

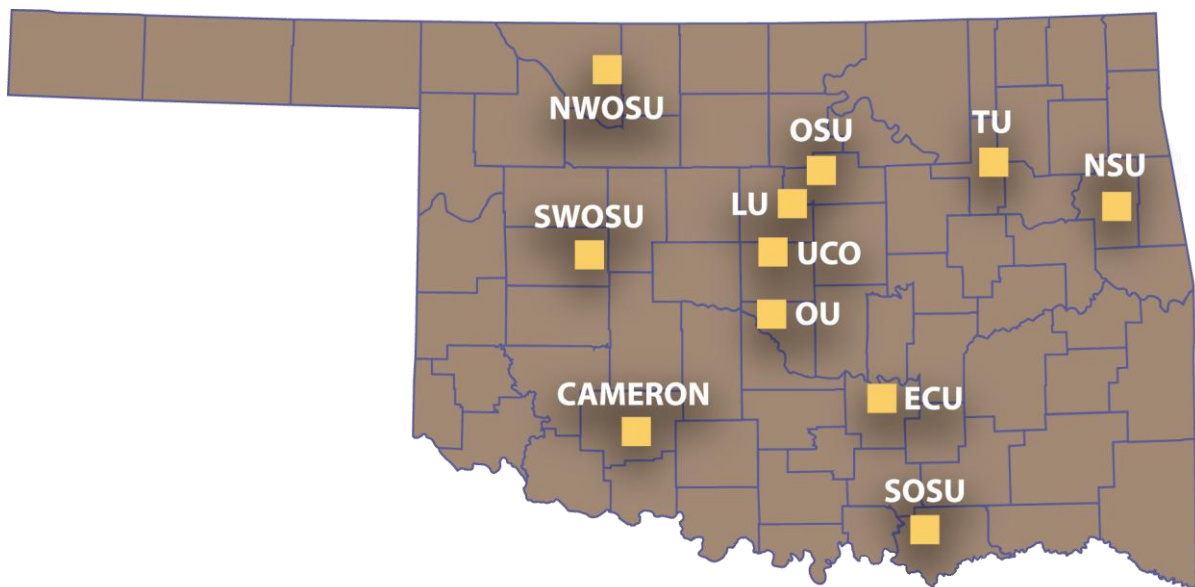
2009

PERFORMANCE EFFECTIVENESS REVIEW
P.E.R.

Oklahoma
Louis Stokes Alliance for
Minority Participation



Submitted to
The National Science Foundation
4201 Wilson Boulevard
Room 815
Arlington, VA 22230



Oklahoma Alliance Institutions

2009

PERFORMANCE EFFECTIVENESS REVIEW

Oklahoma Louis Stokes Alliance for Minority Participation in
Science, Technology, Engineering, and Mathematics
(OK-LSAMP STEM)

Submitted by

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INTRODUCTION

The Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) program concluded *Year Five* of the five year National Science Foundation (NSF) grant (HRD0402640--2004-2009). This also concludes 15 years of successful LSAMP activities in Oklahoma.

The changes that occurred in the Oklahoma Alliance have been positive. A proposal to the National Science Foundation for an additional five year LSAMP grant has been submitted and approved (HRD 0902027). Oklahoma continues to meet the NSF goal to increase the number of students from historically underrepresented groups completing degree programs in STEM fields. In 2008-2009, Oklahoma Alliance had 116 Scholars; 29 completed Bachelor of Science degrees; and 22 were admitted to graduate schools. During the Fall, 2008 semester, 63% of all scholars participated in research activities and 69% of scholars participated in summer internships at research institutions, private industry, and national laboratories, as well as international experiences. Additionally, more than 150 presentations were made by scholars at local, state, national, and international conferences.

The 14th Annual Research Symposium welcomed 119 attendees for a day of workshops, poster and oral presentations, ethics training and guest speakers. Dr. A. James Hicks, Program Director, National Science Foundation, was a keynote speaker, addressing the Bridge to the Doctorate Fellows as well as undergraduate scholars.

Oklahoma State University received funding for a third cohort of the Bridge to the Doctorate program (HRD 0832871). Twelve former LSAMP scholars were recruited and began graduate studies in the fall 2008 semester. The University of Oklahoma received funding for Cohort IV (HRD 0929135) of the Bridge to the Doctorate program. An additional 12 former scholars will be recruited into graduate programs.

Overall, the OK-LSAMP program has met the goals established in the initial proposal to the National Science Foundation. During Phase III, OK-LSAMP held high standards for scholars, thus producing quality graduates in the STEM disciplines. Scholars maintained high grade point averages, participated in research with faculty mentors and internship opportunities thus receiving the support necessary to graduate with the qualifications that open the potential for receiving advanced degrees.

PERSONNEL CHANGES

For the second year significant changes occurred in the Oklahoma LSAMP Alliance. Dr. Cornell Thomas, Oklahoma State University (OSU) resigned his position as Vice President of Institutional Diversity and as Principal Investigator/Program Director of the OK-LSAMP program. He left OSU to assume the role of President of Jarvis Christian College in Hawkins, Texas. Dr. A. Gordon Emslie, Dean of the Graduate College and Associate Vice President of Research, assumed the role of Principal Investigator/Program Director on February 1, 2009.

Dr. Gordon Emslie had previously served as Co-Principal Investigator of the OSU Bridge to the Doctorate, Cohort III. Dr. Emslie has been in his current positions at OSU for five years (Appendix A).

Dr. Jason Kirksey, Associate Professor of Political Science, assumed the role of Interim Associate Vice President for Institutional Diversity at OSU. Dr. Kirksey has been a faculty member at OSU for 13 years (Appendix B).

Dr. Keith Vitense replaced Dr. Ted Snider at Cameron University as the Campus Coordinator. Dr. Vitense holds the rank of Professor in the Chemistry department. He is a member of the American Chemical Society (ACS) and serves on two ACS committees: Ethics and Economic and Professional Affairs. Dr. Vitense has a dedication to his profession and to working with high school students to inspire them to seek careers in the STEM disciplines.

Dr. Jody Buckholtz replaced Dr. Myron Cherry at Northeastern Oklahoma State University as the Campus Coordinator. Dr. Buckholtz holds the rank of Assistant Professor in the Chemistry Department. Dr. Buckholtz completed her Ph.D. requirements in 2007 from the University of Arkansas.

ORGANIZATIONAL PARTNERS

The Oklahoma LSAMP has joined in a number of partnerships that enhance the ability to serve more students and to use NSF funds strategically. Scholars participated in internships across Oklahoma as well as nationally and internationally through programs such as Research Experiences for Undergraduates (REU) and industry. This year, students participated in internship programs that enhanced their career goals and further enhanced their research skills and knowledge. Partners include, but are not limited to, the following.

International

Several OK-LSAMP scholars from across the Alliance had opportunities to participate in international experiences. Five scholars traveled to **France, Hungary,**

Wales, Turkey, and Zambia. These international experiences contribute to the knowledge and skills of the scholars which in turn adds to the success of the OK-LSAMP program.

Domestic

Bioengineering and Bioinformatics Summer Institute, Clemson University, Clemson, SC – The program is designed to provide students majoring in the biological sciences, computer sciences, engineering, mathematics, and physical sciences with well planned interdisciplinary bioengineering or bioinformatics research and education experiences. Funded by the National Institutes of Health and the National Science Foundation (www.ces.clemson.edu).

Brookhaven National Labs (BNL), Long Island, NY – BNL conducts research in the physical, biomedical, and environmental sciences, as well as in energy technologies and national security. BNL also builds and operates major scientific facilities available to university, industry and government researchers from across the nation. Discoveries made at Brookhaven have won six Nobel Prizes.

Little River National Wildlife Refuge, Broken Bow, OK – Little River is one of more than 530 refuges throughout the United States managed by the Fish and Wildlife Service. The National Wildlife Refuge System (15,000 acres) is the only national system of lands dedicated to conserving our wildlife heritage for people today and for generations yet to come. Little River National Wildlife Refuges' primary purpose is to preserve the bottomland hardwood forests for migratory waterfowl on the Central Flyway.

Lawrence Berkeley National Laboratory (LBNL), San Francisco, CA – LBNL is managed by the University of California as a U.S. Department of Energy National Lab and charged with conducting unclassified research across a wide range of scientific disciplines.

Center for Disease Control and Prevention (CDC), Atlanta, GA – The CDC is a national public health agency, working to ensure healthy people in a healthy world. CDC is globally recognized for conducting research and investigations and for its action-oriented approach. The CDC applies research and findings to improve people's daily lives and responds to health emergencies. (cdc.gov)

Center for the Creation of Economic Wealth, Norman, OK – The Center is administered by OU's Vice President for Technology Development. The Center for the Creation of Economic Wealth offers opportunities for practical experience to promote the entrepreneurial spirit and assist in developing Oklahoma's economy (www.ccew.ou.edu).

ConocoPhillips, Tulsa, OK – ConocoPhillips is the third largest integrated energy company in the United States.

Devon Energy Corporation, Oklahoma City, OK – Devon is an independent oil and gas company that explores for and produces oil and natural gas worldwide.

Exxon Mobil, Houston, TX – Exxon Mobil has been a leader in the energy industry since its beginnings. Exxon is the world's largest publicly traded international oil and gas company, providing energy that helps underpin growing economies and improve living standards around the world. (www.exxonmobil.com)

Experimental Program to Stimulate Competitive Research (EPSCoR) – The mission of EPSCoR is to assist the National Science Foundation in its statutory function "to strengthen research and education in science and engineering throughout the United States and to avoid undue concentration of such research and education." (www.nsf.gov)

Four Directions Summer Research Program, Harvard University, Cambridge, MA – Four Directions is directed toward Native American students majoring in STEM disciplines. The program is designed to develop new experiences and skills and a knowledge that the students can take back to their communities. The 8 week program is sponsored by the Harvard School of Medicine.

John Zink Company, Tulsa, OK – John Zink provides industry with environmentally sensitive solutions that enhance air and water quality. Engineers combine practical problem solving with innovative discoveries to produce next-generation clean-air equipment (www.johnzink.com).

Robert S. Kerr Environmental Research Labs, Ada, OK – Kerr Labs is a federal groundwater research laboratory. Sixty-Four OK-LSAMP scholars from East Central University have conducted research at this facility since 1994.

GE – Aviation, Arkansas City, KS – GE-Aviation (a subsidiary of General Electric, headquartered in Evendale, Ohio) is the world's leading producer of large and small jet engines for commercial and military aircraft. The company also supplies aircraft-derived engines for marine applications and provides aviation services. GE - Aviation's technological excellence, supported by continuing substantial investments in research and development, has been the foundation of growth, and helps to ensure quality products for customers.

Goddard Space Flight Center, Greenbelt, MD – The center is a major U.S. laboratory for developing and operating unmanned scientific spacecraft. Goddard manages many of NASA's Earth observation, astronomy, and space physics missions. The campus encompasses 1,270 acres and includes more than 33 major buildings that provide more than 3 million square feet of research, development and office space.

Goddard is unique in that these facilities provide for the construction and development of spacecraft software, scientific instruments as well as the spacecraft themselves.
(www.nasa.gov/centers/goddard)

McNair Scholars Programs – Partner Institutions continue to actively collaborate with the McNair Scholars Program and Student Support Services Program where they exist to identify and recruit students to the Alliance, provide academic services and research activities, and provide or support opportunities to visit graduate schools.

National Institute of Standards and Technology (NIST), Gaithersburg, MD – Founded in 1901, NIST is a non-regulatory federal agency within the U.S. Department of Commerce. NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life. (NIST.gov)

National Institute of Diabetes, Baltimore, MD – The National Institute of Diabetes is a partnership of the National Institute of Health, the Centers for Disease Control and Prevention and more than 200 public and private organizations, working together to reduce the morbidity and mortality associated with diabetes. (NIDDK.NIH.GOV)

National Weather Service, Norman, OK – The National Weather Service houses a unique confederation of University of Oklahoma, National Oceanic and Atmospheric Administration and state organizations that work together in partnership to improve the understanding of events occurring in Earth's atmosphere over a wide range of time and space scales (www.nwc.ou.edu).

Native Americans in the Biological Sciences (NABS), Stillwater, OK – The Oklahoma State University NABS program collaborated with OK-LSAMP in recruiting participants and helping to locate research and graduate school opportunities. Additionally, the NABS program co-sponsored one student for international research in 2008. NABS is a program funded by the National Institute of Health.

Oklahoma Department of Wildlife Conservation, Oklahoma City, OK – This Oklahoma state agency is responsible for managing fish and wildlife.

Oklahoma IDeA Biomedical Research Excellence (INBRE) – INBRE is a grant awarded by the National Institutes of Health Institutional Development Award (IDeA) Program. The award will bring over \$17 million in research funding to fourteen Oklahoma institutions. The institutions include: University of Oklahoma Health Sciences Center, Norman, Oklahoma; Northeastern State University, Tahlequah, Oklahoma; and Southwestern Oklahoma State University, Weatherford, Oklahoma.

Oklahoma State University Geology Department, Stillwater, OK – The OSU Boone Pickens School of Geology owns and operates Les Huston Field Camp outside Cañon City, Colorado. During the degree program-required five-week course, OSU Geology students receive field-based experiences and conduct geologic mapping exercises.

Oklahoma State University, Oklahoma City (OSU-OKC), Oklahoma City, OK –

For the past several years, OSU-OKC has offered OK-LSAMP scholars the opportunity to register for an on-line GRE Preparation. Each Partner institution pays for tuition. A copy of the text has been provided to each institution.

OSU - NASA Project, Tulsa, OK – “Next Generation Composite Materials for

Aerospace and Exploration Systems” is a research project funded by EPSCoR and NASA conducted in Tulsa, Oklahoma.

Oklahoma State University Graduate College, Stillwater Campus – The OSU

Graduate College continues to provide graduate school preparation and effective research presentation workshops for the Oklahoma LSAMP Program and invites OK-LSAMP scholars to participate in the OSU Research Symposium.

Research Experiences for Undergraduates (REU) – REU programs are funded

by the National Science Foundation and conducted on specific campuses in specific programs. Programs in which OK-LSAMP scholars participated include, but are not limited to, the University of Massachusetts, Oklahoma State University, Southeastern Oklahoma State University, East Central University, and the University of Tulsa.

Scientific Opportunities in Atmospheric Research and Science (SOARS),

Boulder, CO – SOARS is a four-year, paid summer research internship for undergraduate science, math, engineering, and social science students interested in understanding the atmosphere and using that understanding to improve life on Earth. SOARS is designed to broaden participation in the atmospheric and related sciences. The program is equal parts research internship, learning community, and mentoring program (www.soars.ucar.edu).

Study Abroad, Oklahoma State University, Stillwater, OK – The OSU Study

Abroad office offers opportunities for students to travel to foreign countries to experience firsthand the culture, technology, and language of the chosen country. This allows students to expand their world view.

Tinker Air Force Base, Oklahoma City, OK – The Oklahoma City Air Logistics

Center is the worldwide manager for a wide range of aircraft, engines, missiles, software and avionics and accessories components. The center manages an inventory of 2,261 aircraft which include the B-1, B-2, B-52, C/KC-135, E-3, VC-25, VC-137 and 25 other Contractor Logistics Support aircraft. The Center also manages an inventory of nearly 23,000 jet engines that range from the Korean conflict vintage J33s (T33) to state of the art B-2 engines such as the F118. Missile systems managed by the Center include the Air Launched Cruise Missile, Conventional Air Launched Cruise Missile, Harpoon and Advanced Cruise Missiles. Airborne accessories management includes responsibility for some 24,000 different avionics and accessories components (www.tinker-af.org).

University of Oklahoma Graduate College, Norman, OK – Along with providing information on graduate admission procedures, the OU Graduate College invites OK-LSAMP scholars and Bridge to the Doctorate Fellows to attend various research symposiums and research workshops.

University of New York at Rochester, Rochester, NY – The Department of Biomedical Engineering uses technical expertise with the clinical side of the medical center. This 8- week long internship places scholars with faculty mentors to conduct research and gain valuable experiences.

University of Oklahoma Engineering Summer Bridge Program, Norman, OK – OU Bridge to the Doctorate students along with LSAMP scholars served as “Big Bridge” scholars during the AT&T “HEADS UP” Summer Bridge program. The “Big Bridges” were mentors to 30 incoming freshman, “Little Bridges.” In a 3-week summer camp designed to enhance calculus readiness. Students acquire the necessary skills to succeed in their first year in college.

University of Oklahoma Medical Research Foundation, Oklahoma City, OK – This is an independent, biomedical research institute dedicated to understanding and developing more effective treatments for human diseases (www.oumedicine.edu).

University of Tulsa Junior Robotics Institute, Tulsa, OK – The Robotics Institute involves OK-LSAMP scholars in the promotion of science and engineering by mentoring high school students for two weeks during the summer in various aspects of robot building and programming.

University of Rochester Medical Center, Rochester, NY – One of the nation's top academic medical centers, the University of Rochester Medical Center forms the centerpiece of the University's health research, teaching, patient care, and community outreach mission.

Williams Companies, Tulsa, OK – Williams is an energy company with its core businesses in natural gas exploration, production, processing, and transportation with additional petroleum and electricity generation assets.

Lou Wentz Foundation, Ponca City, OK – Assists undergraduates preparing for graduate school by providing funding in tandem with a faculty mentor. The research projects must be completed within an academic year. Other scholarships are also available through the Wentz Foundation.

DEMOGRAPHICS

Scholars may be admitted to the LSAMP program during their freshman year of enrollment, however, junior and senior students, in good academic standing, who have already expressed an interest in research and graduate schools are targeted for recruitment. The freshmen and sophomore scholars may be mentored by the junior and senior scholars

and often collaborate on research projects in their chosen disciplines, along with working with the same mentor. A comparison of the classes (freshman, sophomore, junior and senior) is shown in Figure 1.

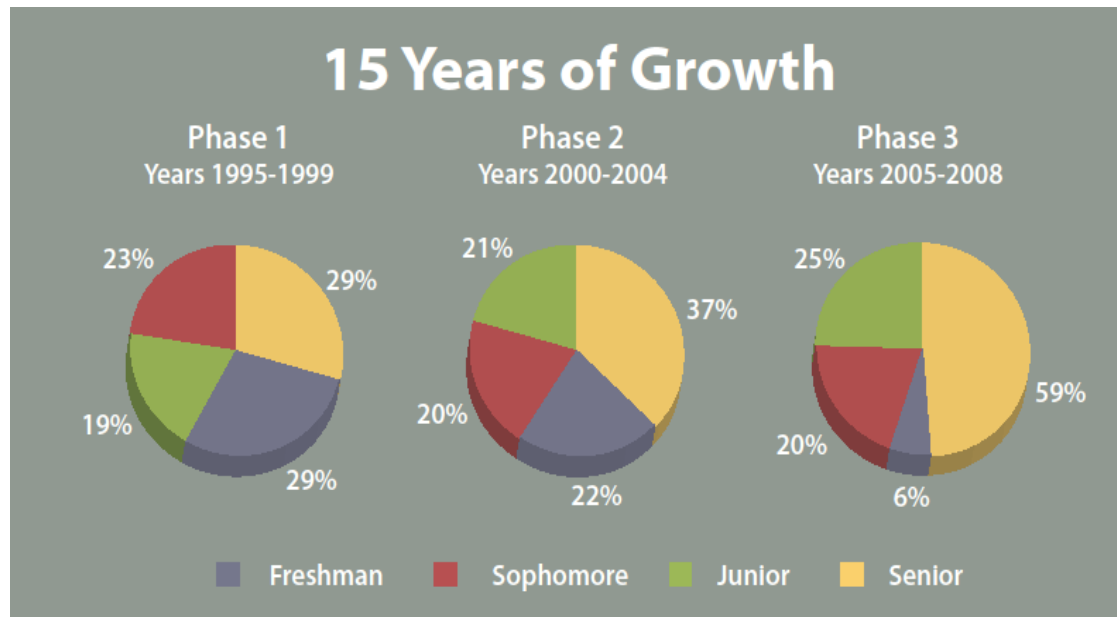


Figure 1. Comparison of Phases I-III of Scholars by Year in School

Table 1 shows the distribution of scholars throughout Alliance institutions during 2008-09 (year 5 of Phase III). The 116 scholars represented a total of 60 males and 56 females. The ethnic distribution for each reported category are: Native American – 38; African American – 51; Hispanic – 14; Pacific Islander – 5; Asian – 4; White – 2, More than one race – 2 (Figure 2).

Figure 3 shows scholars by classification for 2008-2009. Scholars included: Freshmen – 9; Sophomore – 20; Junior – 30; Senior – 57.

Table 1. 2008-2009 Scholars by Institution

Institution	Scholars	Graduates	GRE Prep	GRE Taken	5 Graduate Application	1-4 Graduate Application	Continued to Graduate School
Cameron	5	1	0	0	0	0	1
East Central	13	6	0	0	0	1	3
Langston	21	8	3	4	3	2	6
Northeastern	5	2	0	1	0	1	2
Northwestern	2	0	N/A	N/A	N/A	N/A	0
Oklahoma State	27	2	0	1	0	1	2
Southeastern	6	1	0	0	0	1	1
Southwestern	4	0	N/A	N/A	N/A	N/A	0
U. of Central Oklahoma	14	4	0	0	0	0	2
U. of Oklahoma	12	3	0	0	0	2	3
U. of Tulsa	7	2	0	0	0	0	2
	116	29	3	6	3	8	22

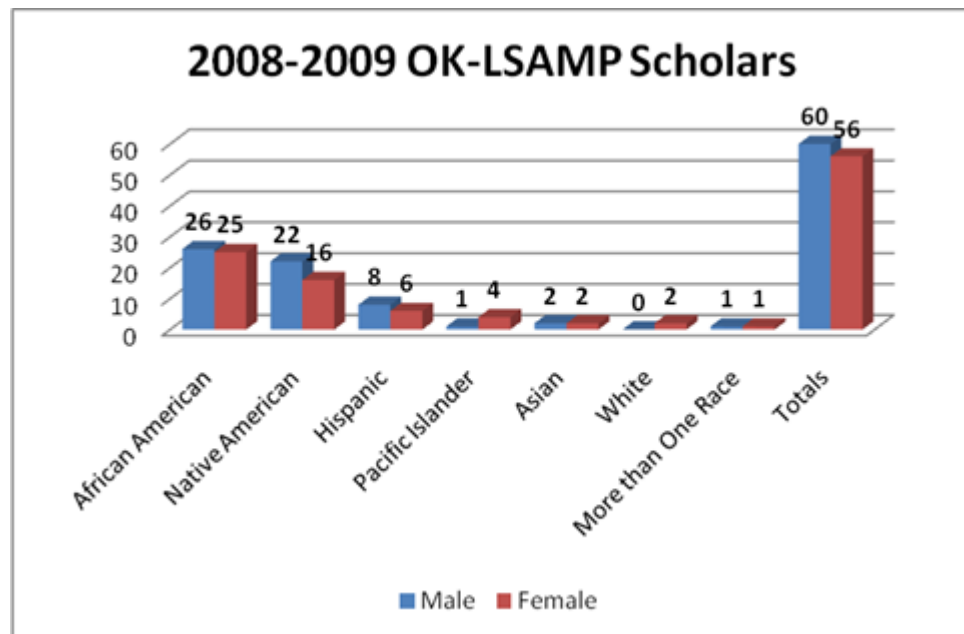


Figure 2. 2008-2009 Scholars by Ethnicity

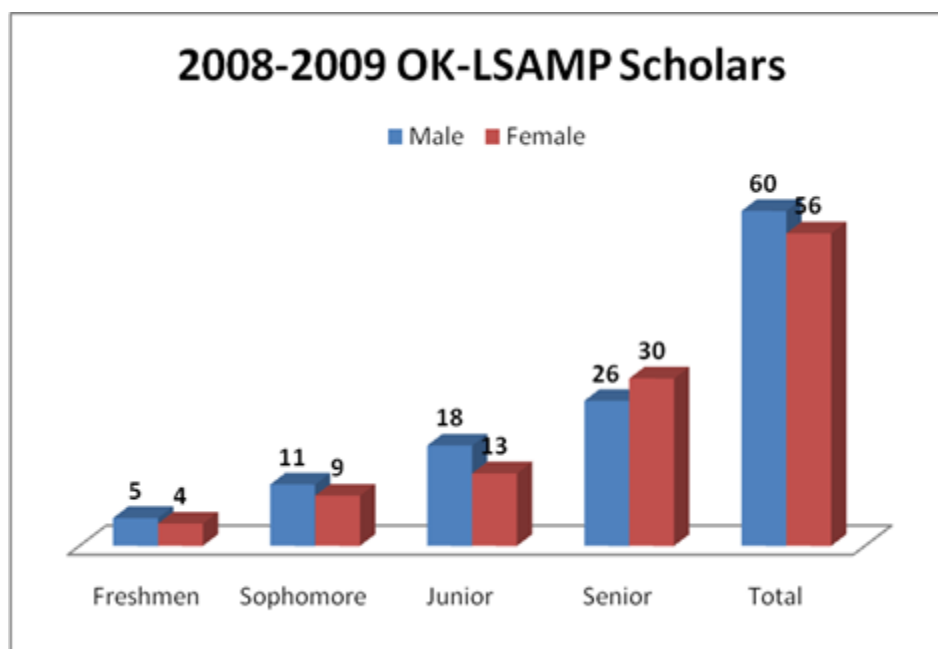


Figure 3. 2008-2009 Scholars by Classification

Data reported by the Oklahoma State Regents for Higher Education (OSPRE) used specific Classification of Instruction Program (CIP) codes. This classification of program terms and descriptions reflects the manner in which institutional instructional program data are organized, collected and reported.

OK-LSAMP Alliance institutions have awarded **7,959** Bachelor of Science degrees in STEM areas to minority and under-represented students during the past 15 years of the program. During the 2008-09 academic year, **502** Bachelor of Science STEM URM degrees were awarded in Oklahoma at Alliance institutions.

