

2008

# PERFORMANCE EFFECTIVENESS REVIEW

## Oklahoma Louis Stokes Alliance for Minority Participation



Submitted to  
The National Science Foundation  
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2008

*PERFORMANCE EFFECTIVENESS REVIEW*

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

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## INTRODUCTION

The Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) experienced several changes during the 2007-2008 year. Changes occurred at all levels of the program, from a change in administration to the number of students recruited as undergraduate Scholars into the program statewide.

The most recognizable change occurred when Dr. Earl Mitchell, Jr. retired as Program Director and Principal Investigator after 14 years. Dr. Mitchell is recognized for his hard work and dedication to the goals and objectives of the LSAMP program. It is because of his initiative and support that the Oklahoma Alliance has been such a success.

Additional staff changes occurred when Dr. Valerie Shangreaux, who had worked with OK-LSAMP for eleven years, resigned as Program Manager to become the Director of Leadership Programs with the Blandin Foundation in Grand Rapids, Minnesota. Dr. Yousif Sheriff also left the OK-LSAMP program after serving for a number of years.

Dr. Myron Cherry, Northeastern State University and Dr. Ted Snider, Cameron University, retired in May, 2008. Both Campus Coordinators supported the OK-LSAMP program for 14 years. Dr. Cherry and Dr. Snider were part of the original planning team for the OK-LSAMP program.

Dr. Cornell Thomas, Vice President for Institutional Diversity, Oklahoma State University, assumed the role of Principal Investigator and Program Director. Before coming to OSU in 2005, Dr. Thomas was employed at Texas Christian University, where he not only held a position as Professor, but served as the Director of Affirmative Action and as Special Assistant to the Chancellor for Diversity and Community. Dr. Thomas brought with him a vast knowledge of diversity issues and a commitment to the students in Oklahoma to complete undergraduate degrees and continue in graduate programs.

Kay Porter began serving as the Program Manager in October, 2007. Kay received a Bachelor of Science degree in Trade and Industrial Education and a Master of Science degree in Occupational and Adult Education from OSU. She has been employed at OSU for several years, most recently with the NASA Aerospace Education Project. She is a member of the Potawatomi Tribe and serves as secretary to the OSU Native American Faculty and Staff Association and Chairperson of the Scholarship Committee.

Fara Williams, who was initially hired as the program Secretary, assumed the role of Data Coordinator. She received her Bachelor of Science degree in Elementary/Middle Level Science Education from OSU and has taught for several years in both private and public schools. Fara brings not only a science background into the program but skills in data collection and knowledge of office organization and computer usage.

The changes in the program have been positive and have made a definite impact on the program state-wide. With the stated goal of “*building new bridges connecting the Partners of the Oklahoma Alliance as well as Alliances around the nation*” much has been accomplished.



## 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. Partnerships include government agencies such as the Federal Aviation Administration (FAA), other universities, and private industry such as Duit Construction in Oklahoma and Sequoia Construction in California. Students 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. Programs included, but were not limited to:

**Avila University, Kansas City, Kansas** – Avila University is a private Catholic university in Kansas City, Missouri, sponsored by the Sisters of St. Joseph of Carondelet. Avila is a values-based community of learning, providing liberal arts, professional, undergraduate and graduate education to prepare students for responsible lifelong contributions to the global community. With a welcoming learning environment, students learn to be competent, yet compassionate professionals who work to make a difference in the world. ([www.avila.edu](http://www.avila.edu))

**Conoco-Phillips, Ponca City, Oklahoma** – Interns experience life in the working world. Conoco-Phillips cultivates top talent from the start and builds a workforce that will continue to lead the interns toward extraordinary futures. Internships provide the students with an opportunity to determine if the petroleum industry is where they want to be, provides unique and challenging projects that enrich their knowledge base about their field of study; and provides opportunities for networking and team building.

**Exxon Mobil, Houston, Texas** – 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](http://www.exxonmobil.com))

**Frontier Electronic Systems, Stillwater, Oklahoma** – Frontier Electronic Systems is an award-winning leader in the design and manufacture of innovative electronic systems and equipment for government and commercial customers. The company designs, manufactures and tests electronic products and systems for aerospace, maritime, and others worldwide. Key customers include: Department of Defense (DoD), NASA, Boeing, Lockheed, and Northrop-Grumman, International.

**General Motors Technical Center, Warren, Michigan** – Students are provided with practical work experience in an academic field of study deemed useful to General Motors. Work involves a variety of duties related to the student's field of study. Students classified as college interns work during a non-academic period not to exceed the amount of time equal to one academic term. (<http://www.gm.com>)

**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.

**Native Americans in the Biological Sciences (NABS), Stillwater, Oklahoma** – 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 two students for international research in 2008.

**New Mexico State University, Las Cruces, New Mexico** – A recent OK-LSAMP Scholar and now Bridge to the Doctorate Fellow is working with a current OK-LSAMP Scholar conducting research using predictive population harvest models derived from high-seas fisheries to determine the effort needed to manually remove and reduce a non-native, invasive species of fish [channel catfish, *Ictalurus punctatus*] from an inland fishery, the San Juan River.

**Oklahoma Center for Advancement of Science and Technology (OCAST), Oklahoma City, Oklahoma** – OCAST is a small, high-impact, technology-based economic development agency funded by state appropriations and governed by a board of directors with members from both the private and public sector. OCAST works in partnership with the private sector, higher education, Career Tech and the Oklahoma Department of Commerce. OCAST is the state's only agency whose sole focus is technology – its development, transfer and commercialization. ([ocast.ok.state.us](http://ocast.ok.state.us))

**OSU Center for Health Sciences (CHS), Tulsa, Oklahoma** – CHS, is a part of the Oklahoma State University system. CHS is a leading academic health center offering programs in osteopathic medicine and biomedical and forensic sciences.

