN LSAMP Scholars receive training to prepare them to serve as peer mentors and tutors, as well as attend workshops and professional development opportunities that allow them to continue building upon their skills throughout the year.

A Sensitive Electrochemical Method t

In our first year we have engaged over one-hundred and fifty students in our tutoring centers located in learning communities across campus. Our Scholars share their research and academic experiences with future scientists and engineers through our visits to local high schools as IN LSAMP Student Ambassadors and in our STEM Summer High School Program which reaches approximately fifty URM students every summer.



# IN LSAMP Program Administrators

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Ivy Tech Community College Indianapolis Campus Dr. Michael Hall Candice Jackson, MS (Coordinator) Isamp@ivytech.edu

IN LSAMP Research Conference will be held October 19, 2018 in Indianapolis, Indiana on the Ivy Tech Community College (ITCC) campus.

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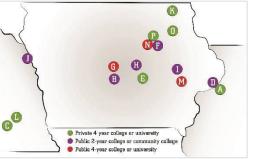


# **IOWA ILLINOIS NEBRASKA LSAMP ALLIANCE**

The Iowa Illinois Nebraska LSAMP (IINSPIRE LSAMP) is a 5+ year alliance formed in 2011 with the goal of doubling the number of underrepresented minority (URM) STEM baccalaureate graduates in the alliance to 350 graduates, to sustain the increases, and thus broaden the participation of underrepresented minorities in STEM education in the Midwest.

## **OBJECTIVES**

• Implement and extend comprehensive, evidence-based, innovative, and sustained strategies to achieve LSAMP priorities resulting in the graduation of well-prepared, highly qualified students from underrepresented groups who pursue graduate studies or careers in STEM.



- Engage alliance faculty to support their mentoring of students, use of evidence-based and inclusive teaching practices, and understanding of URM STEM student success.
- Investigate research questions and collect data to study the effect of program activities, better understand URM STEM student success and institutional environment inform and guide programmatic efforts, and contribute to scientific knowledge.
- Strategically manage the organizational, financial, data, and communication aspects of the project within/across institutions and with partners, including alliance-wide activities that strengthen collaborative approaches.
- Evaluate institutional and alliance program effectiveness and sustainability guided by logic model outcomes.
- As broader impacts, improve educational pathways, training, partnerships, networking, and infrastructure that contribute to inclusive institutions and a diverse STEM workforce prepared to address societal needs.



Jonathan Wickert

Principal Investigator

# Alliance Leadership

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Diane Rover Alliance Director

# **IINSPIRE LSAMP STUDENT NEWS**

### MOUHAMAD DIALLO RECEIVES GOLDWATER SCHOLARSHIP



Mouhamad Said Diallo, a senior majoring in mechanical engineering and materials engineering, at Iowa State University, plans to earn a Ph.D. and pursue an academic career in sustainable energy and technology. He transferred to ISU from Des Moines Area Community College, where he coauthored a scholarly article in Physics Letters A while working with an ISU mechanical engineering researcher.

## DANIEL HERRERA STUDIES CAPUCHIN MONKEYS IN PANAMA AND RECEIVES TOP HONORS

Daniel Herrera, a senior at Augustana College, travelled to Barro Colorado Island, Panama, to study the foraging behavior of white-faced Capuchin monkeys. Daniel won first place in the undergraduate division for his poster on his research at the national Sigma Xi scientific honor society meeting. Upon completion of his degree, he plans to take a gap year then pursue a PhD in wildlife ecology.



# HIGHLIGHTS

A high-quality student experience model supported by mentoring, participation in research, opportunities for building networks, professional development, and a community with other URM STEM students (through alliance activities) has been developed on each campus.

The alliance's annual conference was identified by both students and campus directors as essential for motivating students, connecting them with other students, and getting them interested in research.



Queenster Nartey Undergraduate Researcher, Iowa EPSCOR

Undergraduate research opportunities were also identified as essential for engaging students in STEM and motivating them to consider graduate training. Students reported very positive mentored research experiences, mentioned learning valuable skills, and appreciated the opportunity to take ownership of their research experience.

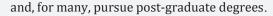
Alliance partnerships resulted in new bridge programs, opportunities for students to engage in research (including students whose home institution might not be able to provide these opportunities in the absence of the alliance), and an exchange of information and effective practices to support institutional efforts to expand the participation, success, and graduation of URM students in STEM.

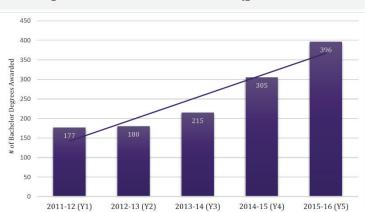
Pedagogy workshops for faculty and staff took place at alliance annual conferences and were also hosted at alliance campuses. Workshop materials were disseminated on the IINSPIRE website (www.iinspirelsamp.org) and the SERC (Science Education Resource Center at Carleton College) Portal. Pedagogy workshops addressed topics such as recruitment, bridge programs, mentoring, supporting student research, and the retention of URM students.

# HISTORY

IINSPIRE LSAMP surpassed its goal of doubling the number of URM STEM graduates at alliance institutions (goal of 350 graduates). During years 1-5 of the alliance:

- 1. The number of bachelor's degrees awarded **increased by 124% from 177 to 396**.
- 2. The number of underrepresented minority students enrolled in STEM majors at alliance institutions **increased by 99% from 1459 to 2899.**
- 3. Students surveyed affirmed that participation in IINSPIRE increased their confidence in their STEM abilities, fostered a sense of community with other URM students, provided valuable professional skills, and motivated them to complete their STEM majors







### IINSPIRE-LSAMP is supported by NSF Award Number: HRD-1619654, 2016-2021

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# **ISLANDS OF OPPORTUNITY ALLIANCE** LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

Vision

The vision of the Islands of

**Opportunity Alliance (IOA)** 

is to prepare and diversify the

STEM workforce in Oceania,

particularly those of Native

Hawaiian and Pacific Islander

and research experiences,

rooted in indigenous language

and culture



# Goals

To increase the overall number of Native Hawaiian and Pacific Islander students graduating with baccalaureate degrees in STEM disciplines and pursing graduate degrees or entering a STEM career.

# **Objectives**

To improve/increase recruitment, retention, and graduation rates by facilitating specific inter-IOA program partnerships, (ii) develop curriculum enhancements and enrichment research experiences in support of STEM success, and (iii) promote STEM graduate degrees and STEM-related fields of employment for IOA participant students.



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# IOA IMPACTS

Since 2006, the IOA has evolved as a dedicated network of higher education institutions working in partnership to identify and develop successful STEM student pathways for its dominant Underrepresented Minority(URM) student demographic—Native Hawaiians and Pacific Islanders. Led by the University of Hawai'i at Hilo, the eleven IOA partner institutions are located on small islands in a geographic area larger than the continental United States, with nine distinct language-speaking communities.



# **Alliance Activities**

# Annual STEM Student Symposium and National Conferences

Over 20 IOA students participate annually in the student symposia that showcases student research while forging an attachment to place through cultural excursions and community service. These presentations prepare students for national conferences.

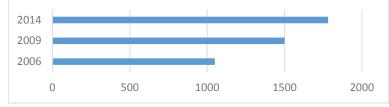
# Summer Bridge and Transfer Programs

Programs facilitate the transition from the six community colleges to the five 4-year institutions, centered in Hawai'i and Guam.

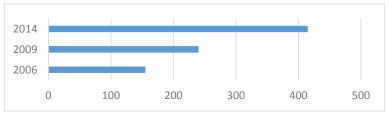
# STEM Learning Communities and Cross-Cultural Exchanges

Programs build confidence and forge an identity of belonging to the scientific community and to the cultures of Oceania.





Number of STEM Majors from URM Groups



Number of Graduates from URM in STEM Fields

# **Undergraduate Research**

Summer research internships with STEM faculty mentorships and year-long research cohorts provide students from across the IOA with cutting-edge research in such fields as climate science, marine science, and astronomy. Over 50 IOA students participated between 2011-2017 in research across the Pacific.



## Kansas State University Leadership Team



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# **Goals & Objectives**

- Develop a successful STEM pathway to the baccalaureate degree
- 2. Work to develop innovative and culturally appropriate recruitment materials and activities for high school and college STEM students
- **3.** Develop and evaluate a systematic approach to assuring successful transfer to K-State
- **4.** Develop and improve academic curricular and co-curricular activities that impact persistence and retention of URM students
- Provide formative and summative evaluation to assure continuous project improvement and the impact of the project on students and the institutions

# **Alliance Description**

The Kansas LSAMP includes the state's land-grant institution Kansas State University, three Hispanic-serving community colleges in Southwest Kansas and one minority-serving private institution in urban Kansas City. The focus of the program is to coordinate specialized activities at critical junctures in students' career. This includes the transition from high school to college; two-year to four-year institutions, and the critical freshmen to sophomore transition at four-year institutions.

# **Alliance Members**

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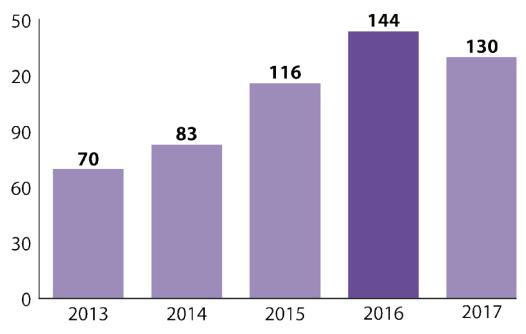
**Fall 2017** | Over 35 students attended KS-LSAMP's Transfer Student Visit Day on October 22, 2017. Students were able to meet with current transfer students, tour the campus, and learn more about STEM majors offered at the university.







# Kansas State University STEM Baccalureate Degrees Conferred for Minority Students



**Figure 1** The number of STEM baccalaureate degrees that have been conferred to minority students at K-State during the years of 2013-2017. We reached our goal of doubling the number of degrees conferred to minority STEM students in 2016.

# **LSAMP Student News**



# Kate Inchun

Work during the RiPS summer research program (2015) was included in a recent publication in Anticancer Research



## Kathlyn Gomendoza

Received honorable mention in the Goldwater Scholarship competition (2017)



# Alice Lam

First place at Kansas City StartUP Weekend 2017 and People's Choice Award, voted on by attendees



Students from the summer 2017 Research Immersion: Pathways to STEM (RiPS).



A summer 2014 RiPs student conducts research with a graduate student.

# Alliance Impact Statement

KS-LSAMP is still in its growth and development stage as we have only been a funded alliance for the past four years. During this time, we have developed an 8-week summer research program focused on engaging community college students. We have also created a transfer student visit day program for community college alliance students who are interested in STEM fields and K-State. This fall and spring event, hosted in collaboration with the K-State Admissions office, is regularly attended by alliance students and faculty.

# Greatest Accomplishments

- We were able to reach our goal of doubling the number of undergraduates obtaining baccalaureate degrees in Year Four of our five year grant cycle
- ~70% (21/30) of the community college students who participated in our summer research program transferred to a 4-year institution.
- Intercultural Professional Development Series for STEM Deans, Department Heads, faculty and staff

# **KY-WV LSAMP**





**Principal Investigator** 

Eli Capiluoto, DMD, ScD President, University of Kentucky 859-257-1701, <u>pres@uky.edu</u>

## **KY-WV LSAMP Mission Statement**

The Kentucky – West Virginia Louis Stokes Alliance for Minority Participation (KY-WV LSAMP) is a consortium of colleges and universities working together to create, enhance, and expand programs designed to broaden participation and increase the quality and quantity of students from underrepresented populations, who receive degrees in science, technology, engineering, and mathematics (STEM) disciplines. Program goals and activities focus on undergraduate research experiences, graduate school preparation, and international experiences. LSAMP is a federally funded program through the National Science Foundation.



www.uky.edu/KYWV-LSAMP

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During the course of the current five-year grant (Phase II), KY-WV LSAMP has met or exceeded its set goals to award 1000 URM STEM BS degrees and to increase URM STEM enrollment to an average of 2000 per year.

In 2016-17, KY-WV LSAMP institutions awarded **360 URM STEM BS degrees**. This represents a 31% increase from the previous year and a 101% increase from the first year of KY-WV LSAMP (2006-07). There have been 1,177 Phase II degrees granted to date.

Enrollment has increased significantly during Phase II. In 2016-17, KY-WV LSAMP institutions **enrolled 2,627 URM students** in STEM programs - a 16% increase from the previous year and a 37% increase from the first year of KY-WV LSAMP (2006-07). Below are charts representing URM STEM BS degrees and enrollments at KY-WV LSAMP institutions.

## 2017-18 Highlights

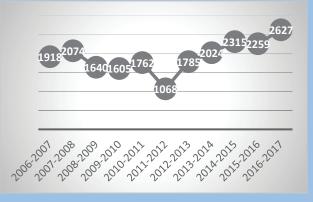
### Louisiana State University

**International Research Experience for Undergraduates** One focus of KY-WV LSAMP is encouraging scholars to take advantage of international experiences. In summer 2017, two scholars were able to do just that through a Louisiana State University iREU. Sarah Hodges, UK biochemistry junior, spent the summer in Grenoble, France, conducting research with Dr. Gerard Mortha. Danielle Chavis, WKU chemistry senior, spent the summer in Puerto Rico conducting research with Dr. Antonio Martinez. A pre-trip conference took place in Washington, DC at the French Embassy. Sarah and Danielle presented other research they had conducted up to that point and met with other researchers and professionals. Pictured left: Sarah, Dr. A. James Hicks (LSAMP Program Director), and Danielle

### **Emerging Scholars Program at West Virginia University**

WVU LSAMP Campus Coordinator, David Miller, is an Associate Professor of Mathematics in the Department of Mathematics, Undergraduate Program Director and cocoordinator of College Algebra and Pre-calculus. In this position, Dr. Miller led the development of the Emerging Scholars Program (ESP) at WVU. ESP is an inquiry-based learning model where students learn by leading class with questions and discussion as opposed to an instructor lecturing. In 2016, Dr. Miller, along with Jessica Deshler and Matthew Pascal, published an article titled, "An Active Classroom: The Emerging Scholars Program at West Virginia University." In the article, the authors explained that since the program's inception in 2009, approximately 100 students have taken ESP Calculus I, with many of them moving on to the ESP sections of Calculus II, III, and Differential Equations. Success rates indicate they are succeeding at higher rates than their non-ESP counter parts in Calculus I.





# Louis Stokes Louisiana Alliance for Minority Participation (LS-LAMP) Southern University and A&M College (Lead Institution) www.subr.edu/Islamp

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From its inception in 1995, the Louis Stokes Louisiana Alliance for Minority Participation (LS-LAMP) has been committed to its mission to increase substantially the number and quality of underrepresented minority students earning degrees in science, technology, engineering and mathematics (STEM) disciplines, with a significant proportion transitioning to graduate school. The Alliance

is currently composed of twelve (12) institutions of higher education and the Louisiana Universities Marine Consortium (LUMCOM), a research facility. The original alliance was joined by Xavier University in 2010. From 1995-2016, LS-LAMP has had a transformative impact on Louisiana STEM education, with emphasis on minority STEM education. This success was achieved through the adoption and institutionalization of our 10-Strand Systemic Mentoring Model at all LS-LAMP partner institutions. For more information on this model, visit http://www.subr.edu/assets/LSLAMP/TEN-StrandSYSTEMICMENTORINGModel05.pdf.

During the last 22 years, a significant indicator of the impact of LS-LAMP is the number of STEM Ph.D. degrees awarded to minority STEM Baccalaureate degree graduates of LS-LAMP partner institutions. This number is a direct measure and indicator of the increase in the quality of minority STEM BS degree graduates from LS-LAMP institutions. Since 2000, over 230 STEM Ph.D. degrees have been awarded to LS-LAMP alumni. Additionally, LS-LAMP has published more than 80 papers on systemic mentoring. Some of the major, refereed publications, pertaining to the basic tenets of teaching, mentoring, and learning (TML), have been validated by publications and reports by the National Academies of Science and the National Research Council. Institutional infrastructure enhancement and curriculum reform are integral parts of the referenced institutionalization.



### Members of LS-LAMP Governing Board and Statewide Office







Governing Board and

Louisiana Commissioner

of Higher Education





Co-PI, Senior Associate Vice Chancellor for Academic Affairs Southern University luria young@subr.edu





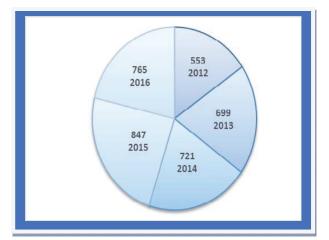
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# PILLARS OF SUCCESS: The Ten-Strand Systemic Mentoring Model of LS-LAMP

### Lighting the Path to Our Future

The adoption and implementation of the Ten-Strand Systemic Mentoring Model of LS-LAMP and of the Timbuktu Academy have significantly and positively affected the financial support and the academic, social, and professional integration of undergraduate scholars on partner campuses. The institutionalization of our transformative best practices is a major, boarder impact of LS-LAMP. LS-LAMP minority STEM degree production between 2012 and 2016 (553, 699, 721, 847, 765) indicates a clear growth of minority STEM degree production. It is also an indication of the post-Katrina recovery of the five (5) New Orleans partner campuses and the continuing success of the other LS-LAMP partners.



### Minority STEM BS Degrees (2012-2016)

### HIGHLIGHTS

- LSAMP Alumnus, First Human Being to See the Signature of Gravitational Waves: Mr. William Parker, a BS and MS degree holder from SUBR and former LSAMP scholar, was the first human being to see the signature of gravitational waves on September 14, 2015, at 4:51 AM. Please see the full story in the next column.
- Increased Graduate School Attendance: A total of 25.5% of LSAMP BS degree holders in STEM attended graduate school. This percentage is slightly higher than the LS-LAMP target of 25%.
- Transformative Broader Impact: The 10-Strand Systemic Mentoring Model of LS-LAMP underpins its ongoing institutionalization on all partner campuses. The resulting best practices portend an ever increasing participation of minorities in STEM, as illustrated by the number of minority STEM BS degree holders from 2012-2016, given above.

### **Student News**

### DETECTION OF GRAVITATIONAL WAVES AT LIGO

Mr. William Parker, a native of New Orleans, Louisiana, began studying at Southern University New Orleans as a scholar of LS-LAMP. After Hurricane Katrina, he transferred to Southern University in Baton Rouge (SUBR) where he



continued to be an LS-LAMP scholar. Parker earned the BS degree in Mathematics while serving as a Docent (tour guide) at the Laser Interferometer Gravitational-Wave Observatory (LIGO) in Livingston, Louisiana. Mr. Parker completed his Master's degree in December 2014 and was immediately employed at LIGO as a Detector Operator, in the same month. Approximately nine (9) months later, he became the first human being to see the signature of gravitational waves, in September 2015, as per the front-page article by The Advocate on February 12, 2016. Mr. Parker has continued his employment as a LIGO Detector Operator since this momentous event. Since detecting the gravitational-waves, William has been interviewed throughout the State of Louisiana and has been featured on local news stations. Articles in national and international news outlets have featured Mr. Parker. Currently, Mr. Parker also serves as an Adjunct Instructor in the SUBR Department of Mathematics and Physics where he teaches undergraduate freshman mathematics.