A breakdown of degrees awarded by discipline by academic year are reported in Figure 4. The CIP codes used to determine the number of degrees awarded are classified into nine different categories:

1. Agricultural Sciences
2. Chemistry
3. Computer Sciences
4. Engineering
5. Environmental Science
6. Geosciences
7. Life/Biological Sciences
8. Mathematics
9. Physics/Astronomy

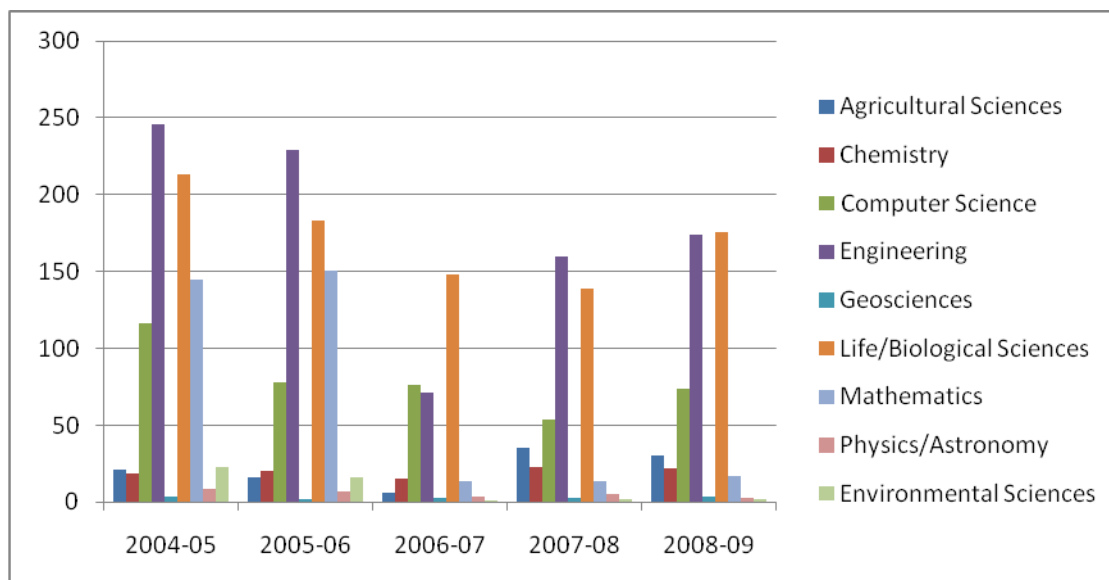


Figure 4. UREP/STEM Bachelor of Science Degrees by Discipline by Academic Year for Phase III

MAJOR RESEARCH AND EDUCATIONAL ACTIVITIES

The Oklahoma LSAMP's stated goal in Phase III was to significantly increase the number of targeted students pursuing entry into graduate programs. Toward meeting this shared goal, three main program components have been developed and implemented Alliance-wide. The following section discusses each of these components.

Program Component One

Formation of a strong research experience in their last two undergraduate years, two full summers of research and two academic years of research activities.

The undergraduate research experience is the key OK-LSAMP activity in which all students must participate. OK-LSAMP believes this is the most practical and effective way to provide value-added graduate school and career preparation. The Oklahoma Alliance offers scholars opportunities for research training, including both academic year and summer research, as well as opportunities to attend and present their research at local, regional, state, and national conferences.

Semester Research Mentoring Component. All of the Partner Institutions in the Alliance offer a Research Mentoring Component. Students are required to identify a faculty mentor, develop an approved research project, and spend time conducting research during the academic year. Students work directly in labs with their chosen mentors. See Appendix C for a copy of the Mentor brochure.

Research Internships. During the summer semester, students have the opportunity to expand their academic year research experience through Summer Research Internship Programs. Each Partner Institution is funded to offer summer internship opportunities through their campus. Stipends, up to the amount of \$4,000, were offered for two months of full-time research. Students may conduct research on their home campus as well as on any of the Alliance Partner campuses or through private industry, national labs, corporations, and with state and federal agencies. OK-LSAMP scholars were also encouraged to participate in Research Experiences for Undergraduates (REUs) or similar programs at other institutions.

Table 2. Scholars Participating in Internships and Research Activities

	Summer 2008 Internships	Fall 2008 Research	Spring 2009 Research	Summer 2009 Internships
Number of Scholars	44	73	60	50
Percent of Scholars	38%	63%	52%	43%

Listed below are selected examples of the research activities OK-LSAMP scholars conducted:

Cameron University (CU)

- *Sylvia Chavana*, Chemistry, conducted research in the lab at Cameron University.

East Central University (ECU)

- *Kristen Thompson*, Physics, interned at ECU in the Physics Department.
- *Tiffany Thompson*, Physics, interned at ECU in the Physics Department.
- *Caleb Wingo*, Medical Physics, interned with Kerr Environmental Labs, Ardmore, Oklahoma.

Langston University (LU)

- *Brittanie Atkinson*, Biology/Chemistry, interned at the Lawrence Berkeley National Laboratory in Enhancing Automated Ligand Fittings in San Francisco, California. She was part of a Faculty and Student Team (FaST).
- *Marshall Bailey*, Biology, spent the summer at Howard University in the summer medical and dental enrichment program, and at Rice University in the UTMB Summer Research and Academic Program (AGEP Summer Research Program).
- *Leethaniel Brumfield, III*, Biology/Chemistry, participated in an REU program with the University of North Carolina, Raleigh, North Carolina.
- *Kenta Caldwell*, Chemistry, participated in an NSF REU at Oklahoma State University, Stillwater, Oklahoma.
- *James Harding, Junior*, Biology, participated in an Oklahoma Medical Research Foundation Presidential Internship, Oklahoma City, Oklahoma.
- *Jamilla Harris*, Biology, participated in a McNair Program at the University of North Texas Health Sciences Center, Ft. Worth, Texas.
- *Samuel Henderson*, Biology, participated in a REU program on nanotechnology, lasers and quantum dots at the University of Massachusetts, Amherst, Massachusetts.
- *Nona Kelley*, Biology, interned with the University of North Texas, Ft. Worth, Texas.
- *Shabree Nichols*, Biology, attended a STEM Summer Scholars Institute, Indiana University, Department of Optometry, Bloomington, Indiana.
- *Erica Smith*, Biology, interned with the Civil and Environmental Engineering program at the University of South Florida, Tampa, Florida.
- *Kendra Vann*, Chemistry, participated in a bio-engineering program during the Stanford Summer Research Program, Stanford University, Palo Alto, California.

Northeastern Oklahoma State University (NSU)

- *Leane Coppick* – participated in an INBRE Network (the IDeA network of Biomedical Research Excellence).

Oklahoma State University (OSU)

- *Brandon “Bubba” Brooks*, Microbiology, conducted research with the Center for Disease Control in Atlanta, Georgia.
- *Cassandra Camp*, Biochemistry and Molecular Biology, interned in Bethesda, Maryland, for the National Institute of Health (NIDDK-SIP REU).
- *Rachel Carson*, Biosystems Engineering, conducted research with GE Aviation, Ark City, Kansas.
- *Kempner “Trey” Cole*, Industrial Engineering, interned with Goddard Space Flight Center, in Greenbelt, Maryland.
- *Juan “Manny” Cortez*, Mechanical Engineering, interned with Exxon Mobile in Houston, Texas.
- *Chris Duncan*, Geology, conducted research with an OSU Engineering faculty mentor through a NASA space grant in Tulsa, Oklahoma.
- *Ryan Jordan*, Geology, conducted research in Zambia, Africa, on Early Continental Rifting.
- *Dalton Kelly*, Mechanical Engineering, participated in a SULLI project at Brookhaven National Labs, Long Island, New York.
- *Eric Kim*, Civil Engineering, interned in Washington, D.C., with the National Institute of Standards and Technology.
- *Darron “DJ” Lamkin*, Mechanical Engineering Technology, served as a Logistics Technician with Tinker Air Force Base, Oklahoma.
- *Meghan Liles*, Microbiology, traveled to Rochester, New York, to conduct research with the University of Rochester School of Medicine.
- *Chris Mace*, Geology, interned with Devon Energy in Oklahoma City, Oklahoma.
- *Lydia Meador*, Botany and Microbiology, participated in a summer REU at North Carolina State University, Raleigh, North Carolina, working on Synthetic Biology.
- *Lauren Miller*, Geology, conducted research with the Geology department at Field Camp in Colorado.

- *Andrew Mixson*, Zoology/Psychology, was part of an OSU FaST program at the Brookhaven National Labs, Long Island, New York.
- *Valentin Sanchez*, Mechanical and Aerospace Engineering, continued his fall research project into the summer with the flight of the Pterosoar-B airplane and began a new research project related to nanotechnology.
- *Lauren White*, Environmental Sciences, conducted wildlife research at the Little River Nature Center in Broken Bow, Oklahoma.

Southeastern OSU (SEOSU)

- *Anthony Banks*, Physical Sciences, participated in an NSF REU program on the Oklahoma State University campus in the Chemistry Department, Stillwater, Oklahoma.
- *Chris Cheek*, Life Sciences, spent his summer in SE Oklahoma conducting an assessment of the turtle population through the Southeastern OSU Department of Biological Sciences.
- *Clayton Porter*, Life Sciences, participated in an internship through the Oklahoma Department of Wildlife Conservation.
- *Christina Nicholas*, Biology with Zoology emphasis, interned with the SEOSU Department of Biological Sciences on the Nesting Success of Prothonotary Warblers.

Southwestern OSU (SWOSU)

- *Courtney Garcia*, Chemistry, participated in an INBRE program through the Southwestern OSU Department of Chemistry and Physics, Weatherford, Oklahoma.
- *Lucy Ramon*, Biology, participated in an INBRE program through the University of Oklahoma Health Sciences Center in the Immunology and Microbiology program, Norman, Oklahoma.

University of Central Oklahoma (UCO)

- *Shaquita Banks*, Biology, participated as a McNair Scholar at the University of Central Oklahoma, Edmond, Oklahoma.
- *Sharome Goode*, Chemistry, interned with the Significant Opportunities in Atmospheric Research and Science (SOARS) Program in Boulder, Colorado. (This internship resulted from the presentation by Rebecca Hacker-Santos during the 14th Annual Research Symposium.)

- *JeAnna Redd*, Forensic Sciences, was selected to participate in the REU-program conducting research in Turkey and Greece through an NSF grant.

University of Oklahoma (OU)

- *Juan Diego Alonso*, Biomedical Sciences, interned with the Center for the Creation of Economic Wealth, University of Oklahoma, Norman, Oklahoma.
- *Kelan Berry*, Industrial Engineering, participated in an internship program on the University of Oklahoma campus in the Metrology Research Experience for Undergraduates program.
- *Erica Brown*, Chemical Engineering, interned with Conoco/Phillips, Special Projects Division, Houston, Texas.
- *Jonathan Compos*, Chemical Engineering, interned with the John Zink company, Tulsa, Oklahoma.
- *Gerardo Conanan*, Mechanical Engineering, interned in the Mechanical Engineering department, University of Oklahoma, Norman, Oklahoma.
- *Ryan Edwards*, Biomedical Engineering, spent the summer in Clemson, South Carolina, at the Biomedical-Bioengineering Summer Institute.
- *Monique Gaines*, Industrial Engineering, interned with the Owens Brookway Glass Company.
- *Shawna Ong*, Electrical Engineering, participated in a national Weather Service Student Career Experience Program (SCEP), Norman, Oklahoma.
- *Vincent Williams*, Biomedical Engineering, interned at the University of New York-Rochester, Rochester, New York.

University of Tulsa

- *Matt Matlock*, Computer Science, assisted with the Summer Robotics Program offered to high school students through the University of Tulsa, Tulsa, Oklahoma.
- *Brandon Neal*, Mechanical Engineering, assisted with the Summer Robotics Program offered to high school students through the University of Tulsa, Tulsa, Oklahoma.
- *Jamie Sampayo*, Petroleum Engineering and Mathematics, interned with the Williams Companies, Tulsa, Oklahoma.

- *Paige Samuels*, Petroleum Engineering and Mathematics, assisted with the Summer Robotics Program offered to high school students through the University of Tulsa, Tulsa, Oklahoma.

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Presentations / Conferences Attended /Additional Activities. Scholars are encouraged to present research findings at every available opportunity. Scholars may give either an oral presentation or a poster, attend and observe others and network with peers and professionals. Table 3 shows the number of presentations made by scholars from each Alliance institution.

Table 3. 2008-2009 Presentations

Institution	Local	State and Regional	National	International	Totals
Cameron	1	1	0		2
East Central	1	3	0		4
Langston	1	19	20		40
Northeastern	1	3	2		6
Northwestern	0	0	0		0
Oklahoma State	15	17	11	1	43
Southeastern	0	4	0		4
Southwestern	0	2	1		3
U. of Central Oklahoma	0	16	0		16
U. of Oklahoma	10	3	4		17
U. of Tulsa	5	4	5	1	15
Totals	34	72	43	2	151

Cameron University

1. *Sylvia Chavana*, **American Chemical Society National Meeting, Salt Lake City, Utah.***
2. *Mario Dominguez*, Oklahoma Research Day, Broken, Arrow, Oklahoma.

*National meetings are listed in bold face.

3. *Derece Williams*, E-Learning for ESL Learners.

East Central University

1. *Anthony DiMambro*, 14th Annual Research Symposium, Stillwater, Oklahoma.
2. *Marianni Fuego*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma, (2) INBRE Symposium, OU Health Sciences Center, Norman, Oklahoma.
3. *Tiffany Thompson*, 14th Annual Research Symposium, Stillwater, Oklahoma.

Langston University

1. *Richard Anderson*, **Beta Kappa Chi, Norfolk, Virginia.**
2. *Brittanie Atkinson*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma, (2) Oklahoma Research Day, Broken Arrow, Oklahoma, (3) **HBCU-UP, Atlanta, Georgia.**
3. *Marshall Bailey*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma, (2) Oklahoma Research Day, Broken Arrow, Oklahoma, (3) **HBCU-UP, Atlanta, Georgia**, (4) **Beta Kappa Chi, Norfolk, Virginia.**
4. *Karole Blythe*, (1) 14th Annual Research Symposium, (2) Oklahoma Research Day, Broken Arrow, Oklahoma, (3) **HBCU-UP, Atlanta, Georgia**, (4) **Beta Kappa Chi, Norfolk, Virginia.**
5. *Leethaniel Brumfield*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma, (2) Oklahoma Research Day, Broken Arrow, Oklahoma, (3) **HBCU-UP, Atlanta, Georgia**, (4) **National Conference on Undergraduate Research, LaCrosse, Wisconsin.**
6. *Kenta Caldwell*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma, (2) Oklahoma, Research Day, Broken Arrow, Oklahoma, (3) **HBCU-UP, Atlanta, Georgia.**
7. *Felicia Ekpo*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma, (2) Oklahoma Research Day, Broken Arrow, Oklahoma, (3) **HBCU-UP, Atlanta, Georgia**, (4) **Beta Kappa Chi, Norfolk, Virginia.**
8. *James Harding, Jr.*, Oklahoma Research Day, Broken Arrow, Oklahoma.
9. *Jamila Harris*, **Beta Kappa Chi, Norfolk, Virginia.**

10. *Samuel Henderson*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma, (2) **HBCU-UP, Atlanta, Georgia**, (3) **Beta Kappa Chi, Norfolk, Virginia**.
11. *Charles Loftis*, (1) Oklahoma Research Day, Broken Arrow, Oklahoma, (2) **HBCU-UP, Atlanta, Georgia**.
12. *Shabree Nichols*, (1) 14th Annual Research Symposium. Stillwater, Oklahoma, (2) Oklahoma Research Day, Broken Arrow, Oklahoma, (3) **HBCU-UP, Atlanta, Georgia**, (4) **Beta Kappa Chi, Norfolk, Virginia**.
13. *Erica Smith*, **Beta Kappa Chi, Norfolk, Virginia**.
14. *Kendra Vann*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma, (2) Oklahoma Research Day, Broken Arrow, Oklahoma, (3) **HBCU-UP, Atlanta, Georgia**, (4) **Beta Kappa Chi, Norfolk, Virginia**.

Northeastern State University

1. *Leane Coppick*, (1) INBRE Conference, Oklahoma City, Oklahoma, (2) Oklahoma Research Day, Broken Arrow, Oklahoma, (3) **NIH NCRR Second National IDeA Symposium of Biomedical Research**, (4) INBRE IDeA Central Region Conference, (5) **American Chemical Society Meeting, Salt Lake City, Utah**.
2. *Crystal Moore*, (1) Oklahoma Research Day, Broken Arrow, Oklahoma, (2) American Society of Microbiology Missouri Valley Branch Conference, Lawrence, Kansas, (3) **National Conference of Undergraduate Research, LaCrosse, Wisconsin**.

Oklahoma State University (OSU)

1. *Brandon "Bubba" Brooks*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) **Society for the Advancement of Chicanos and Native Americans in Science, Salt Lake City, Utah**; (3) Native Americans in Biological Sciences Fifth Annual Research Symposium, Stillwater, Oklahoma; (4) OSU Research Week, Stillwater, Oklahoma; (5) **New England Science Symposium, Harvard University, Maryland**, (6) OSU WENTZ Foundation Research Day, Stillwater, Oklahoma.
2. *Cassie Camp*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Oklahoma Native American Students in Higher Education, Oklahoma City, Oklahoma.

3. *Rachel Carson*, (1) **2009 American Society of Agriculture and Biological Engineers Conference, Reno, Nevada**; (2) **2008 Environmental and Water Resources Institute Annual Conference, Honolulu, Hawaii**; (3) **ASCE-EWRI meeting, Kansas City, Missouri**; (4) **ASABE Conference, Providence, Rhode Island**; (5) **2008 World Water Resource Conference, Oklahoma City, Oklahoma**; (6) **National Association of Engineering Student Councils, San Luis Obispo, California**; (7), **First Place Honors in the Pre-professional Poster Competition at the annual meeting of the American Society of Agricultural and Biological Engineers, Reno, Nevada.**
4. *Juan “Manny” Cortez*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma.
5. *Chris Duncan*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Women in Science Conference, Oklahoma City, Oklahoma.
6. *Dalton Kelley*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Oklahoma Research Day, Broken Arrow, Oklahoma; (3) **National Conference on Undergraduate Research, LaCrosse, Wisconsin**; (4) **Gates Millennium Conference, Los Angeles, California**; (5) Gates Millennium Workshops; (6) Women in Science Conference, Oklahoma City, Oklahoma; (7) Oklahoma Native American Students in Higher Education, Oklahoma City, Oklahoma; (8) OSU Research Week, Stillwater, Oklahoma.
7. *Eric Kim*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) OSU Research Week, Stillwater, Oklahoma; (3) WENTZ Foundation Research Day, Stillwater, Oklahoma.
8. *Darron “DJ” Lamkin*, (1) National Society of Black Engineers (NSBE) Regional Conference, Louisiana; (2) NSBE Regional Meeting; (3) NSBE Zone Meeting, Norman, Oklahoma; (4) NSBE, Fall Regional Conference, Tulsa, Oklahoma; (5) **NSBE National Conference, Las Vegas, Nevada.**
9. *Meghan Liles*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) **National Conference on Undergraduate Research, LaCrosse, Wisconsin,**
10. *Chris Mace*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma.
11. *Lydia Meador*, (1) Fall 2008 Oklahoma Academy of Sciences Technical Meeting, Oklahoma City, Oklahoma; (2) **National Conference on Undergraduate Research, LaCrosse, Wisconsin.**
12. *John Melendez*, (1) Study Abroad presentation, Stillwater, Oklahoma.
13. *Lauren Miller*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) **National Conference on Undergraduate Research, LaCrosse, Wisconsin**; (3) International Research Experience, OSU Geology

Department, Stillwater, Oklahoma; (4) International Research Experience, OSU Study Abroad Class, Stillwater, Oklahoma; (5) **Geological Society of America Conference, Houston, Texas**; (6) **Women of Color Conference, Dallas, Texas**; (7) **Association of American Petroleum Geologists Annual Meeting, Denver, Colorado**.

14. *Andrew Mixson*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) **Society for the Advancement of Chicanos and Native Americans in Science, Salt Lake City, Utah**; (3) Native Americans in Biological Sciences 5th Annual Research Symposium, Stillwater, Oklahoma; (4) **Sigma Xi Annual Research Conference, Washington DC**; (5) WENTZ Research Day, Stillwater, Oklahoma.
15. *Valentin Sanchez*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Aerospace Education Day, Stillwater, Oklahoma
16. *Spencer Williams*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma.
17. *Lauren White*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Women in Science Conference, Oklahoma City, Oklahoma; (3) OSU Research Week, Stillwater, Oklahoma; (4) Research Day at the Capitol, Oklahoma City, Oklahoma; (5) **National Conference for Undergraduate Research, LaCrosse, Wisconsin**.
18. *Doug Yarholar*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma.

Southeastern Oklahoma State University (SEOSU)

1. *Christopher Cheek*, 14th Annual Research Symposium, Stillwater, Oklahoma.
2. *Porter Clayton*, 29th Annual Meeting of the Oklahoma Chapter of the American Fisheries Society, Ardmore, Oklahoma.
3. *Lauren Losawyer*, 14th Annual Research Symposium, Stillwater, Oklahoma.
4. Christina Nicholas, 29th Annual Meeting of the Oklahoma Chapter of the American Fisheries Society, Ardmore, Oklahoma.

Southwestern Oklahoma State University (SWOSU)

1. *Abigail Ntrelh*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) **National Conference on Undergraduate Research, LaCrosse, Wisconsin**; (3) Oklahoma Research Day, Oklahoma City, Oklahoma.
2. *Lucy Ramon*, (1) SWOSU Student Research Day, Weatherford, Oklahoma; (2) Oral Roberts University Research, Tulsa, Oklahoma; (3) **American Chemical Society Meeting, Little Rock, Arkansas**

University of Central Oklahoma (UCO)

1. *Shaquita Banks*, Oklahoma Research Day, Broken Arrow, Oklahoma.
2. *Chris Bobo, II*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Oklahoma Research Day, Broken Arrow, Oklahoma.
3. *Megan Duke*, 14th Annual Research Symposium, Stillwater, Oklahoma.
4. *Dawn Foster*, 14th Annual Research Symposium, Stillwater, Oklahoma.
5. *Shamira Goode*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma (two presentations).
6. *Sharome Goode*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Oklahoma Research Day, Broken Arrow, Oklahoma.
7. *Melissa Kindhart*, 14th Annual Research Symposium, Stillwater, Oklahoma.
8. *JeAnna Redd*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Oklahoma Research Day, Broken Arrow, Oklahoma (2 presentations).
9. *Eyuel Terefe*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) Oklahoma Research Day, Broken Arrow, Oklahoma.
10. *Larimar Williams*, Oklahoma Research Day, Broken Arrow, Oklahoma.

University of Oklahoma (OU)

1. *Juan Alonso*, (1) Oklahoma Research Day at the Capitol, Oklahoma City, Oklahoma; (2) Fred Jones Museum of Natural History, Oklahoma City, Oklahoma; (3) **North Texas State University, Denton, Texas.**
2. *Kelan Berry*, (1) NSBE Regional Conference, Louisiana; (2) **NSBE National Technical Conference, Norman, Oklahoma.**
3. *Erica Brown*, (1) **Midwest Biomedical Engineering Society Annual Conference, Ann Arbor, Michigan;** (2) **Cornell Center for Materials Research, Ithaca, New York.**
4. *Jonathan Compos*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) National Weather Center, Norman, Oklahoma; (3) OU Student Research Day, Norman, Oklahoma.
5. *Gerardo Conanan*, (1) University of Oklahoma Undergraduate Research Day; Norman, Oklahoma; (2) **American Society of Mechanical Engineers Student Professional Development Conference, Arlington, Texas.**

5. *Ryan Edwards*, **Cornell University Research Day, Ithaca, New York.**
6. *Monique Gaines*, **11th Annual Texas National McNair Scholars Conference, University of North Texas, Denton, Texas.**
7. *Robert McClure*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) University of Oklahoma Student Research and Performance Day, Norman, Oklahoma.
8. *Shawna Ong*, (1) University of Oklahoma Student Research and Performance Day, Norman, Oklahoma; (3) Institute of Electrical and Electronics Engineers (IEEE) Regional Conference, Lubbock, Texas; (4) **2009 NSBE National Conference, Las Vega, Nevada**; (5) Meeting, Norman, Oklahoma.
9. *Vincent Williams*, **2009 NSBE National Conference, Las Vegas, Nevada.**

University of Tulsa

1. *Matthew Matlock*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) **2008 Ronald E. McNair Research Conference, Niagara Falls, New York**; (3) **National Conference on Undergraduate Research, LaCrosse, Wisconsin**; (4) **8th Annual Conference on Autonomous Agents and Multi-agents Systems, Budapest, Hungary.**
2. *Courtney Palmer*, (1) Oklahoma Research Day, Broken Arrow, Oklahoma; (2) Member, Science and Engineering African American Honor Society; (3) **2008 McNair Conference, Niagara Falls, New York**; (4) **NSBE National Conference, Las Vega, Nevada.**
3. *Ashley D. Johnson*, Member, Science and Engineering African American Honor Society.
4. *Paige Samuels*, (1) TURC/TU STEM UP Undergraduate Research Seminar, Tulsa, Oklahoma; (2) NSBE Region V Conference, Dallas, Texas; (3) **2008 NSBE National Conference, Las Vegas, Nevada.**
4. *Jamie Sampayo*, **2008 Society of Professional Hispanic Engineers (SPHE) Technical Conference, Phoenix, Arizona.**
5. *Quinn Woodard*, (1) 14th Annual Research Symposium, Stillwater, Oklahoma; (2) **2008 Ronald E. McNair Research Conference, Niagara Falls, New York**; (3) **National Conference on Undergraduate Research, LaCrosse, Wisconsin**; (4) NSBE Region V Conference, Dallas, Texas; (5) TURC/TU STEM UP Undergraduate Research Seminar, Tulsa, Oklahoma; (6) **2008 NSBE National Conference, Las Vegas, Nevada.**

Program Component Two

Full participation in graduate school preparation.

Focal points on graduate school preparation included participation in the Graduate Preparation component of the program, interaction with matriculating graduate students, the application process, and research experiences.

- Graduate school preparation modules are listed on the OK-LSAMP website (www.ok-lsamp.okstate.edu) for all Alliance Institution use.
- Scholars continue to take advantage of the on-line Graduate Record Examination (GRE) preparation course offered to the Alliance scholars through Oklahoma State University-OKC. The classes have been developed to provide learning activities to assist students in acquiring knowledge, practicing skills and completing steps necessary to gain admission to graduate school with successful completion. The classes focus on (1) what is the GRE, why it should be taken, how to prepare, contents and format, (2) test-taking skills relevant to computer aided test format, (3) practice tests, (4) scoring, and (5) average score requirements for specific fields of study.
- Scholar meetings implemented throughout the Alliance offered a forum for educational speakers and workshops focused on graduate school preparation and career development.
- Twenty-two 2008-2009 OK-LSAMP scholars were accepted to graduate schools throughout the nation. Examples include:
 - Duke University
 - North Carolina State University
 - Oklahoma State University
 - Southeastern Oklahoma State University
 - University of Oklahoma
 - University of Texas at Austin

Program Component Three

Institutionalization of a graduate education culture within the undergraduate group culture and environment.

Participants from each Alliance Partner Institution must take an active part in activities that enhance and assess academic performance, arouse accountability

consciousness, and provide other experiences that lend to graduate school and workforce preparation.