**OSU Geology Department, Stillwater, Oklahoma** – OK-LSAMP students conducted research in Turkey through their involvement in the IRES: Research Opportunities in Extensional Dynamics for U.S. Undergraduates and Graduate Geosciences Students in Western Turkey (NSF-07-28519). The summer internship provides opportunities for students to travel to Turkey in order to conduct research on tectonic history and investigate the dynamics of extension within the earth's lithosphere. Additional students interned in Oklahoma conducting mapping. The Geology department has 11 full-time faculty and approximately 100 undergraduate students, most of whom are from the state of Oklahoma, many of whom are from Native American ancestry.

**Oklahoma State University - Oklahoma City (OSU-OKC), Oklahoma City, Oklahoma** – For the past several years, OSU-OKC has offered OK-LSAMP scholars the opportunity to register for an on-line GRE Preparation class at a reduced cost. Each Partner institution pays for tuition and text costs.

**Oklahoma State University Graduate College, Stillwater Campus** – The OSU Graduate College continues to invite OK-LSAMP scholars to participate in the OSU Research Symposium and to provide graduate school preparation and effective research presentation workshops for the Oklahoma LSAMP Program.

**University of Oklahoma Engineering Summer Bridge Program, Norman, Oklahoma** – 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 Graduate College, Norman, Oklahoma** – 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,

**Raytheon Space and Airborn Systems, Dallas, Texas** – Raytheon is a technology leader specializing in defense, homeland security, and other government markets throughout the world. With a history of innovation spanning more than 80 years, Raytheon provides state-of-the-art electronics, mission systems integration, and other capabilities in the areas of sensing; effects; command, control, communications and intelligence systems; as well as a broad range of mission support services. (www.raytheon.com)

**Sandia National Laboratories (SNL), Albuquerque, New Mexico** – Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin company, for the U.S. Department of Energy’s National Nuclear Security Administration. With main facilities in Albuquerque, New Mexico, and Livermore, California, Sandia has major research and development responsibilities in national security, energy and environmental technologies, and economic competitiveness. ([www.sandia.gov](http://www.sandia.gov))

**Schlumberger, Houston, Texas** – Schlumberger is the leading oilfield services provider, trusted to deliver superior results and improved E&P performance for oil and gas companies around the world. Through well site operations and research and engineering facilities, they are working to develop products, services and solutions that optimize customer performance in a safe and environmentally sound manner. (www.schlumberger.com)

**Sequoia Construction Company, Martinez, California** – The Sequoia Construction company models pipe systems for air and liquid disposal. The interns and project work are located on an underground navy base jet fuel cleanup site.

**University of Tulsa Junior Robotics Institute, Tulsa, Oklahoma** – 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.

**W. L. Gore and Associates, Elkton, Maryland** – Perhaps best known for its consumer products like GORE-TEX® fabric and ELIXIR® Strings, Gore is a leading manufacturer of thousands of advanced technology products for the electronics, industrial, fabrics and medical markets. The company creates next-generation cable assemblies and components for the electronics industry, sets the standard for outerwear comfort and

protection, and solves difficult industrial problems with innovative materials and technology, and Gore medical products work in harmony with the body's own tissues to restore normal body function. ([www.gore.com](http://www.gore.com))

## ACTIVITIES AND FINDINGS

OK-LSAMP has found continued requirements for students to participate in research activities and encouraging them to be aggressive in their own education has led to student enthusiasm in seeking graduate school information. After attending professional activities and meeting students like themselves, scholars return with a greater appreciation of who they are and what they can accomplish. Many of the students have never been far from home and occasionally, this is their first trip across the country.

Oklahoma continues to meet the NSF goal to increase the number of students completing degree programs in STEM fields from historically underrepresented groups. The Oklahoma Alliance had 107 Scholars in 2007-2008, with 48 Scholars completing the Bachelor of Science degree and 21 being admitted to graduate programs (Table 1).

Table 1. 2007-2008 Scholars by Institution, Graduates and Scholars Admitted to Graduate School

Institution	2007-2008		
	Scholars	Graduates	Admitted to Graduate School
Cameron University	7	2	2
East Central University	12	5	2
Langston University	18	5	1
Northeastern State University	7	7	0
Northwestern OSU	3	1	0
Southeastern OSU	8	1	0
Southwestern OSU	2	2	2
Oklahoma State University	24	11	10
University of Oklahoma	13	9	3
University of Central Oklahoma	7	1	0
University of Tulsa	6	4	1
Total	107	48	21

The 107 Scholars represent a total of 60 males and 47 females. The ethnic distribution for each reported category are: Native American – 39 (36%); African American – 37 (35%); Hispanic – 23 (21%); Pacific Islander – 3 (3%); More than One Race Reported – 1 (1%); and Non-Minority – 4 (4%). (Figure 1).