**Dr. Rashanique Quarels,** an alumna of SUBR LS-LAMP, is among the first cohort of seven fellows in the "Academic Pathways Program," a new Vanderbilt University initiative that serves as a bridge between academic training and entry-level faculty positions. Rashanique Quarels earned a Ph.D. in

chemistry from Louisiana State University (LSU) in spring 2017. However, it was at age 15, when she first met the late Dr. Ella Kelley, an African American female chemist, at Southern University and A&M College. Dr. Kelley advised Quarels to enroll in an ACT prep program at the Timbuktu Academy. Later, Dr. Kelley saw Quarels' talent for chemistry and encouraged her to major in that discipline. As stated above, this LS-LAMP scholar ultimately earned the Ph.D. degree in chemistry. At Vanderbilt, Dr. Quarels is working on the total synthesis of feglymycin, an organic compound derived from the streptomyces bacteria that have anti-HIV properties. Dr. Quarels' goal is to synthesize feglymycin in larger quantities so it can be produced more efficiently.



**Missouri Louis Stokes Alliance for Minority** 

Participation

http://www.hssu.edu/sp\_content.cfm?wID=90&pID=1230

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## About MoLSAMP

In the fall of 2016, Harris-Stowe State University became one of eight colleges and universities to receive a five-year LSAMP grant from the National Science Foundation (NSF), representing one of forty-one such programs sponsored by the National Science Foundation.

MoLSAMP is a collaborative effort sustained by an alliance of two Historically Black Colleges and Universities (Harris-Stowe State University and Lincoln University), four public universities, (Truman State University, University of Central Missouri, University of Missouri, St. Louis, and the University of Missouri, Columbia), one private research intensive university (Washington University in St. Louis), and the St. Louis Community College system to significantly increase the number of underrepresented minority students, statewide who complete undergraduate and advanced degrees STEM fields. This goal will be accomplished through the implementation of a variety of activities and cohesiveness among the individual campuses to promote recruitment, retention and graduation of URM students.

The Louis Stokes Alliance for Minority Participation (LSAMP) is an NSF sponsored program designed to broaden participation in science, technology, engineering, and technology (STEM) disciplines and increase the number of students receiving baccalaureate degrees and ultimately graduate degrees in STEM disciplines.

The objectives of the alliance are to:

- Increase the total number of URM students graduating with STEM degrees by 125% over a 5 year period
- Increase the first and second year retention rates of URM students in STEM disciplines to at least 60%
- Increase the successful transfer of URM students from 2 to 4 year institutions by 25%
- Increase the number of underrepresented students entering graduate programs in STEM fields by 25%



Students participating in the summer research experience in St. Louis



Dr. Dwayne Smith HSSU Provost and PI smithd@hssu.edu



Dr. Dobbie Herrion Project Director herriond@hssu.edu

Lead Institution Harris-Stowe State University 3026 Laclede Ave., HGA - Room 106 St. Louis, MO 63103



# **MoLSAMP**





# Scholars Spotlight!!

The challenges that students face in today's society are more complicated and the journey to the finish line can seem very daunting at times. However, where some see challenges and op-

position, others see opportunities and chances for growth and development. In Missouri, also known as the show-me-state, several LSAMP scholars showed what perseverance looks like and that with initiative, guidance, and grit, nothing can stand in the way of progress!

Curteisha Jacobs of Harris-Stowe State University received a FASEB DREAM Travel Award to attend the ABCRMS Conference to present her research in Phoenix, AZ.

Juanita Stephen, Adriane Replogle, Jordan Perry, Roslyn Stallings, and Asha Faison from Lincoln University attended and presented posters on their summer research at the annual Louis Stokes Midwest Center for Excellence Conference in Indianapolis.

And....The University of Missouri St. Louis welcomed their first URM STEM professional alumni speaker!

# Alliance Spotlight!

 Eight Missouri colleges and universities have jointly received a \$5 million grant from the National Science
 Foundation's Louis Stokes
 Alliances for Minority Participation (LSAMP) program.



Former Governor Missouri Jay Nixon and Dr. Art Hicks were on hand with MoLSAMP representatives to officially announce the MoLSAMP program.

- Dr. Dobbie Herrion was hired to serve as the Project Director and lead the efforts to move the needle for URM STEM achievement in Missouri.
- MoLSAMP Inaugural Undergraduate Research Symposium, March 23-24th in St. Louis, Missouri!

# Molsamp

## "Show Me" The Impact

In the fall of 2016, Harris-Stowe State University received the NSF LSAMP grant. In conjunction with Washington University, the University of Missouri St. Louis, Truman State University, the University of Missouri Columbia, Lincoln University, St. Louis Community College, and the University of Central Missouri State, the MoLSAMP Alliance was charged with increasing the number of underserved populations in higher education, especially in STEM related disciplines. Since receiving the award, MoLSAMP has taken on the challenge set fourth with efforts and activities that lead to intentional impacts.

Although only in its first year, MoLSAMP has hosted a summer sophomore academy that exposed students across the alliance to career and research opportunities in STEM, supported and developed peer and faculty mentoring programs, created freshman seminar courses with STEM specific curriculum, strengthened the community college matriculation pipeline by working with campus presidents

and faculty, and provided undergraduate research opportunities for a host of students throughout the state.





### Michigan Louis Stokes Alliance for Minority Participation

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### Derrick E. Scott

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# **MI-LSAMP AT A GLANCE**

The Michigan Louis Stokes Alliance for Minority Participation (MI-LSAMP) currently teams six (6) of the State of Michigan's universities and community colleges; (the University of Michigan, Michigan State University, Mott Community College, Washtenaw Community College, Wayne State University and Western Michigan University) in an effort to address the national and state need for a more diverse and well-trained science, technology, engineering, and mathematics STEM workforce.

The MI-LSAMP mission has been to design, implement and evaluate programs aimed at accomplishing the following goals:

- Significantly increase the number of underrepresented minority students (URM) earning baccalaureate degrees in STEM;
- Double the number of URM students transferring into MI-LSAMP 4-year STEM degree programs;
- Increase the number of URM students pursuing STEM graduate degrees.

### Key MI-LSAMP program initiatives developed to achieve these goals include:

- Pre-1st Year STEM Summer Transition Programs at all partner institutions:
- Faculty-mentored research for undergraduate STEM students (transfer & community college);
- Student Research Symposia;
- "Embedded Research" to enhance STEM pathways from community college to 4-year STEM degree programs;
- LSAMP Model (Mentoring; Peer Study Groups, Supplemental Instruction, Advising; Internships)

# **Impact Statement**

The MI-LSAMP Alliance has made progress during its 10 year history in realizing its long term goal of doubling the number of URM students earning bachelor degrees in STEM fields of study, with significantly improved graduation rates and the placement of nearly 300 university and community college students in authentic research experiences.

"Our research on the structure of the **STEM curriculum in the partner** institutions has revealed critical roadblocks in the transferability of STEM coursework from community colleges to universities. In some **STEM disciplines, these roadblocks** prevent STEM-focused community college students from transferring into the universities as juniors with equal standing to their peers who began in the universities. Our continuing research in this area will quantify the impact of structural roadblocks like these on student progress and completion and inform efforts to strengthen transfer pathways to STEM baccalaureate degrees."

- Dr. Peter Riley Bahr, Ph.D., Associate Professor, University of Michigan, MI-LSAMP Researcher

# **Student takes Top Honors**



JustOne Crosby, MI-LSAMP Student since 2015

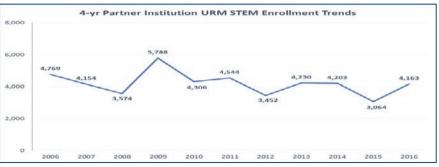
- Undergraduate Poster Presentation, Chemical Sciences/Emerging Research National Conference
- Junior, Paper Engineering
- Research at two MI-LSAMP partner schools (WMU & WSU)
- WMU Student Ambassador

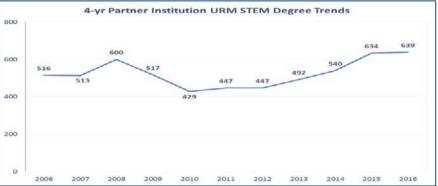
# **Recent MI-LSAMP Achievements**

- Designed and launched comprehensive Alliance Transfer Scholars Programs at two MI-LSAMP Community College (CC) partner schools (Mott & Washtenaw CC);
- Initiated "Embedded Research" Project to better understand how to maximize the potential of Community College pathways to STEM BS degrees;
- Significant increase in the number of entering STEM students participating in Pre-1st Year (PFYSP) and research summer programs by leveraging new collaborations (e.g. MSU S-STEM partnership);

"Students who participated in the LSAMP-funded Pre-First Year summer programs reported high levels of agreement on social integration measures as well as interest in research opportunities and going to graduate school." – Dr. Victoria Bigelow, MI-LSAMP Evaluator, CEDER (Center for Education Design, Evaluation, and Research)

# **Enrollment & Graduation Data**

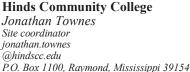




# Louis Stokes Mississippi Alliance for Minority Participation

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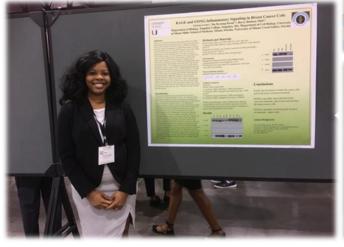


# **About LSMAMP**

The Louis Stokes Mississippi Alliance for Minority Participation (LSMAMP) program is designed to prepare undergraduate underrepresented minority students who major in Science, Technology, Engineering and Mathematics (STEM) to be effective and proficient in their respective STEM field, and to be prepared for graduate school. This is achieved through not only classroom activities, but also through engaging in research activities, tutoring and serving as mentors to their peers, attending GRE workshops, and other developmental activities that prepare our LSMAMP Scholars for graduate school.

Another component of the LSMAMP program is the Summer Bridge program for High School Seniors. Students may apply for the Summer Bridge program in the summer before their freshman year. This 3-4 week program introduces students to campus life, and prepares them for the rigor of college academics in STEM.

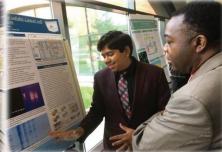














# **Symposium and conferences:**

Students who are part of the LSMAMP program are expected to conduct research with a faculty mentor, attend workshops on networking and master presentation skills. Students also participate in scientific reading and journal club, effective study habits, time management and present at the following conferences:

- Annual Biomedical Research Conference for Minority student (ABRCMS).
- LSMAMP Research Symposium.
- Emerging Research Conference.
- International Conference on Recent Advancement in Health.

# **International travel:**

Our students are given the opportunity to understand the challenges, consequences, benefits, and implications of globalization. By traveling abroad and conducting research, our students learn other cultures and are exposed to the reality of what is expected in the global STEM workforce.

# **Requirements**

- Students must be U.S. Citizen or permanent resident
- Students must be in STEM or STEM related field
- Student must have a GPA of 3.0 or above
- Students must be willing to do research

# **Louis Stokes Mississippi Alliance for Minority Participation**

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# **Pacific Northwest** LSAMP

In 2009, five universities in Washington, Oregon, and Idaho were awarded an LSAMP grant to form the Pacific Northwest Louis Stokes Alliance for Minority Participation (PNW LSAMP). The PNW Alliance was expanded in 2015 to include eight community college partners. PNW LSAMP is a collaborative network of universities, community colleges, science centers, and pre-college programs that work to broaden the participation of underrepresented minority (URM) students in STEM. Broadening participation is critical to the region's economic vitality given the significant number of STEM-related industries and research initiatives in the Pacific Northwest.

## ALLIANCE GOALS AND OBJECTIVES

PNW LSAMP contributes to the production of diverse talent in STEM fields by providing programs that keep URM students engaged in STEM majors. By keeping students engaged, PNW LSAMP aims to: 1) increase the number of STEM bachelor degrees granted to URM students by 10% per year; 2) increase the number of STEM degrees granted to URM STEM transfer students; and 3) provide workshops and services to ensure that 95% of LSAMP-affiliated students are exposed to information about graduate school preparation.

### THE LSAMP PROGRAM PROVIDES:

•Community •Research Opportunities •Conference Participation •Student Space •Study Abroad Experiences •Lending Libraries •A "home base" on campus



Newly transferred Portland Community College LSAMP students participated in a workshop on Developing a Growth Mindset at Portland State University with Dr. Lorna Tran.



Bridge to Boise State attendees gained an introduction to Boise State and also received their first exposure to Boise State's LSAMP Program.



University of Washington LSAMP students studied abroad in Australia where they partnered with the Queensland University of Technology.



WSU's fall research banguet exposed LSAMP students to research opportunities and connected them with STEM faculty across campus.



OSU LSAMP mentors and mentees out on the ocean during the Summer Scholars Bridge Program



PNW LSAMP Alliance GEM grad lab attendees pictured with Dr.Novella Bridges, who works as a project manager in PNNL's Applied Statistics and Computational Modeling group



Dr. Ana Mari Cauce PI & President of the University of Washington 205.543.5010 president@uw.edu



Dr. June Hairston Director nuiversity of Washington 206.685.4322 jhair@uw.edu



Dr. John B. Schneider CO-PI Washington State University 509.335.0348 schneidj@eecs.wsu.edu



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Lead Institution University of Washington Mary Gates Hall 311/Box

Mary Gates Hall 311/Box 355845 Seattle, WA 98195-2835 email: lsamp@uw.edu office: 206-685-3422 fax: 206-543-2746 bts://documents.org/

### STUDENT NEWS

### **Boise State University**

Joel Johnson was accepted into the McNair Scholars program and received the Benjamin A. Gilman Award to travel to South Korea for the spring semester.

Silvia Peritte received the MILES Undergraduate Research and Internship research fellowship for Spring 2017.Silvia also presented her poster, "Water Quality and Redband Trout Habitat in Dry Creek, Ada County, Idaho" at the 2017 Joint AFS-TWS conference, Spring 2017.

Allyssa Hernandez received the Freeman-Asia award to travel to Tokyo.

### **Portland State University**

Recent PSU LSAMP graduate, Griselda Velasco, coauthored a publication reporting her LSAMPsupported undergraduate research, "Adaptive evolution under extreme genetic drift in oxidatively stressed Caenorhabditis elegans" in Genome Biology and Evolution.

### **Oregon State University**

Alec Eastman will be starting his doctorate at UCSB this fall as part of the Louis Stokes California Alliance for Minority Participation Bridges to the Doctorate Fellowship.

Lorraine Waianuhea was selected to participate in the Undergraduate Experience at Sea program where she participated in the multi-day research cruise aboard the R.V. Oceanus.

### **University of Washington**

Francesca Green presented her research on "Ocean Surface Salinity in the Eastern Tropical Pacific" at the Washington NASA Space Grant Consortium.

### Washington State University

Misganaw Demissie.an LSAMP Research Stipend recipient, received the Best Poster Award at the Annual Biomedical **Research Conference for** Minority Students.

Beatriz Abad-Martinez had the opportunity to work for HP Inc over the summer as a Mechanical Engineering Intern in Boise, Idaho. She worked in Laserjet supply chain and had the assignment of optimizing a part for a future printer.

# Pacific Northwest LSAMP

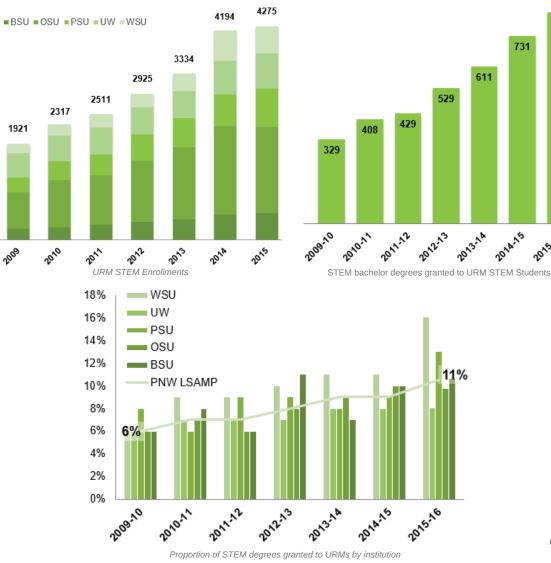
### **IMPACT STATEMENT**

PNW LSAMP institutions have been very successful at broadening participation in STEM. As of fall 2015, there were a total of 5,339 URM students enrolled in STEM majors at PNW LSAMP university campuses, an increase of 123% since the program began. The number of STEM degrees granted to URM students has also increased by 150% since PNW LSAMP's first year, from 329 in 2009-10 to 823 in 2015-16. Growth in the number of STEM degrees granted to URM students has outpaced growth in the number of STEM degrees granted overall – the number of STEM degrees granted to non-URM students at PNW LSAMP Universities has grown by 49% since PNW began. In addition to growth in enrollments and degrees granted to URM STEM students, partner institutions have been transformed by participation in the Alliance. Alliance campuses have implemented policy changes, developed new partnerships, and piloted new ways of delivering student support as a direct result of PNW LSAMP's efforts.

### ACCOMPLISHMENTS OF THE 2017/2018 ACADEMIC YEAR

- The PNW LSAMP conference provided students with the most extensive knowledge about graduate school, coupled with motivation for applying.
- Gem GRAD Lab: A highly interactive event designed to inform and motivate students from underrepresented groups in STEM fields to understand the importance of a graduate degree.

## **ENROLLMENT AND GRADUATION DATA**



823

731

2014-15

2015,16

611



Peach State Louis Stokes Alliance for Minority Participation

Lead Institution University of Georgia http://www.pslsamp.uga.edu

Peach State



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Michelle G. Cook, Ph.D. Lead Co-Principal Investigator mgcook@uga.edu

Suzanne E. Barbour. Ph.D. Co-Principal Investigator sbarbour@uga.edu

Karen M. DeMeester, Ph.D. Co-Principal Investigator karend@uga.edu

William S. Kisaalita, Ph.D. Co-Principal Investigator williamk@engr.uga.edu

Angela Y. Birkes, Ph.D. Project Director abirkes@uga.edu

# **Partner Institutions**

Fort Valley State University http://www.fvsu.edu/pslsamp Dwayne Daniels, Ph.D. danielsd@fvsu.edu

Georgia Institute of Technology http://ceed.gatech.edu/LSAMP Felicia Benton-Johnson, Ed.D. Felicia.johnson@coe.gatech.edu

Georgia State University, Perimeter College http://perimeter.gsu.edu/lsamp Margaret Major, MS margaret.major@gpc.edu

Kennesaw State University, Kennesaw Campus http://pslsamp.kennesaw.edu/kennesaw/index.php Melanie Griffin, Ph.D. mgriff40@kennesaw.edu

Kennesaw State University, Marietta Campus http://pslsamp.kennesaw.edu/Marietta/index.php David Veazie, Ph.D. dveazie@spsu.edu

Savannah State University https://www.savannahstate.edu/pslsamp/index.shtml Mohamed Mustafa, Ph.D. mustafam@savannahstate.edu



Group Photo from the 11th Annual Peach State LSAMP STEM Innovators Conference Savannah, GA February 2—4, 2017

each State LSAMP, established in 2005, has the mission to

significantly increase the number of underrepresented minority students completing undergraduate and graduate degrees in STEM disciplines. The Alliance is comprised of six University System of Georgia public institutions including the University of Georgia (lead institution), Fort Valley State University, Georgia Institute of Technology, Georgia State University Perimeter College, Kennesaw State University, and Savannah State University. It is committed to the implementation of a comprehensive and integrated series of recruitment and retention initiatives that address key transition points from undergraduate recruitment through graduate school completion in order to achieve its mission. With a student focus in mind, the Peach State LSAMP provides services that assist underrepresented minorities with the transition from high school to college, integrates them socially and academically into the university environment, and engages them in research and summer internship opportunities. Peach State LSAMP set the following 2016—2021 goals for extending the STEM pipeline:

- Goal 1: Increase enrollment of URMs in STEM disciplines by 20% above 2013-2014 enrollment of 8,844 per year as the benchmark
- Goal 2: Increase baccalaureate degrees obtained by URMs in STEM disciplines by 20% above 2013-2014 BS degree production of 1,211 per year as the benchmark
- **Goal 3**: Increase the transfer of GPC LSAMP students to 4-year institutions by 25% above 2014 2015 transfer total of 12 per year as the benchmark
- Goal 4: Increase the number of LSAMP students who participate in research/internships by 25% above 2014 -2015 total of 185 undergraduate students per year as the benchmark
- Goal 5: Increase the number of LSAMP students who pursue graduate degrees in STEM by 25% above 2014 -2015 total of 29 graduate students per year as the benchmark

Goal 6: Partner with Education Research team to conduct research on the Peach State LSAMP Transfer bridge program strategies and practices

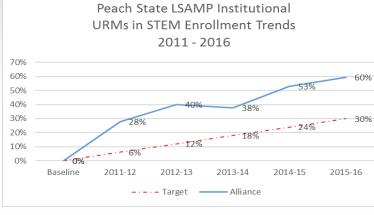


Summer Research Highlights

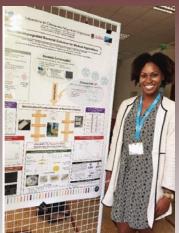
# Peach State Louis Stokes Alliance for Minority Participation



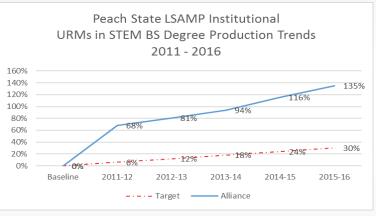
**<u>GRFP Fellows</u>:** These Peach State LSAMP Alumni started at Georgia State University Perimeter College (2-year partner), transferred to Peach State 4-year institutions, completed a BS degree, and now are enrolled in graduate school as GRFP fellows. L-R: Sheena Vasquez (MIT), Shantonio Birch (University of Michigan), Gideon Nyengele (Stanford), and Yash-Yee Logan (GA Tech).