- The Annual Research Symposium offered workshops focusing specifically on Graduate Education.
- The Annual Research Symposium addressed Scientific Integrity and Ethics with two workshops lead by campus coordinators and leading ethics mentors from East Central University and the University of Tulsa.
- Partner Institution scholars were provided opportunities to attend lectures on Ethics during monthly Scholar's meetings.
- The University of Tulsa course, *ES 4001: Research Ethics*, was available for scholars. The course continued to be taught by Dr. J. C. Diaz, OK-LSAMP Campus Coordinator for TU.
- Dr. Carl Rutledge, enhanced his Ethics Workshop and traveled to Alliance Institutions to present the workshop to scholars and faculty, as well as others interested in research ethics.
- Scholars throughout the Alliance continue to be encouraged and supported in traveling to visit graduate schools.
- Scholars are continually advised to enroll in graduate level course work during their senior year. This allows the scholars to begin accumulating graduate credits before beginning a graduate program of study.
- Scholars throughout the Alliance continue to take advantage of the on-line GRE Preparation course offered through OSU-OKC. This self-paced course has proven to be beneficial to the scholars.
- Scholars throughout the Alliance are encouraged to apply to a minimum of five graduate schools.
- Campus Coordinators are provided resources and encouraged to provide scholars with graduate school preparation.
- Scholar meetings are held at a minimum of once per month. Various topics are presented to the scholars such as graduate school preparation, test taking strategies, and opportunities for summer internships, along with ideas for suggestions on completing applications.

VALUE-ADDED INTER- AND INTRA-INSTITUTIONAL PROGRAMMING AND COHERENCE

Common program components, shared resources and coherence among Alliance Institutions provide “value-added” inter-institutional and intra-institutional programming and coherence to the Oklahoma LSAMP program.

Common Components

The inter-institutional collaboration among the 11 Alliance Institutions continues to serve as the catalyst for establishing comprehensive and coherent programming aimed at enhancing the academic preparedness of targeted undergraduate students for graduate studies.

- All Alliance Institutions offer Scholar Programs including, but not limited to: (1) financial and academic support, (2) academic year Research Mentoring Components and (3) a Summer Research Internship Program. Across the Alliance, these programs focus on retention, high academic achievement and graduate school preparation.
- Tutoring is available for students experiencing difficulty with coursework. The program provides compensation to the tutor.
- Nine scholars traveled to LaCrosse, Wisconsin for the 2008 National Conference on Undergraduate Research.
- One Scholar from across the Alliance participated in the Oklahoma Academy of Science Research Conference, November 3, 2008, in Tulsa, Oklahoma, with either poster or oral presentations.
- Twenty-three scholars participated in the 2008 Oklahoma Research Day, Northeastern State University, Broken Arrow Campus, Broken Arrow, Oklahoma.
- The Oklahoma Alliance presented a poster entitled “Fifteen Years of Success” at the National Science Foundation Joint Annual Meeting in Washington, DC, June 8-11, 2009 (Appendix D).

Shared Resources

- Inter-institutional collaboration - each summer, a number of scholars conduct internships at Alliance Institutions. Each Alliance Institution is funded to offer summer internship opportunities on their campus, but, because of inter-institutional collaboration, scholars may also conduct research on Alliance campuses.

- Graduate School preparation information workshops for OK-LSAMP students are available to the Alliance through the Oklahoma State University Graduate College and the University of Oklahoma Graduate College.
- Graduate school preparation modules and helpful handouts are located on the OK-LSAMP website for use by all Alliance Institutions.

Coherence of Program

- Alliance meetings with the program administration and Campus Coordinators, held in Norman, Oklahoma, are a forum for ongoing communication on overall program operation and specific program implementations on each campus. Campus visits to follow-up Fall, 2009.
- A web page continues to be maintained by OSU as the lead institution. The page contains active links to the National Science Foundation and Alliance Institutions. Additional links include Alliance activities, forms, current and past newsletters, reports, and graduate school information. Students may access other LSAMP programs across the U.S. through the webpage. The web address is: www.ok-lsamp.okstate.edu.
- Program newsletters and other program publications enhance communications between Partner Institutions, maintain the coherence of the program, and provide informational recruiting for new scholars, mentors and program supporters.
- The data system developed for the Alliance with information on current and past alumni scholars and Bridge to the Doctorate Fellows continues to be upgraded and improved. Information includes, but is not limited to: major, presentations at workshops/conferences, internships, grades, degrees awarded and graduate school applications.

EVIDENCE OF INSTITUTIONALIZATION, OUTREACH AND FACULTY HIGHLIGHTS

Institutionalization is being achieved in several areas. Examples for this process are listed below:

- The East Central University (ECU) Vice President of Academic Affairs continues to provide work-study funds to eligible ECU OK-LSAMP scholars. Several scholars take advantage of this each semester in order to conduct research. In this way, ECU is able to support more students.
- Faculty across the Alliance campuses continually seek OK-LSAMP scholars for research projects.
- Oklahoma Experimental Program to Stimulate Competitive Research (EPSCoR) collaborates with OK-LSAMP to identify undergraduate research scholars and provides opportunities and support for scholars to attend local, regional and national meetings and conferences.
- The Program Director position at OSU continues to be fully funded by OSU.
- The Program Manager position at OSU continues to be an institutional position and fully funded by OSU.
- Dr. Jody Buckholtz, Northeastern State University, participated as a research mentor for a NSF STEP program through the University of Central Oklahoma (UCO). She mentored 7 incoming freshmen on a research project for the month of July, investigating lead, mercury, arsenic, and nitrate levels in rural well water samples.
- Tim Patton, Southeastern Oklahoma State University, was an invited presenter for the Aquatic Invasive Species Workshop at the 29th Annual Meeting of the Oklahoma Chapter of the American Fisheries Society, January 30, Ardmore, Oklahoma.
- Tim Patton, Southeastern Oklahoma State University, was an invited instructor for Discovering Science: a workshop designed to enhance science content and science-teaching skills among regional public schools. Southeastern Oklahoma State University, May 28 – June 5, 2009.
- Tim Patton, Southeastern Oklahoma State University, was awarded a grant from the Oklahoma Department of Wildlife Conservation on the *Assessment of Aquatic Turtle Population of Southeastern Oklahoma (\$83,200 for 2 years)*.

- Dr. Brian Campbell, Southwestern OSU, conducted three summer research workshops along with an Astronomy class. Workshops were: Summer Science and Mathematics Academy (SSMA - 2 weeks for exceptional high school junior and senior students — 20 attended); Science and Mathematics Association of Rural Teachers (SMART- 4 weeks for math and science teachers — 36 attended); and Student Undergraduate Research Experience In STEM Fields (SURE-STEP – 4 weeks for incoming freshmen majoring in Math and Science — 15 attended).
- Dr. Carl Rutledge, East Central University, hosted a summer workshop for elementary teachers. This NSF No Child Left Behind grant—“Connecting Math and Science” workshop had 40 teachers in attendance.
- Dr. Sharon Lewis, Langston University, for the fifth year hosted one student for one month in the chemistry lab at Langston University.
- Dr. P. Simin Pulat, University of Oklahoma, uses both OK-LSAMP scholars and Bridge to the Doctorate Fellows in a Summer Bridge program for incoming freshman Engineering students. This activity not only increased the interest of the undergraduate students to pursue graduate degrees, but the incoming freshmen were able to connect with upperclassmen and gain knowledge that will assist them during their first semester. This was the third year for this program.
- Dr. J. C. Diaz, University of Tulsa, held his annual Summer Robotics Workshop to promote science and engineering by mentoring high school students in various aspects of robotics. The workshop has been successful for several summers. LSAMP scholars serve as mentors and leaders during this workshop.
- The bi-annual newsletter entitled, *The Link*, highlighted Alliance scholars, Bridge to the Doctorate Fellows, alumni accomplishments and updates, research presentations, program activities and events. *The Link* is mailed to LSAMP Alliances nationwide, Oklahoma State Regents for Higher Education, campus presidents and administrators, Native American Tribal Organizations, and distributed to faculty in STEM disciplines, as well as coordinators/advisers of other diverse organizations on Alliance campuses such as Native American Student Association, Hispanic Student Association, and African American Student Association. The newsletter is also used in conjunction with brochures as a recruitment tool for new scholars as well as faculty mentors.
- The database, created to maintain Oklahoma LSAMP Scholar and BD Fellow information, continued to be used in Year 5. Updates to the database are on-going throughout the year. Information collected included: contact, demographic and degree information, research conducted, presentations, publications, research ethics training, graduate school preparation and applications filed, and program activity. The information is used by the Program Evaluator for yearly program

review and by the Program Manager and Data Coordinator for additional reports. Information is collected from the Campus Coordinators on a semester basis, but may be submitted at any time during the reporting year. Scholars may also submit their information directly to the Data Coordinator.

- Oklahoma State University, as Lead Institution, collaborated with other programs on the Stillwater campus under the direction of the Vice President for Institutional Diversity. The programs include: Educational Talent Search, Inclusion Leadership Program (ILP), Retention Initiative for Student Excellence (RISE) and RISE Jumpstart, and the Inclusion Center for Academic Excellence (ICEA).
- Oklahoma State University LSAMP staff participated in recruitment activities for incoming freshmen and parents throughout the year.
- The Inclusion Center for Academic Excellence, at Oklahoma State University, provided workshops, counseling, and assistance to OSU OK-LSAMP students.
- Several Alliance Institutions partnered with McNair Scholars Programs to recruit and support students.
- The Native Americans in Biological Sciences continued to help support OK-LSAMP scholars.

FACULTY PUBLICATIONS AND ACTIVITIES

Paul, D. W. & **Buckholtz, J.** (2008), “Effects of Solution Resistance in Electrode Arrays.” Presentation to the 213th Electromechanical Society Meeting, Arizona.

Campbell, B.D. Attended Oklahoma State Department of Education Mathematics and Science Partnership Program Fall Meeting, Oklahoma City, Oklahoma.

Campbell, B. D. Attended the 2009 National Conference on Undergraduate Research (NCUR) in LaCrosse, Wisconsin.

Moseley, W., **Campbell, B.D.**, Pool, M. Cultivating Communities of Practice in the Science Mathematics Association of Rural Teachers,” Poster, SITTE International Convention, Las Vegas, NV, November 19, 2008.

Moseley, W., **Campbell, B. D.**, “Knowledge Management applied to the SMART-COP based on the Criteria for Performance Excellence from the Malcolm Baldrige National Quality Award for Education”, Full Paper, SITTE International Convention, Las Vegas, NV, Nov. 19, 2008.

Campbell, B. D., McCarty, R., “SMART, the Science and Mathematics Association of Rural Teachers,” Oklahoma State Department of Education, Oklahoma City, OK, Sept. 23, 2008.

Kanno, Y., J. C. Vokoun, D. C. Dauwalter, R. M. Hughes, A. T. Herlihy, T. R. Maret, and **T. M. Patton**. In Press. Influence of Rare Species on Electrofishing Distance when Estimating Species Richness of Stream and River Reaches. Transactions of the American Fisheries Society, Bethesda, Maryland.

Patton, T. M., and C. L. Lyday. (2009). Ecological Succession and fragmentation in a reservoir: effects of sedimentation on habitats and fish communities. Proceedings of the Fourth International Reservoir Symposium. American Fisheries Society, Bethesda, Maryland.

Paton, T. M. “Assessment of Aquatic Turtle Populations of Southeastern Oklahoma.” Grant awarded: Oklahoma Department of Wild Life Conservation.

Patton, T. M. Invited presenter in Aquatic Invasive Species Workshop. 29th Annual Meeting of the Oklahoma Chapter of the American Fisheries Society, January 30, 2009, Ardmore, Oklahoma.

Patton, T. M. Discovering Science: A Workshop Designed to Enhance Science Content and Science-Teaching Skills Among Regional Public Schools. Southeastern Oklahoma State University, May 28-June 5, 2009.

Lewis, S.A., Ognibene, C. (2008) “Bioinformatics of Bipolar Disorder,” **OK-INBRE IDeA Program National Symposium**, Washington, D.C., August 6-8, 2008.

Raphael D. Isokpehi, **Sharon A. Lewis**, Tolulola, O. Oyeleye, Wellington K. Ayensu, Tonya M. Gerald, “Comorbidity of Bipolar Disorder with Substance Abuse: Selection of Prioritized Genes for Translational Research, 2009 *AMIA Summit on Translational Bioinformatics Proceedings*.

Lewis, S.A., Ognibene, C., “Analysis of the Molecular Role of COMT in Bipolar Disorder,” June 2009, *Journal of Biotech Research*.

Lewis, S.A., “Molecular Genetic Analysis of COMT in Bipolar Disorder,” National Center for Integrative Biomedical Informatics Tools and Technology Seminar, **University of Michigan Medical School**, Ann Arbor, Michigan, October 23, 2008.

Lewis, S.A., Murphy, T.M., “Analysis of the Molecular Role of ANK3 in Bipolar Disorder,” 2009 National Center for Integrative Biomedical Informatics Annual Research Meeting, **University of Michigan Medical School**, Ann Arbor, Michigan, April 28-29, 2009.

Sharon Lewis, Campus Coordinator, Langston University, served as a 2008 Review Panelist for the NSF LSAMP Program, December 1-2, 2008.

Sharon Lewis, Campus Coordinator, Langston University, served 2009 Review Panelist, NSF LSAMP Program, April 1-2, 2009

Sharon Lewis, Campus Coordinator, Langston University, served as a 2008 College Board, AP Chemistry Reading, Reader in Lincoln, Nebraska, June 12-18, 2008.

Pulat, S. (June, 2009). Attended the American Society of Electrical Engineers Annual Conference, Austin, Texas.

Pulat, S. (May 2009). Served on the National Science Foundation Grant Review Panel for Engineering Education, curriculum and Infrastructure, Washington, D.C.

Pulat, S. ((March, 2009). Presentation at High School Girls Day, Norman, Oklahoma. Event sponsored by OU Chapter of Society of Women Engineers.

Pulat, S. (February, 2009). Robotics Regional Competition and Oklahoma Regional Botball Robot Tournament, Guest, Oklahoma City, OK.

Pulat, S. (February, 2009). Presenter, EPSCoR Women in Science Conference, Oklahoma City, Oklahoma.

Pulat, S. January, 2009). Panel Member, Community Engagement at K20 Center's Winter Institute, sponsored by the Oklahoma Education and Technology Trust and the University of Oklahoma, Norman, Oklahoma.

Pulat, S. (October, 2008). Coordinator, Accreditation Bureau of Engineering Technology.

Wilson, G.M., and J.F. Barthell. (2008). Promoting grantsmanship: Engaging faculty and students. Society of Research Administrators International, Oklahoma Chapter, University of Central Oklahoma, Edmond, OK, 6-7 August. (Paper).

Wilson, G.M. Co-authored 5 papers/posters presented with students at professional meetings/conferences.

Wilson, G.M. Grant Submitted and Funded: National Science Foundation, STEM Double Bridge: Connecting High Schools, Community Colleges, and Universities for Tomorrow's Leaders in Science, Technology, Engineering, and Mathematics. PI: Dr. Wei Chen, Co-PIs: Gregory M. Wilson and John Barthell, \$2,000,000 (5 years; 6/1/09-5/31/12).

Wilson, G.M. Co-PI, STEM grant, funding amount \$2,000,000 for a period of five years (2009-2014).

Wilson, G.M. Summer Bridge Program. (2009). A component of the STEP grant introduces incoming Freshmen students to college.

ARTICULATION AGREEMENTS WITH COMMUNITY COLLEGES

Oklahoma State Regents for Higher Education articulation agreement and policy “guarantees transferring students successfully completing Associate of Science or Associate in Arts degrees that the lower division general education course requirements are satisfied.”

Oklahoma State University collaborated with Northern Oklahoma College (NOC) to create the NOC-OSU Gateway Program. The program is located on NOC’s Stillwater campus. Students who have applied for freshman admission to OSU, but do not meet current admission requirements may qualify for admission to the NOC-OSU Gateway Program. Gateway courses transfer as equivalent to specific OSU courses and meet general education requirements.

Tulsa Community College (TCC) and OSU have partnered to create a “dual enrollment” program. Students applying for the dual admission program are accepted at both TCC and OSU. Once admitted, a 4-year plan is developed. Students will complete courses at TCC before attending OSU, thus allowing students to graduate from Oklahoma State University.

SCHOLAR PUBLICATIONS

Students, along with their mentors, are able to present research findings in peer-reviewed journals; campus coordinators also submit articles to journals for professional development. Several examples are listed in Appendix E.

SCHOLAR HIGHLIGHTS

OK-LSAMP scholars are among the top students on Alliance campuses. The scholars are consistently honored through President and Dean’s Honor Rolls, serving as officers and members of student organizations, and recipients of numerous scholarship awards. Additional news articles and related photos are found in Appendix F. Listed below are select examples of Scholar highlights.

Juan Diego Alonso, University of Oklahoma, (1) received the Pacific Care Scholar for 2008, (2) AGA Scholarship, (3) UROP Student Award, and (4) became a Henderson Scholar.

Chris Bobo, II, University of Central Oklahoma, inducted into the 4.0 Club.

Brandon “Bubba” Brooks, Oklahoma State University, received recognition in the following: (1) WENTZ Scholarship, (2) the Outstanding Senior in Microbiology from the College of Arts and Sciences at their Annual Honors and Awards Banquet, (3) Ruth and William Silen, MD Award, Honorable Mention, poster presentation, 2009 New England Science Symposium, Harvard Medical Center.

Erica Brown, University of Oklahoma, (1) 2009 Goldwater Scholarship, (2) President David L. Boren Award for Outstanding Sophomore.

Leethaniel Brumfield, Langston University, spent the spring semester in a study abroad program. Leethaniel was a recipient of the Brad Henry International Scholars Program. The program provided a \$10,000 stipend for study at Swansea University in Wales, United Kingdom. He was also chosen to represent Langston University as a guest participant on the Tom Joyner Morning Show.

Cassandra Camp, Oklahoma State University, was elected Miss Indian OSU,

Rachel Carson, Oklahoma State University, (1) First Place Honors in the Pre-professional Poster Competition at the annual meeting of the American Society of Agricultural and Biological Engineers, Reno, Nevada, (2) received the 2008-09 Wolpart Scholarship.

Sylvia Chavana, Cameron University, (1) received the prestigious American Chemical Society Scholarship and (2) the Zisman Scholarship.

Felicia Ekpo, Langston University, 2009 Sieman’s Teacher Scholar.

Ashley Johnson, University of Tulsa, Science and Engineering African American Honor Society.

Dalton Kelley, Oklahoma State University, received First Place in the poster competition during the OSU Research Week.

Eric Kim, Dalton Kelley, Manny Cortez, Lydia Meador, and Andrew Mixson, Oklahoma State University, were each awarded the WENTZ Research Scholarship.

Darron “DJ” Lamkin, Oklahoma State University, (1) received the 2009 James Wise Outstanding Student Award, and (2) recipient of the First Earl Mitchell Aspiring Scholar of Science Award presented by the Inclusion Center for Academic Excellence, (3) chosen to meet Boone Pickens at the National Society of Black Engineers meeting in Las Vegas, Nevada.

Lydia Meador was selected as the 2009 Outstanding Senior in the OSU Botony Department.

Matthew Matlock, University of Tulsa, Science and Engineering Native American Honor Society.

Timothy Andrew Mixson, Oklahoma State University, Outstanding Senior Psychology Student.

Abigail Ntreh, Southwestern OSU, Homecoming Queen.

Courtney Palmer, University of Tulsa, Science and Engineering African American Honor Society.

Kristen Thompson, East Central University, was listed in Who's Who Among American College Students.

Quinn Woodard, University of Tulsa, received First Place overall in undergraduate Students in Technical Research Competition, NSBE Region V Conference, Dallas, Texas.

STAFF TRAINING AND DEVELOPMENT

OK-LSAMP staff continually seek professional development opportunities. Learning is a continuing, life-long process that those working in education must embrace.

Susy Caloney, Bridge to the Doctorate Program Coordinator, the University of Oklahoma: (1) member, American Society of Engineering Education (ASEE), (2) attended ASEE Annual Conference and K-12 Workshop, Austin, Texas, (3) served as recruiter and outreach coordinator for the College of Engineering, (4) Dean's Leadership Council Staff Advisor, (5) coordinated Dean's Leadership Council Retreat, (6) E-1 First Year Engineering Student Club, staff adviser, (7), attended the Joint Annual Meeting in Washington, D.C., June, 2009, (8) attended the Oklahoma Engineering Foundation Engineering Fair, Oklahoma City, OK, (9) attended the first Robotics Competition and Oklahoma Regional Botball Robot Tournament, Oklahoma City, Oklahoma; (10), attended the EPSCoR Women in Science Conference, Oklahoma City, OK.

Kay Porter, Program Manager, Oklahoma State University: (1) State Coordinator for Women of Color National Conference, (2) attended the grant writing workshop sponsored by the Oklahoma Experimental Program to Stimulate Competitive Research (EPSCoR), (3) served on the Planning Committee for the Women in Science Conference, held in Oklahoma City, OK for junior and high school girls, (4) served on the OSU Institutional Diversity Board, (5) council Member, OSU Alumni Council and Alumni Leadership Council, representing the American Indian Alumni Association; (6) served as Secretary to the Native American Faculty and Staff Association; (7) guest Speaker for Project PASS and STYLE summer academies, (8) recruited at the Native American Career Fair, Tulsa, Oklahoma, (9) attended the Oklahoma Native Americans in Higher Education (ONASHE) state meeting, Oklahoma City, Oklahoma, (10) participated in Read Across America with local elementary school, (11) presented various workshops on BD/LSAMP program to faculty on OSU campus, (12) served as panel member on Diversity Panel for Diversity Awareness Week, (13) attended the Joint Annual Meeting in Washington, D.C., June 2009.

Fara Williams, Data Coordinator, Oklahoma State University: (1) attended the grant writing workshop sponsored by the Oklahoma Experimental Program to Stimulate Competitive Research (EPSCoR), (2) sponsored four scholars to the Women of Color National Conference, Dallas, Texas, (3) attended the Oklahoma Native Americans in Higher Education (ONASHE) state meeting, Oklahoma City, Oklahoma, (4) participated in Read Across America with local elementary school, (5) sponsored 9 scholars to the National Conference on Undergraduate Research (NCUR) in LaCrosse, Wisconsin, (6) participated in two Navy sponsored trips to learn about the Nuclear Office Training Program (San Diego, California, and Jacksonville, Florida), (7) volunteer during the Women in Science Conference, Oklahoma City, Oklahoma, (8) selected to participate in the Oklahoma Project WILD program as a facilitator, (9) attended the Joint Annual Meeting in Washington, D.C., June 2009, (10) presented LSAMP/BD program to faculty on the OSU campus, and (11) attended Oklahoma Research Day, Broken Arrow, Oklahoma.

ANNUAL RESEARCH SYMPOSIUM

The 14th Annual Research Symposium was held September 20, 2008, on the Oklahoma State University, Stillwater campus (Appendix G). The Symposium welcomed 119 attendees for a full day of workshops, poster and oral presentations, ethics training and guest speakers. This number indicated an 89 percent increase from the 2007 Symposium. Dr. A. Hicks, Program Director, National Science Foundation, he presented the opening remarks and held a workshop for the Bridge to the Doctorate Fellows and interested scholars on the importance of graduate education.

The Keynote speaker, Rebecca Haacker-Santos, Program Director from Significant Opportunities in Atmospheric Research and Science (SOARS) Program in Boulder, Colorado, discussed opportunities for internships and graduate study at the University of Colorado-Boulder. As a result, one OK-LSAMP Scholar was able to participate in a summer 2009 internship in Boulder.

Table 4. 14th Annual Research Symposium Attendees by Category

Group	Attendees
Faculty	24
Graduate students	22
Scholars	51
Staff	11
Parents / Special Guests	6
Total	119

BRIDGE TO THE DOCTORATE

The Oklahoma Bridge to the Doctorate program has completed two cohorts of the program. Cohort III was awarded to Oklahoma State University in August, 2008, for two years of NSF funding. Cohort IV, University of Oklahoma, was awarded in April, 2009, to begin August, 2009.

Cohort I and II

Cohort I and II Bridge to the Doctorate Fellows at both OSU and OU have been successful in completing a total of 9 Master of Science degrees and 1 Doctor of Philosophy degree. Nine (9) Doctor of Philosophy degrees are expected to be completed by December, 2009. Five students either transferred to another institution or left the program. See Appendix H for complete list of Fellows for Cohort I and II.

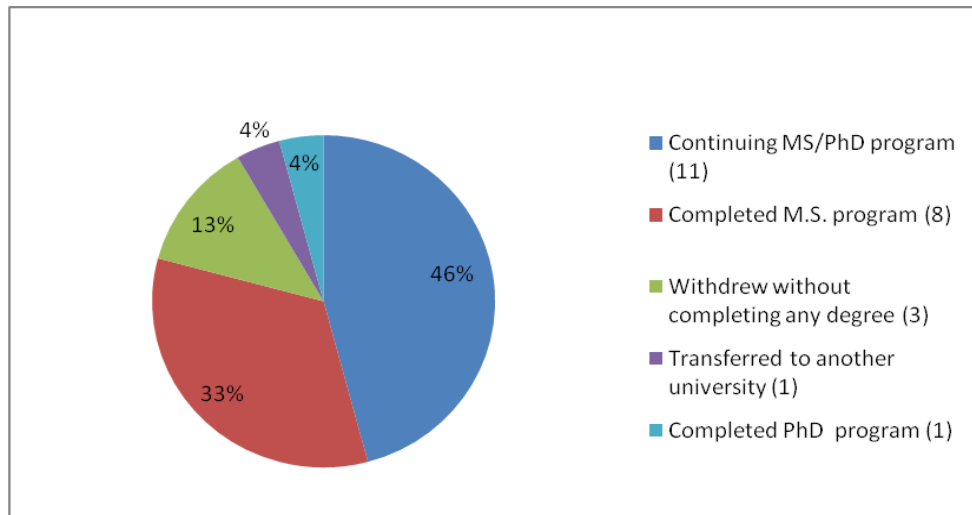


Figure 5. Cohort I and II Bridge to the Doctorate Fellows Graduation Progress

Cohort III

Cohort III, awarded to Oklahoma State University, recruited 12 Fellows for entry into graduate programs. Eight Fellows began in August 2008 and have completed one year of coursework. Four Fellows began in January 2009. The fellows are progressing satisfactorily toward completion of degree requirements.

Fellows chosen are listed below with their undergraduate degree and Bridge to the Doctorate concentration:

Marcus Benjamin, received his BS degree in Chemistry from Jackson State University, 2006. BD emphasis: Chemistry.

Zachary Carpenter, received his BS and MS degree in Electrical Engineering from the University of Tulsa. BD emphasis: Electrical Engineering.

Scott Fine, received his BS degree in Plant and Soil Sciences from Oklahoma State University. BD emphasis: Plant and Soil Sciences.

Erik Gonzales, received his BS degree in Physics from East Central University. BD emphasis: Physics.

Jonathan Gonzales, received his BS degree in Physics from East Central University. BD emphasis: Electrical and Computer Engineering.

Michael Henry, received his BS degree in Management Information Systems from Oklahoma State University. BD emphasis: Management Information Systems. Michael left the program after completing one semester. He returned to industry.

Matt Hough, received his BS degree in Plant and Soil Sciences from Oklahoma State University. BD emphasis: Plant and Soil Sciences.

Shawna Hughes, received her BS degree in Biology from South Carolina State University. BD emphasis: Food Sciences.

Minh Ngo, received her BS degree in Biochemistry and Molecular Biology from Oklahoma State University. BD emphasis: Forensic Sciences-Toxicology.