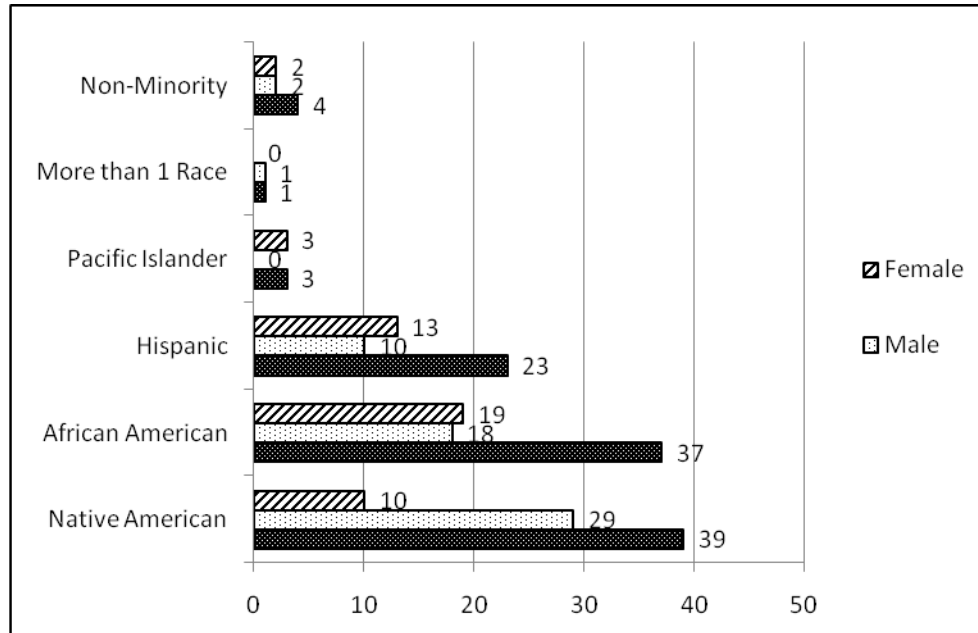


Figure 1. 2007-2008 Scholars by Ethnicity and Gender

Data reported by the Oklahoma State Regents for Higher Education (OSPRE) and reported to the National Science Foundation 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 (Appendix A).

OK-LSAMP Alliance institutions have awarded **7,730** (72% increase over time) Bachelor of Science degrees in STEM areas to minority and under-represented students during the past 14 years of the program. During the 2007-2008 academic year, 550 Bachelor of Science STEM degrees were awarded in Oklahoma (Figure 2).

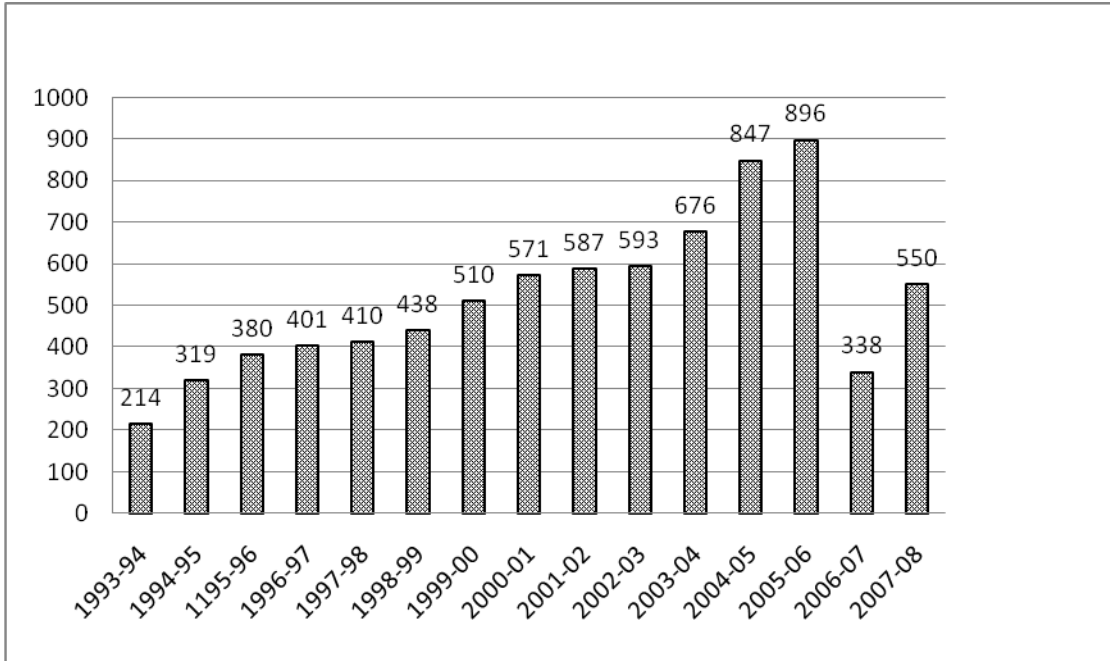


Figure 2. Number of Bachelor of Science STEM Degrees Awarded in Oklahoma from 1994 to 2008

A breakdown of degrees awarded by discipline by academic year are reported in Figure 3. The CIP codes used to determine the number of degrees awarded are classified into nine difference categories:

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

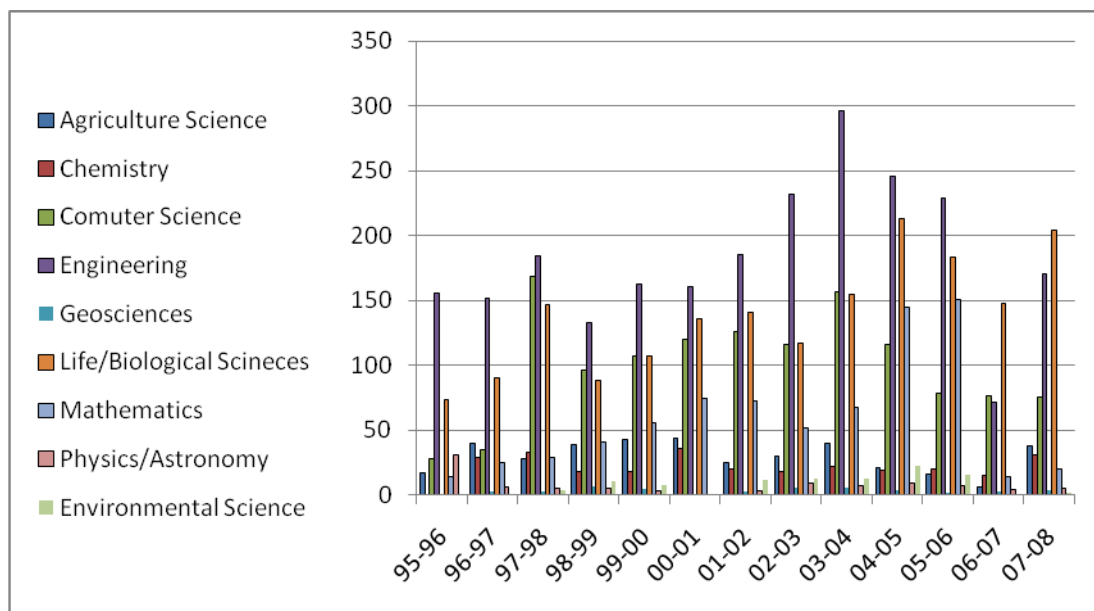


Figure 3. UREP/STEM Bachelor of Science Degrees by Discipline by Academic Year

## MAJOR RESEARCH AND EDUCATIONAL ACTIVITIES

The Oklahoma LSAMP's stated goal in Phase III is 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 in detail.

### 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 to spend time conducting research during the academic year. Students work directly in labs with their chosen mentors.

Activities/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 \$4,000.00 are 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.

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

Cameron University

- *Sylvia Chavana*, Chemistry, conducted research in the lab at Cameron University.
- *Robyn Edmonds*, Multi-Media Design, developed media presentations for the Oklahoma Center for Advancement of Science and Technology (OCAST), Oklahoma City, Oklahoma.
- *Paublo Rodriquez*, Biology, interned in the Biology Department at Cameron University.

East Central University

- *Anthony DiMambro*, Medical Physics, interned at ECU in the Physics Department.

Langston University

- *Marshall Bailey*, Biology, spent the summer at Howard University in the summer medical and dental enrichment program.
- *Felicia Epko*, Biology, interned with the University of Arkansas, Fayetteville, Arkansas, in a Micro-up REU program.
- *James Harding Junior*, Biology, conducted research at the University of North Texas in Denton, Texas.
- *Samuel Henderson*, Biology, conducted research at North Carolina State University in Raleigh, North Carolina.



- *Shabree Nichols*, Biology, conducted research at the University of North Texas in Denton, Texas.

#### Oklahoma State University

- *Bubba Brooks*, Microbiology, spent the summer conducting international research at the University of Wales and the University of Brighton. This research was also supported by the Native American in Biological Sciences (NABS) program.
- *Manny Cortez*, Mechanical Engineering, interned with Conoco-Phillips, Ponca City, Oklahoma.
- *Scott Fine*, Plant and Soil Science, interned with the Plant and Soil Science Department at Oklahoma State University assessing the benefits and functions of the wetland reserve program as it relates to soils in Oklahoma.
- *Jennifer Hackett*, Biochemistry, accepted an internship program with the OSU Center for Health Sciences in Tulsa, Oklahoma, conducting lab research in the area of forensics.
- *Matt Hough*, Plant and Soil Science, interned with the Plant and Soil Science Department at Oklahoma State University assessing the benefits and functions of the wetland reserve program as it relates to soils in Oklahoma.
- *Dalton Kelly*, Mechanical Engineering, was chosen to intern with General Motors Technical Center in Warren, Michigan, conducting research on the closing of car hoods.
- *Eric Kim*, Civil Engineering, interned with Conoco-Phillips, Ponca City, Oklahoma.
- *Meghan Liles*, Microbiology, conducted cereal research at Oklahoma State University.
- *Fred Love*, Electrical Engineering, conducted research with an engineering firm in the city of Tulsa.
- *Chris Mace*, Geology, interned with the OSU Geology Department conducting geometric OHM mapping in Oklahoma.
- *Lauren Miller*, Geology, traveled to Turkey to conduct geological research through the Geology Department.

- *Andrew Mixson*, Zoology/Psychology, conducted research on the effects of ethanol on honey bees in Slovenia. This research was also supported by the Native American in Biological Sciences (NABS) program.
- *Minh Ngo*, Biochemistry, was accepted at the OSU Center for Health Sciences in Tulsa, Oklahoma, to conduct research in the forensics lab.
- *Cody Pinkerman*, Mechanical and Aerospace Engineering, was supported by Frontier Electronic Systems in Stillwater, Oklahoma, to assist in the research of electronic products for the aerospace industry.
- *Valentin Sanchez*, Mechanical and Aerospace Engineering, continued his fall research project into the summer with the flight of the Pterosoar-B airplane.
- *Lauren White*, Environmental Sciences, conducted international research in Dominica. This REU project on the natural history of the herpetofauna was funded through Avila University in Kansas City, Kansas.
- *Spencer Williams*, Zoology, conducted tick research through the OSU Zoology Department.
- *Doug Yarholar*, Civil Engineering, interned with Duit Construction, Oklahoma, working with concrete.
- *Brett Walker*, Engineering, was accepted as an intern with Sandia National Laboratories.