Peach State LSAMP experienced a 60% increase in underrepresented minority students enrolling in STEM disciplines, 2011 - 2016.



Peach State LSAMP Scholar, Nettie Brown, participated in an **International REU** in Bordeaux, France for 10 weeks in the Summer of 2017. Collaborative research between Dr. Handa at the University of Georgia and Dr. Véronique Coma at the Université de Bordeaux was initiated as a result.



Peach State LSAMP experienced a 135% increase in underrepresented minority students completing baccalaureate degrees, 2011 - 2016.

# Key Accomplishments and Outcomes for Peach State LSAMP 2016-2017

- Received the first NSF-funded Peach State LSAMP Bridge to the Doctorate award to be implemented at the University of Georgia.
- Funded 191 summer and academic undergraduate research opportunities for Peach State LSAMP Scholars who provided over 145 presentations at research conferences.



Highlights from the 12th Annual Peach State LSAMP STEM Innovators Conference Atlanta, GA October 19–21, 2017

210 Holmes/Hunter Academic Building | Athens, Georgia 30602 (706) 542-0058 Office | (706) 583-0049 Fax | Email: pslsamp@uga.edu | Website: www.pslsamp.uga.edu

# NEW MEXICO AMP



Since 1993, the statewide partnership of the New Mexico Alliance for Minority Participation (New Mexico AMP) has impacted the lives of students throughout the state. Program activities are designed to achieve program goals to increase student retention in science, technology, engineering, and mathematics (STEM) and to support academic and professional development of students. Specific attention is given to ensuring these students are well prepared to enter the STEM workforce and providing them with the encouragement, incentive, and motivation to pursue graduate education. Evidence-based student support activities include undergraduate research experiences (domestic and international), professional development events, activities, and skills-building workshops and seminars that are shown to increase retention in STEM. The emphasis on research opportunities influences students to comprehend the significance, rewards, and responsibilities of becoming our nation's engineers and scientists. Further, New Mexico AMP seeks to broaden students' perspectives by encouraging national and international research internships and experiences. The following New Mexico AMP three primary components are designed with a research-focus, providing students the opportunity to broaden their experience, gain confidence, develop self-efficacy, and promote the development of a positive academic and scientific identity:

- The Undergraduate Research Scholars (URS) program, designed for underrepresented minority university students, offers research assistantships with faculty mentors. The URS also provides professional development workshops and training and informs students about national and international internships, conferences, and symposia.
- The Summer Community College Opportunity for Research Experience (SCCORE) program, held for underrepresented minority community college students at statewide host partner universities, includes 1) A Summer Bridge Program in which students are housed on campus and attend a professional development creditbearing course that provides campus orientations, graduate and transfer student panels, speakers from industry and the professoriate, lab tours, poster development and presentation training, and transfer support.

Students attend SCCORE at one of the partnership universities to which they want to transfer. 2) A research assistantship opportunity to work on a university faculty member's research project for 4-6 weeks, and 3) Year-round Advising Support.

• The New Mexico AMP Student Research Conference is offered annually in the fall and includes opportunities for statewide students to present their research, to meet and network with faculty and peers, and to participate in relevant professional development workshops and speaker meetings. In association with the conference, the Community College Professional Development Workshops are offered the day before and the day after the conference to assist community college students with navigation and understanding of the conference experience, leading to committed goals for transfer and progression to the B.S. degree and beyond.





Daniel Howard

### Principal Investigator: Dr. Daniel Howard, New Mexico State University, Executive Vice President and Provost, provost@nmsu.edu, (575) 646-2127.

**Co-Principal Investigator:** Dr. Laura Crossey, University of New Mexico, Professor of Earth ad Planetary Sclence, Associate Dean of Research for Arts and Sciences, *Icrossey@unm.edu*, (505) 277-1641.

**Co-Principal Investigator and New Mexico AMP Director** J. Phillip King, New Mexico State University, Associate Department Head and Professor of Civil Engineering, and Director of New Mexico AMP, *jpking@nmsu.edu*, (575) 646-1847.

**NEW MEXICO AMP PARTNERSHIP** 

### Eastern New Mexico University

Brian Pasko, Professor of Mathematics, brian.pasko@enmu.edu, (575) 562-2367.

### New Mexico Highlands University

Jessica Snow, Assistant Professor, Department of Biology, *jbsnow@nmhu.edu*, (505) 426-2118.

#### New Mexico Institute of Mining and Technology

Michael Voegerl, Director of Student Affairs & International Programs Coordinator, Department of Career Services, International and Exchange Programs, and Multicultural Programs, michael.voegerl@nmt.edu, (575) 835-5121.

### The New Mexico AMP Statewide

Alliance includes seven (7) universities and eight (8) community colleges.



Jeanne Garland, Co-Assistant Director & Alliance Program Manager, garland@nmsu.edu, (575) 646-5212.

### Northern New Mexico College

David Torres, Chair & Professor, Mathematics and Physical Science, *davytorres@nnmc.edu*, (505) 747-2174.

### **University of New Mexico**

Laura Crossey, Professor, Department of Earth and Planetary Science & Associate Dean of Research for Arts and Sciences, *Icrossey@unm.edu*, (505) 277-1641.

### Western New Mexico University

Joseph Doyle, Lab Director, Department of Natural Sciences, *joseph.doyle@wnmu.edu*, (575) 654-0202.



## All About Discovery!™ New Mexico State University nmamp.nmsu.edu

**LEAD INSTITUTION** 

#### **PROGRESS TOWARD ALLIANCE INSTITUTIONALIZATION AND SUSTAINABILITY:**

Alliance activities at partner campuses have reached a level of sustainability and institutional support since inception of the program in 1993 that will continue as a legacy to the investment made by the NSF and the State of New Mexico. Most prominent are initiatives emerging from New Mexico AMP's SMET 101 course, the Integrated Learning Communities (ILC) project AMP helped facilitate (see detail in Highlight #2 below), and the SCCORE program. Alliance partners have increasingly provided buy-in, leadership, and support for sustainability of SCCORE. New Mexico Tech hosts a spring Research Symposium to which all SCCORE and URS students are invited to participate. New Mexico Tech also serves as a central meeting place for a SCCORE Summer Networking Meeting. Central New Mexico College (CNM) and the University of New Mexico (UNM) have established a strong partnership and now collaborate on SCCORE planning, recruiting, and programming. At NMSU, added funding is provided by two NSF ERC projects -- Inventing the Nation's Urban Water Infrastructure (ReNUWit) and the Center for Bi-mediated and Bio-inspired Geotechnics (CBBG). Many AMP faculty also include funding for URS students in their grants. Additional SCCORE enhancements will be

coordinated with the New Mexico EPSCoR to collaborate on the selection and support of students applying to SCCORE and to the New Mexico EPSCoR STEMAP summer research experience. In addition, demonstrating long-term sustainability, New Mexico AMP received statutory status by the New Mexico Legislature in 2007, establishing the Alliance as a permanent item in the NMSU state budget request to support STEM student achievement in New Mexico, leveraging to date \$7,458,217 in program support from the New Mexico State Legislature. Additional funding is committed annually by the NMSU administration. New Mexico AMP has provided professional development opportunities, encouraging individuals to impact institutional practices and policies. UNM Institutional Coordinator (IC) Dr. Laura Crossey, Professor of Earth and Planetary Science, was named the Associate Dean of Arts and Sciences. Dr. Heather Fitzgerald, Biology faculty and AMP IC at CNM, served as STEM Director and received as one of 12 2017 Distinguished Faculty Awards. Dr. Jacob Urquidi, NMSU Associate Professor in Physics and AMP research mentor, was recently named National President for the National Society of Hispanic Physicists (NSHP).

#### TWO GREATEST ACCOMPLISHMENTS:

1) We have made collaborative efforts to provide diverse research opportunities throughout the state. Because New Mexico has 1.8 million people dispersed over an area equal to the combined land area of 10 eastern states, our goal is to ensure that all students are given the same opportunities. 1) The Summer Community College Opportunity for Research Experience (SCCORE), previously offered only at the lead institution, NMSU, located in the southern part of the state, is now offered at all our partner universities, giving community college students the opportunity to attend at the institution they want to transfer; 2) EPSCoR (the Established Program to Stimulate Competitive Research) and New Mexico AMP co-sponsored the conferences both programs offer students (EPSCoR-managed New Mexico Academy of Science Symposium in the North and New Mexico AMP Conference in the South). Students will also have the opportunity to apply for SCCORE, a 4-week program) the first year and EPSCoR's STEM Advancement Program (STEMAP, a 9-week program) the second summer. 3) New Mexico Mining and Technology Institute invited all statewide AMP students to present research at their institutional spring Student Research Symposium (SRS). Other partner schools plan to follow this model.

2) The College of Engineering Eloy Torrez Family Learning Communities Center, launched in 2017, encompasses engineering student organizations, peer mentoring and tutoring, faculty mentoring, and industry collaboration. This center's history goes back to the engineering Introduction to STEM course (SMET 101) that New Mexico AMP developed and facilitated. At NMSU, the Engineering 100 course evolved from the New Mexico AMP-developed SMET 101 course designed to help students develop learning skills and become more focused in their disciplines. SMET 101 subsequently served as the cornerstone for the Integrated Learning Communities (ILCs) project, developed with the leveraged support of the AMP-managed Hewlett Foundation (2003-2008) and NSF STEM Talent Expansion Program (STEP) (2007-2012). The ILC project was adopted by the NMSU College of Engineering in 2007 as a mandatory intervention for students beginning engineering at the algebra level of mathematics. In 2014, further adaptation of the ILC model resulted in the Engineering 100 course and First-Year Experience program, which increased the college's first-to-second year retention rate from 63% to 74%. Today, almost 79% of engineering students return for the second year – better than NMSU's overall average. In Fall 2017, the project expanded to include the student center. Sustainability emerging from the SMET 101 project STEM 111 at Santa Fe CC and STEM 117 at Luna CC, and both incorporate elements of the original

1992 - 1993 Awarded STEM Degrees 24% <sup>(N = 253)</sup> Minority Students (URM)

SMET 101 course, with Luna CC allowing for transferrable credits.

Since program inception, New Mexico AMP has seen significant increases in the number and percentage of B.S. degrees earned by underrepresented students at the state's public 4-year universities – from 253 in 1992/93 to 858 in 2015-16. Importantly, the percentage of B.S. STEM degrees awarded to minority students increased from 24 percent to 48 percent in the same time period, thereby increasing diversity in STEM.



2015 - 2016

Awarded STEM Degrees

48% <sup>(N = 858)</sup> Underrepresented Minority Students (URM)

#### NATIONAL RECOGNITION OF STUDENTS:

Chris Torres (University of New Mexico (UNM) Chemical Engineering, URS & SCCORE): Internships: 1) Research Experience for Undergraduates (REU), 2015, University of New Mexico 2) REU, 2016, University of Pittsburg 3) National Institute of Standards and Technology (NIST) Summer Undergraduate Research Fellowship (SURF). Awards: American Institute of Chemical Engineers (AIChE) Donald F. Othmer Sophomore Excellence Award; American Chemical Society Scholar's Program Fellow and UNM NSF-STEM Scholar, Publications: Co-authored two manuscripts, with a third in progress.

Margaret Turpin (UNM Environmental Science,URS, SCCORE, Transfer Scholarship): Works as Science Research Assistant in the Biology Department on projects funded by Department of Energy, NSF, Sandia National Labs, NASA, and Washington State University. Awards: 2nd Place for poster (2015, 2016) at the New Mexico AMP Student Research Conference.

Lenny Mendoza (New Mexico State University, Electrical Engineering, SCCORE and URS): Internship: URENCO, USA, 2017. Coop: NMSU Aggie Innovation Space. Internship: Central Intelligence Agency, Summer of 2018.

James McKeough (Northern New Mexico College, Physics, URS): Presentation: American Physics Society (APS) in Washington, D.C. and at the NMAS Symposium, 2017, Albuquerque, NM.

INTERNATIONAL RESEARCH OF STUDENTS: Rebecca Melendez (not pictured) (NMSU Biology, URS): NMSU Biology Scholarship 2017. Participated in a research experience in Napal with her faculty mentor, Dr. Immo Hansen, Professor of Biology, NMSU. One focus was collecting tiger specimens for genetic analysis.

**Pascual Camacho** (NMSU, Civil Engineering, URS): Spring of 2018, attending Loughborough University, in the United Kingdom (UK) to participate in construction materials research and take civil engineering classes.

Andrea Salazar (NMSU, Chemical Engineering, URS): Researched at Sogang University in South Korea, funded by the Gilman International Scholarship, after which she participated in the Lessons from Abroad Conference at the University of Arizona.

**Michael Kaemingk** (NMSU, Engineering Physics, URS) Internship: in the University of Michigan CERN Summer REU in Geneva, Switzerland from June-August 2017.

### The New York City Louis Stokes Alliance

The City College of New York 138th Street and Convent Avenue, MR-529 New York, NY 10031 212-650-8854 ampcc@ccny.cuny.edu globalcuny.org/



The NSF supported New York City Louis Stokes Alliance for Minority Participation (LSAMP) at CUNY has, since its inception in November 1992, been at the forefront of a concentrated effort to substantially increase the number of underrepresented minority students (African-Americans, Hispanics, Native Americans and Native Pacific Islanders), who pursue and graduate with Baccalaureate Degrees in Science, Technology, Engineering and Mathematics (STEM).



**Dr. Leon P. Johnson (CoPI)** Chair, Physics and Computer Science Department Medgar Evers College, 1638 Bedford Avenue Brooklyn, NY 11225 718-27-6454/6453 leon.johnson@verizon.net

<u>City College of New York</u> (Lead Institution) Baruch College Borough of Manhattan Community College Bronx Community College Brooklyn College College of Staten Island

#### Dr. Charles B. Watkins (PI) Professor of Mechanical Engineering The City College of New York Room ST-237 Convent Ave at 140th Street New York, NY 10031 (212) 650-5439 cwatkins@ccny.cuny.edu

### Dr. Pamela Brown (CoPI)

Associate Provost NYC College of Technology 300 Jay Street, Namm 320 Brooklyn, NY 11201 718.260.5560 pbrown@citytech.cuny.edu

NYC Alliance Members Graduate Center CUNY Hostos Community College Hunter College John Jay College Kingsborough Community College La Guardia Community College

### LOUIS STOKES ALLIANCE OU NY FOR MINORITY PARTICIPATION

#### Dr. Claude Brathwaite

Executive Director NYC LSAMP 138th Street and Convent Avenue, MR-529 New York, NY 10031 212-650-8850 cbrathwaite@ccny.cuny.edu

> Lehman College Medgar Evers College NYC College of Technology Queens College Queensborough Community College York College

#### THE NEW YORK CITY LOUIS STOKES ALLIANCE- NYC LSAMP



The New York City Louis Stokes Alliance for Minority Participation (NYC LSAMP) in STEM has over twenty-five years been at the forefront to increase the City University of New York's annual baccalaureate degree production among underrepresented groups (African-American, Hispanic, Native American and Pacific Islanders). The NYC LSAMP Undergraduate Research Program continues to be the heart of the NYC Alliance. The program includes research experiences on or off CUNY campuses, research enrichment and career development. Since inception in November 1992, over 16,000

baccalaureate degrees have been awarded to underrepresented minority students in CUNY.

#### **CUNY Enrollment and Graduation**

<b>CUNY Enrollment and Graduation</b>	2012	2013	2014	2015	2016	2017
CUNY URM STEM Enrollment	6,377	6,906	7,343	8,075	9,103	9,840
CUNY URM STEM BA/BS Degrees	815	939	941	1,001	1,175	1,392

#### **GlobalCUNY: NYC Alliance Beijing-China**



A recently developed partnership with the departments and faculty at the **Beijing University of Chemical Technology** (**BUCT**) for selected students to develop and/or work on existing STEM research projects at BUCT. The areas of Research are within the Chemical Sciences focusing on Environmental, Biochemistry, Biomedical Science/Engineering, Material Science and Nanotechnology, Catalysis and Synthesis. Our first cohort of 4 students conducted research in 2017.

#### NYC Alliance News

• Five BTD Scholars successfully defended their Doctoral dissertations

Benedette Adewale
SUNY Stony Brook
Chemistry
Dana Warmsley
Cornell University

Mathematics Jesse John, SUNY Stony Brook Geosciences Alejandra Costeno SUNY Stony Brook Biochemistry Amara Enemuo City College Electrical Engineering

• Bianca Brown (doctoral candidate at Brown University/York College graduate) was a recipient of the NSF Graduate Research Fellowship.

#### **NYC Alliance Accomplishments**

- From 2008 2017 over 200 NYC LSAMP Scholars have participated in International Research Experiences in 30 different countries.
- CUNY BA/BS degree production increased 71% since 2012, and 89% since 2011.



## North Carolina Louis Stokes Alliance for Minority Participation



Beryl C. McEwen, Ph.D. Provost and Executive Vice Chancellor for Academic Affairs North Carolina A&T State University NC-LSAMP Principal Investigator

#### North Carolina A&T State University

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Fayetteville State University Subir Nagdas, Ph.D.; Campus PI snagdas@uncfsu.edu

North Carolina Central University Tonya Gerald-Goins, Ph.D.; Campus-Pl tgerald@nccu.edu

North Carolina State University Jerome Lavelle, Ph.D.; Campus Pl jerome\_lavelle@ncsu.edu

University of North Carolina at Chapel Hill Laura Miller,Ph.D.; Campus Pl lam9@unc.edu

University of North Carolina at Charlotte Banita Brown, Ph.D.; Campus Pl bwbrown@uncc.edu

University of North Carolina at Pembroke Verlinda Woriax, Ph.D.; Campus Pl velinda.woriax@uncp.edu

> Winston-Salem State University Elva Jones, Ph.D.; Campus Pl jonese@wssu.edu

http://www.ncat.edu/provost/nclsamp/

### **NC-LSAMP Goals and Objectives**

The North Carolina Louis Stokes Alliance for Minority Participation (NC-LSAMP) is a senior alliance comprised of eight of the sixteen University of North Carolina (UNC) system institutions. As currently configured, the alliance had been in existence since 1997, with North Carolina A&T State University as the lead institution. The alliance includes four Historically Black Colleges and Universities (HCBU), three Predominately White Institutions (PWI) and one Native American Serving Institution (NASI). NC-LSAMP utilizes existing best practices, as well as new program initiatives, in the fields of student success and retention to achieve the following goals:

- increase the pool of underrepresented minority (URM) students with STEM bachelor's degrees;
- promote retention and baccalaureate degree attainment in STEM academic programs, and;
- increase the number of URM students who matriculate into STEM graduate programs.