Richard Osei, received his BS degree in Computer Science from Langston University. BD emphasis: Computer Science.

Cody Pinkerman, received his BS degree in Aerospace and Mechanical Engineering from Oklahoma State University. BD emphasis: Mechanical and Aerospace Engineering.

C. Doug Yarholar, received his BS degree in Civil Engineering from Oklahoma State University. BD emphasis: Civil Engineering.

Cohort III Highlights

Ten BD fellows from Cohort III attended the 2009 Joint Annual Meeting (JAM) in Washington, D.C. June 8-11.

Zach Carpenter, (1) along with his BD Mentor, Dr. Abdolvand, traveled to Georgia Tech to learn how to use lithography to create masks on silicon wafers, (2) served as a moderator during OSU Research Week, (3) participated as a panel member for the BD section during JAM, 2009.

Jonathan Gonzales, (1) volunteered at the Women in Science Conference, Oklahoma City, OK, (2) volunteered at the 14th Annual Research Symposium, (3) served as a moderator for the OSU Research Symposium, (4) received Ethics in Research training, (5) served as a panel member on the Diversity Panel during Diversity Awareness Week.

Shawna Hughes, (1) founding member of the OSU Black Graduate Student Association and serves as Secretary, (2) attended EPSCoR Grant Writing Workshop, Oklahoma State University, Stillwater, Oklahoma, (3) volunteered during the OSU Research Week activities.

Minh Ngo, (1) participated in the poster presentation at the National Science Foundation Joint Annual Meeting (JAM) June 9, 2009, in Washington, D.C. (2) attended the Women of Color National Conference, Dallas, Texas, (3) presented a poster during OSU Research Week (received second place in the poster competition).

Richard Osei, (1) served as a moderator during the OSU Research Week oral presentations, (2) volunteered computer programming skills to the Inclusion Center for Academic Excellence.

Cody Pinkerman, (1) assisted and mentored high school students during a summer bridge program for high school junior and senior students entitled: Fired Up! About Engineering, (2) volunteered during OSU Research Week as a room monitor.

EVALUATION PROCEDURES

LSAMP

To ensure the accomplishment of planned outcomes, a vigorous evaluation component was implemented for Phase III of the OK-LSAMP program. Evaluation is an on-going process, with information gathered on a regular basis and provided to the evaluator, Dr. Rosemary Hayes, Center for Institutional Data Exchange and Analysis, University of Oklahoma. Dr. Hayes works closely with the Data Coordinator to obtain the necessary information for the evaluation reports. Data is collected from all Alliance institutions and

includes, but is not limited to, the number of scholars, degrees conferred, enrollment, performance, retention, graduate school preparation and graduate school applications, along with honors and awards and presentations. A copy of the 2008-2009 evaluation is found in Appendix I.

Bridge to the Doctorate (Cohort III)

Evaluation procedures for the Bridge to the Doctorate Program (BD) will be conducted by Dr. Katye Perry, Professor, Oklahoma State University and Dr. Mwarumba Mwabita who are certified evaluators. They developed an evaluation matrix based on the proposal submitted to the National Science Foundation. A copy of the report may be found in Appendix J.

APPENDICES

APPENDIX A

A. GORDON EMSLIE, PH.D.

PRINCIPAL INVESTIGATOR

BIOGRAPHICAL SKETCH

A. GORDON EMSLIE



a. Professional Preparation

University of Glasgow, UK, Physics/Astronomy
B.Sc. 1976
University of Glasgow, UK, Astrophysics
Ph.D. 1979
University of Glasgow, UK, Science
D.Sc. 1997

The University of Alabama-Huntsville, Mechanical Engineering	M.S.E. 1991
The University of Alabama-Huntsville, Atmospheric Science	M.S. 1995
The University of Alabama-Huntsville, Materials Science	M.S. 1998
The University of Alabama-Huntsville, French	B.A. 2005

Dr. Emslie was the first von Braun Fellow at UAH in 1981 and was one of the first recipients of a National Science Foundation Presidential Young Investigator Award in 1984. He has advised eight graduate students to successful completion of their Ph.D. studies, authored or coauthored over one hundred fifty papers in refereed journals, co-authored one book on “The Physics of Solar Flares,” and was a co-author on a 1992 NSF Report entitled “America’s Academic Future.” Dr. Emslie has been an associate editor of the journals *Geophysical Research Letters* and *Journal of Geophysical Research* and a member of the National Academy of Sciences Committee on Solar-Terrestrial Research. He is a member of the American Astronomical Society, and an officer in its Solar Physics Division. He served as President of the Alabama Council of Graduate Deans from 2002-2003 and President of the Conference of Southern Graduate Schools from 2005-2006.

b. Appointments

2004-present	Associate Vice President for Research Dean, Graduate College, Oklahoma State University
2001-present	Visiting Professor, The University of Glasgow, UK
1998-2004	Dean, School of Graduate Studies, The University of Alabama in Huntsville
1991-1999	Chair, Department of Physics, The University of Alabama in Huntsville
1995-1997	Interim Chair, Atmospheric Science Department, The University of Alabama in Huntsville
1988-2004	Professor of Physics, The University of Alabama in Huntsville
1984-1988	Associate Professor of Physics, The University of Alabama in Huntsville
1981-1984	Assistant Professor of Physics, The University of Alabama in Huntsville

c. Recent Publications

“RHESSI Hard X-ray Imaging Spectroscopy of Extended Sources and the Physical Properties of Electron Acceleration Regions in Solar Flares,” Y. Xu, **A. G. Emslie**, and G. J. Hurford, *Ap. J.*, **673**, 576 (2008).

“Evaluation of Algorithms for Reconstructing Electron Spectra from their Bremsstrahlung Hard X-Ray Spectra,” J. C. Brown, **A. G. Emslie**, G. D. Holman, C. M. Johns-Krull, E. P. Kontar, R. P. Lin, A. M. Massone, and M. Piana, *Ap. J.*, **643**, 523 (2006).

“Energy Partition in Two Solar Flare/CME Events”, **A. G. Emslie**, H. Kucharek, B. R. Dennis, N. Gopalswamy, G. D. Holman, G. H. Share, A. Vourlidas, T. G. Forbes, P. Gallagher, G. M. Mason, T. R. Metcalf, R. A. Mewaldt, R. J. Murphy, R. A. Schwartz, and T. H. Zurbuchen, *JGR-Space Physics*, **109**, A10104 (2004).

“An Explanation for the Different Locations of Electro and Ion Acceleration in Solar Flares,

“An Explanation for the Different Locations of Electron and Ion Acceleration in Solar Flares”, A. G. Emslie, J. A. Miller, and J. C. Brown, *Ap. J. (Letters)*, 602, L69 (2004).

“RHESSI Imaging Spectroscopy of the Large Gamma-Ray Flare of July 23, 2002”, A. G. Emslie, E. P. Kontar, S. Krucker and R. P. Lin, *Ap. J. (Letters)*, 595, L107 (2003).

“The Determination and Use of Mean Electron Flux Spectra in Solar Flares”, J. C. Brown, A. G. Emslie, and E. P. Kontar, *Ap. J. (Letters)*, **595**, L115 (2003).

d. Synergistic Activities

Dr. Emslie has been PI on several grants from NSF (24 years); NASA (24 years), and the USAF (3 years). Total Research Expenditures under his direction exceed \$4M. From 1992 through 2003 Dr. Emslie was Principal Investigator on an NSF REU site at The University of Alabama in Huntsville. Nearly 100 students participated in this venture over this ten-year period.

e. Collaborators and Recent Former Students/Postdoctoral Associates

Collaborators

J. Brown (U. Glasgow – also graduate advisor for Ph.D.), B. Dennis (GSFC), M. Fivian (UC Berkeley), T. Forbes (UNH), P. Gallagher (Queen’s U., Belfast), N. Gopalswamy (U. Md.), G. Holman (GSFC), H. Hudson (UC Berkeley), G. Hurford (UC Berkeley), C. Johns-Krull (Rice), E. Kontar (U. Glasgow), S. Krucker (UC Berkeley), H. Kucharek (UNH), R. Lin (UC Berkeley), J. Mariska (NRL), G. Mason (U. Md.), A. Massone (U. Genoa, Italy), M. McConnell (UNH), T. Metcalf (Lockheed), R. Mewaldt (Caltech), J. Miller (UA Huntsville), R. Murphy (NRL), M. Piana (U. Verona, Italy), J. Ryan (UNH), G. Share (NRL), R. Schwartz (GSFC), D. Smith (UC Santa Cruz), L. Sui (GSFC), N. Vilmer (Observatoire de Paris), A. Vourlidas (NRL), H. Warren (Harvard CFA), T. Zurbuchen (U. Michigan)

APPENDIX B

JASON KIRKSEY, PH.D.

INTERIM ASSOCIATE VICE PRESIDENT

FOR INSTITUTIONAL DIVERSITY

Kirksey named interim head of Institutional Diversity at OSU

Thursday, 26 March 2009 –OSU Headline News



Associate Professor Jason F. Kirksey
(STILLWATER, Okla., March 26, 2009) -- Oklahoma State University Associate Professor Jason F. Kirksey has been named interim associate vice president for Institutional Diversity at OSU, effective April 1.

Kirksey, who is the Hannah D. Atkins Endowed Chair for Political Science and Government Information at OSU, will continue in his teaching role. He also is director of the OSU Center for Africana Studies and Development.

“I want to thank the search committee for finding an excellent candidate to hold this important position as we conduct a national search,” said OSU President Burns Hargis. “Jason is uniquely qualified to hold this position and I appreciate his willingness to assume this additional assignment while continuing to teach.”

Kirksey will report to Hargis in his role as interim associate VP. Hargis said OSU will begin the search immediately for a fulltime leader of Institutional Diversity.

“I am honored that President Hargis has selected me to represent and serve the university in this capacity,” Kirksey said. “Institutional Diversity plays a vital role in maintaining and furthering a welcoming and inclusive university environment for all. I look forward to the challenge of providing leadership in such an important area and I am excited to begin working with the faculty and the Institutional Diversity staff until a permanent replacement is hired.”

Kirksey earned undergraduate degrees from OSU in economics and political science and his master’s in political science from OSU. He received his Ph.D. in political science from the University of New Orleans. He became an assistant professor at OSU in 1995.

OSU has implemented a number of innovative programs and made important strides in its diversity efforts. The university places great value on the differences of its people and seeks to empower individuals to think and act in ways that will embrace and promote a more inclusive world.

Kirksey hopes to maintain diversity success at OSU

By [Allison McCartney](#)

Senior Staff Writer

Published: **April 06, 2009**

He said he has "long been an advocate of promoting a diverse environment at OSU." Jason Kirksey said he hopes his position as the associate interim vice president of the Office of Institutional Diversity, which he started on Wednesday, will help him do that.

"This position gives me the opportunity to potentially affect change on a broader scale," he said. "This was the case as a faculty member, but this is a more visible office."

Kirksey, also an associate professor of political science and director for the OSU Center of Africana Studies, temporarily replaced Cornell Thomas, who was named president of Jarvis Christian College. Kirksey said his main role is to keep the office on a successful track. "My main role is to make sure the course of success that has been established by the Office of Institutional Diversity stays on the right path, to maintain the course of the ship," he said.

The Office of Institutional Diversity is comprised of four departments: Affirmative Action, Diversity Academic Support, Inclusion Center for Academic Excellence and the Oklahoma-Louis Stokes Alliance for Minority Participation at OSU.

The Office of Institutional Diversity's Web site states the mission of these departments is to "develop and support efforts that help the Oklahoma State University System achieve and maintain environments, where all members are actively broadening their perspectives about differences; actively seeking to know individuals; actively including all members of the community in every aspect of the organization; and where students achieve academic excellence." Kirksey said he has several ideas to help achieve this goal.

He said he wants to heighten the visibility of the office on campus as well as make sure its successes are highlighted through campus communication. "The office plays a vital role in the process of fulfilling the university's goal to provide an inviting and friendly campus," he said. "It is responsible for helping create an environment that is respectful and tolerant of all on campus."

Kirksey received his bachelor's and master's at OSU before earning his doctorate at the University of New Orleans. He has worked at OSU since 1995. He said he has studied race, ethnicity and gender issues during his tenure and that the knowledge and understanding he has of those issues will help him in this position.

Deborah Evers, the director of the educational talent search program, will be working with Kirksey. She said she met him for the first time Friday. "I felt like he was solidly behind our programs," she said. "I felt like he was backing us 100 percent. "I'm looking forward to working with him. It seems like he's energetic and has a lot of good ideas."

Kirksey said the program is searching for a permanent vice president and he is not sure how long he will be in this position. However, he said he is honored and excited to hold the position for a while. "I'm certainly very honored that the president had confidence in me for the position," he said. "I'm excited about the challenges it provides, and I'm eager to learn and help the university move forward as the state's best university."

This story was published April 6th, 2009 under [News](#). [Permalink](#)

APPENDIX C

MENTOR BROCHURE

Administration

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LAWSON COLLEGE Lempson Sharon Lewis 405.486.3316 slewis@luc.edu	UNIVERSITY OF OKLAHOMA Norman Gregory Wilson 405.974.3497 gwilson@uou.edu
NORTHEASTERN STATE UNIVERSITY Tahlequah Jody Buckholz 918.456.3838 buckholz@nesu.edu	UNIVERSITY OF OKLAHOMA Norman P. Shirr Pulat 405.325.0699 pulat@ou.edu
NORTHWESTERN OSU Alsea Timothy Mahany 580.327.8563 timmahany@nwosu.edu	UNIVERSITY OF TULSA Tulsa J.C. Diaz 918.631.2226 jcdiaz@tulsa.edu

OK-LSAMP

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 under-represented minority students in STEM disciplines.

The LSAMP program is named after retired Ohio Congressman Louis Stokes, who is responsible for numerous minority focused programs through the 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 with opportunities to interact with faculty and scientists participate in research activities, present at national conferences, and prepare for the transition into graduate programs or the workforce.



Oklahoma State University is a proud member of the Louis Stokes Alliance for Minority Participation (LSAMP) program. One of 17 member institutions, OSU is proud to be a part of this program. The program is designed to increase the recruitment, enrollment and retention of under-represented minority students in STEM disciplines. The program is funded by the National Science Foundation (NSF) and the National Institute of Health (NIH).

OKLAHOMA

Louis Stokes Alliance for Minority Participation



(OK-LSAMP)

MENTOR

Mentored by a grant through the

National Science Foundation
WHERE DISCOVERIES BEGIN

BENEFITS & REQUIREMENTS

Benefits

- Opportunity to aid in the growth of an OK-LSAMP Scholar
- Undergraduate Scholar to assist with research projects
- Opportunity to develop OK-LSAMP Scholar research abilities
- Opportunity to develop OK-LSAMP Scholar presentation skills
- Enhance your leadership, teaching, and coaching skills and become a more reflexive practitioner
- Build networking connections in a wide range of disciplines and institutions
- Assist in the progression of under-represented minorities in STEM fields

Requirements

- Have an interest in working with undergraduates
- Have a research project on which undergraduate assistance would be welcomed
- Research to be conducted in a qualifying field of study
- Interested in aiding the growth of knowledge and research skills of an undergraduate
- Interested in promoting STEM in underrepresented communities
- Interested in encouraging undergraduates to pursue graduate degrees
- Participation and contribution to program activities



RESPONSIBILITIES

Mentors are expected to:

- Serve as a positive role model
- Provide encouragement and skillful feedback
- Provide a safe and well equipped research environment
- Teach research procedures; work closely with mentee to stimulate research thought processes and future projects
- Guide mentee in the development of research projects – draw out ideas from the mentee and help to build on them
- Inform mentee of research opportunities
- Advise mentee on opportunities to present research at local, state, regional, and national conferences
- Guide mentee with publication opportunities and procedures for submitting publications
- Provide leadership and opportunities for discipline specific networking
- Communicate with OK-LSAMP office in regard to mentee's progress
- Communicate with the OK-LSAMP office in regard to research, internship, and presentation opportunities for mentee as well as other Scholars
- If schedule permits, attend the OK-LSAMP Annual Research Symposium held on the Oklahoma State University, Stillwater campus (Note: Scholars are required to present)
- If schedule permits, attend Scholars Meetings
- Attend Mentor Meetings (1-2 times per year)
- Commit to a semester or academic term



NSF-HRD-CO02027

SCHOLAR RESPONSIBILITIES WITH MENTOR OVERSIGHT

Scholars will be required to complete the following tasks with guidance from and approval of the mentor.

- Create a Research Outline that Includes:
 - Cover Sheet Signed by the Mentor
 - Title/Research Focus
 - Methods
 - Equipment/Materials
 - Data Collection/Analysis
 - Results/Conclusions
- Write a Progress Report that Includes:
 - Cover Sheet Signed by the Mentor
 - Actions/Research Conducted
 - Progress on Project
 - Description of Next Step (could be a continuation of the current project or that the project is complete)
- Communicate to the OK-LSAMP office presentations to be made and conferences to be attended

Note: The Research Outline and Progress Reports are required each semester. If the research conducted is for a class or program such as Niblack or Wentz, copies of the reports required for the class or other program may be submitted for the reports required by OK-LSAMP.



APPENIDX D

2009 JAM POSTER



Daniel H. Wilson
Associate Professor
Department of Biology
University of Oklahoma
Norman, Oklahoma



Dr. [Name]
Associate Professor
Department of Biology
University of Oklahoma
Norman, Oklahoma

Oklahoma

Louis Stokes Alliance for Minority Participation

15 Years of Success



Dr. [Name]
Associate Professor
Department of Biology
University of Oklahoma
Norman, Oklahoma



Dr. [Name]
Associate Professor
Department of Biology
University of Oklahoma
Norman, Oklahoma

15th Annual Research Symposium Daniel H. Wilson Corporate Sponsor

Dr. Daniel H. Wilson, a world-renowned scholar and leader of The White House Initiative on Historically Black Colleges and Universities, is the keynote speaker for the 15th Annual Research Symposium. Dr. Wilson is a Distinguished Professor at the University of Oklahoma and a past president of the American Society of Plant Biologists. He received his B.S. in 1977 and his M.S. in 1979 from Cornell University in Ithaca, NY.



A group of people standing together, likely participants or organizers of the symposium.

Dr. Wilson is currently a senior research advisor at the White House, where he is involved in addressing the needs of the African American community. He is also the director of the Center for the Study of African American Life and History at the University of Oklahoma. He received his B.S. in 1977 and his M.S. in 1979 from Cornell University.



A person speaking at a podium during the symposium.



Dr. [Name]
Associate Professor
Department of Biology
University of Oklahoma
Norman, Oklahoma

Dr. [Name] is currently a senior research advisor at the White House, where he is involved in addressing the needs of the African American community. He is also the director of the Center for the Study of African American Life and History at the University of Oklahoma. He received his B.S. in 1977 and his M.S. in 1979 from Cornell University.

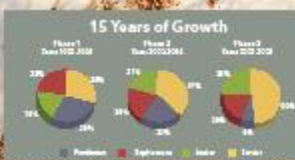


A group of people standing together, likely participants or organizers of the symposium.

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A person speaking at a podium during the symposium.



A group of people standing together, likely participants or organizers of the symposium.

APPENDIX E

SCHOLAR PUBLISHED ARTICLES

EFFECT OF GSM CELLULAR PHONE RADIATION ON THE BEHAVIOR OF HONEY BEES

T. Andrew Mixson, Charles I. Abramson, Sondra L. Nolf, Ge'Andra Johnosn, Eduardo Serrano and Harrington Wells
Laboratory of Behavioral Biology & Comparative Psychology, OK State Univ.,
Depts of Psychology & Zoology, Stillwater, OK 74078
Department of Biology, University of Texas at Brownsville & Texas Southmost College, Brownsville, TX 78520
Department of Biology, University of Tulsa, Tulsa, OK 74104

SUMMARY

This study consists of a series of experiments that investigate the effects of radiation emitted by GSM cellular phones (Global Systems for Mobile Telecommunications) on the behavior of harnessed and free-flying forager honey bees. A unique aspect of this study is that three subspecies – *Apis mellifera carnica*, *Apis mellifera caucasiaca*, and *Apis mellifera syracca*—were employed. In the first series of experiments, we investigated its effects on proboscis extension and feeding in harnessed foragers. Relative to control animals, exposure did not influence proboscis extension or feeding. In a second series of experiments, free-flying foragers were trained to visit a target with the question of interest being whether exposure to cell phone radiation would influence flight navigation. Relative to control animals, the results indicated that a 45 minute radiation exposure did not influence return to the target. In the final series of experiments, the effects of GSM radiation on aggression were investigated. As in the previous experiments, no effect of radiation exposure was found. To our knowledge, this is the first study to investigate the effects of GSM cellular phone radiation on honey bees.

Pavlovian conditioning of the proboscis extension reflex in harnessed foragers using paired vs. unpaired and discrimination learning paradigms: tests for differences among honeybee subspecies in Turkey

Charles I. Abramson¹, T. Andrew Mixson¹, Ibrahim Çakmak², Aaron J. Place³ and Harrington Wells⁴

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Received 5 November 2007 - Revised 15 February 2008 - Accepted 3 March 2008 -
Published online 25 June 2008

Abstract - Experiments utilized three honeybee subspecies from very distinct biomes (*Apis mellifera caucasica*, *A.m. carnica*, *A.m. syriaca*). In experiment one a simple association between odor and a sucrose feeding was readily established in all three subspecies. This association decreased when the conditioned stimulus was no longer followed by a feeding. Neither the learning rate nor extinction rate differed among subspecies. Unpaired controls confirmed that the acquisition of the odor-food association is learned. In experiment two, an attempt to uncover subspecies differences was tested through the ability of bees to discriminate between two odors, one of which is paired with a feeding. Rapid learning occurred in all subspecies and no significant subspecies differences were observed. Finally, discrimination learning was used as an added control to test for honeybee response to an olfactory versus mechanical (air) stimulus.

Key words: Proboscis conditioning / discrimination learning / *Apis mellifera caucasica* / *Apis mellifera carnica* / *Apis mellifera syriaca*

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 Eyuel Solomon Terefe, and Melville Bailey Vaughan
Analysis of Tissue Layer Stratification in Cells over Expressing Cdk4 and Long-time Cultured Cells with Green Fluorescence Protein
FASEB J. 23: 830.3

Analysis of Tissue Layer Stratification in Cells over Expressing Cdk4 and Long-time Cultured Cells with Green Fluorescence Protein

Eyuel Solomon Terefe¹ and Melville Bailey Vaughan¹

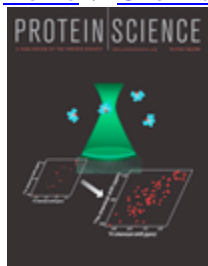
¹ Biology, University of Central Oklahoma, Edmond, OK

ABSTRACT

I examined whether the stratification of keratinocytes, the primary cells of skin epithelium, that over expressed the Cdk4 and telomerase (hTER)-which made them into immortal cells, had an influence on whether the keratinocytes tissue layer was organized as normal keratinocytes. These immortal keratinocytes were engineered to overexpress GFP so they could be used in wound healing models to monitor keratinocytes migration in real time as they healed a wound. The goal was to determine if GFP affected their ability to stratify and differentiate similar to normal keratinocytes. I arrived at my results by examining immunofluorescence stains for the presence of proteins within the epithelial layers/ dermal compartment in their proper location and orientation. The staining was for the proteins: Involucrin, Keratin 14, and basement membrane proteins collagen IV and laminin-5. I found that the organization of the epithelial layers of the over expressing keratinocytes to be similar as those of non-over expressing cells, which means that keratinocytes maintained epithelial cellular organization although they were going through abnormal proliferation. I also analyzed the epithelium layer organization of keratinocytes that were cultured for prolonged period. I also found that skin equivalents that were maintained for long period of time were similar to those that weren't maintained for such a long period.

Grant Funding Source: LS-OKAMP

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PROTEIN|SCIENCE



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Article

Trichloroacetic acid-induced protein precipitation involves the reversible association of a stable partially structured intermediate

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[†]Dakshinamurthy Rajalingam and Charles Loftis contributed equally to this work.

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- Arkansas Bioscience Institute
- George Washington Carver Research Program Summer Research Internship at the University of Arkansas

Keywords

protein precipitation • NMR spectroscopy • molten globule-like state(s) • protein isolation • proteomics • fibroblast growth factors

Abstract

Sample preparation for proteomic analysis involves precipitation of protein using 2,2,2-trichloroacetic acid (TCA). In this study, we examine the mechanism of the TCA-induced protein precipitation reaction. TCA-induced protein precipitation curves are U-shaped and the shape of the curve is observed to be independent of the physicochemical properties of

proteins. TCA is significantly less effective in precipitating unfolded states of proteins. Results of the 1-anilino-8-naphthalene sulfonate (ANS) and size-exclusion chromatography, obtained using acidic fibroblast growth factor (aFGF), show that a stable “molten globule-like” partially structured intermediate accumulates maximally in 5% (w/v) of trichloroacetate. Urea-induced unfolding and limited proteolytic digestion data reveal that the partially structured intermediate is significantly less stable than the native conformation. ^1H - ^{15}N chemical shift perturbation data obtained using NMR spectroscopy indicate that interactions stabilizing the β -strands at the N- and C- terminal ends (of aFGF) are disrupted in the trichloroacetate-induced “MG-like” state. The results of the study clearly demonstrate that TCA-induced protein precipitation occurs due to the reversible association of the “MG-like” partially structured intermediate state(s). In our opinion, the findings of this study provide useful clues toward development of efficient protocols for the isolation and analysis of the entire proteome.

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Fenton-driven regeneration of MTBE-spent granular activated carbon—Effects of particle size and iron amendment procedures

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revised 5 January 2009;
accepted 5 February 2009.
Available online 12 February 2009.

Abstract

Fenton-driven regeneration of spent granular activated carbon (GAC) can be used to regenerate organic contaminant-spent GAC. In this study, the effects of GAC particle size (>2 mm to <0.35 mm) and acid pre-treatment of GAC on Fenton-driven oxidation of methyl-*tert*-butyl ether (MTBE)-spent GAC were evaluated. Iron (Fe) was amended to the GAC using two methods: (1) untreated—where GAC was amended with a concentrated solution of ferrous sulfate and (2) acid pre-treatment—where GAC was amended with acid followed by sequential applications of a dilute ferrous sulfate solution. Subsequently, MTBE was amended to the GAC, followed by oxidative treatments with H₂O₂. H₂O₂ reaction and MTBE oxidation were inversely correlated with GAC particle size and were attributed to shorter intraparticle diffusion transport distances for both H₂O₂ and MTBE. Image analysis of the GAC cross-sections (i.e., prepared thin sections) revealed that the Fe amended to the GAC extended to the center of the GAC particles. Fe accumulated at higher levels on the periphery of the untreated GAC but Fe dispersal was more uniform in the acid pre-treated GAC. In the acid pre-treated GAC, conditions for MTBE oxidation were favorable and greater levels of MTBE oxidation were measured for all particle size fractions tested. Modeling and critical analysis of H₂O₂ diffusive transport and reaction indicated limited H₂O₂ penetration into large GAC particles which contributed to a decline in MTBE removal. Residual MTBE remaining on the GAC limited the quantity of MTBE that could be re-adsorbed, but no reduction in MTBE sorption capacity resulted from oxidative treatments.