#### Southeastern OSU

- *Chris Cheek*, Life Sciences, along with an OK-LSAMP alumni and Bridge to the Doctorate Fellow at New Mexico University in Las Cruces conducted research on the fish of the San Juan River.
- *Lauren Losawyer*, Zoology, interned with a non-profit cat rehabilitation center in Texas, working specifically with tigers. This research involved handling procedures as related to stress induced upon the animals.

#### University of Oklahoma

- *Juan Diego Alonso*, Chemical Engineering, interned with Sequoia Construction in Martinez, California. The computer modeling pipe systems for air and liquid disposal research was housed on an underground navy base.
- *Felix Betances*, Electrical Engineering, interned with the Federal Aviation Administration in Oklahoma City, Oklahoma.

- *Jonathan Compos*, Chemical Engineering, traveled to Elkton, Maryland to conduct research with W. L. Gore and Associates.
- *Robert McClure*, Engineering Physics, interned with Dr. Harold Stalford on the University of Oklahoma campus.
- *Shawna Ong*, Electrical Engineering, spent her internship in Dallas, Texas with Raytheon Space and Airborne Systems.
- *Jacob Spring*, Electrical Engineering, accepted an internship with the DSP groups of Sandia National Laboratories in New Mexico.
- *Michael Walden*, Industrial Engineering, interned with Schlumberger in Houston, Texas.
- *Scott Zacharie*, Engineering, interned as a Drilling Engineer with Exxon Mobil in Houston, Texas.

#### University of Tulsa

- *Matt Matlock*, Computer Science, accepted an industry internship with True Digital Security, Tulsa, Oklahoma.
- *Courtney Palmer*, Electrical Engineering, conducted research with the Geophysical Research Corporation, Tulsa, Oklahoma.
- *Scott Rainwater*, Electrical Engineering, was chosen to intern with the General Motors Technical Center, Warren, Michigan.

#### 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](http://www.ok-lsamp.okstate.edu) – Appendix B) for all Partner Institution use.
- Scholars continue to take advantage of the on-line Graduate Record Examination (GRE) preparation course offered at a reduced cost 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 (Appendix C).

- Scholar meetings implemented throughout the Alliance offered a forum for educational speakers and workshops focused on graduate school preparation and career development.
- Twenty-one 2007-2008 OK-LSAMP scholars were accepted to graduate schools throughout the nation. Examples include:
  - Harvard
  - University of Illinois
  - Kansas State University
  - OSU Center for Health Sciences
  - OSU
  - OU

### 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 Oklahoma State University Annual Research Symposium offered workshops focusing specifically on Graduate Education.
- The opening session of the Annual Research Symposium addressed Scientific Integrity and Ethics.
- Partner Institution Scholars were provided opportunities to attend lectures on Ethics during monthly Scholar's meetings.
- The University of Tulsa developed a course, *ES 4001: Research Ethics*. The course was developed and taught by Dr. J. C. Diaz, OK-LSAMP Campus Coordinator for TU.
- Dr. Carl Rutledge, developed an Ethics Workshop and traveled to Alliance Institutions to present the workshop to Scholars and faculty, as well as others interested in research ethics (Appendix D).

- Scholars throughout the Alliance continue to be encouraged and supported in traveling to visit graduate schools.
- Scholars are required to submit five applications to graduate schools during their senior year.
- Laticia Rivera, OSU; attended the National Conference on Undergraduate Research, Salisbury University, Maryland, April 10-12, 2008. The oral presentation was entitled: *Expression, purification and characterization of a protein from the insect lipid droplets, LSD.*
- Matt Butler, University of Tulsa, presented at the National Conference on Undergraduate Research in Salisbury University, Maryland, April 10-12, 2008. The oral presentation was entitled: *Extended attribute trees for risk adaptive access control.*
- Thomas Kantowaski, University of Tulsa, participated in the poster presentations at the National Conference on Undergraduate Research in Salisbury University, Maryland, April 10-12, 2008. The poster was entitled: *Modl: Modeling data layer.*
- Matt Matlock, University of Tulsa, presented at the National Conference on Undergraduate Research in Salisbury University, Maryland, April 10-12, 2008. The oral presentation was entitled: *Effective tag mechanisms for evolving cooperation.*
- Quinn Woodard was recognized as one of the Top Ten Outstanding Freshmen at the University of Tulsa for 2007-2008
- Several Scholars from across the Alliance participated in the Oklahoma Academy of Science Research Conference, November 2, 2007, in Tulsa, Oklahoma, with either poster or oral presentations.
- Felix de laCruz, Steven Harris, Desmond Harvey, and, Shawn McCarroll, University of Oklahoma Bridge to Doctorate Fellows, attended the National Science Foundation Joint Annual Meeting (JAM) June 16, 2008, in Washington, D.C.
- Shawn McCarroll, participated in the poster presentation at the National Science Foundation Joint Annual Meeting (JAM) June 16, 2008, in Washington, D.C. The poster was entitled: *a Progress Report on the Development of Compression Strategies for Super-Resolution and Dual-Polarization WSR-88D Radar Data.*
- Bridge to the Doctorate Fellows are required to attend at least one Joint Annual Meeting (JAM) in Washington, D.C. The meeting is held in June of each year and brings together BD Fellows and Program Administrators to allow for

networking and peer support. Each state Alliance presents a poster of BD activities and highlights (Appendix E).