### 2017 NC-LSAMP Annual Research Conference

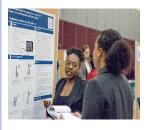


Dr. A. James Hicks, National Science Foundation, LSAMP Program Manager, shares insights with students as part of the Student Networking "Speed Dating" Session during the 2017 NC-LSAMP Annual Research Conference hosted by North Carolina State University.

Dr. Wanida Lewis, Foreign Affairs Officer, United States Department of State Office of Agriculture Policy, was closing plenary speaker. Dr. Lewis received her B.S. from St. Augustine University. She went on to earn a M.S. in Analytical Chemistry, as a Bridge to the Doctorate Fellow, at North Carolina



Central University and a Ph.D. from North Carolina State University.



Fayetteville State University undergraduate research scholar, Andrea Wilson, presented her research findings on *"Cannamix, a new hemp seed based pesticide on poultry beetles"*. Ms. Wilson received first place honors for her poster presentation.

#### **Student Voices**



"I spent a week in the Summer Bridge Program and loved every second of it. It let me get to know the school better as well as some of the other female engineering students I would be studying with for the next four years"

"Without the STEM LLC, I wouldn't have had a smooth transition to college from home. Having someone to talk to and understand me and my education helped a lot."

This is my first year in undergraduate research and I am amazed by what I am learning. The NC-LSAMP program is a great driving force in reference to pushing students to always do more and to test their abilities"

"The program has shown me that I like research more than industry, and now I know I want to get a Ph.D. I had not considered getting a Ph.D. before I was apart of this program. I would like to become a university professor"



Bridge to the Doctorate Fellow, Ashani Hamilton, conducts research in Belize.

### NC-LSAMP Impact & Highlights

NC-LSAMP institutions have awarded over 18,000 STEM bachelor degrees to students who are underrepresented in STEM disciplines. During the current funding cycle, 746 NC-LSAMP level one students have been awarded STEM bachelor's degrees. Twenty-four percent (183) have earned Master's degrees in STEM fields and thirty-three have earned Ph.D.'s in STEM fields. NC-LSAMP participants have secured funding through nationally recognized and prestigious fellowship programs, including the NSF Graduate Research Fellowship Program, the Ford Diversity Fellowship Program, the GEM Ph.D. in Science Fellowship, the GEM Ph.D. in Engineering Fellowship, Rhodes Scholarship, Goldwater Marshall Fellowship, the Goldwater Scholarship, the George Mitchell Scholarship and the Fulbright. NC-LSAMP scholars have conducted research in Belize and Costa Rica.

NC-LSAMP partners implemented programs aligned with our goals and objectives. Initiatives included summer bridge programs, faculty mentored research, peer mentoring, learning communities and academic support. Partners have also engaged in outreach activities created to expose middle school and high school students to STEM careers. This year two initiatives, highlight here, focused on increasing student awareness of STEM. The NC-LSAMP program at North Carolina Central University (NCCU), the NSF INCLUDES DISCUSSIONS Network, and the NCCU School of Education, implemented community outreach activities for elementary and middle school age URM students. Programs utilized a near-peer mentoring model to reinforce fundamental STEM concepts taught by NC-LSAMP students and students majoring in education. Another collaboration includes the American Indian Science and Engineering Society (AISES), NC-LSAMP at the University of North Carolina at Pembroke (UNCP), and the Morehead Planetarium and Science Center, which held a STEMville Science Symposium on the UNCP campus. The symposium welcomed 104 sixth and seventh graders from Robeson County schools to participate in a conference-style event complete with registration, check-in, a keynote speaker and five concurrent sessions. UNCP faculty and students from the departments of Biology, Chemistry & Physics, and Geology & Geography were breakout session presents.

NC-LSAMP Institutions Five Year Enrollment and Graduation

						% Change 2013 to
URM STEM Students	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017
UREM STEM Enrollment	6,107	6,098	5,882	5,760	6,342	20%
URM StTEM Degrees	1,088	1,167	1,091	1,155	1,297	19%
% URMSTEM degrees of URM STEM						
Enrollment	18%	19%	19%	20%	20%	



The North Star STEM Alliance is a partnership of 14 Minnesota colleges and universities and three community organizations committed to supporting underrepresented minority students earning bachelor's degrees in STEM.

#### **Alliance Goals and Objectives**

**Goal 1:** Attain 756 underrepresented minority students earning STEM bachelor's degrees annually at Alliance institutions by July 31, 2022.

**Goal 2:** Deepen Alliance collaborations to improve students' pathways through all stages of transfer from community colleges to degrees at 4-year institutions.

- Objective 2a) Increase twofold the proportion of transfer students that are retained in STEM after three years' enrollment in Alliance 4-year institutions.
- Objective 2b) As an Alliance, identify performance metrics and institutional practices within and across colleges and universities that inform and influence the success of transfer students.
- Objective 2c) Engage students and administrators at community colleges beyond the Alliance to build stronger STEM transfer pathways to Alliance institutions.

**Goal 3:** Foster institutional change toward greater diversity and inclusion on Alliance campuses.



#### Principal Investigator

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#### **Program Director**

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#### Impact of the North Star STEM Alliance

In the first five years of the partnership, the Alliance exceeded the goal of doubling the number of graduates from a baseline of 136 degrees in 2004-05. The National Science Foundation has renewed its funding twice as Alliance partners work toward achieving 756 minority STEM graduates per year by 2022. During this second renewal of LSAMP funding, the North Star STEM Alliance is focused on a) improving the transfer process and experience to increase retention of minority STEM transfer students; b) increasing the number of students experiencing international undergraduate research and c) a social science research effort which investigates the nature and dimensionality of the undergraduate research experience for minority STEM students.

Alliance activities in 2017-18 have included:

- 10<sup>th</sup> annual Kick-Off, featuring Dandrielle Lewis, Ph.D., Associate Professor of Mathematics at University of Wisconsin Eau Claire and an LSAMP alumna
- Summer Opportunities Expo inviting students to explore research and internship opportunities for summer 2018
- UMN Twin Cities Graduate Visit Day welcomed Alliance students to meet with faculty representatives of graduate programs of interest and staff in the Office for Diversity in Graduate Education
- 4<sup>th</sup> annual Jump Start Your STEM Job Search, a daylong professional development workshop for polishing interviewing, resumes, and LinkedIn profiles, and researching internship and job prospects.

### More Than One Race Reported - Minority Native Hawaiian or Pacific Islander Native American Hispanic or Latino Black or African American

Actual and Projected Bachelor's Degrees Earned by Minority STEM Students in North Star STEM Alliance Institutions, 2004-2022

Dr. Dandrielle Lewis addressing Alliance students at the Kick-Off in September 2017

#### **Student News**

#### Nahom Mossazghi

of the University of Minnesota Twin Cities is one of 15 students nationwide selected for the NIH Undergraduate Scholarship Program (UGSP). The fellowship covers \$20,000 of living expenses during his senior year and one year paid research trainging experience at NIH after his graduation.



#### Anita Cloud

of Leech Lake Tribal College placed 4<sup>th</sup> in the research poster competition at the 2016 American Indian Science and Engineering Society conference in Minneapolis.

The Alliance is funded by the Louis Stokes Alliance for Minority Participation (LSAMP), National Science Foundation grant #1712619, with additional support from 3M Foundation and partner institutions.

northstarstem.org nssa@umn.edu



# Northeast Louis Stokes Alliance for Minority Participation

### **NELSAMP** Members



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The Northeast Louis Stokes Alliance, now in its sixteenth year, is dedicated to furthering its work in increasing enrollment and BS degrees awarded in the STEM disciplines for underrepresented students.



Additionally, the alliance seeks to develop strategic partnerships with other universities, schools, and organizations locally, regionally, and internationally.

Strategic partnerships provide high-quality research experiences for NELSAMP scholars building on the knowledge that undergraduate research is a high-impact practice that promotes persistence to graduation. Extending outreach to partnerships with international universities and colleges fosters international research experiences, another significant contributor to student engagement, persistence, and willingness to pursue advanced degrees in the STEM disciplines.

NESLAMP also seeks to utilize its successes, programming, and institutional dedication to underrepresented students in STEM to increase outreach to well-qualified community college students, increasing the pipeline of scholars from two-year institutions who go on to achieve BS degrees and pursue the goals and objectives of the alliance.

#### **NELSAMP** Highlights

#### Summer Research, Shanghai Jiao Tong University



- Twelve NELSAMP scholars completed summer research projects in a variety of STEM fields at Shanghai Jiao Tong University (SJTU)
- NELSAMP scholars participated directly in research laboratories with faculty and graduate students from SJTU
- Students lived among and participated in cultural excursions with students and staff from SJTU as well as undergraduate researchers from the United Kingdom, France, and Canada
- Multiple NELSAMP students received SJTU scholarships in recognition of their academics

#### **NELSAMP Symposium 2017**

- Built on a theme of international research and the graduate student experience, NELSAMP scholars ranging from freshmen to seniors gathered for a day of learning, team building, and scholarly fellowship
- Undergraduates presented on international research experiences and shared tips and strategies for being abroad
- Graduate students, including NSF Bridge to the Doctorate fellows, participated in a panel discussion sharing experiences of being a graduate student in STEM
- Two keynote speakers with terminal degrees shared inspirational messages with direct advice on succeeding as an underrepresented scholar as Ph.D. and M.D.

#### **Student News**

In addition to the twelve students that participated in the international research experience at SJTU, NELSAMP students were highly active nationally, obtaining NSF opportunities, travel awards, REU and poster opportunities for professional associations and conferences such as the National Society for Black Engineers, the Annual Biomedical Research Conference for Minority Students, the Clinton Global Initiative, and the Society of Hispanic Professional Engineers.

NELSAMP students also obtained internships with a broad variety of corporations, National Laboratories, and even as electrical and software engineers at the 20<sup>th</sup> Century Fox Studios in Los Angeles, demonstrating that STEM can truly take scholars wherever they want to be.

#### **NELSAMP Impact**

Since its inception, NELSAMP has promoted a three-fold underrepresented increase in minority student baccalaureate enrollment and graduation rates at member institutions. In the past five years, member institutions have been able to maintain and institutionalize these gains in enrollment and persistence to graduation across representations. Graduation rates for URM students have continued to increase, with nearly 20% more graduating when comparing 2011 to 2016. Enrollment continues to increase as a whole, with a few fluctuations to account for individual institutional enrollment targets adjusting in a five-year period.

The increased visibility of accomplishment and achievement by NELSAMP students has raised the profile of underrepresented recruitment and NELSAMP member institutions continue to find new opportunities for outreach with other institutions, including regional community colleges. Future outreach includes a partnership by one member institution with two HBCUs.

Prior and continued success of NELSAMP prompted growth within the alliance, adding Tufts University as a sixth school for the 2016-2021 period. Further, successes in undergraduate research, in particular, the international component, have led to a stronger partnership with SJTU and the intent to increase the number of students attending in 2018. As a whole, the alliance continues to build on its strengths, increase its reach, and maintain excellence and dedication to the successful and high-level preparation of underrepresented STEM scholars.





### **OHIO LSAMP ALLIANCE OBJECTIVES**

- 1. To foster a partnership among alliance institutions, working with industry and community partners, that results in programming that is collaborative, effective, and sustainable
- 2. To heighten the awareness of opportunities in STEM disciplines and increase the recruitment of underrepresented minority students to STEM majors at partner institutions
- 3. To provide early and sustained programs to facilitate the critical transition from high school to college at each partner institution
- 4. To increase the retention of first- and second-year underrepresented minority students in STEM disciplines
- To improve the disciplinary socialization of underrepresented minority students in STEM disciplines, particularly by providing undergraduate research opportunities through the baccalaureate
- 6. To provide pathways for smooth transitions from community colleges to four-year institutions

### **ALLIANCE OFFICE CONTACTS**



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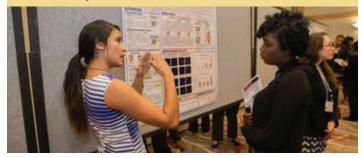
### ACCOMPLISHMENTS OF THE OHIO LSAMP ALLIANCE

- Development of the Community College Pathways Model to provide for accessible, productive, viable community college pathways to STEM degrees for racial/ethnic minorities. The model involves collaborative programming between two-year and four-year institutions, transfer readiness assessment for individualized programming, and infrastructural, instructional, and curricular reform.
- Alliance-wide peer mentoring programming
  - Peer mentor training through a massive open online course (MOOC), Peer Mentoring in STEM: A Training for Peer Mentors
  - o Freshmen and community college LSAMP scholars are matched with upperclassmen at the fouryear institutions in their disciplines and cities



### **STUDENT NEWS**

- University of Cincinnati LSAMP scholars, Rickey Terrell and Madelyn Leembruggen, honored with prestigious Goldwater Scholarship
- Central State University LSAMP scholar, Daniel Lee, studied at the University of Nicosia to test solution for harmful algal blooms
- LSAMP scholars Rickey Terrell (University of Cincinnati) and Johana Barrientos (Wright State University) won first and third place respectively at the Louis Stokes Midwest Center of Excellence Conference
- Ohio State LSAMP scholar, Neil Ramirez, awarded NSF Graduate Research Fellowship to study at UC Berkeley

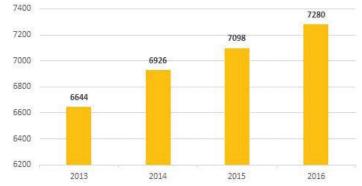




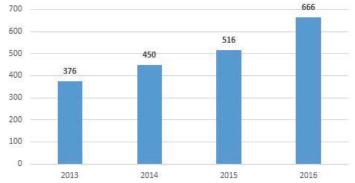
### **FIVE YEAR HISTORY**

The Ohio LSAMP Alliance has implemented evidence-based high-impact practices that are effective in retention, persistence, and attainment of STEM degrees. These include both alliance-wide activities and programming at each institution. The alliance-wide activities include the Research Conference of The Ohio LSAMP Alliance and the activities through the alliance task forces: Ancillary Studies Task Force, Community College Pathways Task Force, Communications Task Force, Industry and Community Partner Task Force, and Mathematics Curriculum Reform Task Force. The high-impact practices at each partner institution of The Ohio LSAMP Alliance include advisement and transfer support services, bridge/early arrival programs, tutoring or supplemental instruction, peer mentoring, faculty mentoring and undergraduate research, and professional development.

### URM STEM ENROLLMENT



### **URM STEM DEGREES EARNED**



# OKLAHOMA LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION:

A PROGRAM MODELING Group Impact!



#### ATTENDEES OF THE OK-LSAMP ANNUAL RESEARCH SYMPOSIUM







To recruit, retain and graduate 50% more URMs in STEM fields and increase their matriculation into graduate programs.

GOALS

To provide the support students require, academically and professionally, to ensure they build connections, skills and motivation to excel. To expand and facilitate opportunities for international research experiences and engagement so at least 25% of alliance scholars gain international experience.



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# **OK-LSAMP Overview**

The Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) is designed for students majoring in Science, Technology, Engineering and Mathematics (STEM) fields. Funded by the National Science Foundation (NSF), the LSAMP program began in 1994 when Oklahoma institutions of higher education joined forces to significantly increase the recruitment, enrollment and retention of underrepresented minority students in STEM disciplines. The LSAMP program is named after late Ohio Congressman, Louis Stokes, who is responsible for numerous minority-focused programs through NSF and the National Institute of Health (NIH). The Oklahoma program nurtures and assists students through the undergraduate program while creating opportunities for students to pursue graduate degrees in their selected STEM disciplines. OK- LSAMP scholars are provided opportunities to interact with faculty and scientists, participate in research activities, present at national conferences, and prepare for the transition into graduate programs and/or become leaders in the STEM workforce.



### **Student Spotlights**

**Catherine White**, Biological Sciences undergraduate, conducted research abroad in Costa Rica.

**Brianna Cole**, Biology undergraduate, conducted research abroad in China.

Erika Costain, Biology and Chemistry undergraduate, conducted research abroad in China.

**Riley Smith**, Microbiology undergraduate, studied abroad in Peru.

Marly Fixico-Hardison, Industrial Engineering and Management undergraduate, participated with Native Explorers.

**Jordan Moore**, Microbiology undergraduate, was awarded Point Foundation Scholar.

**William Starr**, Microbiology undergraduate, received the National Goldwater Honorable mention.

Melissa Chanderban, Microbiology graduate, was awarded NSF Graduate Research Fellowship for 2017-2022.

Akanimoh 'Sanmi Adeleye, Computer Engineering graduate, was awarded NSF Graduate Research Fellowship for 2017-2022.

Autumn Only A Chief, Nutritional Sciences graduate, received Senior of Significance and Gates Millennium Scholarship.

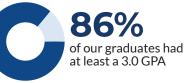
**Jordan Fleming**, Microbiology graduate, received a Wentz research grant.

**Ayrianna Swanson**, Microbiology undergraduate, recipient of the Women of OSU Science scholar.

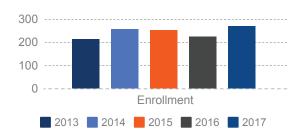


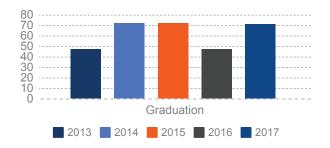
**51%** of all graduates had at least one summer internship while participating in the program

of our graduates were accepted into graduate school



### Enrollment and Graduation Rates





#### ATTENDEES OF THE 2017 SACNAS CONFERENCE



### Puerto Rico Louis Stokes Alliance for Minority Participation University of Puerto Rico



Eduardo Nicolau, Ph.D. Co-PI eduardo.nicolau@upr.edu 787-765-5170 ext 2013

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**PR-LSAMP HISTORY** 

PR-LSAMP is one of the six "Grand AMPs". It was created in 1991 as a collaborative venture of the main higher education institutions in Puerto Rico to increase the quantity and quality of minority and low-income college students who successfully complete a baccalaureate degree in science, technology, engineering, or mathematics (STEM), and continue on to complete a graduate degree in a STEM-related field.

Historically, all of the member institutions are well known for their strong commitment to academic excellence and for providing a learning environment conducive to retaining and graduating a significant number of undergraduate students in STEM careers. PR -LSAMP has been the main generator of institutional change among all members of the alliance in creating a genuine culture of undergraduate research and mentoring, therefore improving undergraduate STEM education.

PR-LSAMP's success and institutionalization of activities are predicated on a systemic, integrative approach that builds not only on the successes of the past 20 years, but also on the participating institutions' on-going efforts to improve STEM education to ensure sustainability of efforts. As a result of these sustained efforts, PR-LSAMP institutions have: 1) increased the undergraduate STEM enrollment from 12,572 in 1991-92 to 27,258 in 2010-11, more than a twofold increase; 2) increased the annual BS degree production from 1,709 in 1991 to 2,764 in 2011 a significant contribution to the NSF goal of a diversified STEM workforce; 3) contributed to the national pool of Hispanic PhD's in Natural Sciences, from 12.5% to 17%, and Engineering, from 18% to 21%; and 4) increased the number of PhD degrees awarded in STEM fields in the UPR System from 9

Resource Center for Science & Engineering University of Puerto Rico PO Box 23334 San Juan, PR 00931

in 1991 to 49 in 2010, more than a five-fold increase.