Keywords: Activated carbon; Hydrogen peroxide; Iron; Methyl-*tert*-butyl ether; Oxidation

COMPARING SOIL AND HYDROLOGICAL CONDITIONS BETWEEN “WETLANDS RESERVE PROGRAM” AND “REFERENCE” WETLANDS ALONG THE DEEP FORK RIVER OF OKLAHOMA

By
Matthew W. Hough and Brian J. Carter

Wetland restoration is a common method of re-establishing wetland functions lost after human-induced degradation. The objectives of this study are to evaluate and compare functions of federally-funded wetland restorations conducted under the USDA-NRCS Wetlands Reserve Program (WRP) with those provided by naturally occurring wetlands. The purpose of this study is to determine if the functions provided by the WRP wetland restorations are different from those provided by nearby natural wetland sites. The study area encompasses eight WRP and eight natural riverine wetland sites flooded by the Deep Fork River. The sites occur in the central region of Oklahoma within the Cherokee Prairies and cross Timbers Major Land Resource Areas. Soils in these wetlands are deep and clayey to loamy Mollisols and Inceptisols. These alluvial soils have formed during the last one thousand years (or less) before present. Soil biogeochemical and hydrological functions to be evaluated include the dynamic, long-term, and subsurface storage of water. Soil biogeochemical functions include nutrient cycling, retention of particulates, and organic carbon export. Data will be gathered from the monitoring of shallow wells, describing soil profiles, measuring redoximorphic potential, the installation of sediment collecting devices, through the use of radiometric dating, and conducting various soil tests. Soil tests to be included include nutrient availability, salinity, percent organic carbon, bulk density, soil-water content, and hydraulic conductivity. This data will provide quantitative values for selected wetland functions and will be used to find similarities and differences between WRP and natural site.

Submitted to the Soil Science Society, Pittsburg, PA.

APPENDIX F

NEWS ARTICLES AND RELEVANT PHOTOS

University of Oklahoma BD Students participate in summer camps.



Bridge to the Doctorate Fellow, *Felix de la Cruz* demonstrates a ping pong launcher and other engineering projects to visiting high school students.



Bridge to the Doctorate Fellow, *Jacob Henderson*, assists students by demonstrating electronics and robotics during summer academies.

Erica Brown

OU STUDENT RECEIVES GOLDWATER SCHOLARSHIP

4-2-09

FOR IMMEDIATE RELEASE

CONTACT: Public Affairs, (405) 325-1701

NORMAN – University of Oklahoma honors student Erica Brown has been named a 2009 Goldwater Scholar, bringing to 28 the number of OU students named Goldwater Scholars since 1994. The prestigious scholarships are awarded on the basis of potential and intent to pursue careers in mathematics, the natural sciences or engineering.

“Erica Brown is the kind of outstanding student who has propelled the University of Oklahoma into the top ranks of all U.S. universities in the awarding of Goldwater Scholarships,” said OU President David L. Boren. “She is already involved in cutting-edge research while still an undergraduate.”

Brown, an Oklahoma City junior majoring in chemical engineering, has worked with Vassilios Sikavitsas, OU associate professor of chemical, biological and materials engineering, as the principal investigator on projects associated with bone tissue engineering.

In addition, last summer she participated in a Research Experience for Undergraduates internship at Cornell University to create a biodegradable nanofiber mesh for tissue engineering purposes. In 2007, Brown assisted in research in the OU Department of Microbiology and Immunology analyzing HIV in an effort to block infection and thus control HIV-1 disease. She also has given numerous presentations at OU and Cornell as well as at national conferences.

This summer, Brown will serve as an intern for the Special Projects division of ConocoPhillips alongside scientists in research and development. The Special Projects division internship recruits top students in the field of engineering with extensive leadership experience. Upon graduation, she plans to pursue a doctorate in chemical engineering and establish a career researching musculoskeletal repair.

Brown has a 3.97 grade-point average and is a member of the OU Honors College, Alpha Lambda Delta honor society and the OU chapter of the American Institute of Chemical Engineers, for which she has served as sophomore class representative and external vice president. As one of eight Chevron Phillips scholars, Brown mentors engineering sophomores, and she previously

served as a mentor on the Dean's Leadership Council. In addition, while at Cornell last summer, Brown volunteered at a local juvenile center.

Her honors and awards include the Award of Excellence; the President's Award for Outstanding Sophomore; Outstanding Sophomore in Chemical, Biological and Materials Engineering; the CMBE Outstanding Junior Researcher; the CBME Program of Excellence Undergraduate Research Scholarship; an Undergraduate Research Opportunities Program grant; the Harriet Harvey Scholarship for Outstanding Research; and the Alpha Lambda Delta Trow Scholarship. Erica also is the recipient of an Oklahoma Alliance for Minority Participation scholarship funded through a National Science Foundation grant aimed at providing research experiences to the undergraduates in Science, Engineering, Technology, and Mathematics.

The national scholarship competition is conducted by the Barry M. Goldwater Scholarship and Excellence in Education Program. This year, 1,097 college sophomores and juniors across the country competed for the 278 scholarships. The one- and two-year scholarships will cover the cost of tuition, fees, books, and room and board up to a maximum of \$7,500 per year.

BD Fellow, Minh Ngo, graduate class filmed by the Tulsa World.

Video: CSI 101

by: SHANNON MUCHMORE World Staff Writer

Saturday, June 27, 2009

6/27/2009 3:44:15 AM

For Oklahoma State University graduate students, everything but the crime was real Friday morning.

Ducking around yellow crime scene tape at a small house near River Parks, men and women with latex gloves, clipboards, measuring tape and other equipment carefully investigated the scene.

They drew sketches, took pictures, measured rooms and made copious notes in preparation for a mock trial in August. They will have to testify to their findings in front of a real judge while being grilled by University of Tulsa law students.

The OSU Center for Health Sciences students are in an advanced crime scene class that is part of OSU's forensic sciences program.

They practice with crime scenes every week, but they are not as elaborate and lifelike as the fictitious date-rape scenario that instructors had set up for Friday, said Rob Allen, chairman of the Forensic Sciences Department.

"It's one thing to read about it in a book. It's another thing to do it," Allen said. "And we ratchet it up a notch or two by making them defend it."

Five students in forensic chemistry or forensic biology arrived at the house to find a "crime scene" with drink cups and beer bottles on the coffee table.

A scrap of paper with a phone number was wedged in the doorjamb, and in a back room, the bed cover was thrown aside.

The students took multiple pictures of the evidence, cataloging each photo, and examining the bedroom for biological fluids.

Then they collected the evidence and took it back to their labs. In the afternoon, they investigated another scene — the suspect's car.

The evidence will be analyzed for the next three weeks, and then the students will make a case file that will be turned over to the TU law students to prepare for moot court, Allen said.

"They can't take the whole house back to the lab, so they have to be discriminating in what they analyze," he said.

Andrew Taylor, who expects to graduate from the program in August, was assigned to be the sketch artist. He drew the crime scene in a notebook, jotting down measurements as he went.

Taylor will go to Atlanta this summer for a fellowship with the Centers for Disease Control and Prevention. He hopes eventually to get a job studying biological agents in a public health laboratory.

Taylor said Friday's exercise helped prepare students for what they are likely to encounter on the job.

"It's been immensely helpful and at least a real step toward what real crimes scenes would look like," he said.

Allen said forensic science programs are popping up across the country as areas, including Tulsa, face a backlog of evidence that needs to be analyzed. Those already in the field must keep up with the latest techniques and practices, as well.

"As crimes evolve, training needs to evolve," he said.

Shannon Muchmore 581-8378
shannon.muchmore@tulsaworld.com

Associate Images:



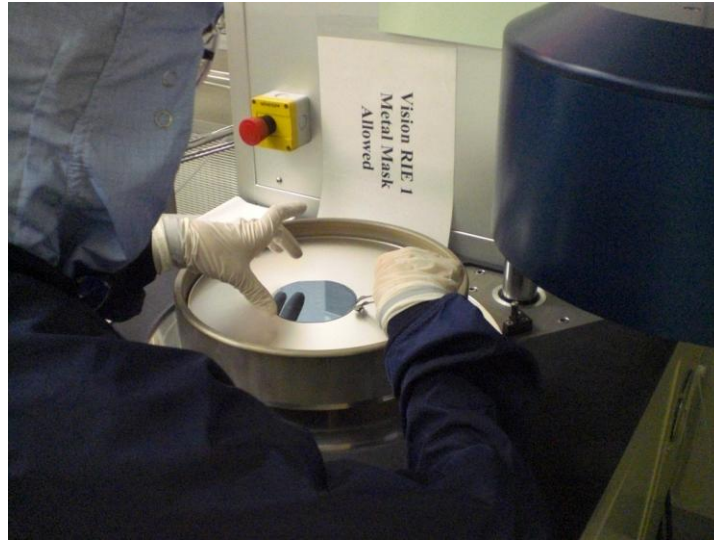
Andrew Taylor looks for evidence as forensic science graduate students from the Oklahoma State University Center for Health Sciences investigate a mock crime scene. MIKE SIMONS/Tulsa World



Susie Talbert marks evidence as forensic science graduate students from the Oklahoma State University Center for Health Sciences investigate a mock crime scene. MIKE SIMONS/Tulsa World

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Zach Carpenter, BD Fellow, conducting research at Georgia Tech



Dr. Gilbert John, Associate Professor, Biology, took two students to Brookhaven Labs, Long Island, New York, for summer internships through a Native American initiative.

A16 Stillwater NewsPress • Wednesday, May 13, 2009

OSU

4 head to New York for research

An Oklahoma State University associate professor and three OSU students will participate in summer research at Brookhaven.

The OK-LSAMP program, a part of Institutional Diversity, funded through the National Science Foundation, is a consortium of 11 Oklahoma colleges and universities working together to develop programs aimed at increasing the number of students from under-represented populations who receive degrees in STEM disciplines.

Brookhaven Lab conducts research in the physical, biomedical and environmental sciences, as well as in energy technologies and national security. Brookhaven also builds and operates major scientific facilities available to university, industry and government researchers from across the nation. Discoveries made at Brookhaven have won six Nobel Prizes.



OSU Associate Professor Gilbert John, center, and students Daniel Trobare, left, and Andrew Mixson, right, will participate in summer research at the U.S. Department of Energy's Brookhaven National Laboratory in New York.

Photo provided

Cara Cowan Watts, BD Fellow, Cohort I

CHEROKEE CHAT - *PhD TRIBAL WATER QUALITY STANDARDS*

Claremore Daily Progress

May 5, 2009 —

This Friday, I will participate in the Graduation Ceremony for Graduate students at Oklahoma State University (OSU).

Although I have a month or so before I defend my dissertation, there is no summer graduation ceremony.

When I defend my dissertation in front of a Committee of four OSU professors and earn their approval, I will graduate with a Doctorate of Philosophy (PhD) in Biosystems Engineering.

My dissertation topic is 'Numerical Nutrient Criteria Supporting Cherokee Nation's Culturally Significant Waters.' The research has a direct benefit to the Cherokee Nation and Oklahoma.

When I am done, I will be able to present my findings to the Cherokee Nation Environmental Protection Commission for incorporation in our future Tribal Water Quality Standards. The final paper will be available online at okstate.edu. My research is investigating phosphorus and nitrogen nutrients and the algae response in rivers and streams. One aspect of the research investigates the Oklahoma Scenic River standard for phosphorus on rivers such as the Illinois. Without scientifically defensible water quality standards, water rights are hollow.

Many of you have supported me throughout my research which began in June of 2005. As I wrap up this life journey, I want to invite you to join my family and I at 7 p.m. on Friday, May 8 in Stillwater. A local gathering will be held after I complete my work.

Special thanks to the National Science Foundation for my Louis Stokes Fellowship support as well as Oklahoma State University Department of Biosystems and Agricultural Engineering.

To contact the Tribe, call 453-5000. The operator will connect you with the appropriate department. Tribal programs and services are administered by the Chief's staff at the Tribal Complex. Tribal hours are Monday through Friday from 8 a.m. to 5 p.m.

Save a trip to Tahlequah by using the Tribe's Internet tools at www.cherokee.org. Almost all applications are available online to print from home.

CEAT student council helps local cause

Photo by Michael Bevers

The College of Engineering, Architecture and Technology student council donated \$7,500 to the Coaches vs. Cancer organization, a philanthropy organization that raises money for the National Cancer Society. The CEAT student council has donated money to the University of Oklahoma children's hospital but wanted to donate closer to home this year, said Denise Armstrong, the CEAT Week coordinator.

By [Sara Stephenson](#)

Staff Writer

Published: **May 05, 2009**

Students help knock out cancer.

The College of Engineering, Architecture and Technology student council donated \$7,500 to the Coaches vs. Cancer organization. CEAT student council raised the money during its annual CEAT Week this spring. The council tries to get corporate sponsors to pay for its events during the week, and any fee that is charged goes to its philanthropic efforts, said Katie Nixon, an industrial engineering and marketing junior. Denise Armstrong, the CEAT Week coordinator, said CEAT has given the money to the OU children's hospital in the past but wanted to bring its philanthropy home this year. Coaches vs. Cancer is a philanthropy organization involving coaches who raise money for the National Cancer Society to help cancer patients and families within the Stillwater and Oklahoma City area, Nixon said. The organization is a nationwide collaboration between the NCS and the National Association of Basketball Coaches. "It allowed us to focus on something that would reflect OSU better," said Richard Wilson, a mechanical engineering senior and vice president of communications. CEAT is the only self-sustaining student council on the OSU campus and has been voted the best council nationwide for the past two years. "Our student council is definitely one of the most active on campus," Wilson said. "I believe we have the biggest membership." Armstrong said the events and the council itself are entirely student run. Students are responsible for everything within the CEAT student council, including the career fair, Armstrong said. If we fail, it would hurt all of our societies," Wilson said. The students finance their own projects and promote their own activities. "It gives us some freedom," Wilson said. "Also, a great deal of responsibility and accountability." All of the student council members are interviewed because it has to be sure that they will do their jobs. "Each member takes an active role in getting involved," Nixon said. "There's something for everyone in the council." Being self-sustained and having a large membership are just two reasons the National Association of Student Engineering Councils voted the CEAT student council the best in the nation. "I think the students actually like getting involved," Nixon said. "It's not just a résumé buffer." Armstrong said OSU competes for this title with large engineering schools, such as Texas and Texas A&M. Future goals of the council include hosting the regional conference this fall and getting more involved with other councils. "We need to brush up on our social skills," Nixon said.

This story was published May 5th, 2009 under **Front Page, News. [Permalink](#)**.

Lauren White – OSU OK-LSAMP Scholar



Contact: Kelly Green | Research Communications | 405-744-5827 | kelly.green@okstate.edu

OSU undergraduate scholars compete in state-wide research competition

(March 5, 2009 Stillwater, OK) – Four Oklahoma State University students were selected to present competitive research posters to the State Legislature and the public recently during Research Day at Capitol, an annual event sponsored by Oklahoma EPSCoR, the Oklahoma State Regents for Higher Education and The National Science Foundation. Christie Backoulou, a Niblack scholar and a biochemistry/management senior from Stillwater, placed third in the research intensive campus category for her research on osteoporosis. Other OSU participants included: Ashley Hayes, a Wentz scholar and a mechanical engineering senior from Oklahoma City, whose research focuses on tissue engineering; Ellen Jarrett, a Wentz scholar and mechanical engineering junior from Tulsa, whose research focuses on biomaterials; and Lauren White, a Niblack scholar and environmental science junior from Idabel, whose research focuses on animal behavior. “I am immensely proud of the students who presented posters during this year’s Research Day,” said Stephen McKeever, OSU vice president for research and technology transfer. “They are great examples of the many hardworking, intelligent and truly gifted students we have here at Oklahoma State.”

A total of 18 students from 12 Oklahoma colleges and universities participated in Research Day at the Capitol. The event is designed to create awareness about the outstanding research conducted by college students throughout the state.





LANGSTON UNIVERSITY

Office of Public Relations

News Release

FOR IMMEDIATE RELEASE

April 9, 2007

Contact: Ashley Gibson
Director, Public Relations
Phone: 405.466.3484
angibson@lunet.edu

LU Student Receives Prestigious UNCF/MERCK Scholarship

Leethaniel Brumfield is the first LU student to receive the award

Leethaniel Brumfield, a biology and chemistry junior, was recently named one of 15 national recipients of a 2007 United Negro College Fund/ Merck Undergraduate Science Research Scholarship Award.

Brumfield is the first student from Langston University to receive this prestigious honor and the second in the state of Oklahoma. As a UNCF/Merck Fellow, Brumfield will receive up to \$25,000 to cover the cost of tuition, room and board, and billable fees, for the upcoming 2007-2008 school year.

"My mission is achievement in every field of human endeavor, and I'm convinced that this is only accomplished through hard work and die-hard determination," he said. "Anything worth having is worth working for and waiting for. I spend at least four hours a week gathering the miscellaneous things: transcripts, recommendations, etc. needed for various scholarships and internship opportunities."

Brumfield will also receive at least \$10,000 over the next two summers to conduct research as an intern at a Merck research facility, provided by The Merck Company Foundations.

In July, 1995, Merck & Co., Inc., a leading pharmaceutical products and services company, and UNCF announced the UNCF/Merck Science Initiative, whose purpose was to increase the number of African American students pursuing careers in scientific research. Merck's initial commitment was to support this initiative over 10 years with total funding of \$20 million. This was the largest single corporate gift ever given to UNCF and one of the largest minority education-related donations in the history of corporate philanthropy. In 2006, Merck committed another \$13 million to the initiative, extending the UNCF/Merck partnership for another five years.

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Page Hall, Room 317

Langston, Oklahoma 73050

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After suffering from a stress-related stroke last fall (2006) that resulted in partial and temporary facial paralysis, Brumfield still managed to persevere in regards to his academic endeavors, by making sure that his UNCF/Merck Undergraduate Science Research Scholarship Award application was turned in a month prior to the deadline.

"Though I'm able to see improvement daily, I feel that this award is God's way of repaying me for my immeasurable diligence during a most difficult and trying time," he said. "Through prayer and the support of loved ones, I mustered up an inner-strength that I didn't know I had."

Brumfield, who aspires to enter a Ph.D. research-based program with a concentration in pharmacology, upon graduating from Langston, foresees the opportunity to intern at Merck the most commendable scholastic accolade he has received thus far. The majority of the awardees are students from Ivy League schools and world-renowned institutions like Harvard, Stanford, Duke, Princeton, Yale, Caltech, MIT, and Carnegie Mellon, and Cornell. Brumfield anticipates meeting the other 14 awardees this summer during the "Fellows Day" ceremonies, scheduled for June 23-27, 2007, in Blue Bell, PA, sponsored by Merck Research Laboratories.

Brumfield commented that "less than two percent of Ph.D.'s in biology and chemistry are held by African Americans. This limited number won't meet America's needs when more than 50 percent of new entrants into tomorrow's workforce will be minorities. This award is an innovative approach that will create new opportunities in the life and physical sciences and develop a huge, untapped resource for America."

Brumfield, with a cumulative GPA of 3.85, already receives academic merit as an E. P. McCabe II, LINC, NASA, and OKAMP scholar, and he anticipates graduating next year as Summa Cum Laude. He also holds membership in Alpha Chi National Honor Society, Beta Kappa Chi Scientific Honor Society, and the Oklahoma Science Academy and currently serves as the managing editor for the 2006-2007 Langston Yearbook, produced the LU Public Relations Department. Nominated by the Dean of the Honors Department at Langston University, Dr. JoAnn Clark, Brumfield was recently named a 2007-2008 honoree in Who's Who Among Students in American Colleges and Universities.

Along with the other scholarships and stipends that he already receives, this semester, Brumfield also was granted The Tulsa Post Scholarship from the Society of American Military Engineers (\$1000) and the John W. Coleman Scholarship Trust Fund Scholarship (\$500). This past summer, Brumfield was given the opportunity to attend the University of Southern California's (Berkley) Edge Program, and he anticipates presenting research this April, for the second time, at Arizona State University's Annual MGE@MSA Conference.

Brumfield cautions others to realize that "a mind is a terrible thing to waste, and though you'll never be recognized for what you're "truly" worth, make it a mission to be received for what you "know" you worth. If you seize every ample financial opportunity, you could very well attain a Ph.D. and beyond, never having used monies that weren't given to you!"

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Fara Williams, Oklahoma State University

Staff member ‘seas’ a new perspective



Photo illustration by Ryan Morales

Fara Williams, the data coordinator for Oklahoma-Louis Stokes Alliance for Minority Participation program, explored a Navy destroyer, submarine and aircraft carrier during a tour.

‘In the navy’ with guided tour

By [Kaylee Crampton](#), Staff Writer

Published: [March 10, 2009](#)

An OSU staff member explored three components of the United States Navy while seagulls called over her head and waves broke against the sides of the ship.

Fara Williams, the data coordinator for the Oklahoma-Louis Stokes Alliance for Minority Participation program, toured a Navy destroyer,

submarine and aircraft carrier in December and January.

Navy recruiter Lt. Chris Miles sent Williams on the tours. Miles received Williams' name from a co-worker at the recruiting district in Dallas, Texas. Miles said the co-worker met Williams at a career fair at OSU. "The purpose was to show her what the men and women of the Navy do," Miles said. "That way, if any students show an interest, she's more knowledgeable." Williams toured the destroyer and submarine in San Diego, Calif. on Dec. 17. "Basically we went aboard the destroyer, toured it, looked around, met some of the sailors and then we had a presentation on the Navy Nuclear Officer Training Program," Williams said. "Then, we went down into the submarine." Only male sailors serve in submarines, which is one of the few parts of the military that is all male. "If you ever tour a submarine, you know why," Williams said. "There's a lot of very tight enclosures. They showed us the communications room, where the periscopes are and everything, and the officer explained that on normal duty there's 12 men in there. Then he told us that when there's battle stations, there's 35." She said that is quite a few people to fit in such a small place. "You look around, see all the computers and periscopes and everything, and you're like, 'How do they get 35 people in here? Let alone in a position where they can work and actually do a job?'" Williams said. She said the destroyer and submarine tour consisted of college faculty from across the nation, including two OSU professors — Raman Singh, mechanical engineering professor, and David Thompson, associate dean at the College of

Engineering, Architecture and Technology. “The tour was intended to provide a better understanding of the career opportunities for engineers as nuclear officers in the Navy,” Thompson said. “They took us to multiple bases in San Diego for presentations, to meet Navy personnel and tour facilities and ships.” Singh said he believes his students can benefit from the information he learned. “I’m much better informed about what the program entails, and if a student expresses interest in the program, I can tell them about it and help them make an informed decision,” Singh said. “One thing I learned is that for the right kind of student, this could be a great career choice.” He said the tour also provided a unique insight to life in the Navy. “You get to know the personal aspects of serving in the U.S. Navy, besides how you get in and what you do,” Singh said. Williams traveled to Jacksonville, Fla. to tour the aircraft carrier on Jan. 17. “We took (what) was called a C2 plane, which is a small cargo type plane, and flew to the aircraft carrier, which is about 70-80 miles offshore,” Williams said. “So we actually did the arrested landing. That was a lot of fun.” The rest of the day, and part of the next, was spent exploring the ship, meeting the sailors and learning about different departments onboard, she said. “Then we participated in the catapult assisted take-off the next day,” Williams said. “Where you’re shot off the deck at 0 to 128 miles in two seconds. That was much more fun than the landing.” Williams said she enjoyed many moments of the trip. “I like just being around the sailors and meeting them and learning what they do and gaining a new appreciation for what they do for our country,” she said. “The stars were amazing, too.” Williams said the trip has already helped a student. “One student in our program has already talked with a recruiter, and he’s ready to enlist,” Williams said. So, if my visits and tours got that one student the encouragement and the information he needed, then it’s worth it.

APPENDIX G

14th ANNUAL RESEARCH SYMPOSIUM

**14th
ANNUAL RESEARCH SYMPOSIUM**

**Oklahoma Louis Stokes Alliance for
Minority Participation in Science,
Technology, Engineering, and
Mathematics**



(OK-LSAMP STEM)

**Saturday, September 20, 2008
Office of the Vice President for Institutional Diversity
Noble Research Center
Oklahoma State University
Stillwater, Oklahoma**



OK-LSAMP is a National Science Foundation (NSF) program.

SCHEDULE OF ACTIVITIES

9:00-11:00 AM	Registration and Refreshments	
10:00-10:30 AM	Poster Set-Up 1 st Floor Atrium ALL POSTERS MUST BE IN PLACE BY 10:30 AM	
10:00-10:30 AM	Bridge to the Doctorate Session Room 106 Dr. A. James Hicks, LSAMP Program Director, National Science Foundation	
10:30-10:40 AM	Welcome and Introductions Room 106 Dr. Cornell Thomas, PI/Program Director OK-LSAMP, VP for Institutional Diversity, Oklahoma State University Dr. A. James Hicks, LSAMP Program Director, National Science Foundation	
10:40-11:10 AM	Keynote Speaker Room 106 Rebecca Haaker-Santos, Coordinator SOARS, Colorado Talea Mayo, SOARS Ph.D. Fellow, University of Texas Introduction by Steven Harris, OK-LSAMP BD Fellow, University of Oklahoma, Cohort III	
11:10-11:15	Break	
11:15-12:00	Research Ethics Room 106 Dr. Carl Rutledge, Coordinator OK-LSAMP, East Central University Introduction by Scott Fine, OK-LSAMP BD Fellow, Oklahoma State University, Cohort VI	
11:15-12:00 AM	Concurrent Oral Presentations Section I: Life Sciences Room 108 Section II: Engineering & Computer Science Room 207 Section III: Engineering & Forensics Room 216-218	
12:00-1:00 PM	Keynote Speaker/Lunch Room 106 Dr. Stephen McKeever, VP for Research and Technology Transfer, Oklahoma State University Introduction by Jonathan Gonzales, OK-LSAMP BD Fellow, Oklahoma State University, Cohort VI	
12:00-1:00 PM	Alliance Meeting/Lunch 4 th Floor Atrium OK-LSAMP Administration and Campus Coordinators Dr. A. James Hicks, LSAMP Program Director, National Science Foundation	
1:00-1:15 PM	Break	
1:15-2:00	Research Ethics Room 106 Dr. J. C. Diaz, Coordinator OK-LSAMP, University of Tulsa Introduction by Lila Peal, OK-LSAMP BD Fellow, Oklahoma State University, Cohort II	
1:15-2:00 PM	Concurrent Oral Presentations Section I: Life Sciences Room 108 Section II: Engineering Room 207	
2:00-2:30 PM	Visit with Recruitment Tables 1 st Floor Atrium	
2:30-3:00 PM	Poster Presentations 1 st Floor Atrium PRESENTERS MUST BE PRESENT AT THIS TIME	
3:00	Closing Remarks and Symposium Feedback Room 106 Dr. Carl Rutledge, Coordinator OK-LSAMP, East Central University	

*Note: Symposium Volunteers are designated on their name badges.
They will gladly assist if you need information or directions.