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

Common program components, shared resources and coherence among Partner 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 Partner 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 Partner Institutions offer Scholars 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.
- 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 at a reduced cost to the Alliance. 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.

### Shared Resources

Inter-institutional collaboration - each summer a number of scholars conduct internships at Partner Institutions. Each Partner Institution is funded to offer summer

internship opportunities on their campus, but, because of inter-institutional collaboration, scholars may also conduct research on Alliance Partner 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.

### Coherence of Program

- Alliance meetings with the Principal Investigator and Campus Coordinators, held in Oklahoma City, are a forum for ongoing communication on overall program operation and specific program implementations on each campus.
- Periodic teleconferences are held with Campus Coordinators to discuss Alliance activities, seek input and suggestions.
- A web page, maintained by OSU as lead institution has been developed. 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](http://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.
- A data system developed for the Alliance with information on current and alumni Scholars and Bridge to the Doctorate Fellows is available. Information includes, but is not limited to: major, presentations at workshops/conferences, internships, grades, degrees awarded and graduate school applications (Appendix F).

## EVIDENCE OF INSTITUTIONALIZATION

### AND OUTREACH

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

- The Oklahoma Alliance joined the Fulbright Academy of Science and Technology (FAST). This joint membership will help advance science and technology by creating linkages among Fulbright scholars and the institutions that host or employ Fulbright scholars or send faculty and/or scholars abroad as Fulbrighters (Appendix G).

- East Central University (ECU) Vice President of Academic Affairs has made college work-study funds available to all 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.
- Northwestern OSU began a “Ranger Research” day focusing on undergraduate research.
- Other programs which have research components and faculty are now seeking OK-LSAMP scholars for research projects. Selected examples include:
  - 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.
  - Campus Coordinators statewide reported receiving several requests from research faculty for OK-LSAMP students to work with on-going research projects.
- The Program Director position at OSU has been fully funded by OSU.
- The Program Manager position at OSU continues to be an institutional position.
- 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. Additionally, an ethics workshop was developed and presented to alliance institutions.
- Dr. Sharon Lewis, Langston University, for the fourth year hosted three students for one month in the chemistry lab at Langston University. At the completion of the program each student received \$1300. Two students were supported by the Academy of Applied Sciences, Research and Engineering Apprenticeship Program (REAP) and one student was supported by a Warm Mix Asphalt grant in which Dr. Lewis is PI. Students learned about: bioinformatics, molecular biology and asphalt chemistry.



- Dr. P. Simin Pulat, Co-PI and Campus Coordinator, 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.
- Dr. J. C. Diaz held a 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.
- 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 members of the LSAMP Alliance 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.
- A database was created to maintain Oklahoma LSAMP SCHOLAR and BD Fellow information. Information collected includes: contact, demographic, and degree information, research conducted and 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 other 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 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).
- The Inclusion Center for Academic Excellence provides workshops, counseling, and assistance to all OSU students.

## 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.

## 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 below and in Appendix H):

Abramson, C., **Mixson, T.A.**, Cakmak, I., Place, A.J., & Wells, H. (2008). *Pavlovian conditioning of the proboscis Extension Reflex in harnessed foragers using paired vs. unpaired and discrimination learning paradigms: Tests* Apidologie, Vol. 39, pp. 428-435.

Abramson, C., **Mixson, T. A.**, Cakmak, I., & Wells, H. (2007). *The use of honey bees to teach principles of learning*. Uludag Bee Journal, Vol. 7, pp. 126-131.

Arrese, E., **Rivera, L.**, Hamada, M. & Soulage, J. (2008). *Function and structure storage droplet protein 1 studied in lipoprotein complexes*. Archives of Biochemistry and Biophysics, Vol. 473, pp. 42-47.

Arrese, E. & **Rivera, L.** (In press). *Purification and characterization of recombinant lipid storage protein-2 from drosophila melanogaster*. Protein and Peptide Letters.

- Arrese, E., Mirza, S., **Rivera, L.**, Howard, A.D., Palaniappan, H., Cherry, S., & Soulages, J. L. (In press). *Expression of lipid storage droplet protein-1 may define the role of AKH as a lipid mobilizing hormone in Manduca sexta*. *Insect Biochemistry and Molecular Biology*.
- Lewis, S. A.** & Ognibene, C. (2008). *Bioinformatics of Bipolar Disorder*. Oklahoma City, OK: Mid-South Computational Biology and Bioinformatics Society.
- Patton, T. M.** and Lyday, C. L. (In Press). *Ecological Succession and fragmentation in a reservoir: effects of sedimentation on habitats and fish communities*. Proceedings of the Fourth International Reservoir Symposium. Bethesda, MD: American Fisheries Society.
- Rutledge, C. T.**, and Weems, B. (2007). *Experiments and Observations in Astronomy*. Ada, OK: East Central University Physics Department.
- Wilson, G. M.**, Boyd, K. S., Caire, W. & VanDeen Bussche, R.A. (2007). *Lack of population genetic variation in the bat fly (trichobius major) in Kansas, Oklahoma, and Texas based DNA sequence data for the cytochrome oxidase I (COI) and NADH dehydrogenase 4 (ND4) genes*. Proceedings of the Oklahoma Academy of Science, 87:31-36.
- Garic, J. M. & **Wilson, G. M.** (2007). *What business do IEBs have in business*. Business Review, Journal of St. Joseph's College of Business Administration, 2:117-125.
- Astley, R. A., Chodosh, J., Caire, W. & **Wilson, G. M.** (2007). *Conjunctival lymphoid follicles in new world rodents*. The Anatomical Record, 290:1190-1194.