As a fundamental part of the PR-LSAMP Program with a high success rate is the Bridge to the Doctorate Program an initiative within the LSAMP Program, began in August of 2003, with ten former undergraduate PR-LSAMP students being awarded fellowships for their first two years of graduate studies at UPR-Rio Piedras. Since then, 120 additional fellowships have been awarded, for a total of 130 Fellows.

The two institutional sites that have participated in the BD Program are UPR-Rio Piedras and UPR-Mayaguez, the island's two major higher education's institutions with graduate programs in STEM fields. Each Fellow receives an average of \$32,000 fellowship per year, for their first two years of graduate studies. The BD Program also covers the Fellows' tuition and institutional fees; the health plan, and provides funds for travel and educational materials.

A Support Program includes a series of workshops, seminars and field trips to enhance the Fellows' academic preparation. At least five of these activities are joint activities with Fellows from the following Cohort, to exchange experiences and establish networking collaborations, including presenting their research projects at the annual Puerto Rico Interdisciplinary Scientific Meeting and the annual Puerto Rico EPSCoR Meeting. All Fellows must serve as mentors to an undergraduate PR-LSAMP student, and must visit at least one high school each year to serve as role models to high school students, and share with them their academic experiences and career plans. Schools from the GK-12 Program are included in these visits.



Ricardo Martí, conducting research at the electrophysiology lab during his undergraduate years as a PR-LSAMP fellow. At the present, Dr. Martí is a recognized scientist at Los Alamos National Lab. In 2007, the young scientist made the cover page of the Nature Magazine, being the first Puertorrican to accomplish this goal.

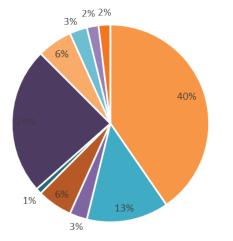


Participants of Bridge to the Doctorate Cohort 10, at the field trip, studying the Natural History and Geology of the Vieques Island. At the center Dr. Eugenio Santiago describing the dry forest vegetation.



Graduate and Undergraduate PR-LSAMP fellows, building a Geological Map of the Sierra Bermeja Complex, one of the oldest Geological Formations in the Caribbean area.

### STEM areas and percentage of students



- Life/Biological Sciences
- Chemistry
- Environmental Sciences
- General Science
- Electronics
- Engineering
- Computer Sciences
- Agriculture Science
- Geosciences
- Physics

# ACCOMPLISHMENTS 2017/2018

In academic year 2017- 2018 for the first time we grant 191 Research Fellowships as PR-LSAMP students member of the Alliance, and all of them will present their research work in the 2018 Puerto Rico Interdisciplinary Scientific Meeting (PRISM) the largest scientific forum in Puerto Rico. The statistics by discipline are as follows:

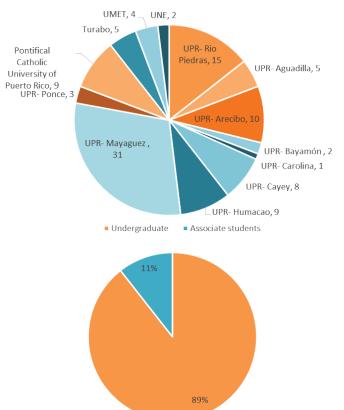
- Chemistry 28
- Life Sciences 87
- Engineering 32
- Computer Science 9
- Physics 6
- Mathematics 4
- General Sciences 25



### **ENROLLMENT**

Total STEM enrollment for the PR-LSAMP Alliance is 16,851 as 2018 report.

#### **STUDENTS PROFILE**



### THE LOUIS STOKES SOUTH CAROLINA ALLIANCE FOR MINORITY PARTICIPATION PROGRAM



Principal Investigator South Carolina State University James Clark, President jclark@scsu.edu



Executive Director South Carolina State University Judith Salley-Guydon, PhD djdsalley@scsu.edu



The LS-SCAMP is one of the oldest and most successful alliances currently existing in the state of South Carolina. Established in 1992 as a collaborative effort between the National Science Foundation and eight higher education institutions and restructured in 2002, with South Carolina State University becoming the lead institution, LS-SCAMP now consists of twelve South Carolina institutions including six Historically Black Colleges and Universities (HBCUs): Benedict College, Claflin University, Voorhees College, Morris College, Allen University, and inclusive of SCSU; three majority universities: Clemson University—Research I, the University of South Carolina – Research I, the College of Charleston; and three technical colleges: Midlands Technical College, Denmark Technical College, and Orangeburg-Calhoun Technical College. The primary focus of LS-SCAMP is recruitment, retention, and degree completion of underrepresented minorities in science, technology, engineering and math (STEM).

### THE LS-SCAMP EXECUTIVE COMMITTEE Campus Principal Investigators

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> Orangeburg-Calhoun Technical College Walter Tobin tobinw@octech.edu

### **Outcomes and Accomplishments**

The Baccalaureate Degrees and STEM Enrollment by Reporting Year

Reporting Year	2013	2014	2015	2016
Degrees Awarded	568	626	714	719
STEM Enrollment	5977	5627	5896	6267

Source: WEB AMP OMB#3145-0136 LSAMP Program

### Alliance Highlights 2017 – 2018

•In the two decades of the program existence, member institutions have awarded 12,033 STEM degrees and enrolled 101,216 URMs in STEM disciplines (2013-2016)

•First national LS-AMP Alliance to receive support from its State Legislature. \$6.2 million invested in LS-SCAMP through the State of South Carolina Legislature partnership since 1994

•42 active partnerships and collaborations with academic institutions, business and industry and government laboratories resulted in increased funded undergraduate research internship opportunities. •Five Students completed International Research Experiences at Nanyang Technological University in Singapore

•Laquita Grissett (USC 2016 LS-SCAMP Grad) awarded 2017 National Science Foundation Graduate Research Fellowship; She is pursuing a PhD in Oral Biology University of Washington in Seattle, Washington

•The newly crowned Miss USA 2017, Kara McCullough is a former LS-SCAMP student, 2013 SC State alumna, radio chemistry major who works as an emergency preparedness specialist with the U.S. Nuclear Regulatory Commission's Office of Nuclear Security and Incident Response.

#### **Economic Impact**

Approximately \$22 million in federal funds have been invested in the Alliance by National Science Foundation while the state of South Carolina appropriated an impressive \$6.2 million (1992-2017). The success of the LS-SCAMP, increased the number of URM's who graduated college alone and directly impacted the competitive qualified human capital for a diverse workforce.

### Alliance Signature Programs

#### Annual Science and Engineering Research Conference

LS-SCAMP has hosted 17 Undergraduate Science and Engineering Research Conferences over all project years.

#### **Research Internship**

Nine four-year partner institutions offered faculty mentored undergraduate research internships to LS-SCAMP students. Academic Year and summer research experiences were offered to 145 students.

#### **Collaborative Partnerships**

Resources were leveraged with forty-two partnerships to fund research internships, leadership development, seminars and conferences for faculty and students. Federal and state partners include: SC Commission on Higher Education (\$6.2 million invested since 1992), EPSCoR, United States Department of Agriculture, Department of Energy, and Nanyang Technological University in Singapore.

#### Summer Bridge Program

Summer bridge workshops or institutes have been consistently offered at alliance institutions since 1992. Mathematics courses including calculus are offered for credit. LS-SCAMP has successfully recruited and enrolled 598 Summer Bridge participants (2007-2017)

#### Technical College Transfer Activity

The LS-SCAMP technical college partners include Midlands, Denmark, Orangeburg-Calhoun, Tri-County and Trident Technical College. The summer research transfer bridge program was offered to recruit 2 year college students for faculty mentored research experiences. The Alliance awarded a total of 55 Bachelor of Science degrees in STEM to technical college students (2008-2013)



Four year college and Technical College student presenters at University of South Carolina 2017 Research Conference



#### **International Research Experience**

Launched in 2014, the International Research Experience enabled students to conduct eight to ten weeks of research abroad. Selected STEM juniors and seniors conducted research at Nanyang Technological University in Singapore.



To date, a total of 17 alliance underrepresented minority undergraduates completed International Research Experiences (IRES)





# SOUTHERN NEVADA-NORTHERN ARIZONA

## **LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION**



Founded in September 2017, the Southern Nevada Northern Arizona (SNNA) Louis Stokes Alliance for Minority Participation (LSAMP) is a partnership between:

- University of Nevada, Las Vegas (UNLV);
- Northern Arizona University (NAU);
- College of Southern Nevada (CSN); and
- Coconino Community College (CCC).

Using a cohort model, the partnership will capitalize on each institution's strengths and diverse population to build a supportive, innovative environment, focusing on student success in STEM fields.

### **ALLIANCE GOAL**

Within 5 years, the number of underrepresented-minority STEM baccalaureate recipients produced by Alliance partners will increase by **50%**.

#### **ALLIANCE PARTNER CONTACTS**

#### <u>UNLV</u>

Terri Bernstein, M.A. Center for Academic Enrichment & Outreach University of Nevada, Las Vegas terri.bernstein@unlv.edu

#### NAU

Diana Frances Elder, Ph.D., Associate Dean College of Engineering, Forestry & Natural Sciences Northern Arizona University <u>diana.elder@nau.edu</u>

#### <u>CSN</u>

John Adlish, Ph.D., Dean School of Science and Mathematics College of Southern Nevada john.adlish@csn.edu

#### <u>CCC</u>

Gonzalo Perez, Ph.D., Associate Vice President Innovative Learning Solutions Coconino Community College gonzalo.perez@coconino.edu

#### **PROJECT DIRECTOR**

Lawrence E. Letourneau, Ph.D. Center for Academic Enrichment & Outreach University of Nevada, Las Vegas <u>larry.letourneau@unlv.edu</u>

### **ALLIANCE OBJECTIVES**

#### ACADEMIC ACHIEVEMENT

- **80**% of lower-division participants earn a GPA of 2.5 or higher in STEM courses.
- <u>80</u>% of upper-division participants earn a GPA of 3.0 or higher in STEM courses.

#### GRADUATION

- **<u>25</u>%** of participants graduate in 4 years with a STEM baccalaureate.
- <u>45</u>% of participants graduate in 5 years with a STEM baccalaureate.

#### **PERSISTENCE AND TRANSFER**

- **<u>84</u>%** of participants persist from Year 1 to 2.
- **<u>77</u>%** of participants persist from Year 2 to 3.
- <u>77</u>% of sophomore participants at SNNA-LSAMP community colleges will enroll at UNLV or NAU as STEM majors for their junior year of postsecondary education.
- <u>**72%**</u> of participants persist from Year 3 to 4.

#### POSTBACCALAUREATE ENROLLMENT

• <u>38</u>% of participants enroll in graduate school in the fall semester after earning the baccalaureate.



#### **PRINCIPAL INVESTIGATOR**

Diane Z. Chase, Ph.D. Executive Vice President and Provost University of Nevada, Las Vegas diane.chase@unlv.edu

### Co-Pl

B. Keith Rogers, M.B.A. Deputy Executive Director, Center for Academic Enrichment & Outreach University of Nevada, Las Vegas keith.rogers@unlv.edu





Linking Arizona and Nevada on US 93, the Mike O'Callaghan-Pat Tillman Memorial Bridge arches 900 feet above the Colorado River. The inscription reads, "May all who cross the canyon on this memorial bridge travel their life journeys with the strength and inspiration found in the high ideals and heroic deeds of these brave, humble men."

### **ALLIANCE ACTIVITIES**



**UNDERGRADUATE RESEARCH** Paid opportunities for Alliance juniors and seniors to conduct cutting-edge research in laboratories and field settings, supervised by STEM faculty from NAU and UNLV



#### **NEAR-PEER MENTORING**

Every Alliance freshman and sophomore is matched with a trained mentor who is an upperclassman majoring in STEM. Every Alliance junior and senior is matched with a trained mentor who is a STEM graduate student.

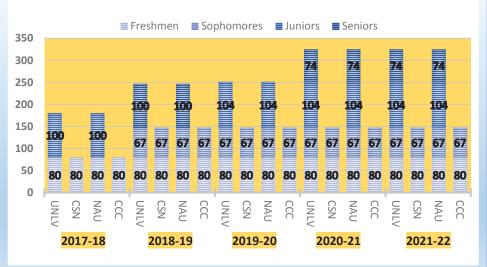


#### TRANSFER & POST-BACCALAUREATE ENROLLMENT GUIDANCE

Step-by-step, Alliance participants at CSN and CCC are led through the process of preparing for transfer to UNLV or NAU and Alliance juniors and seniors are assisted with applying for graduate school admissions and financial aid.



#### ALLIANCE PARTICIPANT ENROLLMENT





#### **INTERNSHIPS & JOB SHADOWING**

Through internships and jobshadowing experiences with local STEM companies, Alliance juniors and seniors learn how knowledge and skills acquired in STEM-degree programs translate into occupational opportunities.



#### **EXTRACURRICULAR STEM EVENTS**

Lectures, presentations, discussion groups, tours of industry partner facilities and other events, hosted by CSN and CCC on a monthly basis, that give Alliance staff, STEM faculty, industry-partner employees, and participants more opportunities to meet on an informal basis, network and form relationships with one another, and accelerate the process of disciplinary socialization for Alliance participants.









### State University of New York Louis Stokes Alliance for Minority Participation

The State University of New York Louis Stokes Alliance for Minority Participation (SUNY LSAMP) consists of fourteen campuses (four major university centers, three four year colleges, six community colleges and one college of technology across a four hundred mile area of New York State in urban, suburban and rural settings. Since 1996, it has increased underrepresented minority (UREP) science technology, engineering, and mathematics (STEM) enrollment by 640% and increased UREP STEM bachelor's degrees by 395 %.

#### The Goals and Objectives of SUNY LSAMP are:

To meet the grand challenge of preparing underrepresented minority (UREP) students for successful transition into science, technology, engineering, math (STEM) majors by:

- Providing comprehensive support services that stress academic and social integration in the first two years with an Services Include: emphasis on necessary math skills for STEM majors
- Providing activities at the two year colleges that prepare students for transfer to four year institutions and at the four year institutions for new transfer students
- Using the results of the SUNY LSAMP FIT research grant to identify factors that lead to STEM success among underrepresented groups
- Using the results of the current research grant to identify the best interventions to help UREP community college students successfully transfer to four year STEM programs

To focus on providing experiential activities that lead to socialization into science by:

- Providing research opportunities, both domestic and international
- Providing experiences that increase students STEM professional skills and experience
- Preparing students for successful preparation for and entry into STEM graduate school

#### To promote significant systemic changes by:

- Reconstituting SUNY LSAMP to better facilitate program goals and objectives across the Alliance
- Disseminate evidence-based best practices from program operation and SUNY LSAMP research grants on the local, state and national level

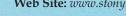
- Continue the trajectory towards institutionalization and sustainability of SUNY LSAMP after NSF funding ends
- Continue to work on efforts to improve STEM curriculum and pedagogy

- Stipend support
- Workshops and tutoring in STEM disciplines
- Mentoring programs that link faculty and staff to students
- Domestic and international research and internship opportunities
- Opportunities for students to attend professional
- conferences and present the results of their research
- Assistance to students in preparing for and applying to graduate programs
- Innovative enrichment courses and program models
- Research and scholarship about UREP STEM issues
- Social, cultural, and community building activities
- Bridge to the Doctorate programs for LSAMP graduates

David Ferguson, Project Director, 631-632-8763 David.Ferguson@stonybrook.edu Lucy Gluck, Project Administrator, 631-632-9988 Lucille.Gluck@stonybrook.edu



Web Site: www.stonub



Samuel Stanley, PI • (631) 632-6265 •

Samuel.Stanley@stonybrook.edu • David Ferguson,

Co-PI, Project Director • (631) 632-8763 • David.Ferguson@stonybrook.edu • Bonita London, Co-PI • (631) 632-7802 • Bonita.London@stonybrook.edu • Shanise Kent, Co-PI, (518) 442-3899 • snkent@albany.edu • Stacie Swingle Nunes, Co-PI • (845) 257-2695 • nuness@newpaltz.edu

SUNY LSAMP Institutions

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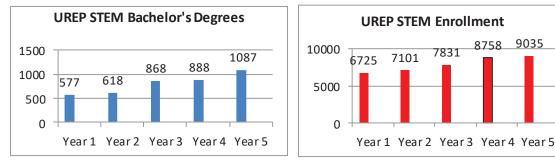
### NY LSAMP Impact Statement

#### SUNY LSAMP has substantially increased UREP STEM enrollment and degrees •

Since 1997, 9514 UREP STEM students have received Bachelors' Degrees, 1106 UREP STEM students have received Masters' Degree and 276 UREP STEM students have received Doctoral Degrees

8758 9035

7831



#### SUNY LSAMP has added to the research base about UREP STEM Students

SUNY LSAMP has designed and implemented three research grants that have made significant impact on best practices and developed important research related to the success of UREP STEM undergraduate and graduate students. The three grants are: "Research on Student Support Services and Graduate Issues", "Fostering (STEM) Identity through the Transition (FIT) to College Among Underrepresented Students" and "SUNY LSAMP Phase 5 Research Grant, Using the FIT Model to Explore Issues of Student Success with Community College Students".

#### Student News: SUNY LSAMP has produced world class scholars and researchers

Student News: SUNY LSAMP has produced world o	class scholars and researchers
NSF Graduate Research Fellowship Winners	Corie Ellison, Pharmacology, Buffalo
Jude Safo	Yvonne Ferrer, Chemistry, Buffalo
Maria Rodolis	Pablo Guzman, Chemistry, Emory
Elizabeth Millings	Alexis Santana, Genetics, Stony Brook
Dmitri Vaughan II	Jason Hall, Pharmacology, Stony Brook
Steven Collazo	Sara Mina, Biomedical Engineering, Binghamton
Catherine Depeine	Elena Adjei, Human/Medical Genetics, Howard
Dara Bobb Sample	<u>Post-Doctorates</u>
Honorable Mentions: NSFGRFP	Maria Rodolis, Chemistry, Stony Brook
Javier Monzon	Jesus Velasquez, Chemistry, Cal Tech
Kevin Hauser	Yvonne Ferrer, Chemistry, Cal Tech
Luisa Torres	Pablo Guzman, Chemistry, Cal Tech
Marie Raphaelle Jean	Shayri Greenwood, Biopsych, Rutgers
Karen Torrejon	<u>Selection of Other Awards and H</u> onors
Moises Guardado	NIH Minority Post-Doctoral Fellowships, GEM
<u>Ph.D. Completion</u>	Fellowships, NSF IGERT Fellowships
Mary Graham, Nanoscale Engineering, Albany	UNCK-Merck Fellowships, Fulbright Fellowship
Inefta Reid, Pharmacology, Stony Brook	IBM Science Award, SUNY Chancellor's Award,
Sunyata Smith, Md/Ph.D Immunology, Albert Einstein	NYS Underrepresented Graduate Fellowships, Hispanic
Marvin Vasquez Materials Science, Stony Brook	Heritage Fund Scholarship, ASEE Post- Fellowship, NASA
Wesley Francillon, Materials Science, Stony Brook	Jenkins Graduate Fellowship, NASA New York Space
Melody Goodman, Biostatistics, Harvard	Grant scholarship, Minority Access to Research Careers
Giselle Medina, Microbiology, Stony Brook	(MARC) , NIH Training Grant
Yared Alemu, Electrical Engineering, Stony Brook	International Research
Susan Campbell, Neuroscience, U. Alabama, Birmingham	REU's- Costa Rica, Belgium, Bordeaux, Grenoble
Marjorie Bonhomme , Physiology and Biophysics, SB	MHIRT- Spain, France, England
Federico Casares , Marine Sciences, Stony Brook	SUNY Global Laboratory- Brazil, Europe
Jamilah Abdur Rahim, Mechanical Engineering, U. C.	Nano-systems Initiative- Munich
Mary Osisami, Genetics, Stony Brook	International research at Cite University, Paris (CERN)
Dimitri Vaughan, Chemistry, Penn State	Neuroscience International Program (OWNIP)
Luisa Torres, Pharmacology, Stony Brook	Research presentations- International Atomic Energy
Emmanuel Asare, Genetics, Stony Brook	Commission, Vienna; Protein Society, Zurich;
Maria Rodolis, Biochemistry, U. of Warwick, England	International Society Italia de Patalogia, Salerno; Menoufia
Gandy Pierre-Louise, Stanford	University, Egypt
Carla Neckles, Chemistry, Stony Brook	
Cindy Thomas, Microbiology, Stony Brook	
Javier Monzon, Ecology and Evolution, Stony Brook	

# Tennessee Louis Stokes Alliance for Minority Participation

The Tennessee Louis Stokes Alliance for Minority Participation (TLSAMP) is a strategic partnership comprised of 10 public and private institutions of higher education. TLSAMP partners share a collective interest in recruiting, cultivating, and developing the next generation of scientists, leaders, and a highly skilled workforce to ensure not only Tennessee's economic prosperity but also America's global preeminence. The Alliance has made progress, achieved many notable accomplishments, realized positive results and outcomes, and institutionalized research-based strategies, like summer bridge programs and tutoring programs, which contribute to successful retention of undergraduate minority students in science, technology, engineering and mathematics (STEM) fields. Tennessee State University is the lead institution for the Alliance.