APPENDIX H

BRIDGE TO THE DOCTORATE FELLOWS: OKLAHOMA
STATE UNIVERSITY AND THE UNIVERSITY
OF OKLAHOMA

OKLAHOMA STATE UNIVERSITY

BRIDGE TO THE DOCTORATE PROGRAM

Update – May 2008



Cornell Thomas
Principal Investigator
Vice President for Institutional Diversity



Oklahoma State University (OSU), founded in 1890, is a comprehensive land-grant institution that provides exceptional academic experiences, scholarly research and other creative activities that advance fundamental knowledge. With its main campus in Stillwater, OSU is Oklahoma's only university with a statewide presence. Total system-wide enrollment from all five campuses is approximately 32,500. The institution is a state leader in research, with a focus on sensors and sensor technology, information technology, Homeland Security issues, biotechnology and nanotechnology. More than 170 graduate programs and options are offered, including 110 at the master's level and 60 at the doctoral level. Recent graduate enrollment totaled 4,325, and approximately 1,000 master's and 200 doctoral degrees are awarded annually. The university awards more graduate degrees to Native Americans students than any institution in the nation. Sixty percent of OSU graduates choose to stay in Oklahoma and work hand-in-hand with other Oklahomans to advance the state and create even more opportunities for future generations. In Fall, 2007 graduate enrollment totaled 4,325.

	Dominic Barrett BS (2004) Fisheries and Wildlife Conservation, Southeastern OSU BD EMPHASIS: Natural Resource Ecology Management Received M.S. in 2008		Loretta Rush BS (2003) Biology, MS (2004), East Central University; BD EMPHASIS: Plant Pathology, Teaching and Research; Withdrew in 2007
	Brett Cowan BS (1999), MS (2000) Civil Engineering; Oklahoma State University, BD EMPHASIS: Professional Engineer and Teaching; Received Ph.D. in 2007		Adrienne Sherman BS (2005) Natural Resource Management, Langston University BD EMPHASIS: Environmental Sciences and Biosystems Expected M.S. completion December, 2008
	Marty Hepler BS (1994) Entomology/Plant Pathology, Oklahoma State University, BD EMPHASIS: Teaching and Research; Received M.S. in 2007, employed with USDA		Nicole Singleton BS (2004) Animal Science, Langston University, BD EMPHASIS: Toxicology, Teaching and Research, Received M.S. in May, 2008
	Jacob Manjarrez BS (2003) Cell/Molecular Biology, Oklahoma State University, BD EMPHASIS: Microbiology and Molecular Genetics, Teaching and Research, Expected Ph.D. Graduation Date, May, 2009		Cara Cowan-Watts BS (1997) Mechanical Engineering, MS (2002) Telecommunications Mgmt, Oklahoma State University BD EMPHASIS: Biosystems Engineering Expected Ph.D. completion: August, 2009
	Thomas Patten BS (2002), MS (2004), Mechanical Engineering, Oklahoma State University, BD EMPHASIS: Professional Engineer; Expected Ph.D. completion, May, 2009		Brek Wilkins BS (2004) Microbiology; Oklahoma State University, BD EMPHASIS: Microbiology, Teaching and Research; Expected Ph.D. graduation December, 2009
	Lila Peal BS (2004) Biology, Langston University BD EMPHASIS: Biochemical Research, Expected Ph.D. completion, May, 2009		Cristee Wright BS (1999) Biology, Southern University, BD EMPHASIS: Microbiology, Teaching and Research, Received M.S. in 2007

Kay Porter, Program Manager/BD Coordinator
Fara Williams, Data Manager
114 Thatcher Hall, Stillwater, Oklahoma 74078
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www.ok-lsmp.okstate.edu



Cohort I: Oklahoma State University

The UNIVERSITY OF OKLAHOMA

BRIDGE TO THE DOCTORATE PROGRAM

Update – May 2008



P. Simin Pulet
Co-PI and Bridge to the Doctorate Campus Liaison
Associate Dean for Undergraduate Education,
Howard and Suzanne Kauffman Chair, and
Professor in the School of Industrial Engineering



Created by the Oklahoma Territorial Legislature in 1890, the University of Oklahoma is a doctoral degree-granting research university serving the educational, cultural, economic and health care needs of the state, region and nation. The Norman campus serves as home to all of the university's academic programs except health-related fields. Both the Norman and Health Sciences Center colleges offer programs at the Schusterman Center, the site of OU-Tulsa. The OU Health Sciences Center, which is located in Oklahoma City, is one of only four comprehensive academic health centers in the nation with seven professional colleges. OU enrolls more than 30,000 students, has more than 2,000 full-time faculty members, and has 20 colleges offering 153 majors at the baccalaureate level, 133 majors at the master's level, 75 majors at the doctoral level, 20 majors at the first professional level, and 18 graduate certificates. The university's annual operating budget is more than \$1 billion. The University of Oklahoma is an equal opportunity institution. (11/05).

	Jacob Henderson BS (2007) Computer Engineering, University of Oklahoma; BD EMPHASIS: Electrical Engineering; Expected MS completion, 2009		Marshall McCutchen BS (2004) Physics, East Central University; BD Emphasis: Physics, Withdrew from the program
	Steven Harris BS (2006) Chemistry, Langston University; BD EMPHASIS: Chemistry; Expected Ph.D. completion, 2009		Israel Osisanya BS (2003) Petroleum Engineering, University of Oklahoma, BD Emphasis: Petroleum Engineering, Completed the MS in 2008, working in industry
	Desmond Harvey BS (2006) Chemistry, Langston University BD EMPHASIS: Industrial Engineering; Received MS in 2008, working in industry		Marquita Rowland BS (2006) Biology, Langston University BD Emphasis: Microbiology, Withdrew from the program
	Quintin Hughes BS (2004) Industrial Engineering, University of Oklahoma; BD EMPHASIS: Industrial Engineering;		William Vazquez BS (2005) Math, Cameron University BD Emphasis: Mathematics, Received MS in 2008, working in industry
	Kevin James BS (2005) Electrical and Computer Engineering; Southern Univ. A&M College, Baton Rouge, LA; BD Emphasis: Electrical and Computer Engineering, Expected MS completion 2009		T'aire D. Wallace BS (2002) Microbiology, Langston University BD Emphasis: Microbiology, transferred to another university to complete degree
	Shawn McCarroll BS (2006) Computer Science, University of Oklahoma, BD Emphasis: Computer Science, Expected MS completion 2009		Felix de la Cruz BS (2007) Mechanical Engineering, University of Oklahoma, BD Emphasis: Mechanical Engineering, Expected MS completion 2009

Susy Calonkey, Program Coordinator
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Oklahoma LSAMP

3rd Bridge to the Doctorate



Oklahoma State University, 114 Thatcher Hall, Stillwater, OK 74078, okamp@okstate.edu, www.ok-state.edu



Gordon Emilio, Ph.D.
OK-LSAMP & Bridge to the Doctorate PI
Oklahoma State University
Associate V.P., Research & Technology Transfer
Dean, Graduate College
gordon.emilio@okstate.edu
405-744-6368

Oklahoma State University

Oklahoma State University is a multi-campus public land grant educational system, founded in 1890, that is dedicated to improving the lives of people in Oklahoma, the nation, and the world through integrated, high-quality teaching, research, and outreach. The instructional mission includes undergraduate, graduate, technical, extension, and continuing education informed by scholarship and research. The research, scholarship, and creative activities promote human and economic development through the expansion of knowledge and its application. OSU can boast: (1) being named as one of the "Best Value" colleges by the *Princeton Review*; (2) a Truman Honor Institution; (3) College of Engineering renowned in the fields of architecture and mechanical engineering; (4) the Center for Health Sciences educates osteopathic physicians, research scientists and other health care professionals with an emphasis on serving rural and under-served Oklahoma; (5) the Forensic Sciences program is one of only eight in the nation accredited by the Forensic Science Education Program Accreditation Commission; (6) the Biomedical Sciences program offers advanced degrees in anatomy, biochemistry, cell biology, microbiology, pathology, pharmacology, and physiology; (7) dedicated to educating students to be life-long learners and ethically prepared to serve and lead in an increasingly complex global society; (8) a leader in research, the Wentz Foundation program offers a unique Undergraduate Research Scholarship that allows students to develop their own projects in university labs; (9) has state-of-the-art research facilities and equipment, along with talented faculty, and (10) awards more degrees to Native Americans than any other institution in the nation.



Kay Porter, Program Manager
Oklahoma State University
Office of Institutional Diversity
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Marcus Benjamin - BS,

Chemistry, Jackson State University, 2006
BD Emphasis: Chemistry
Career Goals: to teach and conduct research at a university in collaboration with another institution.

Zachary Carpenter - BS, Electrical

Engineering, University of Tulsa, 2005; MS, Electrical Engineering, University of Tulsa, 2008
BD Emphasis: Electrical Engineering
Career Goals: real-world experience as well as university level instruction

Scott Fine - BS, Plant & Soil

Sciences, Oklahoma State University, 2008
BD Emphasis: Plant Soil Sciences—soil science
Career Goals: give back to his home community through government or extension services employment.

Erik Gonzales - BS, Physics, East

Central University, 2007
BD Emphasis: Physics
Career Goals: become a physics professor and stay involved with research and become a mentor to future students

Jonathan Gonzales - BS, Physics,

East Central University, 2007
BD Emphasis: Electrical and Computer Engineering
Career Goals: completely learn and apply how electrical power systems work

Michael Henry - BS, Management

Information Systems (MIS), Oklahoma State University, 2007
BD Emphasis: MIS
Career Goals: conduct business productivity research, mentor undergraduates and teach

Matt Hough - BS, Plant & Soil

Sciences, Oklahoma State University, 2008
BD Emphasis: Plant & Soil Sciences—wetland function
Career Goals: a position where he can enjoy the application of his knowledge.

Shawna Hughes - BS, Biology,

South Carolina State University, 2007
BD Emphasis: Food Sciences
Career Goals: to conduct research in the food industry; become involved with college and high school students

Minh Ngo - BS, Biochemistry &

Molecular Biology, Oklahoma State University, 2008
BD Emphasis: Forensic Sciences—toxicology
Career Goals: would like to lead her own forensic toxicology lab

Richard Osei - BS, Computer

Science/Mathematics, Langston University, 2008
BD Emphasis: Computer Science
Career Goals: to become a computer science teacher or a CEO for a company

Cody Pinkerman - BS, Aerospace

& Mechanical Engineering, Oklahoma State University, 2008
BD Emphasis: Mechanical & Aerospace Engineering
Career Goals: designing the next generation of spacecraft

C. Doug Yarholer - BS, Civil

Engineering, Oklahoma State University, 2008
BD Emphasis: Civil Engineering
Career Goals: to own and operate a consulting firm

Cohort III: Oklahoma State University



Oklahoma LSAMP

1st and 2nd Bridge to the Doctorate Cohorts



Oklahoma State University, 114 Thatcher Hall, Stillwater, OK 74078, okamp@okstate.edu, www.ok-lsamp.okstate.edu



Successes to Date

Dominic Barrett—Cohort I, OSU

BS, ...
MS, Natural Resource Ecology Management, OSU, 2008

Brett Cowan—Cohort I, OSU

BS, Civil ...
MS, ...

Ph.D., Civil Engineering, OSU, 2007

Marty Heppler—Cohort I, OSU

BS, ...
MS, Entomology/Plant Pathology, OSU, 2007

Desmond Harvey—Cohort II, OU

BS, ...
MS, Industrial Engineering, OU, 2008

Shawn McCarroll—Cohort II, OU

BS, ...
MS, Computer Science, OU, 2009

Israel Osisanya—Cohort II, OU

BS, ...
MS Petroleum Engineering, OU, 2008

Adrienne Sherman—Cohort I, OSU

BS, ...
MS, Environmental Sciences and Biosystems, 2009

William Vazquez—Cohort II, OU

BS, ...
MS, Mathematics, OU, 2008

Cristee Wright—Cohort I, OSU

BS, ...
MS, Microbiology/Cell and Molecular Biology, 2007

Continuation of the Program

Felix de la Cruz—Cohort II, OU

BS, Mechanical Engineering, OU, 2007
Continuing MS—estimated graduation 2010

Steven Harris—Cohort II, OU

BS, Chemistry, Langston University, 2006
Continuing Ph.D.—estimated graduation Summer 2009

Jacob Henderson—Cohort II, OU

BS, Computer Engineering, OU, 2007
Continuing MS—estimated graduation Summer 2009

Quintin Hughes—Cohort II, OU

BS, Industrial Engineering, OU, 2004
MS, Industrial Engineering, OU, 2009
Continuing Ph.D.—estimated graduation 2012

Kevin James—Cohort II, OU

BS, Electrical Engineering, Southern Univ. A & M Coll., 2005
Continuing MS—estimated graduation Summer 2009

Jacob Manjarrez—Cohort I, OSU

BS, Cell/Molecular Biology, OSU, 2003
Continuing Ph.D.—estimated graduation Summer 2010

Thomas Patten—Cohort I, OSU

BS, Mechanical Engineering, OSU, 2002
MS, Mechanical Engineering, OSU, 2004
Continuing Ph.D.—estimated graduation December 2009

Lila Peal—OSU Cohort I, OSU

BS, Biology, Langston University, 2004
Continuing Ph.D.—estimated graduation Summer 2010

Cara Cowan-Watts—Cohort I, OSU

BS, Mechanical Engineering, OSU, 1997
MS, Telecommunications Management, OSU, 2002
Continuing Ph.D.—estimated graduation Summer 2009

Brek Wilkins—Cohort I, OSU

BS, Microbiology, OSU, 2004
Continuing Ph.D.—estimated graduation December 2009

Cohort I and II Update of BD Fellows

Oklahoma State University Bridge to the Doctorate Students – Cohort I

Twelve former LSAMP Scholars began the BD program in 2004 as Cohort II. Of these, one Ph.D. degree has been awarded and six Master of Science degrees. Four Fellows anticipate completing the Ph.D. by December, 2010. One Fellow withdrew from the program and is currently teaching at a junior college. OSU Fellows and degree emphasis are listed below:

Dominic Barrett, Zoology, Fisheries and Wildlife Ecology, with an emphasis in Natural Resource Ecology, completed requirements for the Master of Science degree in May, 2008. He is currently employed as a Wildlife Biologist with the U.S. Fish and Wildlife Service at Cibola National Wildlife Refuge in Arizona and California.

Brett Cowan, Civil Engineering, with an emphasis in Professional Engineer and Teaching, completed requirements for the Ph.D. degree in May, 2007. Currently Brett is employed as a Civil Engineer with Kleinfelder, a national geotechnical engineering firm in Tulsa, Oklahoma, and teaching part-time on the OSU-Tulsa campus.

Cara Cowan Watts, Biosystems and Agricultural Engineering, (1) Selected to participate in the Oklahoma Leadership program, (2) represents the Cherokee Nation as a Tribal Representative, (3) presented a paper along with her advisor/mentor at the 2009 Oklahoma Clean Lakes and Watershed Association Conference, (4) expected completion, December 2010.

Marty Heppler, Entomology and Plant Pathology, completed requirements for the Master of Science degree in Summer 2007. Marty accepted employment with the USDA Agricultural Research Services in California.

Jacob Manjarrez, Biochemistry and Molecular Biology, (1) completed departmental requirements and is currently working on his research project. Graduation is anticipated in May, 2010, (2) teaching associate in the Biochemistry Department, (3) presented poster at OSU Research Week, April 2009.

Thomas Patten, Electrical Engineering, is currently working on his research. Ph.D. graduation is anticipated in May, 2010.

Lila Peal, Biochemistry and Molecular Genetics, (1) completed departmental requirements and is currently working on her research project and thesis. Graduation is anticipated in May, 2010, (2) teaching associate in the Biochemistry Department, (3) oral research presentation at the OSU Research Day, April 2009,

Loretta Rush, Plant Pathology, withdrew from the program, and is currently teaching at a junior college in Oklahoma.

Adrian Sherman, Biosystems and Agricultural Engineering, completed requirements for the Master of Science degree in May, 2009.

Nicole Singleton, Physiological Sciences (Toxicology), completed requirements for the Master of Science degree in May, 2008.

Brek Wilkins, Biomedical Sciences, Oklahoma State University Center for Health Sciences, Tulsa, Oklahoma, will complete Ph.D. requirements in December, 2009.

Christee Wright, Microbiology and Molecular Genetics, completed Master of Science degree requirements in July, 2007.

University of Oklahoma Bridge to Doctorate Students – Cohort II

Twelve former LSAMP Scholars began the BD program at the University of Oklahoma as Cohort II Fellows. Of these, three Fellows have completed the Master of Science degree, four either transferred to another university or withdrew from the program and five are expected to complete degree requirements in 2009 or 2010. OU Fellows and degree emphasis are listed below:

Felix delaCruz, Mechanical Engineering, *Felix De La Cruz* – (1) completed his MS in Mechanical Engineering in the summer, 2009, (2) attended ASME Winter Conference in Boston, Massachusetts, (3) presented research at the 14th Annual Research Symposium in September 2008, (4) participated in the OU Research Day in April, 2009, (5) participated in the student project showcase and demonstration. This allows younger students to connect with university students to hear about the cool and exciting projects in engineering, (6) attended the 2008 Joint Annual Meeting in Washington, D.C.

Steven Harris, Biochemistry, (1) continuing research with a goal of PhD completion in 2011, his mentor is Dr. Susan Schroeder (2) presented research at 14th Annual Research Symposium, September 2008, (3) presented research at the OU Biochemistry seminar, (4) served as president of the Black Graduate Student Association at OU, (5) attended the Joint Annual Meeting in Washington, D.C.

Jacob Henderson, Electrical and Computer Engineering, (1) completed his MS in Electrical Engineering in Summer 2009, Continuing on toward PhD in the research phase with Dr. John Fagan is his mentor/chair. His research thesis is based on developing an autonomous device for delivering tools down a well hole in the oil and gas exploration industry, (2) attended the 2008 Institute of Navigation Global Navigation Satellite System (ION GNSS) Savannah, Georgia, (3) conducted research under Dr. Fagan and taught two courses as a teaching assistant at the University of Oklahoma, (4) supported the College of Engineering's outreach efforts. During summer camps or visits by middle school and high school groups, Jacob demonstrated projects and taught electrical and computer engineering concepts to young students. He frequently talked with prospective students and their parents about engineering and the exciting opportunities in the field.

Desmond Harvey, Industrial Engineering, completed the Master of Science degree in May 2008, and is currently working in industry.

Quintin Hughes, Industrial Engineering, (1) Completed MS in Industrial Engineering, Spring 2009, continued Ph.D. research phase with Dr. Randa Shehab as his mentor, Engineering Education as his focus, (2) attended American Society for Engineering Education (ASEE), (3) attended National Association of Multicultural Engineering Program Advocates (NAMEPA), (4) attended 14th Annual Research Symposium, (5) gained valuable experience in the field of Engineering Education, in the summer of 2008 and summer of 2009 by serving as camp director for the BP Engineering Academy (a weeklong engineering camp for high school students). (6) served as associate director of the HEADS UP Engineering Summer Bridge camp for incoming freshmen. This camp served to enhance new student's calculus skills and provide a bridge of skills and support from high school to university.

Kevin James, Electrical and Computer Engineering *Kevin James* – (1) Finalizing MS thesis and prepared for a summer 2009 defense, (2) attended American Society for Engineering Education (ASEE), (3) attended the 17th International Conference on Computer Communication and Networks (ICCE), (4) served as Vice President of the Black Graduate Student Association at OU, (5) interned at the Radar Operations Center, (6) volunteered as a teaching assistant, (7) served on the Oklahoma Department of Transportation (ODOT) research project, (8) attended the Joint Annual Meeting, Washington, D.C.

Shawn McCarroll, Computer Science, (1) completed the Master of Science degree in May 2009, (2) currently he is a computer analysis in Washington, D.C.

Marshall McCutchin, Physics, withdrew from the program.

Isreal Osisanya, Petroleum Engineering, completed requirements for the Master of Science degree in May 2008, and is currently working in industry.

Marquita Rowland, Microbiology, withdrew from the program.

William (Joey) Vazquez, Mathematics, completed requirements for the Master of Science degree in May, 2008, and is currently working in industry.

T'Aire Wallace, Microbiology, transferred to another university to complete the Ph.D. program.

APPENDIX I

ANNUAL EVALUATION REPORT:

OK-LSAMP, PHASE III



The University of Oklahoma

CENTER FOR INSTITUTIONAL DATA EXCHANGE AND ANALYSIS (C-IDEA)
Consortium for Student Retention Data Exchange (CSRDE)

September 8, 2009

Dr. Gordon Emslie
Program Director, LS-OKAMP
Oklahoma State University
408 Whitehurst
Stillwater, OK 74078

Dear Dr. Emslie,

Congratulations on another successful year. My analysis shows that based on the most currently available data approximately **32% of the Phase III graduates in this evaluation period have been accepted to graduate school**. *The goal of the Alliance is to have a minimum of 10% of the available baccalaureate degree graduates over the five year program to be eligible for graduate school for admission and subsequent enrollment. The LS-OKAMP Alliance is certainly meeting this goal.*

The Alliance is developing good candidates for graduate school. The majority of Alliance participants are taking advantage of research opportunities each semester. They are also participating in research during the summer. Academically, 84% of the juniors and seniors had grade point averages over 3.0. The challenge for the alliance is how to increase the number of these quality students that take the GRE and make graduate applications.

Using the results of our recently completed survey on the retention and graduation of first-time full-time STEM majors in 187 institutions, the attached narrative draws comparisons between the LS-OKAMP institutions and the overall results of the other participants in the survey. The comparisons are for the First-time Full-time Cohorts of STEM majors from Fall 2000-Fall 2007. Two tables which examine the most recently available 6-year graduation rates (2002 cohorts) and 2nd-year continuation rates (2007 cohorts) for underrepresented minority students are provided. These tables compare the individual LS-OKAMP partner institutions with the STEM institutions with similar admission selectivity requirements. In addition, I have also included two tables that provide a historical view of both 6-year graduation rates and 2-year continuation rates of underrepresented minority (URM) STEM students.

Juniors and seniors involved in the LS-OKAMP program with rare exception graduate in a STEM field. The laboratory of success found in the LS-OKAMP program does not represent the experience of most URM STEM majors. Institutionally, URM STEM students who enrolled at LS-OKAMP Alliance institutions between 1997 and 2002 graduated had an overall graduation rate (26%), which is slightly better than the average six-year graduation rates of all other institutions participating in the CSRDE STEM study (25%). Although, because of the unavailability of first time enrollment data we are unable to calculate the length of time it takes (4-yr, 5-yr, 6-yr, etc.) the alliance students to graduate, the key point is that if students can make it to the junior and senior year in the program they will graduate and do so in STEM fields.

Retention of students in STEM nationally and within the state institutions continues to be a problem. Only 56% of the URM STEM majors within the Fall cohort of 2007 who were attending Oklahoma Alliance institutions continued as STEM majors in their second year as compared to an average 65% first-year at the other institutions participating in our survey. This narrows the pool of students that might be eligible to participate as juniors and seniors where they can receive some program support. This problem is bigger than the LS-OKAMP Alliance. However, if institutions were to make resources available to expand the

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scope of the program to include a renewed focus on retention during the first two years of STEM majors with the goal of getting them into the program as juniors and seniors, we could see even more URM STEM graduates.

My team has summarized the activities of the individual partners and this summary is included as an appendix. Kay Porter and Fara Williams have done a superb job at devising methods to track activity. They are always willing to try new approaches to improve the Alliance processes. I will visit with them in October to discuss the data collection plan for this next phase of the program.

Finally, there are two major recommendations for improvement made at the end of the report. These recommendations are intended to address the major challenge I mentioned earlier and are based on the data.

- Increasing the inflow of eligible juniors and seniors
- increasing the number of juniors and seniors who test the waters of graduate school by taking the GRE and making application.

Thank you for the opportunity to service the Alliance. Let me know if you have any questions.

Warm regards,

Rosemary Hayes, Ph.D.
NSF Program Evaluator

Introduction

During Phase III the Oklahoma Louis Stokes Alliance for Minority Participation has focused on increasing the number of underrepresented minority (URM) students graduating in STEM fields and going on to graduate college. This report examines the participation of these students in this program during 2008-09 and the ability of the Alliance to achieve its goals during this period. Resources have primarily been focused on supporting juniors and seniors during Phase III. However, the Alliance has continued to reach out to freshman and sophomore students. Although this evaluation addresses the upper classmen participating in the program, the institution specific summaries found at the end of this report will inform the reader about the total number of LS-OKAMP students being served at each institution.

A total of eighty-one juniors and seniors participated in the 2008-09 programming under review. There were fifty-two seniors and twenty-nine juniors. The breakdown of this cohort by race/ethnicity and class standing can be seen in Table 1. Participation of students by class standing and institution is displayed in Table 2.

Table 1: Class Standing and Ethnicity

Standing	AI	Black	Hispanic	Other	Total
Junior	8	14	6	1	29
Senior	21	19	6	6	52
Total	29	33	12	7	81

Table 2: Participants by Partner Institution

Institution	Junior	Senior	Total
CU	2	3	5
ECU	2	10	12
LU	4	8	12
NEOSU	0	3	3
NWOSU	1	0	1
OSU	6	10	16
OU	3	8	11
SEOSU	4	1	5
SWOSU	3	0	3
Tulsa	1	3	4
UCO	3	6	9
Total	29	52	81

Alliance Wide Goals

The OK-LSAMP program proposed to significantly increase the number of targeted students entering into graduate programs over the five years of the program, preferably to earn doctorates. To this end, the goal of the Alliance is to have a minimum of 10% of the available baccalaureate degree graduates eligible for graduate school for admission and subsequently enrollment over the course of Phase III.

Graduate School eligibility has been defined as:

- Min 3.0 GPA
- Two full summer internships
- Annual presentation of research
- Taken GRE by fall of Senior Year
- Minimum 5 applications to graduate school

Alliance Eligibility Goal Achieved

The Alliance has met the goal to have a minimum of 10% of the available baccalaureate degree graduates each year be eligible for graduate school for admission and subsequently enrollment. This evaluation shows that eight out of twenty-five or **32% of participating OK-LSAMP graduates were identified as having been admitted to graduate school.**

Moreover, the GPAs, internships, and research experience of the group demonstrates that there were many other students that graduated who had the potential to move on to graduate STEM work. The OK-LSAMP graduates accomplished the following:

- 25 of the 52 OK-LSAMP seniors graduated during this period with the rest continuing their studies
- 32% (8) of the graduates had taken the GRE
- 84% of all graduates had a GPA of 3.0 or higher
- 64% of all graduates had at least two full summer internships
- 65% of all graduates presented their research at least once during the reporting period

The Continuing Development of Students

Research is a significant component of the program. It is believed that participation in research helps increase graduate school eligibility. It also provides an opportunity to develop research skills and build relationships with faculty. Participants are also encouraged to make five or more applications to graduate school. Typically, an application and GRE scores are required for admission in most programs.