## 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 Calonkey*, Bridge to the Doctorate Program Coordinator, the University of Oklahoma, attended the Joint Annual Meeting in Washington, D.C. June, 2008.

*Kay Porter*, Program Manager, completed: (1) Ethics in Research Workshop, (2) a Grant Writing Workshop sponsored by the Oklahoma Experimental Program to Stimulate Competitive Research (EPSCoR), and (3) attended the Joint Annual Meeting in Washington, D.C., June 2008.

*Cornell Thomas*, Program Director, (1) completed an Ethics in Research Workshop, (2) attended several national conferences on access of under-represented student populations, (3) initiated programs to increase efforts for external funding, (4) focused initiatives to insure internships with Williams Companies and ConocoPhillips, (5) supported five students for study abroad activities with funding from the Vice President for Institutional Diversity office.

*Fara Williams*, Data Coordinator, completed two series of professional development trainings offered at OSU through the Human Resources Department. The Basic Research Administration Program consisted of 12 two-hour classes focusing on the administration of grant programs. Classes included: Dealing with Private Sponsors, Ethics in Research, Grant budgeting Basics, Grants.gov and eRA, Intellectual Property Basics, and Research Compliance Basics. The HRStar Program consisted of four classes focusing on the process of payroll. Classes included: HRS Time Input and Confirmation, Employment Action Forms and Payroll Signup, Payroll Processing and Payroll Accounting. Additionally, Fara completed: (1) Ethics in Research Workshop, (2) a Grant Writing Workshop sponsored by the Oklahoma Experimental Program to Stimulate Competitive Research (EPSCoR), and (3) attended the Joint Annual Meeting in Washington, D.C., June 2008.

## ANNUAL RESEARCH SYMPOSIUM

The 13<sup>th</sup> Annual Research Symposium was held September 15, 2007, on the Oklahoma State University, Stillwater campus. The Symposium welcomed 63 attendees for a full day of workshops, poster and oral presentations, ethics training and guest speakers. Dr. Shelly Wear, Special Programs Coordinator, Oklahoma State Regents for Higher Education, spoke on EPSCoR and how the program is able to support OK-LSAMP Scholars to attend conferences where they are presenting research findings. Dr. Earl Mitchell presented an Ethics in Research workshop. Attendees included: 14 faculty, 2 staff, 1 post-doctoral student, and 45 Scholars. There were 19 poster presentations and 19 oral presentations.

## SCHOLAR HIGHLIGHTS

*Juan Diego Alonso*, University of Oklahoma, received the Pacific Care Scholar for 2008, AGA Scholarship, UROP Student Award, and became a Henderson Scholar.

*Brandon "Bubba" Brooks, Jennifer Hackett, Chris Mace, Aimee McGrath, & Andrew Mixson*, Oklahoma State University, were each awarded the WENTZ Scholarship.

*Lethanial Brumfield*, Langston University was awarded the 2007 UNCF/MERCK Undergraduate Science Research Award. In addition, he was award the NASA Motivating Undergraduate Science and Technology Scholarship.

*Sylvia Chavana*, Cameron University, was listed in the 2008 Who's Who for College Students.

*Jonathan Compos*, University of Oklahoma, received the Shell Incentive Scholar Award.

*Manny Cortez*, Oklahoma State University, received the Executive of the Year award at the annual OSU Minority Engineering Program banquet and a ConocoPhillips Spirit Scholarship.

*Dalton Kelly*, Oklahoma State University, was selected as a Gates Millennium Scholar and also received a General Motors Fellowship Scholarship.

*Eric Kim*, Oklahoma State University, received a ConocoPhillips Spirit Scholarship for 2008.

*Andrew Mixson*, Oklahoma State University, received the Outstanding Junior in the Zoology Department. Additionally, he is the founding member of Beta Beta Beta, a national biological honor society at OSU.

*Lauren Miller & Doug Yarholar*, Oklahoma State University, received OSU Native American Faculty and Staff Association Undergraduate Scholarships.

*Shamara Manora*, University of Oklahoma, received honors as an Henderson Scholar, Outstanding National Society of Black Engineers Outstanding Senior, and a McNair Scholar.

*Annette Moulder*, Cameron University, was listed in Who's Who, 2008, for College Students and in the 2008 Non-Traditional Who's Who College Students.

*Audrey Myers*, East Central University, was awarded the Top Ten Senior Award and was a George Nigh Award finalist.

*Cody Pinkerman*, Oklahoma State University, served as the Propulsion Lead member of the Orange Team for OSU's entrance into the American Institute of Aeronautics and Astronautics, the Design, Build, Fly Competition. The Orange Team took 3<sup>rd</sup> place in Kansas, April, 2008.

*Valentin Sanchez*, Oklahoma State University, was a member of the Pterosoar Team which broke the world record for a point and return range mission in September, 2007.

*David Supeck*, Southwestern Oklahoma State University, received a grant from NASA.

*Jacob Spring*, University of Oklahoma, was chosen as the American Indian Science and Engineering Society (AISES) Outstanding Senior.

*Michael Walden*, University of Oklahoma, received the 2008 Most Outstanding Industrial Engineering Senior.

*Brett Walker*, Oklahoma State University, was inducted into the Minority Engineering Program Hall of Fame.