#### **Goals and Objectives**

The goal of TLSAMP is to significantly increase the quality and quantity of baccalaureate degrees awarded to underrepresented minority students in STEM disciplines. The objectives to achieve the Alliance's goal are to: 1) improve the recruitment of under-represented students into STEM majors at TLSAMP institutions; 2) improve the retention and persistence of underrepresented STEM majors across the Alliance; and 3) increase the number of under-represented undergraduate STEM majors who enter graduate programs.



Dr. Mark Hardy mhardy@tnstate.edu



#### **TLSAMP** at A Glance

Alliance-wide activities relate primarily to the recruitment, retention to graduation, and transition to graduate school of underrepresented STEM students. Alliance partners participate in some form in the following activities:

- Peer Mentoring pairs an upper-class STEM student with a freshman STEM student to serve as a guide and helpful resource to facilitate successful academic and social integration into the campus environment.
- Academic Tutoring provides supplemental support in core STEM courses.
- Undergraduate research introduces juniors, seniors and high performing sophomores to research for the purpose of bridging classroom learning and real world experiences. STEM students also get an opportunity to build a professional mentoring relationship with a faculty researcher.
- Professional Development Seminars provides information about academic, scientific, professional or technical knowledge to support the growth and development of undergraduate STEM students. These seminars are held on a monthly basis.
- GRE Prep Workshops covers GRE test taking strategies, study skills, and problem concepts, to assist with applying to graduate school.

Tennessee State University Dr. Denise Green 615-963-1397 dgreen10@tnstate.edu

University of Memphis Dr. Richard Sweigard 901-678-4306 rjsweigard@memphis.edu

University of Tennessee Knoxville Dr. Masood Parang 865-974-2554 mparang@utk.edu

#### Vanderbilt University

Dr. Arthur Overholser 615-343-3773 <u>k.a.overholser@vanderbilt.edu</u>

TLSAMP Research Conference 2017



Tennessee State University Dr. Mark Hardy 615-963-5301 <u>mhardy@tnstate.edu</u>

Fisk University Dr. Arnold Burger 615-329-8516 aburger@fisk.edu

LeMoyne Owen College Dr. Sherry Painter 901-435-1383 <u>sherry painter@loc.edu</u>

Middle Tennessee State University Dr. Robert Fischer 615-898-5508 Bud.fischer@mtsu.edu Tennessee State University Dr. Lonnie Sharpe 615-963-7474 <u>sharpe@coe.tsuniv.edu</u>

Nashville State Community College Dr. Reginald Gardner 615-353-3486 Reginald.Gardner@nscc.edu

Southwest Tennessee Community College Dr. Christopher Ezell 901-333-4363 cezell@southwest.tn.edu

Tennessee Technological University Dr. Darrell Hoy 931-372-3172 <u>dhoy@tnstate.edu</u>

#### **Impact Statement**

TLSAMP is described as the single best collaboration among institutions across the State of Tennessee. TLSAMP continues to make a significant impact on underrepresented undergraduate STEM education. In addition, the Alliance continues to produce graduates that are prepared for entry into the STEM workforce or graduate school. TLSAMP has a 96% persistence rate of Level I students in STEM disciplines.

#### Greatest Accomplishments 2016-2017

- TLSAMP Annual Research Conference. The Annual Research Conference is the venue that brings the Alliance partners and STEM undergraduate students together. The conference provides an opportunity for students to present research, gain presentation experience, network with other students and faculty, and participate in workshops and panels. The conference also sponsors a Graduate School Fair. In 2017, Somotochukwu C. Dimobi, Biology, Vanderbilt University, won first place for his poster presentation titled: Validation of a of a Galectin-8 Reporter as a Measure of Nanocarrier Endosomal Escape and Biologic Drug Intracellular Bioavailability. David LeVine, Biomedical Engineering, The University of Memphis, won first place for his oral presentation titled: Magnetic Chitosan Microbeads for use as a Local Drug Delivery System.
- International Summer Research Experiences. Each year STEM faculty from Alliance partner institutions submit proposals to lead an international research experience. This four-week experience engages TLSAMP students in conducting research at foreign sites with appropriate foreign expert mentorship. The research experience enables students to work within an established collaboration between the awardee of the proposal and a foreign collaborating research group. The first international summer research experience was held with Sichuan University in Chengdu, China and the second international summer research experience was held with Zamorano University, Honduras.

#### TLSAMP LEVEL I Student Degree Tracking

Year	Level I Students	% Graduated	% Persisted	% Graduate School
2002-2003	87	63%	63%	31%
2003-2004	365	78%	78%	43%
2004-2005	448	79%	79%	48%
2005-2006	498	79%	79%	48%
2006-2007	478	81%	81%	54%
2007-2008	570	75%	76%	50%
2008-2009	566	72%	73%	49%
2009-2010	414	77%	80%	50%
2010-2011	313	77%	80%	50%
2011-2012	279	78%	90%	47%
2012-2013	335	68%	90%	45%
2013-2014	294	54%	92%	49%
2014-2015	266	41%	95%	40%
2015-2016	297	19%	98%	39%





#### TLSAMP Minority Student Enrollment in STEM Degrees 2012-2016



#### STUDENT NEWS

**Aniglo**, Herve – University of Memphis 2017 graduate. Received \$10,000 grant to conduct a technological camp for 7<sup>th</sup> and 8<sup>th</sup> graders during spring of 2017.

**Bowens**, Jaquantey –Tennessee State University 2017 graduate. Graduated 1<sup>st</sup> in the class, and was also selected for participation in the highly competitive Harvard BWH Stars Program for Summer Research 2017.

**Dimobi**, Somtochukwu – Junior Chemical Engineering major at Vanderbilt University. Won 1<sup>st</sup> Place in technical research at the National Society of Black Engineers Region III Fall Regional Conference Fall 2017.

**Jones**, Trevor – Vanderbilt University 2017 graduate and 1<sup>st</sup> Year Ph.D. student at Princeton University. Won 1<sup>st</sup> Place in the Chemical Engineers Undergraduate Poster competition in the Materials Engineering and Sciences Division Fall 2016.

# LSAMP THE TEXAS A&M UNIVERSITY SYSTEM

## Louis Stokes Alliances for Minority Participation



The Texas A&M University System Louis Stokes Alliance for Minority Participation (TAMUS LSAMP) is a partnership comprised of Texas A&M University (TAMU), Texas A&M University-Corpus Christi (TAMUCC), and Prairie View A&M University (PVAMU). Since its inception in 1991 as one of the first LSAMPs funded by the National Science Foundation (NSF), the TAMUS LSAMP has functioned as a key vehicle in enhancing retention and degree completion for underrepresented minority (URM) students in science, technology, engineering and mathematics (STEM). The alliance entered its fifth phase of NSF funding, titled *Sustaining the Progress*, in March 2014. *Sustaining the Progress* endeavors to institutionalize successful recruitment and retention efforts for URM STEM majors, sustain STEM student transfer through continued and new relationships with community college partners, increase participation in STEM undergraduate research, and link and leverage other NSF projects at TAMU, TAMUCC, and PVAMU.

#### **PROGRAM COMPONENTS**

#### College Partnerships for Undergraduate Research Program (UGR)

- Links UGR students with active and supportive faculty-researchers where students perform meaningful research
- Students attend academic, personal, and professional workshops and seminars to encourage and prepare them to continue their academic and research careers in STEM graduate programs

#### Bridge to the Doctorate Program (BTD)

- Began Cohort XII in Fall 2016, the BTD program is designed to aid Master's level students in successfully matriculating into Doctoral programs
- Two-year fellowships include stipends, mentoring assistance, academic enrichment workshops, and seminars focused on thriving and succeeding in a Ph.D. program

#### **Community College (STEM Conferences)**

- Aimed at informing, motivating, and preparing students and community college advisors to and through STEM bachelor degrees and beyond
- Discusses the inner working of the transfer infrastructure to build more effective working relationships

#### International Research Experiences

• Aimed to increase and diversify the pool of globally trained STEM graduates

### **LEADERSHIP**



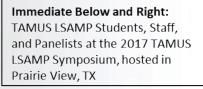
Dr. Karen Butler-Purry Principal Investigator Interim Vice President for Research klbutler@tamu.edu

### http://www.tamuslsamp.org



Dr. Karan Watson Co-Principal Investigator Texas A&M University Professor of Electrical and Computer Engineering watson@tamu.edu

Dr. Shannon D. Walton Co-Principal Investigator and Director shannon@tamu.edu (979) 845-0778











**Left:** Undergraduate Students at the 2017 Texas Regional GEM GRAD LAB hosted in College Station, TX

TEXAS A&M

**UNIVERSITY-**

CORPUS CHRISTI

#### PRAIRIE VIEW A&M UNIVERSITY

Dr. Kendall Harris Co-Principal Investigator Dean of Engineering ktharris@pvamu.edu (936) 261-9956

> 050 Wisenbaker Engineering Building College Station, TX 77843-3405 Phone : (979) 845-0778 Fax : (979) 862-1267



Dr. Frank Pezold Co-Principal Investigator Dean of Science and Technology frank.pezold@tamucc.edu (361) 825-3655



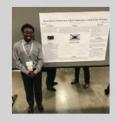
3405 TAMU

### 2017 – 2018 TAMUS LSAMP Student News



**Caren Sims** is currently a senior majoring in Chemical Engineering at Prairie View A&M University. On February 10, 2017 Caren was awarded the Most Outstanding Research Award at the Black Engineer of the Year Awards Conference (BEYA) in Washington, DC. Caren entered research knowing her existing knowledge and understanding would grow even more by being a part of PVAMU's LSAMP Research Program. She is currently working with an Associate Professor of Chemical Engineering developing biodiesel fuel additives and has since taken on an Energy minor due to her love for her research. Caren has participated in LSAMP since 2015. After graduating from PVAMU, Caren plans to work in industry with a goal to eventually become a "C-level" executive.

**Darcy Houston** was a Texas A&M University-Corpus Christi LSAMP Undergraduate Research Participant since Spring 2017. He was a Mechanical Engineering student who received his Bachelor of Science degree in December 2017. The goal of his research project, titled "Autonomous Sense & Adjust Quadcopter Using Sonar Sensors", was to establish a platform capable of self awareness using only Sonar Sensors to be used indoors or within small enclosed spaces. He presented this research at the 2017 Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference. After graduating, Darcy intends to enroll in the Geospatial Surveying Engineering Master's program at TAMUCC.





**Mitchell Burr** was a Texas A&M University-Corpus Christi LSAMP Undergraduate Research Participant since Summer 2017 who graduated in the fall of 2017. He worked under the guidance of Dr. Christopher Bird in the Genomics Core Lab on a project titled "Troubleshooting Odd Patterns in Relatedness Among Oysters (*Crassostrea virginica*)". His research enabled accurate assessments of genetic relatedness among oysters and tested for a genetic basis of oyster substratum preference. Mitchell presented his research at the 2016 and 2017 SACNAS National Conferences, and he will have a paper published in the 2018 McNair journal, which has yet to be released.



Jamie Gutierrez was a Texas A&M University Undergraduate Research Participant. In Spring 2017, Jamie won 1<sup>st</sup> place for her undergraduate poster presentation in the 20<sup>th</sup> Annual Student Research Week at TAMU, and she graduated with a Bachelor's in Biology. During Fall 2017, Jamie enrolled at the University of Texas Health Science Center in Houston, TX, in pursuit of a Master's degree in Public Health.



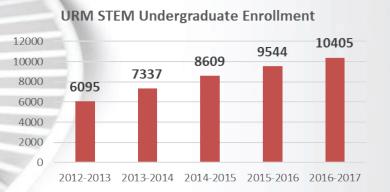
Victoria Sharp was a Texas A&M University-Galveston LSAMP Undergraduate Research Participant. She received 3rd place among 26 poster presentations from LSAMP scholars at the 2016 TAMUS LSAMP Symposium. Victoria graduated with a Bachelor's in Marine Biology in December 2017.

### 2017 – 2018 TAMUS LSAMP Highlights

• Nine (9) TAMUS LSAMP-supported URM STEM undergraduate students graduated with Bachelor degrees in STEM fields in December 2017.

• In August and December 2017, six (6) TAMUS LSAMP Bridge to the Doctorate (BTD) Fellows completed their Ph.D. degrees and five (5) LSAMP BTD Fellows completed their Master's degrees in STEM fields at Texas A&M University. A total of forty-two (42) TAMUS LSAMP BTD Fellows have earned STEM or STEM-related Ph.D. degrees and sixty-three (63) TAMUS LSAMP BTD Fellows have earned STEM or STEM-related Master's degrees.

### Five-Year TAMUS LSAMP URM STEM Bachelor Enrollment and Degree Information





**NOTE:** TAMU, PVAMU, and TAMUCC students who identify as one or more of the following ethnicities are considered underrepresented minorities (URMs): African American, Hispanic American, American Indian, Alaskan Native, Native Hawaiian, and Native Pacific Islander. Only U.S. citizens or permanent residents are included in the data presented in the above figures.

#### THE UNIVERSITY OF TEXAS SYSTEM



#### UT System LSAMP Campus Directory

UT El Paso (prime): Ms. Ariana Arciero-Pino avarcier@utep.edu • 915.747.8725

UT Arlington: Ms. Alisa Johnson alisa@uta.edu • 817.272.0708

UT Austin: Ms. Lynda Gonzales SRA-Abroad Coordinator lyndag@austin.utexas.edu • 512.232.8345

UT Dallas: Dr. Juan Gonzalez jgonzal@utdallas.edu • 972.883.2526

UT Permian Basin: Dr. Milka Montes montes m@utpb.edu • 432.552.2233

UT Rio Grande Valley: Dr. Cristina Villalobos Cristina.villalobos@utrgv.edu • 956.665.2123

UT San Antonio: Mr. Darrell Balderrama Darrell.balderrama@utsa.edu • 210.458.4284

UT Tyler: Dr. Steve Rainwater srainwater@uttyler.edu • 903.566.7403

El Paso Community College: Dr. Karina Castillo Kcastil8@epcc.edu • 915.831.4003

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# The University of Texas System Louis Stokes Alliance for **Minority Participation** https://lsamp.utep.edu

In 1992, an alliance was forged among the academic universities in the University of Texas System and partnering two-year institutions for the purpose of increasing the number of students from historically underrepresented minority groups who would pursue and earn STEM degrees. Toward this goal, the Alliance has successfully promoted cultures of curriculum innovation and inclusive enrichment experiences that have positively impacted tens of thousands of students in a period of 25 years.

#### UT System LSAMP Leadership Team







Principal Investigator Co-PI 915.747.6961

956.665.2123

Dr. Benjamin Flores Dr. Cristina Villalobos Dr. Helmut Knaust Co-PI 915.747.7002

Ms. Ariana Arciero-Pino Associate Director 915.747.8725

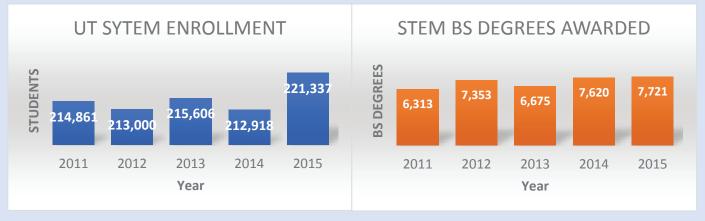


Students presenting their research at the 2017 UT System LSAMP Student Research Conference. More than 350 students have participated in the conference in the last five years.

# The University of Texas System Louis Stokes Alliance for Minority Participation Program History

Academic Year 2017-2018 marks our 26<sup>th</sup> year as an Alliance with a National Science Foundation designation of **Model Senior Alliance.** Our current objectives build on best practices developed in previous years:

- 1. To enhance the Summer Research Academy (SRA) to include on-campus training and culminate with a summer research exchange, national laboratory opportunity, or research abroad capstone.
- 2. To ensure that URM students who are co-enrolled in partnering community colleges and universities complete their STEM associate degrees and advance toward their baccalaureate degrees.
- 3. To create synergy among federally-funded STEM student training projects in Texas and across the nation.



### Highlights (2017 - 2018)

- Over 300 students applied to the SRA and SRA-Abroad, and 62 outstanding students were selected by the Board of Directors (21% selection rate).
- Two LSAMP scholars, Rosa Perez and Jose Rosales, were selected for the 2017 LSAMP i-REU program in France.

<u>UT System LSAMP Student News</u> – The Summer Research Academy-Abroad continued to attract exceptional STEM students. Between 2016 and 2017, sixteen students conducted research in the following countries: Austria, Czech Republic, Denmark, England, Germany, Ireland, Italy, the Netherlands, and Spain.

2016 SRA-Abroad Cohort



2017 SRA-Abroad Cohort



### **University System of Maryland** Louis Stokes Alliance for Minority Participation





**UMBC** Renetta Tull. Ph.D. Assoc. Vice Provost for Strategic Initiatives rtull@umbc.edu

Sundiata Jangha, M.S. Co-Director sjangha@umbc.edu

### UMES

Deborah Sauder, Ph.D. Professor and Chair Department of Natural Sciences dgsauder@umes.edu

Tracy Bell, Ph.D. Assistant Professor tdbell@umes.edu

# UMCP

**Rosemary Parker, M.S.** Director Center for Minorites in Science and Engineering rparker@umd.edu

https://usmlsamp.wordpress.com/ https://lsamp.umbc.edu/ www.cmse.umd.edu/lsamp https://www.umes.edu/lsamp/ The USM LSAMP is a senior alliance founded in 1995. It is a partnership between: University of Maryland, Baltimore County (UMBC)

University of Maryland, College Park (UMCP)

**University of Maryland Eastern Shore** (UMES)

With two Associate members:

### Frostburg University

Towson University And three Community College Collaborators Anne Arundel Community College **Community College of Baltimore County** Prince George's Community College

### Alliance Goals

1) Increase the numbers and academic competitiveness of URM undergraduates transitioning to graduate programs and foster in them a strong STEM identity, as well as the necessary tools for educational and professional success in STEM fields. 2) Build a replicable and scalable interorganizational infrastructure to deliver a comprehensive array of programmatic activities that facilitate the transitions of students along their educational pathways.