- 76% of the fall 2008 Phase III OK-LSAMP students participated in research
- 73% of the spring 2009 students conducted research
- 51% (36 of 70) of the spring 2009 students were scheduled for internships in the summer of 2009. Given that 18 of the 70 students graduated in the spring, this actually represents 69% of the remaining students.

- 29% of all 81 OK-LSAMP participants made graduate applications. Five students completed five or more applications.

Summaries on how each individual Alliance partner contributed to these goals can be found within the institutional summaries at the end of the report.

Examination of Retention and Graduation Rates

Background

Within the LS-OKAMP program the following can be said: Students that enter this program almost without exception graduate, graduate within STEM and almost 1/3 or more go on the graduate school. The LS-OKAMP laboratory of student success is not the experience of underrepresented minority STEM students nationally or within the State of Oklahoma.

Traditionally the LS-OKAMP evaluation process also looks at the retention and graduation of first-time full-time underrepresented minority STEM students within the State of Oklahoma in an effort to not only provide a context for understanding the achievement of the LS-OKAMP Alliance, but also to examine more broadly the state of URM STEM student retention and completion.

The following executive summary will address the status of STEM retention and graduation at the LS-OKAMP institutions as compared to the overall status of STEM retention and graduation observed in the 2008-09 STEM survey of 187 higher education institutions.

In August 2009, the Consortium for Student Retention Data Exchange published the tenth annual national STEM retention study, 2008-09 STEM Retention Report. This report was based on survey data collected from 187 colleges and universities, including all ten of the LS-OKAMP public universities. The data for the Oklahoma institutions, with the exception of Oklahoma State University and The University of Oklahoma, were provided by Office of the Oklahoma State Regents for Higher Education. The University of Tulsa does not participate in this reporting and is not included in the report of retention and graduation rates.

The survey data was collected on first-time full-time freshman cohorts of 2000 through 2007 who indicated intent to major in a STEM field. The CIP-codes used to identify the majors were selected in cooperation with the National Science Foundation when this survey was developed in the late 1990s. In capturing the retention and graduation rates of these students a dual pronged approach was used. First, the retention and graduation rates of these cohorts at their institution in any major were collected. Next, the survey captured the rates at which the cohorts continued within STEM fields and graduated within STEM fields. This dual tracking allows us to see within a campus the migration of STEM majors out of STEM fields and into other majors. It also allows us to see the general departure rates of students, that is the percent of students that leave the institution.

Underrepresented Minority STEM Majors

Approximately 24% of the over 2 million first-time freshmen enrolled in 187 public colleges and universities during the survey period intended to pursue STEM majors. Within the ten Oklahoma public institutions participating in the LS-OKAMP study, 18% of the 83,000 first-time full-time freshmen intended to be STEM majors. Within the Oklahoma institutions included in this analysis, underrepresented minority students made up 20.6% of the freshman STEM cohorts and 17.7 % at the other STEM survey institutions.

Comparison Tables

The tables below compare the 6-year graduation rates and the most recent 2nd year continuation rates of underrepresented minority students at LS-OKAMP institutions and the STEM survey institutions. The U.S. Department of Education developed the concept of the 6-year graduation rate as a benchmark. This rate represents the percent of first-time full-time students who complete a 4-year program within six years.

Graduation Rates

Historically, as shown in **Table 3**, the 6-year graduation rates of URM STEM majors who begin in STEM and graduated within STEM while attending the LS-OKAMP public institutions have been greater than or equal to the national 6-year graduation rates observed in the CSRDE STEM studies for the URM cohorts of 1994 through 2002, with the exception of the 1997, 2000, and 2002 cohorts. However, the overall graduation rates between the Oklahoma Alliance and the rest of the participating institutions is comparable.

Table 3: 6-year Graduation Rates for URM STEM Majors within STEM Fields

Cohort	All STEM Participant Institutions	LS-OKAMP Institutions
1994	24%	24%
1995	25%	27%
1996	24%	27%
1997	24%	23%
1998	26%	26%
1999	25%	30%
2000	27%	25%
2001	26%	26%
2002	27%	23%
Overall	25%	26%

A more useful way to understand the degree of success underrepresented minority STEM students are attaining at Oklahoma institutions is to examine institutional retention and graduation rates within the context of institutional peers. Table 4 shows the six-year graduation rates of URM first-time full-time STEM majors in the cohort of 2002 at Oklahoma institutions as compared to the six-year graduation rate of URM students at other institutions with similar selectivity. Selectivity as defined in the CSRDE research is a categorization of institutions based on the average ACT or SAT admission test scores of incoming students. These scores are highly correlated to retention and graduation rates.

In Table 4 there are two types of six-year graduation rates shown for each institutions and selectivity peer group:

- Any Major - Any Major identifies the percent of URM students who began as freshman STEM majors and graduated within six years in any major at their institution.
- STEM Major - The STEM Major column identifies the percent of the URM students who began as freshman STEM majors and graduated specifically within a STEM field.

As can be seen from this chart, at the 6-year graduation mark the URM STEM cohorts of 2002 at Southeastern, Southwestern, and the University of Central Oklahoma graduated at higher rates within STEM majors than their peers at institutions with comparable selectivity.

Table 4: Six Year Graduation Rates within Any Major and Within Stem Majors
For 2002 URM First-time Freshmen STEM Cohorts By Selectivity

Institutional Selectivity	Any Major on Campus	STEM Majors
Highly Selective	59%	37%
OU	49%	26%
OSU	51%	26%
Moderately Selective	34%	17%
SW	33%	24%
UCO	30%	20%
Less Selective	32%	22%
NW	33%	0%
SE	47%	37%
Cameron	17%	10%
ECU	29%	21%
Langston	29%	18%
NE	0%	0%
All Other STEM Institutions	45%	27%
Oklahoma Institutions	41%	23%

Retention Rates

The on-going challenge faced by the LS-OKAMP institutions has been retention. Retention is defined as the rate at which the first time fall cohort returns to the institution the following Fall. The first year is a critical period in the success of students, and typically this is the point at which departures occur most frequently at most institutions across the country. Percentages aside, if the object is to increase the number of URM STEM students graduating within STEM in the State of Oklahoma, lowering first year departures is important.

The LS-OKAMP institutions historically show lower retention of URM students within the STEM fields when compared with all other STEM participating institutions, as can be seen in Table 5. However, while the rates for the entire group of STEM participating institutions have shown little change overtime, the LS-OKAMP first year retention rates for Oklahoma URM STEM students has improved from a low of 49% for the cohort of 1997 to 56% for the cohort of 2007. Clearly though, there is still much room for improvement.

Table 5: 1st Year Institutional Retention Rates for URM STEM Majors Within STEM Fields by Cohort Year

Cohort	All Other STEM Participant Institutions	LS-OKAMP Institutions
1997	65%	49%
1998	65%	55%
1999	64%	57%
2000	65%	57%
2001	64%	59%
2002	64%	51%
2003	64%	57%
2004	65%	57%
2005	65%	55%
2006	66%	53%
2007	65%	56%
Overall	65%	56%

Table 6 examines the retention of URM first-time full-time STEM majors in the cohort of 2007. Additionally, rates of Oklahoma LS-OKAMP institutions are compared to the peer group of institutions with similar selectivity. As with the graduation table, there are two types of retention rates examined below.

- Any Major - Any Major identifies the percent of URM students who began as freshman STEM majors and continued to the second academic year at the same institution, regardless of their major.
- STEM Majors - The STEM Majors column identifies the percent of the URM students who began as freshman STEM majors and remained specifically in STEM fields as they moved into the second year in the same institution.

Table 6: First-Year Retention Rates within Any Major and Within Stem Majors For Underrepresented Minority Students in the 2007 cohort by Institutional Selectivity

	Any Major on Campus	STEM Majors
Highly Selective	86%	72%
University of Oklahoma	84%	62%
Oklahoma State University	73%	70%
Moderately Selective	74%	60%
Southwestern	62%	50%
University of Central Oklahoma	60%	31%
Less Selective	70%	60%
Northwestern	57%	29%
Southeastern	54%	42%
Cameron	21%	21%
East Central University	67%	47%
Langston	71%	63%
Northeastern	100%	57%
Other STEM Institutions	79%	65%
Oklahoma Institutions	71%	56%

As can be seen in Table 6, the most recent retention rates indicate that many OK-LSAMP institutions lag behind the other STEM survey institutions, both in retention of initial STEM majors in any field and of particular interest to this project, the retention with STEM fields. One partner in the Alliance, Langston University, has retention rates above that of the group rates for the less selective institutional group.

Summary

Underrepresented minority STEM students who enrolled at LS-OKAMP Alliance institutions between 1997 and 2002 graduated within STEM at overall six-year graduation rates equal to or better than the average six-year graduation rates of all other institutions participating in the CSRDE STEM study. Approximately 26% of URM STEM students graduate within 6-years within STEM. This means about 74% of the incoming STEM majors either changed majors, or left their institutions.

The first-year retention rate of URM students within STEM fields attending LS-OKAMP schools has improved from a low of 49% for the cohort of 1997 to 56% for the cohort of 2007. Despite this improvement, clearly a new bar should be set for increasing retention within STEM.

Interestingly, the cohorts of first-time full-time URM STEM majors within LS-OKAMP institutions have higher first-year retention rates and six-year graduation rates than their URM peers who began their college career in non-STEM fields. URM students who begin as STEM majors and then change to a non-STEM field appear to have the ability to perform college work. How can they be encouraged and supported to continue their work in a STEM field? Is it possible they could be re-directed into a different STEM field than the one they pursued originally?

The LS-OKAMP project is specifically attempting to address these issues. Over the course of the project the LS-OKAMP institutions have attempted to support URM students participating in the LS-OKAMP program as they move through their academic undergraduate careers as STEM majors. Review of the participation data from the LS-OKAMP partners shows that if students are in the program as upperclassmen they most certainly will graduate, and graduate in STEM. The LS-OKAMP program is helping its participants buck the trends for URM students in STEM. Additional achievement can be seen within the cohort of LS-OKAMP Phase III students. This evaluation shows that eight out of twenty-five or **32% of participating OK-LSAMP graduates were identified as having been admitted to graduate school.** This is again a testament to the quality of the students and the faculty mentorship they receive in the program.

Recommendation for improvement as the Alliance moves into Phase IV

1. Increased Levels of Institutional Support for retaining students in first two years

If a student is actively involved in LS-OKAMP during the junior and senior year, the likelihood of that student graduating in STEM is excellent. So, the challenge is how to increase the number of upper classmen participating in the program. Decreasing the departure of students during the freshman and sophomore years will increase the number of students eligible at the junior and senior level to receive LS-OKAMP support.

There have been progressive funding decreases for this program over the last five years. The focus has shifted from recruiting URM students into STEM majors to retaining and graduating the upperclassmen. Despite the shift in funding priorities LS-OKAMP PIs have still attempted to recruit and include freshmen and sophomores in the program. However, because of funding, the support to these students is naturally limited.

During the initial and better funded early phases of this program institutions were called upon to build capacity to insure the sustainability of the program. By sustainability, it is meant not only the existence of the program but the vitality. The first recommendation is for the institutional leadership to identify ways in which the institution can demonstrate continuing financial support of this program, with a renewed inclusion of support for freshmen and sophomores. Their retention is key to increasing graduation rates. Given the proven track record of success of this program in producing underrepresented minority STEM graduates, such support is an investment that will show returns.

2. Increase the numbers of upper classmen taking the GRE and making application to graduate schools.

LS-OKAMP participants appear to be good candidates for graduate school

- 84% of all graduates had a GPA of 3.0 or higher
- 64% of all graduates had at least two full summer internships
- 65% of all graduates presented their research at least once during the reporting period
- 76% of the fall 2008 Phase III OK-LSAMP students participated in research
- 73% of the spring 2009 students conducted research

Despite this, only 32% of the graduates had taken the GRE and 29% of the 81 juniors and seniors had completed graduate applications. If the goal is to increase the number of students going on to graduate school the number of students completing these two graduate school requirements must be increased. The PIs at the individual institutions would have some ideas on how to best accomplish this. One of the frequent issues mentioned by PIs is the cost of making graduate school applications. Although some Alliance institutions have provided students with assistance, more support may be needed. Funding for traveling to other institutions to visit the campus and make contacts may need to be increased. A graduate fee waiver agreement might be developed at least between the Alliance and the Oklahoma research institutions. These ideas are not prescriptive. Again, the institutional PIs will best know what will work for their students. It is recommended in the next phase that efforts be redoubled to increase the number of participants taking the GRE and completing graduate applications.

In conclusion, the partners of the LS-OKAMP Alliance have more than met the goals as laid out for Phase III. The National Science Foundation has often said that the goal of the Louis Stokes Alliance for Minority Participation is to not just produce graduates; but to produce quality graduates. The LS-OKAMP Alliance has held its participants to high standards in terms of grade point averages, research, and internships. As a result, minority students participating in this program have benefited by receiving the support necessary to graduate with the qualifications that open the potential for receiving advanced degrees.

Institution Specific Activities

Below is a summary of activity for each of the LS-OKAMP institutions. For each institution the numbers of participants are identified, and within that number the number of students (juniors and seniors) that were included in the evaluation. Not included in this report is a list of the titles of the papers, presentations, and research projects which the participants completed. This data is available from the Alliance Office at Oklahoma State.

Cameron University

- All 5 students in the program were used in this evaluation.
- 2 students were juniors and 3 were seniors.
- The 3 seniors continued from the spring to fall 2008, and the 2 juniors were new to the program in fall 2008.
- All 5 students who participated in fall 2008 continued to spring 2009 and no new students entered in spring 2009.
- 5 out of 5 students (100%) received funding for both fall 2008 and spring 2009.
- 1 student graduated in May 2009.

Research

1. 5 out of 5 students (100%) conducted research in fall 2008 and spring 2009.
2. 0 out of 5 students (0%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 2 out of 5 students (40%) gave 1 or more presentations during the year. Both students gave 1 presentation.
4. 2 out of 5 students (40%) attended at least 1 conference or meeting during the year.

Grad Preparation

1. 0 out of 5 students (0%) participated in GRE prep classes.
2. 1 out of 5 students (20%) took the GRE.
3. The 1 senior who took the GRE took it by fall of their senior year.
4. 2 out of 5 students (20%) submitted applications to graduate schools. 1 senior submitted 4 applications, and 1 junior submitted 1 application.

Support

1. 2 out of 5 students (40%) participated in summer internships.
2. 1 student had an internship in summer 2007, and 2 students in summer 2008.

Additional Information

1. 5 out of 5 students (100%) had a minimum GPA of 3.0.
2. 5 out of 5 students (100%) received 1 or more honors and/or awards.
3. 0 out of 5 students (0%) had their research published.

Alliance-wide Graduate School Information

1. 5 out of 5 students (100%) had a minimum GPA of 3.0.
2. 1 out of 3 students (33%) that had been in the program for at least 2 summers had 2 or more internships over the summer.
3. 2 out of 5 students (20%) presented their research during the year.
4. 1 out of 3 seniors (33%) took the GRE by the fall of their senior year.
5. 0 out of 3 seniors (0%) submitted a minimum of 5 graduate school applications.
6. 0 out of 1 graduates (0%) were admitted to graduate school.

East Central University

- 12 out of 13 students were included in this evaluation.
- 2 students were juniors and 10 were seniors.
- 1 student who graduated in May 2008 was not included in this evaluation.
- 7 seniors returned from the spring to fall 2008. 1 senior was new to the program in summer 2008.
- 4 seniors continued from fall 2008 to spring 2009. 1 senior and 2 juniors were new to the program in spring 2009, and 1 senior returned to the program in spring 2009.
- 7 out of 8 students (88%) who participated in fall 2008 and spring 2009 received funding.
- 3 of the students graduated in December 2008, and 2 students graduated in May 2009.

Research

1. 2 out of 8 students (25%) conducted research in fall 2008, and 1 out of 8 students (13%) conducted research in spring 2009.
2. 2 out of 8 students (25%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 2 out of 12 students (17%) gave 1 or more presentations during the year. 2 seniors gave 1 presentation.
4. 1 out of 12 students (8%) attended at least 1 conference or meeting during the year.

Grad Preparation

1. 0 out of 12 students (0%) participated in GRE prep classes.
2. 0 out of 12 students (0%) took the GRE.
3. 0 out of 12 students (0%) submitted applications to graduate schools.

Support

1. 4 out of 12 students (33%) participated in summer internships.
2. 1 student had an internship in summer 2007, 3 students in summer 2008, and 1 student in summer 2009.

Additional Information

1. 8 out of 12 students (67%) had a minimum GPA of 3.0.
2. 1 out of 12 students (8%) received 1 or more honors and/or awards.
3. 1 out of 12 students (8%) had their research published.

Alliance-wide Graduate School Information

1. 8 out of 12 students (67%) had a minimum GPA of 3.0.
2. 1 out of 9 students (11%) that had been in the program for at least 2 summers had 2 or more internships over the summer.
3. 2 out of 12 students (17%) presented their research during the year.
4. 0 out of 12 seniors (0%) took the GRE by fall of their senior year.
5. 0 out of 10 seniors (0%) submitted a minimum of 5 graduate school applications.
6. 0 out of 5 graduates (0%) were admitted to graduate school.

Langston University

- 12 out of 21 students were included in this evaluation.
- 8 students were seniors and 4 were juniors.
- 9 students were not included in this evaluation: 1 freshman, 7 sophomores, and 1 student who graduated in May 2008.
- 5 seniors and 3 juniors continued from spring to fall 2008, and 3 seniors were new to the program in fall 2008.
- All 11 students who participated in fall 2008 continued to spring 2009, and 1 junior was new to the program in spring 2009.
- 8 of the 11 students who participated in fall 2008 received funding, and 8 of the 12 participants in spring 2009 received funding.
- 8 of the students graduated in May 2009.

Research

1. 4 out of 11 students (36%) conducted research in fall 2008, and 3 out of 12 students (25%) conducted research in spring 2009.
2. 8 out of 11 students (73%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 11 out of 12 students (92%) gave 1 or more presentations during the year. 1 senior gave 2 presentations, 2 seniors gave 3 presentations, and 3 seniors and 3 juniors gave more than 3 presentations during the year.
4. 3 out of 12 students (25%) attended at least 1 conference or meeting during the year.

Grad Preparation

1. 3 out of 12 students (25%) participated in GRE prep classes.
2. 4 out of 12 students (33%) took the GRE.
3. 2 seniors took the GRE by fall of their senior year.
4. 6 out of 12 students (50%) submitted applications to graduate schools. 3 seniors submitted 5 applications, 1 senior submitted 3 applications, 1 junior submitted 2 applications, and 1 senior submitted 1 application.

Support

1. 10 out of 12 students (83%) participated in summer internships.
2. 1 student had an internship in summer 2005, 1 student in summer 2006, 3 students in summer 2007, 8 students in summer 2008, 6 students in summer 2009, and 4 summer internship dates are unknown.

Additional Information

1. 10 out of 12 students (83%) had a minimum GPA of 3.0.
2. 8 out of 12 students (67%) received 1 or more honors and/or awards.
3. 1 out of 12 students (8%) had their research published.

Alliance-wide Graduate School Information

1. 10 out of 12 students (83%) had a minimum GPA of 3.0.
2. 9 out of 9 students (100%) that had been in the program for at least 2 summers had 2 or more internships over the summer.
3. 11 out of 12 students (92%) presented their research during the year.
4. 2 out of 8 seniors (25%) took the GRE by fall of their senior year.
5. 3 out of 8 seniors (38%) submitted a minimum of 5 graduate school applications.
6. 4 out of 8 graduates (50%) were admitted to graduate school.

Northeastern State University

- 3 out of 5 students were included in this evaluation.
- All 3 students were seniors.
- 1 freshman and 1 sophomore were not included in this evaluation.
- 2 seniors were new to the program in fall 2008.
- Both seniors who participated in fall 2008 continued to spring 2009, and 1 senior was new to the program in spring 2009.
- 2 out of 2 students (100%) who participated in the program in fall 2008 received funding, and 2 out of 3 students (67%) who participated in spring 2009 received funding.
- 2 of the students graduated in spring 2009.

Research

1. 3 out of 3 students (100%) conducted research in fall 2008 and spring 2009. Although one senior did not begin the program until spring 2009, since they did research in fall 2008 they are included here.
2. 0 out of 2 students (0%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 2 out of 3 students (67%) gave 1 or more presentations during the year. 1 senior gave 2 presentations, and 1 senior gave more than 3 presentations.
4. 1 out of 3 students (33%) attended at least 1 conference or meeting during the year.

Grad Preparation

1. 0 out of 3 students (0%) participated in GRE prep classes.
2. 2 out of 3 students (67%) took the GRE.
3. 1 senior that took the GRE took it by fall of their senior year. The GRE date of the other senior is unknown.
4. 2 out of 3 students (67%) submitted applications to graduate schools. 1 senior submitted 2 applications, and 1 senior submitted 1 application.

Support

1. 1 out of 3 students (33%) participated in summer internships.
2. The student had an internship in summer 2008 and summer 2009.

Additional Information

1. 3 out of 3 students (100%) had a minimum GPA of 3.0.
2. 0 out of 3 students (0%) received 1 or more honors and/or awards.
3. 0 out of 3 students (0%) had their research published.

Alliance-wide Graduate School Information

1. 3 out of 3 students (100%) had a minimum GPA of 3.0.
2. 0 out of 0 students (0%) that had been in the program for at least 2 summers had 2 or more internships over the summer. However, one senior that was new to the program in spring 2009 had 2 summer internships (2008 and 2009).
3. 2 out of 3 students (67%) presented their research during the year.
4. 1 out of 3 seniors (33%) took the GRE by fall of their senior year. In addition, one senior took the GRE, but the date is unknown.
5. 0 out of 3 seniors (0%) submitted a minimum of 5 graduate school applications.
6. 1 out of 2 graduates (50%) were admitted to graduate school.

Northwestern Oklahoma State University

- 1 out of 2 students were included in this evaluation.
- The 1 student was a junior.
- 1 freshman was not included in this evaluation.
- 1 student continued from spring to fall 2008.
- 1 student continued from fall 2008 to spring 2009.
- 1 out of 1 student (100%) that participated in both fall 2008 and spring 2009 received funding.

Research

1. 0 out of 1 student (0%) conducted research in fall 2008 and spring 2009.
2. 0 out of 1 student (0%) who was in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 0 out of 1 student (0%) gave 1 or more presentations during the year.
4. 0 out of 1 student (0%) attended at least 1 conference or meeting during the year.

Grad Preparation

1. 0 out of 1 student (0%) participated in GRE prep classes.
2. 0 out of 1 student (0%) took the GRE.
3. 0 out of 1 student (0%) submitted applications to graduate school.

Support

1. 0 out of 1 student (0%) participated in summer internships.

Additional Information

1. 1 out of 1 student (100%) had a minimum GPA of 3.0.
2. 0 out of 1 student (0%) received 1 or more honors and/or awards.
3. 0 out of 1 student (0%) had their research published.

Alliance-wide Graduate School Information

1. 1 out of 1 student (100%) had a minimum GPA of 3.0.
2. 0 out of 1 student (0%) that had been in the program for at least 2 summers had 2 or more internships over the summer.
3. 0 out of 1 student (0%) presented their research during the year.
4. 0 out of 1 student (0%) took the GRE by fall of their senior year.
5. 0 out of 1 student (0%) submitted a minimum of 5 graduate school applications.
6. 0 out of 0 graduates (0%) were admitted to graduate school.

Oklahoma State University

- 16 out of 27 students were included in this evaluation.
- 10 students were seniors and 6 students were juniors.
- 4 freshmen and 7 sophomores were not included in this evaluation.
- 6 seniors and 4 juniors continued from spring to fall 2008, and 2 seniors and 1 junior was new to the program in fall 2008.
- 6 seniors and 4 juniors continued to spring 2009, and 2 seniors and 1 junior were new to the program in spring 2009.
- 8 of the 13 students (62%) participating in fall 2008 received funding, and 9 of the 13 students (69%) participating in spring 2009 received funding.
- 1 student graduated in fall 2008.

Research

1. 14 out of 16 students (88%) conducted research in fall 2008, and 14 out of 14 students (100%) conducted research in spring 2009.
2. 10 out of 12 students (83%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 14 out of 16 students (88%) gave 1 or more presentations during the year. 2 juniors and 2 seniors gave 2 presentations. 2 seniors gave 3 presentations. 1 junior and 3 seniors gave more than 3 presentations.
4. 5 out of 16 students (31%) attended at least a conference or meeting during the year.

Grad Preparation

1. 4 out of 16 students (25%) participated in GRE prep classes.
2. 2 out of 16 students (13%) took the GRE.
3. Dates were not given for when the students took the GRE so we do not know if they took it by the fall of their senior year.
4. 0 out of 16 students (0%) submitted applications to graduate schools.

Support

1. 14 out of 16 students (88%) participated in summer internships.
2. 4 students had an internship in summer 2007, 10 students in summer 2008, and 12 students in summer 2009.

Additional Information

1. 14 out of 16 students (88%) had a minimum GPA of 3.0.
2. 12 out of 16 students (75%) received 1 or more honors and/or awards.
3. 2 out of 16 students (13%) had their research published.

Alliance-wide Graduate School Information

1. 14 out of 16 students (88%) had a minimum GPA of 3.0.
2. 10 out of 10 students (100%) that had been in the program for at least 2 summers had 2 or more internships over the summer. In addition, 1 senior that was new to the program in fall 2008 had 2 summer internships (2008 and 2009).
3. 14 out of 16 students (88%) presented their research during the year.
4. 0 out of 10 seniors (0%) took the GRE by the fall of their senior year. The 2 seniors that did take the GRE have no date of when it was taken.
5. 0 out of 10 seniors (0%) submitted a minimum of 5 graduate school applications. No one submitted applications for graduate school.
6. 1 out of 1 graduate (100%) was admitted to graduate school.

Southeastern Oklahoma State University

- 5 out of 6 students were included in this evaluation.
- 1 student was a senior and 4 students were juniors.
- 1 senior was not included in this evaluation because they did not participate in fall 2008 and spring 2009.
- 2 juniors and 1 senior continued from the spring to fall 2008, and 2 juniors were new to the program in fall 2008.
- 4 juniors and 1 senior continued to the spring 2009, and no students were new to the program in spring 2009.
- 5 out of 5 students (100%) participating in both fall 2008 and spring 2009 received funding.
- 1 student graduated in August 2009.

Research

1. 5 out of 5 students (100%) conducted research in fall 2008 and spring 2009.
2. 2 out of 5 students (40%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 4 out of 5 students (80%) gave 1 or more presentations during the year. All 4 students gave one presentation.
4. 0 out of 5 students (0%) attended at least a conference or meeting during the year.

Grad Preparation

1. 0 out of 5 students (0%) participated in GRE prep classes.
2. 0 out of 5 students (0%) took the GRE.
3. None of the seniors took the GRE therefore they had not taken it by the fall of their senior year.
4. 1 out of 5 students (20%) submitted applications to graduate schools. 1 senior submitted applications to 1 graduate school.

Support

1. 5 out of 5 students (82%) participated in summer internships.
2. 4 students had an internship in summer 2008 and 4 students in summer 2009.