**Principal Investigator** Freeman Hrabowski. Ph.D. President University of Maryland, Baltimore County

### Co-PI



Janet Rutledge, Ph.D. Vice Provost and Dean of the Graduate School University of Maryland, **Baltimore County** jrutledge@umbc.edu

### Alliance Objectives

- 1. Numbers & pool building
- 2. Tailored program design elements
- 3. Support unaffiliated students
- 4. Math performance
- 5. Research training and recognition
- 6. STEM Identity
- 7. Graduate school matriculation
- 8. Knowledge-building research
- 9. Collaborative models of excellence

### Four Focus Areas



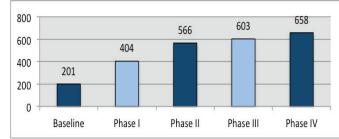
#NSFNextGenSTEM **@USM LSAMP** 



Student poster presentations at the 1<sup>st</sup> Annual USM LSAMP Fall Research Symposium hosted by UMCP.

### Student Highlight

Naomi Mburu '18 ChemE UMBC First student in UMBC history to receive the Rhodes Scholarship. She will be getting her Ph.D. in Engineering Science from the University of Oxford



Alliance-wide average BS Degrees/year over first four phases.

### Research Conferences Attended



MARCH 29-APRIL 2, 2017

#### NEXT













### Alliance Highlights

#### **Alliance Activities**

- LSAMP Bridging Conference •
- SUCCESS 2017 Pipeline • **Development Conference**
- Math Institute & Fellowships • Workshop
- 1<sup>st</sup> Annual USM LSAMP • Research Symposium
- Winter Student Leadership Retreat
- Spring Regional Research 0 Symposium

#### Campus Actvities

- Bridge Program for Scientists • & Engineers (All)
- Undergraduate Research • Program (All)
- Things You'll Need to Know • for Your First Year in STEM (UMBC)
- LSAMP Virtual Seminar • Series (UMES)
- Academic Year Bridge • Program (UMCP)

### **Dissemination Activities**

- The World Engineering Education Forum
- **United Nations Commission** • on the Status of Women
- National GEM Consortium **GEM Grad Lab**
- STEMconnector Global STEM • Talent Summit
- STEMconnector Million • Women Mentors
- **UNESCO** International Centre • for Engineering Education
- Council for Opportunity in Education



# **UPSTATE LOUIS STOKES ALLIANCE** FOR MINORITY PARTICIPATION



http://lsamp.syr.edu/ulsamp



The goal of the Upstate Louis Stokes Alliance for Minority Participation (ULSAMP) is to recruit, retain, and graduate an increasing number of underrepresented minority (African-American, Alaskan Native, American Indian, Hispanic American, Native Hawaiian, and Native Pacific Islander) students in science, technology, engineering, and mathematics (STEM) fields and to provide early student research experiences to foster graduate school enrollment in Upstate New York. ULSAMP was established in 2007.

#### **Grand Challenge**

Strengthen the 2-year to 4-year pathway by increasing support for community college students

#### **Focus Areas**

- · Research experiences during the summer and academic year including experiences for first year students
- Bridge program for transfer students
- Opportunities for graduate school preparation
- Preparation in STEM courses during the first two years
- Students presenting research at conferences

### **ULSAMP Objectives, Years 2017-2022**

- Increase the number of underrepresented minority (URM) students transferring from community colleges to four-year STEM studies at Alliance universities
- Improve the retention of URMs in STEM majors after their first and second years
- Increase the total enrollment of URMs in the STEM disciplines
- Increase the baccalaureate degree attainment of URMs in STEM
- Increase URM bachelor degree recipients pursuing graduate studies in STEM

#### **Alliance Members**

- Clarkson University Marjorie Warden, mwarden@clarkson.edu
- Cornell University Jami P. Joyner, jami.joyner@cornell.edu
- Onondaga Community College Drake Harrison, harrisod@sunyocc.edu
- Monroe Community College Joann Santos, jsantos@monroecc.edu
- Rensselaer Polytechnic Institute Dr. Stanley Dunn, smd@rpi.edu
- Rochester Institute of Technology Dr. Tomicka Wagstaff, tcgnsc@rit.edu
- Syracuse University
- Tamara N. Hamilton, tnhami01@syr.edu

### **Alliance Leadership**

#### **Principal Investigator**

• Dr. Michele G. Wheatly Vice Chancellor and Provost Syracuse University mwheatly@syr.edu



#### **Co-Principal Investigators**

- Tamara N. Hamilton, tnhami01@syr.edu ULSAMP Project Director, Syracuse University
- Dr. Julie A. White, <u>i.a.white2@sunyocc.edu</u> Onondaga Community College
- Dr. Andria Costello Staniec, costello@syr.edu Syracuse University
- Dr. Dawn Johnson, drjohn02@syr.edu Syracuse University

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#### **ULSAMP Alliance Impact**

- The total fall enrollment for undergraduate URM students at ULSAMP institutions increased from 1,943 STEM students in 2007 to 3,594 students in 2016.
- The total number of URM STEM bachelor degrees awarded by ULSAMP institutions increased from 249 in 2007-2008 to 611 in 2016-2017.
- Since 2007, ULSAMP institutions have awarded 4,186 STEM degrees to URM students.
- Each year ULSAMP activities support over 200 URM STEM students.

### URM STEM Fall Undergraduate Enrollment

\*URM STEM: Underrepresented minority students studying science, technology, engineering, and mathematics

#### **Student News and Accomplishments**

- Bryan Anthonio, BS'15, Applied Engineering Physics (Cornell): GEM Associate Fellowship
- Amber Barrow, BS'17 Neuroscience and Biology (Syracuse): Awarded a Fulbright Research Scholarship to travel to Sun Yat-Sen University in Guangzhou, China to promoting student focused sex education intervention for local high schools and universities; Received a Blakemore

Freeman Foundation Fellowship.

- Kendrick Cancio, BS'16, Operations Research (Cornell): GEM Full Fellowship, Internship with MIT Lincoln Laboratory.
- Iriny Ekladious, BS'12, Biological Engineering (Cornell): NSF Graduate Research Fellowship Progra
- Firehiwot Gurara, BS'18, Electrical and Computer Engineering (Cornell): IEEE Power & Energy Society Scholarship.
- Adam Lowery, BS'14, Mechanical Engineering (Cornell): GEM Full Fellowship, Internship with Brookhaven National Laboratory.
- Brennica Marlow, BS'14, Chemistry and Chemical Biology (Cornell): NSF Graduate Research Fellowship Program.
- José L. Marrero-Rosado, BS'17, Biochemistry and Anthropology (Syracuse): Received a two-year Greater Research Opportunities (GRO) Undergraduate Fellowship from the Environmental Protection Agency (EPA), which includes a \$50,000 grant. Jose's LSAMP research project investigated the toxicity of chemicals present in Onondaga Lake in New York.
- Alexis Pena, BS'16 Bioengineering (Syracuse): Received Honorable Mention for the NSF Graduate Research Fellowship Program; Research Award for her poster, *Computational investigation of tight junctions* at the 2014 Annual Biomedical Research Conference for Minority Students (ABRCMS); Awarded first place for her research *Antimicrobial peptide interaction with bacterial membranes*, in the biological sciences category at the 2015 Emerging Researchers National Conference in Science, Technology, Engineering, and Mathematics conference; 2016 Student Research Award from the Black Engineer of the Year STEM Conference.
- Ephrath Tesfaye, BS'15, Biological Sciences (Cornell): NSF Graduate Research Fellowship Program, Honorable Mention; John W. Estey Outstanding Scholar Award.
- Christian Zollner, BS'16, Engineering Physics (Cornell): NSF Graduate Research Fellowship Program.



**Bachelor's Degrees Awarded to URM STEM** 









# **Urban Massachusetts AMP**

### **Preparing for:**

# America's 21<sup>st</sup>Century STEM Ecosystems

### AMP and Ecosystem Workforce Collaborations:

Urban Mass LSAMP in the Commonwealth of Massachusetts is composed of 8 Alliance members concentrated within 3 major metropolitan areas. The Boston, Lowell, and New Bedford metros consist of vibrant urban ecosystems with large clusters of bioscience, high technology, and STEM related enterprises and institutions. The Associate Degree and Baccalaureate Degree institutions of higher learning in this AMP work closely within their regions and as an Alliance as a whole to establish policies and practices to increase the retention, persistence, and graduation of students from underrepresented demographics.



Research in Cambridge, Mass. Sanofi Genzyme Corporation





Research in Nairobi, Kenya University of Nairobi

### **Objectives and Institutional Resources:**

Urban Mass AMP colleges and universities collaborate with state and local agencies and other organizations in the ecosystems to provide campus training, field research experiences, and community service to develop our future STEM workforce. Resources include at each Alliance campus the contributions for laboratories or research from the Governor sponsored \$1B fund granted through the Massachusetts Life Sciences Center. Innovation Hubs and the involvement of corporate researchers and scientists at campus workshops and career fairs provide guidance and encouragement to AMP students as they in turn pass their gifts onto the international as well as national future generation of scientists and researchers. Representatives involved in AMP activities and services come from the following companies and organizations: Biogen, Dana Farber Cancer Research Institute, Dell, Google, IBM, Microsoft, Massachusetts General Hospital, Novartis, Oracle, Raytheon, Sanofi Genzyme, Schlumberger, and others.

# **Urban Massachusetts AMP**

### Pathways to STEM Graduation and Careers:

### Learning Communities for Academic or Social Capital Enrichment

Facilitated Study Groups and Supplemental Instruction Sessions are integrated into critical courses such as Calculus, Biology, Chemistry, or Physics so students may be academically competent for success in their next sequential courses. Learning communities with first year students co-enrolled in STEM courses by disciplines help students create academic social capital for independent study or career affinity groups that in turn contribute to persistence throughout the rest of their years in college.

### **Undergraduate Mentored Research Projects and Internships**

Students participate in research skills development workshops that give them an awareness of the importance of research in creating knowledge and help them to sharpen their understanding of core research methodologies. They attend career fairs and panel sessions with professional researchers and scientists from STEM corporations and research institutions. Students have opportunities to work in research projects, in campus research laboratories, and in off-campus research laboratories.

### Leadership and Impact:

The Urban Mass LSAMP program is composed of 4 two-year community colleges, 1 four-year college, and 3 public universities. From 2006 to 2016 1,891 baccalaureate STEM degrees have been awarded to minority underrepresented in STEM students. These numbers do not take into account the impact LSAMP has had on the growth in STEM enrollments and graduation rates for Associate Degrees at the 4 community colleges who are members of this Alliance. The leadership team for the Urban Massachusetts LSAMP is as follows:

University of Massachusetts Boston PI, Emily McDermott, Interim Provost, Emily.McDermott@umb.edu Co-PI, Andrew Grosovsky, Dean, College Science & Math, Andrew.Grosovsky@umb.edu 617-287-5777 Marshall Milner, LSAMP Program Manager, Marshall Milner@umb.edu	University of Massachusetts Dartmouth Tesfay Meressi, Assoc. Provost, LSAMP Coordinator, <u>tmeressi@umassd.edu</u> 508-999-8542	University of Massachusetts Lowell Sheila Riley-Callahan, Exe Dir Academic Services, <u>Sheila Rileycallahan@uml.edu</u> 978-934-2946, Reaksmey Roeung, LSAMP Coordinator <u>reaksmey roeung@uml.edu</u> , 978-934-2458	Wentworth Institute of Technology Sandy Pascal, VP External Relations, pascals@wit.edu 617-989-4478 Erik Miller, LSAMP Coordinator millere1@wit.edu, 617-989-4993
Marshall.Milner@umb.edu 617-287-4057 Bunker Hill Community College Erik Saperstein, LSAMP Coordinator, esaperst@bhcc.mass.edu 617-480-8444	Bristol Community College Mary Hyde, LSAMP Coordinator, mary.hyde@bristolcc.edu 508-678-2811, x-2065	Middlesex Community College Michele Stein, LSAMP Coordinator, <u>steinM@middlesex.mass.edu</u> , 617-953-7264	Roxbury Community College Hillel Sims, Dean & LSAMP Coordinator, <u>hsims@rcc.mass.edu</u> , 857- 701-1501



#### PARTNER INSTITUTIONS:

Bennett College Dr. Willietta Gibson 335.517.1203 wgibson@bennett.edu

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George Mason University Dr. Alok Berry 703.993.1606 aberry@gmu.edu

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National Radio Astronomy Observatory Ms. Lyndele Von Schill 434.244.6896 Ivonschi@nrao.edu

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Thomas Nelson Community College Dr. Seyed Akhavi 757.825.3565 akhavis@tncc.edu

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Virginia Commonwealth University Dr. Rosalyn Hobson Hargraves 804.828.8308 rhobson@vcu.edu

Virginia Tech Dr. Jody Thompson-Marshall 540.231.5023 jodyt@vt.edu

### **VA-NC ALLIANCE 2017 HIGHLIGHTS**

 The VA-NC Alliance continued its successful Summer Research Program. In 2017, students chose from the following research tracks: Astronomy, Biology, Chemistry, Computer Science, Engineering, Environmental Science, Neuroscience, and Physics.

 The 10th annual VA-NC Alliance Undergraduate Research Symposium, "Developing Critical Thinkers, Innovators & Leaders in STEM," featured 51 student presenters. Saint Augustine's University hosted the symposium in Raleigh, NC.

Photos, from top: 1) Dequante Mckoy from Saint Augustine's University with his mentors in Professor Harris's civil and environmental engineering lab. 2) Alma Rivera from the University of Virginia conducts research in Professor Gahlmann's chemistry lab.



### **VA-NC Alliance Management Team**



Dr. Marcus L. Martin

Principal Investigator: Dr. Marcus L. Martin, mlm8n@virginia.edu Co-Principal Investigator: Dr. Rosalyn Hobson Hargraves, rhobson@vcu.edu Co-Principal Investigator: Dr. Archie Holmes, Jr., ah7sj@virginia.edu Co-Principal Investigator and Program Director: Ms. Kristin L. Morgan, klm3q@virginia.edu Director of Business Operations and Grants Management: Ms. Debra White, djt@virginia.edu Program Coordinator: Mr. Maurice Walker, emw5m@virginia.edu

The VA-NC Alliance is a consortium of twelve partner institutions in Virginia and North Carolina with the goal of increasing the number of underrepresented minorities earning STEM degrees. Through synergistic partnership the VA-NC Alliance offers summer bridge programs, summer research experiences, annual symposia, common reading experiences, mentoring, tutoring, and preparation for graduate school.

### lsamp.virginia.edu



# VIRGINIA-NORTH CAROLINA ALLANCE FOR MINORITY PARTICIPATION

# IMPACT

From 2007 to 2016, the VA-NC Alliance saw a 156% increase in the number of underrepresented minority (URM) students earning undergraduate STEM degrees.

### Graduates

Baseline	641
Mid-Level Year One	820
Mid-Level Year Two	972
Mid-Level Year Three	1,108
Mid-Level Year Four	1,247

During year four of the Mid-Level phase (2015-16), the total number of URM STEM students graduating with bachelor's degrees from VA-NC Alliance partner institutions <u>increased 95%</u> from baseline.

### Enrollment

Baseline	4,262
Mid-Level Year One	5,062
Mid-Level Year Two	5,654
Mid-Level Year Three	6,340
Mid-Level Year Four	6,764

During year four of the Mid-Level phase (2015-16), the total number of URM STEM students enrolled at VA-NC Alliance partner institutions <u>increased 59%</u> from baseline.

### Accomplishments

- From 2010-11 to 2015-16, the number of Hispanic or Latino students from VA-NC Alliance schools obtaining STEM degrees increased by 145%.
- During this same time period, the number of African American graduates increased by 42%, and the number of minority graduates reporting more than one race increased by 461%.

### lsamp.virginia.edu

WASHINGTON BALTIMORE HAMPTON ROADS LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION (WBHR-LSAMP)

202-865-8568 (P) • 202-232-4758(F) • lsamp@howard.edu • Website: www.howard.edu/lsamp

#### Lead Institution – Howard University





Executive Director/Co-PI

Dr. Clarence M. Lee

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202-865-8568

Principal Investigator Dr. Anthony Wutoh awutoh@howard.edu 202-806-2550

**Program Manager - Marquia Whitlock** 202-865-8565 • mwhitlock@howard.edu

Data Analyst - Monique Yvette McClung 202-865-8566 • Monique.mcclung@howard.edu

Alliance Advisor - Dr. William Gordon 202-865-8568 • wgordon@howard.edu

#### Partner Institutions & Coordinators

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Prince George's Comm. Coll.-Dr. Christine Barrow 301-322-0419 • barrowce@pgcc.edu

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Virginia State University-Dr. Ali Ansari 804-524-1083 • aansari@vsu.edu

### About Our Alliance...

The Washington Baltimore Hampton Roads - Louis Stokes Alliance for Minority Participation (WBHR-LSAMP) was established in 1993 under a cooperative agreement through the Directorate for Education and Human Resources (EHR) of the National Science Foundation. Now an established senior level alliance, the WBHR-LSAMP has developed into a 13 member alliance inclusive of the original seven HBCU members and six new community college partners.

### WBHR-LSAMP Alliance Goals

The Alliance has continued to build on each previous year's success to ensure:

1) An increased rate of graduation of underrepresented minorities at the baccalaureate.

2) A substantial impact on the rate of attendance in STEM graduate programs by program participants through the Bridge to the Doctorate fellowship activity, graduate symposia, seminars, workshops, and research.

3) Institutionalizing best practices via peer mentorship, tutoring, GRE prep, tutoring in gate-keeping courses, curriculum development, increased faculty mentored research, facilitating the transfer of community college students into STEM areas, and involving our students in presenting at state, regional and national conferences. 4) Increased emphasis on collaborations with other NSF projects, national laboratories and private

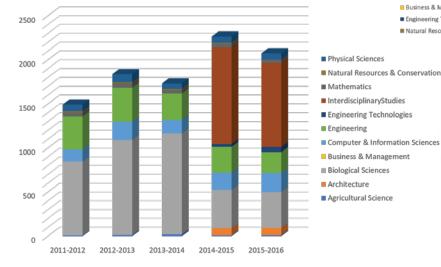
corporations/industry and expanding opportunities for student engagement

in international activities.

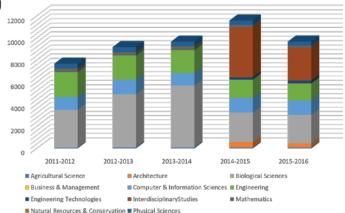


The Washington Baltimore Hampton Roads – Louis Stokes Alliance for Minority Participation Program (WBHR-LSAMP) is one of the largest producers of STEM degrees in the nation. Over the past 22 years this alliance has produced over 30,000 minority students with BS degrees, 3,482 with MS degrees, and over 1,000 with Ph.D. degrees in STEM fields. Howard University has successfully served as the lead institution for the alliance during these years. In addition, we have accepted five classes of Bridge to the Doctorate students.

#### WBHR-LSAMP URM STEM DEGREES



WBHR-LSAMP URM STEM ENROLLMENT



#### Student Impact.....

- Cameron Clarke, a graduate of Howard University and WBHR-LSAMP Alum was selected as one of 32 students nationwide to receive the prestigious 2017 Rhodes Scholarship.
- Chelsea Nnebe, was selected for a Fulbright Research Award in 2017. Chelsea will be in Germany identifying sub-clinical markers of cognitive deficiency in epilepsy. She won several awards while participating in the LSAMP program at Howard University.