Additional Information

1. 4 out of 5 students (80%) had a minimum GPA of 3.0.
2. 0 out of 5 students (0%) received 1 or more honors and/or awards.
3. 0 out of 5 students (0%) had their research published.

Alliance-wide Graduate School Information

1. 4 out of 5 students (80%) had a minimum GPA of 3.0.
2. 1 out of 2 students (50%) that had been in the program for at least 2 summers had 2 or more internships over the summer. In addition, 2 juniors that were new to the program in fall 2008 had 2 summer internships.
3. 4 out of 5 students (80%) presented their research during the year.
4. 0 out of 1 senior (0%) took the GRE by the fall of their senior year.
5. 0 out of 1 senior (0%) submitted a minimum of 5 graduate school applications.
6. 1 out of 1 graduate (100%) was admitted to graduate school.

Southwestern Oklahoma State University

- 3 out of 4 students were included in this evaluation.
- All 3 students were juniors.
- 1 sophomore was not included in this evaluation.
- No students continued from spring to fall 2008, and 1 junior was new to the program in fall 2008.
- 1 junior continued to spring 2009, and 2 juniors were new to the program in spring 2009.
- 1 out of 1 student (100%) participating in fall 2008 received funding. 1 out of 3 students (33%) participating in spring 2009 received funding.
- No one graduated by spring 2009.

Research

1. 3 out of 3 students (100%) conducted research in fall 2008 and spring 2009
2. 1 out of 1 student (100%) who was in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 1 out of 3 students (33%) gave 1 or more presentations during the year. 1 junior gave 3 presentations.
4. 2 out of 3 students (67%) attended at least a conference or meeting during the year.

Grad Preparation

1. 0 out of 3 students (0%) participated in GRE prep classes.
2. 0 out of 3 students (0%) took the GRE.
3. 0 out of 3 students (0%) submitted applications to graduate schools.

Support

1. 3 out of 3 students (100%) participated in summer internships.
2. 1 student had an internship in summer 2008, 2 students in summer 2009, and 1 summer internship date is unknown.

Additional Information

1. 3 out of 3 students (100%) had a minimum GPA of 3.0.
2. 1 out of 3 students (33%) received 1 or more honors and/or awards.
3. 0 out of 3 students (0%) had their research published.

Alliance-wide Graduate School Information

1. 3 out of 3 students (100%) had a minimum GPA of 3.0.
2. 0 out of 0 students (0%) that had been in the program for at least 2 summers had 2 or more internships over the summer. However, 1 junior that was new to the program in January 2009 had 2 summer internships (1 unknown date and 2009).
3. 1 out of 3 students (33%) presented their research during the year.
4. 0 out of 0 seniors (0%) took the GRE by the fall of their senior year. There were no seniors participating.
5. 0 out of 0 seniors (0%) submitted a minimum of 5 graduate school applications. There were no seniors participating.
6. 0 out of 0 graduates (0%) were admitted to graduate school. There were no graduates.

University of Central Oklahoma

- 9 out of 14 students were included in this evaluation.
- 6 students were seniors and 3 students were juniors.
- 3 sophomores and 2 seniors who had graduated by the end of spring 2008 were not included in this evaluation.
- 2 juniors and 2 seniors continued from the spring to fall 2008, and 4 seniors and 1 junior were new to the program in fall 2008.
- 5 seniors and 3 juniors continued to spring 2009, and no students were new to the program in spring 2009.
- 7 out of 9 students (64%) participating in fall 2008 received funding. 8 out of 8 students (100%) participating in spring 2009 received funding.
- 1 senior graduated in fall 2008 and 1 senior graduated in May 2009.

Research

1. 9 out of 9 students (100%) conducted research in fall 2008, and 8 out of 8 students (100%) conducted research in spring 2009.
2. 5 out of 9 students (56%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 7 out of 9 students (73%) gave 1 or more presentations during the year. 1 junior gave 2 presentations. 1 junior and 1 senior gave 3 presentations.
4. 0 out of 9 students (0%) attended at least a conference or meeting during the year.

Grad Preparation

1. 1 out of 9 students (11%) participated in GRE prep classes.
2. 1 out of 9 students (27%) took the GRE.
3. The 1 junior who took the GRE took it by the fall of their senior year.
4. 1 out of 9 students (11%) submitted applications to graduate schools. 1 junior submitted applications to 3 graduate schools.

Support

1. 3 out of 9 students (33%) participated in summer internships.
2. 3 students had an internship in summer 2009.

Additional Information

1. 6 out of 9 students (67%) had a minimum GPA of 3.0.
2. 8 out of 9 students (89%) received 1 or more honors and/or awards.
3. 1 out of 9 students (11%) had their research published.

Alliance-wide Graduate School Information

1. 6 out of 9 students (67%) had a minimum GPA of 3.0.
2. 0 out of 4 students (0%) that had been in the program for at least 2 summers had 2 or more internships over the summer.
3. 7 out of 9 students (78%) presented their research during the year.
4. 0 out of 6 seniors (0%) took the GRE by the fall of their senior year. However, 1 junior did take the GRE.
5. 0 out of 6 seniors (0%) submitted a minimum of 5 graduate school applications.
6. 0 out of 2 graduates (0%) were admitted to graduate school.

University of Oklahoma

- 11 out of 12 students were included in this evaluation.
- 8 students were seniors and 3 students were juniors.
- 1 sophomore was not included in this evaluation.
- 5 seniors continued from the spring to fall 2008, and 3 seniors and 3 juniors were new to the program in fall 2008.
- 6 seniors and 3 juniors continued to spring 2009, and no students were new to the program in spring 2009.
- 10 out of 11 students (91%) participating in fall 2008 received funding. 8 out of 9 students (89%) participating in spring 2009 received funding.
- 2 seniors graduated in December 2008 and 1 senior graduated in May 2009.

Research

1. 11 out of 11 students (100%) conducted research in fall 2008, and 8 out of 9 students (89%) conducted research in spring 2009.
2. 4 out of 11 students (36%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 8 out of 11 students (73%) gave 1 or more presentations during the year. 1 junior and 1 senior gave 2 presentations. 3 seniors gave 3 presentations and 1 senior gave 4 presentations.
4. 2 out of 11 students (50%) attended at least a conference or meeting during the year.

Grad Preparation

1. 5 out of 11 students (45%) participated in GRE prep classes.
2. 3 out of 11 students (27%) took the GRE.
3. None of the seniors who took the GRE took it by the fall of their senior year.
4. 9 out of 11 students (82%) submitted applications to graduate schools. 1 senior submitted 5 applications, 1 junior and 3 seniors submitted 4 applications, 1 junior and 2 seniors submitted 2 applications, and 1 junior submitted 1 applications.

Support

1. 9 out of 11 students (82%) participated in summer internships.
2. 4 students had an internship in summer 2007, 6 students in summer 2008, and 8 students in summer 2009.

Additional Information

1. 10 out of 11 students (91%) had a minimum GPA of 3.0.
2. 8 out of 11 students (73%) received 1 or more honors and/or awards.
3. 0 out of 11 students (0%) had their research published.

Alliance-wide Graduate School Information

1. 10 out of 11 students (91%) had a minimum GPA of 3.0.
2. 6 out of 9 students (67%) that had been in the program for at least 2 summers had 2 or more internships over the summer.
3. 8 out of 11 students (73%) presented their research during the year.
4. 0 out of 8 seniors (0%) took the GRE by the fall of their senior year.
5. 1 out of 8 seniors (13%) submitted a minimum of 5 graduate school applications.
6. 1 out of 3 graduates (33%) were admitted to graduate school.

University of Tulsa

- 4 out of 10 students were included in this evaluation.
- 3 students were seniors and 1 student was a junior.
- 5 freshmen and 1 sophomore were not included in this evaluation.
- 3 seniors continued from the spring to fall 2008, and 1 junior was new to the program in fall 2008.
- 2 seniors and 1 junior continued to spring 2009, and no students were new to the program in spring 2009.
- 3 out of 4 students (75%) participating in fall 2008 received funding. 3 out of 3 students (100%) participating in spring 2009 received funding.
- 1 senior graduated in May 2009 and 1 senior graduated in summer 2009.

Research

1. 2 out of 4 students (50%) conducted research in fall 2008, and 2 out of 3 students (67%) conducted research in spring 2009.
2. 2 out of 4 students (50%) who were in the program in fall 2008 participated in the 14th Annual Research Symposium.
3. 2 out of 4 students (50%) gave 1 or more presentations during the year. 1 senior gave 4 presentations.
4. 2 out of 4 students (50%) attended at least a conference or meeting during the year.

Grad Preparation

1. 0 out of 4 students (0%) participated in GRE prep classes.
2. 1 out of 4 students (25%) took the GRE.
3. 1 senior who took the GRE took it by the fall of their senior year.
4. 1 out of 4 students (25%) submitted applications to graduate schools. 1 senior submitted applications to 5 graduate schools.

Support

1. 4 out of 4 students (100%) participated in summer internships.
2. 2 students had an internship in summer 2006, 3 students in summer 2007, 2 students in summer 2008, and one student in summer 2009.

Additional Information

1. 4 out of 4 students (100%) had a minimum GPA of 3.0.
2. 1 out of 4 students (25%) received 1 or more honors and/or awards.
3. 0 out of 4 students (0%) had their research published.

Alliance-wide Graduate School Information

1. 4 out of 4 students (100%) had a minimum GPA of 3.0.
2. 2 out of 3 students (67%) that had been in the program for at least 2 summers had 2 or more internships over the summer.
3. 2 out of 4 students (50%) presented their research during the year.
4. 1 out of 3 seniors (33%) took the GRE by the fall of their senior year.
5. 1 out of 3 seniors (33%) submitted a minimum of 5 graduate school applications.
6. 0 out of 2 graduates (0%) were admitted to graduate school.

APPENDIX J

BRIDGE TO THE DOCTORATE EVALUATION REPORT

**Louis Stokes Alliance for Minority Participation
Bridge to Doctorate
2008-2009
Formative Evaluation Report**

INTRODUCTION

The Program

The **Louis Stokes Alliance for Minority Participation (LSAMP) Bridge to Doctorate (BD)** at Oklahoma State University (OSU) has been designed and implemented to support twelve (12) LSAMP-BD students who have completed baccalaureate degrees and who desire to pursue and complete Ph.D. programs in a STEM field. These fields are in the areas of science, technology, engineering and mathematics. At OSU, the STEM options include all doctoral granting degrees in Agricultural Sciences, Chemistry, Computer Science, Engineering, Environmental Sciences, Life Sciences, Mathematics and related fields, and Physics/Astronomical Sciences.

After two years of initial funding from the National Science Foundation (NSF) for the LSAMP-BD program, OSU has assured students who continue will receive sufficient financial and academic support to complete doctoral degrees within approximately five years. OSU will also continue to provide extensive academic support specific to this group. They further assured that in accordance with NSF's goal to increase the number of LSAMP-BD students successfully completing terminal degrees in STEM fields, would give particular attention to the recruitment and support of Native Americans.

Program Objectives

To accomplish the overall goal of LSAMP-BD, LSAMP administrators formulated program objectives and corresponding activities to guide the program. To further realize the accomplishment of these objectives through their corresponding activities, the evaluators and program manager and data coordinator agreed as to what expectations were to result and are presented in Table 1.

Table 1: Louis Stokes Alliance for Minority Participation Bridge to Doctorate Program (LSAMP BD) Performance/Objectives, Activities and Expected Outcome

Performance/Objective	Activity	Expected Outcome
1: To recruit eligible LSAMP students with STEM baccalaureate degrees in a range of fields	1.1: Shared Database-The Program Manager will coordinate efforts among the graduate colleges of alliance institutions to share information about potential LSAMP students that will be part of a database on individual campuses	To share information about potential students with the graduate colleges of alliance institutions to enroll students from our specific mix of students in Oklahoma and also nationwide
	1.2: Website-OSU has already set up a sophisticated website for OK-LSAMP	To advertise and inform potential students nationwide about the BD opportunities at our institution
	1.3: Printed Materials-Handouts, pamphlets, and web-based information sheets to share with other LSAMP programs	To supplement recruitment materials for undergraduate LSAMP participants
2: To support individual students, academically and professionally, ensuring they build the connections and skills needed to excel in a	2.1: Regular Group Meetings- At least once per semester, students will be required to meet as a group with the Program Manager and PIs	To discuss group concerns and share feedback on the program

chosen career		
	2.2: Progress Reports-All BD students will be required to provide once-a-semester updates to the Program Manager	To keep the Program Manager informed, in a timely manner, of any issues impacting academic progress
	2.3: STEM Mentor Network-A wide-ranging network of faculty advisors for students will be developed and will include OK-LSAMP research mentors at national laboratories where relationships have been established through the alliance institutions, and through specific programs including the Oklahoma EPScoR program, and through individual researchers	To enhance recruitment efforts by identifying potential LSAMP students interested in Ph.D. programs. <i>Each student will be linked to identified mentors at the beginning of the program.</i>
	2.4: Interactive Web Page and Newsletter-The OSU web page for OK-LSAMP will be enhanced, incorporating a new on-line newsletter to link current students and alumni. May also host a Facebook, blog, or chat room	To be a prime dissemination and public relations channel, to build a community of shared experience, and to augment other mentoring approaches by facilitating peer-to-peer dialogue and conversation
	2.5: Annual meeting-Each spring the OK-LSAMP and BD programs will host a general meeting of all participants including students, faculty, mentors, potential students, and administrators.	To feature a keynote speaker, introduce students, present awards and fellowships, and announce other special presentations. Senior students will be encouraged to discuss the program with potential students
	2.6: GRAD 5992-All BD students will be required to enroll in this two-hour graduate course	To prepare students for careers in the professoriate
	2.7: BD Teaching Conference-During their academic training, each cohort will be required to attend a minimum of two spring teaching workshops specific to BD students	To present a lecture on a topic in their field with faculty and students providing critiques
	2.8: Ethics in Research Administration-A required annual presentation for which certificates of completion are awarded	To inform students about scientific integrity and responsible conduct of research
	2.9: Research Compliance Basics-A required annual presentation	To inform students about issues of compliance including export regulations, research misconduct, and the protocols of the Institutional Research Board (IRB)
	2.10: Graduate fellowship and Funding Opportunities-A required annual workshop at which university presenters will provide advice on how to locate graduate funding opportunities, prepare and submit competitive grants to federal and state agencies and other external	To provide information about National Science Foundation Graduate Research Fellowships, NSF Doctoral Dissertation Improvement Grants, and other nationally funded fellowships and grant opportunities

	fundors	
	2.11: Grant Writers' Seminar and Workshop-A required two-day workshop in the fall by professional grant writers' organization, underwritten by the VPRTT	To help faculty and students learn how to successfully prepare and submit competitive grants to federal and state agencies and other external funders
	2.12: Research Week-An annual event sponsored each fall by the VP for Research and Technology Transfer, which BD students are required to attend	To showcase BD students and provide them an opportunity to meet other graduate researchers, attend a wide variety of presentations, and gain experience in academic presentation
	2.13: Research Symposium-A one-day statewide research symposium hosted by OSU	To require students to make a poster or oral presentation and/or assist with Symposium activities as needed
	2.14: Graduate Certificate Option-An option to take 10 hours of designated <i>Education</i> or <i>International Studies</i> courses	To earn a graduate certificate in those programs in addition to students' primary degree
	2.15: Academic and Professional Conferences and Symposia-Students are encouraged to participate in and present their research at professional meetings at least once per year. OSU provides travel support	To develop professional, collegial networks that will serve as sources of future collaborations and peer review during students' careers
	2.16: Team Teaching-Senior students in the final year of their doctoral program will be expected to team teach with a faculty member	To teach a segment of the course, develop an exam, and receive confidential evaluations from faculty and students via OSU's Instructor Evaluation forms
	2.17: Summer Student Workshops- BD specific workshops in the summer that focus on integrating cultural pride and academic achievement by implementing suggestions drawn from students, mentors, and other sources such as the Native American Advisory Board	To connect students back with their communities, to provide additional networking opportunities and to provide in-service training by developing a dynamic partnership of community members, group role models, students, and mentors
	2.18: Graduate Research Fellows Program-BD students are strongly urged to apply to the NSF GRFP in their first year	To have all or the majority of students apply for this program
	2.19: Transfers from AGEF-For third year graduate students wishing to transfer into an AGEF	To be advised about opportunities and procedures to accomplish transfer
3: To ensure financial support for students in all years of their doctoral program (i.e., including years 3 and up to terminal degree)	3.1: Two-year total cost of \$1,002,000.00	To provide each student (as stipulated by NSF) \$30,000 per year (12 months) as an annual stipend
	OSU charges of \$10,500 per year/per student	To provide the following: -Resident tuition for 22 credit hours of graduate work: 9 hours/fall, 10 hours/spring, 3 hours/summer

		-7.92% fringe benefit on the stipend to provide single person health insurance -Travel to the annual NSF Human Resource Development Joint Annual Meeting (NSF-HRD-JAM) conference in Washington, DC -Travel and attendance to academic and research conferences as appropriate to the students' development and research interests (upon request of student's faculty mentor)
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Program Evaluators

The Program Manager invited the lead evaluator, Katie Perry, to evaluate the LSAMP-BD Program. The acceptance of this invitation also provided an opportunity to not only assist in this capacity, but to provide an additional opportunity to assemble a team of others with experience and an interest in program evaluation with the latter being a doctoral student pursuing a PhD in Educational Psychology. Specifically, the evaluation team members are:

Katie Perry, PhD
 Lead Evaluator
 Associate Professor
 REMS*

Mwarumba Mwavita, PhD
 Researcher & Evaluator
 Adjunct Professor
 REMS

Angela Watson, M.S.
 PhD Student Evaluator
 Educational Psychology

*REMS= Research, Evaluation, Measurement and Statistics

METHODOLOGY

Evaluation Participants

The evaluation of the LSAMP-BD program gained information from those directly involved in the implementation and impact of the program. Therefore, data sources came from the Program Manager, the Data Coordinator as well as from the BD Fellows with the LSAMP-BD Program. Specifically, they were:

LSAMP-BD Program Manager: Kay Porter
LSAMP-BD Data Coordinator: Fara Williams

Table 2: BD Fellow Evaluation Participants

Fellow	Ethnicity	Graduate School Major
Marcus Benjamin	African American	Chemistry
Zack Carpenter	Native American	Engineering
Scott Fine	Native American	Plant & Soil Management
Eric Gonzales	Hispanic	Physics
Jonathan Gonzales	Hispanic	Engineering
Matt Hough	Native American	Plant & Soil Management
Minh Ngo	Asian	Forensic Sciences
Richard Osei	African American	Computer Science
Cody Pinkerman	Native American	Mechanical & Aerospace Engineering
Michael Henry*	Native American	Management Information System
Shawna Hughes	African American	Food Sciences
Doug Yarholer	Native American	Engineering

*Michael Henry left the program after one semester (Spring, 2009) and did not return. Applications for possible Fellows to fill that position have been received and are under review. The successful applicant will begin the program August, 2009.

Evaluation Plan

The evaluation plan for the LSAMP-BD program was directed according to its objectives, corresponding activities and expected outcomes, while at the same time considering additional expectations of those managing the program. It was further established that this evaluation would be formative rather than summative. Formative evaluations are designed to collect information to monitor the implementation of the program and to help identify areas of maintenance and/or improvement by those in positions to make such decisions rather than to determine if the program should be terminated, resulting in a summative evaluation. With this approach, a **discrepancy evaluation model (DEM)** was chosen to guide the evaluation of the LSAMP-BD program. Ultimately, the DEM identifies ‘discrepancies’ between expected and actual outcomes once the program has been implemented. In other words, and more directly, this approach will see if the planned outcomes are realized as actual outcomes.

Evaluation Procedures

Given the breadth of the performance measures/objectives and expected outcomes of this program, the evaluators planned their efforts to focus on the three areas addressed within them and in turn related them to the program personnel and/or participants/fellows involved in the program. To this end, the objectives were categorized as those from whom answers would be solicited from the: 1) Program Manager; 2) Data Coordinator and/or 3) BD Fellows. Together, the evaluators determined the approach to be used to collect information (instrumentation) from each source as they also determined who among the three evaluators would be responsible for the collection and analyses of information collected as well. To this end, Katye Perry solicited information from the Program Manager; Mwarumba Mwavita solicited information from the Data Coordinator, while Angela Watson solicited information from the BD Fellows.

Instrumentation

The evaluators reviewed the performance measures/objectives and the activities associated with each, and then framed the activities as *expected outcomes* with corresponding questions (See Table 1). As shown in Table 3, these measures were then identified according to the most likely source from whom data would be obtained as a measure of the actual outcomes for each and the better method for this information to be best obtained.

Table 3: Louis Stoke Alliance for Minority Participation BD Program Data Source(s)

Performance/Objectives	Source	Method for Data Collection
1: To recruit eligible LSAMP students with STEM baccalaureate degrees in a range of fields	1: Data Coordinator BD Fellows	Online Survey Online Survey
2: To support individual students, academically and professionally, ensuring they build the connections and skills needed to excel in a chosen career	2.1-2.3: Program Manager BD Fellows 2.4-2.6: Data Coordinator BD Fellows 2.7-2.19: Program Manager Data Coordinator BD Fellows	Online Surveys for each source Program Manager and Data Coordinator worked together to provide answers to each inquiry. Ibid Online Survey
3: To ensure financial support for students in all years of their doctoral program (i.e., including years 3 and up to terminal degree)	Program Manager Data Coordinator BD Fellows	Online Survey for each source and additional in-person and/or phone contacts with Program Manager and/or Data Coordinator

Following a review of the questions, data were collected from the Program Manager (Appendix A), Data Coordinator (Appendix B) and BD Fellows (Appendix D and Appendix E) beginning in June, 2009. Specifically, surveys were developed to address the issues from whom answers could be best addressed by the Program Manager and Data Coordinator and were submitted to them electronically. The cover letter submitted electronically with the survey attached, further reiterated the purpose of the evaluation and how the information could be used. The procedures and results from these data sources will be presented under separate headings.

RESULTS

Data were collected from the Program Manager, Data Coordinator and BD Fellows commencing the last week in June, 2009 through the second week in September, 2009. The data were analyzed and evaluated according to the extent the expected outcomes for each performance/objective were aligned with the actual outcomes. A full account of the performance/objectives, corresponding activities, expected outcomes, questions that directed survey development, and actual outcomes are presented in Appendices A-F. The following is a summary of these findings beginning with the results from the Program Manager and Data Coordinator followed by data collected from the BD Fellows

Results from Program Manager and Data Coordinator

An examination of Appendix A shows the objectives, and expected outcomes for the three overall areas of the performance measure/objective that guide the OSU-LSAMP-BD Program were actualized during the 2008-2009 academic year. What was not realized was more often a result of timing in relation to the year in which the fellows were involved in the program and the time referenced in the objective or a delay in which the objective would be implemented. In summary, and by objective, the actual outcomes show the following:

Objective 1: To recruit eligible LSAMP students with STEM baccalaureate degrees in a range of fields.

- A **database, website and printed materials** were created and shared nationally, statewide, and locally for the purpose of recruiting eligible students for the LSAMP-BD Program for students with STEM baccalaureate degrees. **(1:1-1:3)**

To this end, no discrepancies were noted between the expected and actual outcomes for activities 1:1-1:3 as measures of Objective 1.

Objective 2: To support individual students, academically and professionally, ensuring they build the connections and skills needed to excel in a chosen career.

Several activities were planned to fulfill the intent of Objective 2. A summary of the outcomes, by activities, are as follows:

- Two **regular meetings** among the Program Manager, PIs and Fellows were held in the fall and spring semester of the 2008-2009 academic year **(2:1; 2.5)**. [*The Program Manager reported a need to check on the Plan of Study more closely to make sure BD Fellows were submitting this form*];
- **STEM Network links between faculty mentors and BD Fellows** were established **(2:3)**; and **connections with EPSCoR staff (2:11); interactive website and Facebook links** with Program Manager and Data Coordinator were established **(2.4)**;

- An interactive webpage, biannual /semester newsletter for all OSU-LSAMP were created, while a blog has not been created. However, both the Program Manager and Data Coordinator have Facebook pages. (2.4)
- BD Fellows have been **linked with faculty members/mentors on campus** [However, no reference was made regarding the network at national laboratories] (2.3); Interactive webpage & a newsletter were developed (2.4), and two annual meetings in the fall and spring of the 2008-2009 academic year were held for the LSAMP and BD Program (2.5);
- Five of the BD Fellows completed **GRAD 5992**, while those remaining will complete the course before ending the program (2.6); Neither of the BD Fellows **presented a lecture** this year but are expected to do so beginning in the 2009-2010 academic year (2.7);
- All BD Fellows will receive **training in Ethics in Research** the fall of the 2009-2010 academic year (2.8);
- During August, 2009, 10 of the 11 BD Fellows attended a **workshop that addressed Research Compliance (2.9) and Graduate fellowship and funding opportunities (2.10)**
- Two BD Fellows attended the **Grant Writer's Seminar (2.11)**, while 10 of the BD Fellows participated in **Research Week (2.12)**;
- Seven of the BD Fellows participated in the **OSU Research Symposium** in October, 2008 (2.13). Neither of the BD Fellows enrolled in courses for the **Graduate Certificate option**, but they will be monitored by the Program Manager and Data Coordinator (2.14).
- Ten of the BD Fellows participated in the **NSF Joint Annual Meeting** in June, 2009 (2.15)
- None of the BD Fellows are seniors, and so none **taught during their senior year**. However 4 of them team taught with their faculty mentors (2.16);
- Two of the BD Fellows spent the summer conducting **research in their local communities**, while the remaining BD Fellows were in classes during the summer. The Program Manager will monitor this connection during the 2009-2010 academic year (2.17);
- The BD Fellows who will be in their second year will complete **applications to the NSFGRFP** in the Fall of 2009-2010 (2.18), and
- To date, none of the BD Fellows **transferred from or into AGEP**. [Theses transfers are optional for the BD Fellows] (2.19).

Overall, the activities and actual outcomes for 2.1-2.19 for Objective 2 were met. There were very few discrepancies found between the expected and actual outcome measures for Objective 2. The few discrepancies found between them are to be addressed during the 2009-2010 academic year, and/or as the BD Fellows progress through the program.

Objective 3: To ensure financial support for students in all years of their doctoral program (i.e. **including years 3 and up to terminal degree**).

The Data Coordinator maintains a record of all the expenditure of funds for the BD Fellows. The funds are checked monthly against OSU FBM report to assure both records are reconciled. The Data Coordinator did indicate the following:

Currently, Fellows are provided \$30,000/year stipend, tuition, fees, and books for years 1 and 2. Afterwards, and for years 3 and 4 the transitioning from NSF to University funds will begin. Fellows will receive a 0.5 assistantship and \$10,000/year stipend and tuition, from the Graduate College. For Year 5, the Fellows will receive a 0.5 assistantship and \$5,000 stipend.

<p>There are no discrepancies between the expected and actual outcome measures of Objective 3. Therefore, Objective 3 continues to be met.</p>