Ms. Termara Parker, HU WBHR-LSAMP Alum, was accepted into the Yale University Neuroscience Doctoral Program! She has been offered a full scholarship with a substantial yearly stipend for the duration of her studies

 Raymond Carson (Bowie State LSAMP) was awarded the State University of New York (SUNY) Louis Stokes Alliance for Minority Participation Bridge to the Doctorate (LSAMP BD) Fellowship at Binghamton University.



WBHR-LSAMP Alum, Honoree Brewton, is currently enrolled in the Behavioral Neuroscience Doctoral Program at The University of North Carolina at Chapel Hill.

"Thank you for the support of the LSAMP program. I credit a couple of those interview invitations to the fact that I met program administrators at conferences that I attended with LSAMP. I wish you and the program continued success.

-Alana Jones, BA Latin & BS Biology, Howard University WBHR-LSAMP Alum



#### WESTERN ALLIANCE TO EXPAND STUDENT OPPORTUNITIES (WAESO)

http://www.asu.edu/WAESO Email: waeso@asu.edu

THE NATIONAL SCIENCE FOUNDATION



WAESO is sponsored in part by grants from the National Science Foundation (NSF)

The ambitious but achievable primary goal of the WAESO 10+ LSAMP Alliance is to finally complete the long difficult task that WAESO began in 1991 and successfully progressed steadily toward ever since to end the underrepresentation and achieve representation of underrepresented minority (URM) science, technology, engineering and mathematics (STEM) student annual B.S. graduates at WAESO institutions as compared with the URM general populations of the states of Arizona and Utah, and of the USA, by increasing the baseline total 2,183 annual URM STEM B.S. degrees to 3,590 annual URM STEM B.S. degrees by the end of this grant. After 26 years of demonstrated success moving steadily toward this goal, WAESO aims to prove that it is possible to end underrepresentation and achieve representation at parity with the Arizona and Utah general statewide as well as the national population at large of URM STEM B.S. degrees earned by reaching that goal at alliance institutions.

#### **WAESO Participating Institutions:**

Arizona State University (Lead) Brigham Young University Maricopa Community College District

- Chandler/Gilbert Community College
- Estrella Mountain Community College
- Gateway Community College
- Glendale Community College
- Phoenix College
- South Mountain Community College

Regis University University of Arizona University of Utah Utah Valley University

#### Significant results of WAESO 10+ LSAMP Alliance

There has been a significant increase of WAESO faculty-directed student research at our two largest WAESO institutions, Arizona State University (ASU) and the University of Arizona (UofA). We increased our faculty-directed undergraduate student research projects at ASU by 122% to 20 WAESO students participating in 13 research projects in Spring 2017 compared to 9 WAESO students participating in 7 research projects in Spring 2016. At UofA, we increased our faculty-directed undergraduate student research projects by 200% to 39 WAESO students participating in 14 research projects in Spring 2017 compared to 13 WAESO students participating in 9 research projects in Spring 2016.

At the WAESO 12<sup>th</sup> Annual Student Research Conference held at Arizona State Universty, a total of 82 WAESO-LSAMP students presented their research posters and participated in informational and motivational presentations by underrepresented STEM faculty members.



WAESO students presenting their posters at the WAESO Student Research Conference at Arizona State University.

## LSAMP - WAESO activities in which the students participated include:

- Peer study groups
- Faculty-directed undergraduate research projects
- Research presentation travel
- Summer bridge programs
- Graduate preparation institutes, mentoring, and research
  presentation

WAESO CONTACT INFORMATION Dr. Antonio A. Garcia Project Director and Principal Investigator, WAESO Foundation Professor of Bioengineering School of Biological and Health Systems Engineering Ira A. Fulton Schools of Engineering/ Associate Director, Hispanic Research Com

Associate Director, Hispanic Research Center Arizona State University P.O. Box 875403

Tempe, AZ 85287-5403

(480) 965-0840

#### **WAESO LSAMP Impact Statement**

#### Progress on Primary Mission: Expanding the U.S. Science, Technology, Engineering and Mathematics Workforce.

WAESO LSAMP UR	M STE	M En	rollme	ent by	Instit	ution	(1994-	2015)															
Enrollment URM	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
University																							
Arizona State University	778	730	852	839	969	1125	1464	1491	4620	1682	2100	2135	2258	2364	2556	2969	3369	4102	4667	4989	5437	6322	7350
Brigham Young University	217	239	287	287	290	233	248	266	268	328	317	301	259	312	334	335	475	496	521	632	642	654	740
Regis University	0	0	23	23	82	82	82	8	140	89	100	162	142	115	131	87	142	128	141	236	234	259	259
University of Arizona	956	977	1056	1035	1145	959	2232	1362	1429	1537	1396	1753	1652	1675	1675	1809	1966	2954	3087	3795	4099	4456	4710
University of Utah	131	131	122	125	120	139	112	210	257	297	331	332	409	419	462	471	519	639	805	924	948	997	997
Utah Valley University	14	0	94	40	94	96	29	37	50	169	238	122	219	253	271	362	482	609	697	746	720	748	832
University Total	2096	2077	2434	2349	2700	2634	4167	3374	6764	4102	4482	4805	4939	5138	5429	6033	6953	8928	9918	11322	12080	13436	14888
Community College																							
Chandler Gilbert CC	7	7	19	35	47	57	153	150	153	173	150	159	128	147	227	155	223	293	390	555	567	624	533
Estrella Mountain CC	13	14	9	28	23	53	202	197	183	163	167	152	89	73	194	193	259	386	424	636	840	924	962
Gateway CC	40	40	17	6	13	125	233	236	233	207	175	144	165	2206	124	102	145	146	160	172	191	215	164
Glendale CC	104	105	112	108	122	5	414	421	399	540	449	423	368	312	390	461	605	808	848	1105	1134	1141	982
Phoenix CC	68	107	68	79	66	58	234	211	233	226	158	97	82	78	118	205	376		551	684	797	861	710
South Mountain CC	75	77	48	43	47	45	379	186	111	116	126	114	86	80	134	180	207	259	299	391	494	536	520
Community College Total	307	350	273	299	318	343	1615	1401	1312	1425	1225	1089	918	2896	1187	1296	1815	2370	2672	3543	4023	4301	3871
Grand Total	2403	2427	2707	2648	3018	2977	5782	4775	8076	5527	5707	5894	5857	8034	6616	7329	8768	11298	12590	14865	16103	17737	18759

#### WAESO LSAMP URM STEM B.S. Degrees by Institution (1992-2016)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bachelors	190	213	247	288	358	344	423	436	550	601	609	686	845	717	801	796	988	1042	1051	1269	1477	1756	1923	2170	2304
Arizona State University	65	76	89	94	111	109	138	155	229	234	264	264	273	304	317	323	405	435	464	540	699	833	934	996	1082
Brigham Young University	23	21	21	27	40	50	45	37	37	39	64	58	37	53	50	61	88	90	86	115	117	113	104	146	133
Regis University	12	14	14	18	16	13	15	12	10	7	11	12	21	42	27	21	21	33	23	33	35	35	35	48	38
University of Arizona	81	91	107	131	179	157	211	219	257	293	238	300	454	283	304	319	389	381	365	434	465	558	642	740	840
University of Utah	9	11	16	18	11	14	14	10	16	24	29	47	48	23	63	43	64	85	73	83	105	156	147	160	155
Utah Valley University	0	0	0	0	1	1	0	3	1	4	3	5	12	12	40	29	21	18	40	64	56	61	61	80	56

#### WAESO LSAMP URM STEM M.S. Degrees by Institution (1992-2016)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Masters	33	37	49	42	45	42	47	50	109	90	116	164	150	142	128	119	158	148	175	188	213	217	264	287	326
Arizona State University	11	17	18	14	13	22	22	30	26	29	24	20	23	22	27	27	54	43	54	64	81	95	118	140	166
Brigham Young University	3	5	6	6	7	5	3	0	3	1	2	12	2	3	4	2	7	8	10	15	10	11	12	10	16
Regis University	1	0	5	2	2	1	0	0	18	19	40	37	54	66	42	42	39	41	42	23	31	21	38	34	42
University of Arizona	17	13	16	17	21	13	17	17	60	34	39	88	64	47	43	41	43	40	54	69	71	70	69	74	76
University of Utah	1	2	4	3	2	1	5	3	2	7	11	7	7	4	12	7	15	16	14	15	20	20	27	29	26
Utah Valley University	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0

## WAESO LSAMP External Evaluation Highlights:

Here are the highlights of the final report of our WAESO External Evaluators for our most recently completed WAESO LSAMP Senior Alliance Phase (2011-2017):

- In general, student participants and faculty mentors have a high level of satisfaction with WAESO-LSAMP program.
- Student participants are exposed to high level, handson research that prepares them for the rigors of graduate school.
- Beyond exposure to high-level research, students engage in a number of professional activities that increase their self-confidence, academic accomplishments and influence their professional paths including conference travel and presentation and the opportunity to co-author academic papers.
- The sense of community provided through WAESO-LSAMP funded experiences has a significant impact on students.
- WAESO-LSAMP support helps faculty in their efforts to diversify their labs and even influences some of their views on working with minority students.
- Faculty driven recruitment models have an interesting impact on both faculty and students, but come with challenges.
- Faculty shared a number of insights on recruiting and working with underrepresented minority students into STEM environments including the importance of listening to students to understand their cultural backgrounds and giving students the opportunity to work on challenging research problems.



WAESO student participants at Minority Access 18th Annual Conference held in Washington, DC

- Students noted a number of factors that attracted them into STEM environments including hands on research, altruistic projects, supportive mentors and diverse work environments
- Students and faculty mentors noted that WAESO-LSAMP supported environments are fundamentally different than experiences students receive in a traditional academic environment. WAESO-LSAMP environments were described as realistic where students are given the opportunity to engage in research and learn from mistakes while classrooms were described as a place to learn general knowledge in a formulaic manner.
- Evidence suggests that the WAESO-LSAMP program utilizes a cutting-edge model of diversity in higher education and is reflective of a Multicontext model of diversity rather than an assimilationist model of student development.

#### Wisconsin Louis Stokes Alliances for Minority Participation



UW-Milwaukee WiscAMP STEM Inspire scholars aboard the UWM Neeskay Research Vessel. The research experience is offered through collaboration with the School of Fresh Water Sciences at UW-Milwaukee.

The need for a highly skilled workforce with training in science, technology, engineering, and mathematics (STEM) helps to ensure economic development and innovation. The WiscAMP program helps higher education institutions in Wisconsin meet this need as student populations and local communities continue to become more diverse. As an alliance of 19 colleges and universities across Wisconsin, WiscAMP supports the development of a diverse STEM workforce for Wisconsin and the world. WiscAMP alliance institutions collectively work to double the number of underrepresented minority students who complete their baccalaureate degrees in STEM disciplines within 5 years.

#### WiscAMP Leadership Team (UW-Madison)



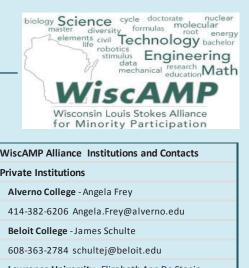
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\*Lead Institution

#### Wisconsin Louis Stokes Alliance for Minority Participation



Student participants in the WiscAMP Excel Summer Program Poster session present their research projects to faculty, graduate students, and other campus leaders.

#### WiscAMP institutions have collectively:

- Doubled the number of URM students completing baccalaureate degrees in STEM over the last 5 years
- Doubled the number of URM undergraduates majoring in STEM
- Raised the cumulative grade point average (GPA) at graduation 0.23 for URM students majoring in engineering, computational and physical sciences and by 0.05 for students majoring in biological, agricultural and environmental sciences
- Decreased the GPA gap between URM and majority students graduating in STEM by 52% for engineering, computational and physical science majors and by 12% for biological, agricultural and environmental science majors
- Provided direct support to over 1000 students over the last 10 years.

The WiscAMP Small Grants Program provides up to \$25,000 for one year to support program enhancement or expansion to broaden participation and achievement in STEM. Over the last 10 years over 90 WiscAMP Small Grants programs have been implemented, with every WiscAMP institution offering at least 1 WiscAMP Small Grants funded program. Over 90% of these resources go to participants. The program supports summer and academic year research experiences,



Shad Evelyn, Biology, UW-Whitewater, studies Prairie Dogs in Boulder, Colorado during the summer

international research experiences, bridge programs, academic enhancement activities. Two WiscAMP students, Samantha Knott (Lawrence University) and J. Miguel Hernandez Ochoa (UW-Madison) have been awarded the NSF Graduate Research Fellowship.



Riley Whitehead, a former WiscAMP Scholar in the Madison College transfer preparation program is now majoring in chemical engineering at UW-Madison

## CENTRAL FLORIDA STEM ALLIANCE FOR MINORITY PARTICIPATION

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STEM Summit attendees learn about education and career journeys of diversity panelists..

In Central Florida, underrepresented minority (URM) students encounter, consider, and pursue possibilities that, for many of them, seemed unimaginable a short time earlier. The Central Florida STEM Alliance brings together three state colleges within the region, Lake-Sumter State College, Polk State College, and Valencia College, working to achieve a 25% increase in the rate of URM associate degree graduates transferring into baccalaureate degree majors in STEM at partner universities.

While CFSA partners collaborate through a comprehensive program of strategies to increase URM STEM degree attainment and career participation, three signature strategies of the Alliance include a summer bridge experience for incoming STEM students, engagement in research and other internship experiences, and conference participation.

**Summer STEM Institute** is a weeklong experience for incoming students, providing experiences to explore STEM topics and disciplines, promote STEM career awareness and motivation and, assess readiness to pursue and attain a STEM degree.

**LSAMP Scholars Program** provides professional experiences in the STEM workplace through research, internships, and laboratory assistantships. During 2017, eighteen students engaged in research and seven participated in laboratory assistantships. Four scholars presented their research at one or more national STEM conferences.

**STEM Summit** is the CFSA student conference and is hosted by Valencia College. During the most recent conference in 2017, sixty-two percent of students experienced a STEM conference for the first time. Also during the conference, eight students presented research posters. The number of students, faculty, and staff in attendance totaled 149.

In addition, a total of twenty-three Alliance students attended three national STEM conferences during which students participated in a range of professional development and networking experiences. Six students from this group made eight research presentations during these conferences.

The program elements highlighted above, along with broad engagement in co-curricular activities, learning support, career awareness, and STEM outreach, are contributing to student outcomes that include improved STEM identity and increased number of URM students transferring to baccalaureate-degree STEM programs.





An LSAMP Scholar receives a medallion as graduation recognition.



Jean Woody Luxama participated in a research trip to the Guadeloupe.



Summer bridge students explore genetic engineering with green slime.



Michelle Garcia Mendoza shares her research during the a national conference.

### ALAMO COLLEGES DISTRICT



The Louis Stokes Alliances for Minority Participation (LSAMP) program theory is based on the Tinto model for student retention. The overall goal is to assist universities and colleges in diversifying the nation's STEM workforce by increasing baccalaureate and graduate degrees awarded to populations historically underrepresented in these disciplines: African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians and Native Pacific Islanders.

Particular emphasis is placed on transforming undergraduate STEM education through innovative, evidence-based recruitment and retention strategies, and relevant educational experiences. The LSAMP program supports knowledge generation, knowledge utilization, program impact and dissemination type activities. The program seeks new learning and immediate diffusion of scholarly research into the field.

The LSAMP program provides funding to alliances that implement comprehensive, innovative and sustained strategies that ultimately result in the graduation of well-prepared, highly-qualified students who pursue STEM graduate studies or careers.

During year four, the CIMA-LSAMP program focused on increasing opportunities for undergraduate research projects on three of the campuses, maintaining a comprehensive program evaluation and improvement. As an alliance, we have increased on-campus undergraduate research student opportunities by more than 50%.

NORTHEAST LAKEVIEW COLLEGE

NORTHWEST VISTA COLLEGE 💼

PALO ALTO COLLEGE SAN ANTONIO COLLEGE

ST. PHILIP'S COLLEGE







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## **North Carolina STEM Alliance**

With the support of the Louis Stokes Alliances for Minority Participation (LSAMP), the primary goal of the North Carolina STEM Alliance (NCSA) is to increase the number of under-represented minority students who successfully transfer to four-year institutions to earn degrees in STEM disciplines.

## **NCSA Supported Activities Include:**

- Dedicated mathematics coaching and supplemental instruction - STEM enrichment and bridge programs (STEM Prep) - Proactive academic advising and mentoring Participation in summer REU programs - Faculty-led STEM research experiences - University visits and transfer planning - Weekly STEM enrichment workshops - Community service activities - Leadership development - Genuine fellowship



**Central Piedmont Community College** (Lead Institution) **Richard Zollinger, Pl** richard.zollinger@cpcc.edu 704.330.6730

This material is based upon work supported by the National Science Foundation under Award Number 1400792.



NCSA

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## Northern New Jersey Bridges to the Baccalaureate Alliance

#### Established in 2014, the NNJ-B2B Alliance...

Is a consortium of five publicly funded Hispanic serving community colleges in Northern New Jersey committed to assisting underrepresented minority students in completing their STEM associates degree and successfully transferring them to four-year STEM programs. The alliance forms a synergistic partnership with the Garden State LSAMP, a highly successful project headed by Rutgers University-Newark to create a transformative model to streamline the transition from two-year to four-year institutions.

Strategies for engaging students. During this period, the Alliance has increased *the number of underrepresented minority students* transferring to four-year STEM programs by over *100 percent*. This success was accomplished by instituting five high-impact practices across the partner institutions, including Undergraduate Research opportunities, Math Prep programs, peer-led Supplemental Instruction, Peer Mentoring, and Transfer Seminars. Collectively, the partners engaged more than 100 students in undergraduate research, utilized online adaptive learning systems to support math acceleration strategies, and involved 8,000 URM students in more than 100 STEM events and conferences, and institutionalized Supplemental instruction for difficult STEM gateway courses.





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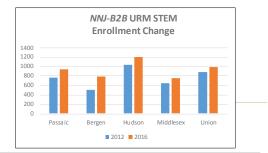
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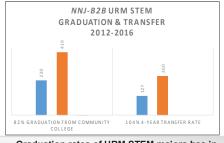
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Enrollment of URM STEM majors at B2B schools has increased by 28% - nearly triple the original objective.



Graduation rates of URM STEM majors has increased by 84% and transfer rates by 104%.



Dr. Jacqueline Kineavy, Pl

Senior Vice President Passaic County Community College jkineavy@pccc.edu (973) 684-6300 Thomas van Aken NNJ-B2B Project Director Passaic County Community College tvanaken@pccc.edu (973) 684-4855



#### Bridges to Baccalaureate: Strategic Transfer Alliance for Minority Participation (B2B:STAMP)

B2B STAMP Alliance, led by Kapi'olani Community College, was awarded in 2017 by the NSF. The B2B STAMP Alliance supports and advances STEM education and transfer at the six University of Hawai'i Community Colleges and the University of Hawai'i Maui College. To achieve this goal, three strategies for student success is being employed:

Math acceleration for first year students

Peer Mentoring

Undergraduate Research Experience (URE)

for academically mature sophomore students



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February 2018.

One semester into the grant, the B2B STAMP Alliance has 18 URM students: 12 are involved in URE projects and 6 are doing peer mentoring. Nine of the students did poster presentations during the Student Undergraduate Research Fair (SURF) at one of the campuses. Four of the 18 URM students are transferring to a four-year campus to pursue a STEM baccalaureate degree. Two of the STAMP awardees received travel grants to present their projects at the Emerging Researchers National (ERN) Conference in Washington DC in

## 11611

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