*Doug Yarholar*, Oklahoma State University, received the Oklahoma Asphalt Paving Association Scholarship.

## BRIDGE TO DOCTORATE PHASE III SUPPLEMENT

In July 2004, the Oklahoma Louis Stokes Alliance received funding for a Bridge to the Doctorate (BD) program at Oklahoma State University for 12 Fellows. The following year, the University of Oklahoma became the second BD site in the Oklahoma Alliance to also select 12 Fellows for the program (Appendix I).

Bridge to the Doctorate students 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.

NSF awarded a Cohort VI to Oklahoma State University in June, 2008, for an additional 12 Fellows (Appendix J).

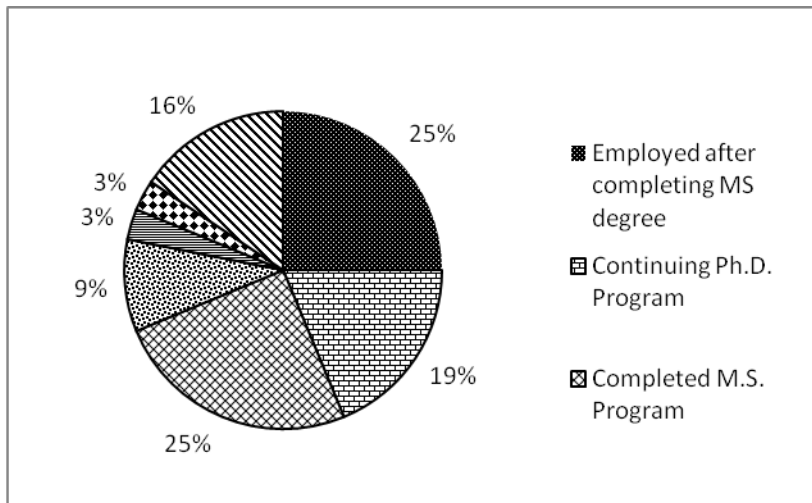


Figure 4. Bridge to the Doctorate Fellows Graduation Progress

### Oklahoma State University Bridge to the Doctorate Students

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, 2009. 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, will complete Ph.D. program requirements in December, 2008.

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, completed departmental requirements and is currently working on his research project. Graduation is anticipated in May, 2009.

Thomas Patten, Electrical Engineering, is currently working on his research. Ph.D. graduation is anticipated in May, 2009.

Lila Peal, Biochemistry and Molecular Genetics, will complete Ph.D. requirements in May, 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, anticipates completing requirements for the Master of Science degree in December, 2008.

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

Twelve former LSAMP Scholars began the BD program at the University of Oklahoma as Cohort III 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, is currently working on his course requirements and research project. His anticipated graduation for the Master of Science degree is May, 2009.

Steven Harris, Biochemistry, is currently working on his course requirements and research with an anticipated Ph.D. graduation date of May, 2009.

Jacob Henderson, Electrical and Computer Engineering, has an anticipated Master of Science completion date of May, 2009.

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

Quintin Hughes, Industrial Engineering, is currently completing course requirements and thesis research with an anticipated Master of Science completion date of May, 2009.

Kevin James, Electrical and Computer Engineering, has an expected completion of the Master of Science degree in May, 2009.

Shawn McCarroll, Computer Science, has an expected completion of the Master of Science degree in May, 2009.

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.



## EVALUATION PROCEDURES

To ensure the accomplishment of planned outcomes, a vigorous evaluation component was implemented for Phase III of the OK-LSAMP program. Evaluation is an ongoing process, with information gathered on a regular basis and provided to the evaluator. Evaluation of the OK-LSAMP program is conducted by the Center for Institutional Data Exchange and Analysis in Norman, Oklahoma. Dr. Rosemary Hayes, Director, works closely with the Data Coordinator to obtain the necessary information for the evaluation reports. Data collected from all Alliance institutions on number of scholars, degrees conferred, enrollment, performance, retention, and graduate school preparation, and graduate school applications are used for reports. A copy of the 2007-2008 evaluation is found in Appendix K.

## APPENDIXES

APPENDIX A

CIP CODES

<b>CIP_2000</b>	<b>CIP_DESCRIPTION</b>
010901	Animal Sciences, General
010902	Agricultural Animal Breeding
010903	Animal Health
010904	Animal Nutrition
010905	Dairy Science
010906	Livestock Management (NEW)
010907	Poultry Science
010999	Animal Sciences, Other
011001	Food Science
011002	Food Technology and Processing (NEW)
011099	Food Science and Technology, Other (NEW)
011201	Soil Science and Agronomy, General
011202	Soil Chemistry and Physics (NEW)
011203	Soil Microbiology (NEW)
011299	Soil Sciences, Other (NEW)
019999	Agriculture, Agriculture Operations, and Related Sciences, Other
030101	Natural Resources/Conservation, General
030103	Environmental Studies (NEW)
030104	Environmental Science (NEW)
030201	Natural Resources Management and Policy
030204	Natural Resource Economics (NEW)
030205	Water, Wetlands, and Marine Resources Management (NEW)
030206	Land Use Planning and Management/Development (NEW)
030299	Natural Resources Management and Policy, Other
030301	Fishing and Fisheries Sciences and Management
030501	Forestry, General
030502	Forest Sciences and Biology
030506	Forest Management/Forest Resources Management
030508	Urban Forestry (NEW)
030509	Wood Science and Wood Products/Pulp and Paper Technology
030510	Forest Resources Production and Management (NEW)
030511	Forest Technology/Technician (NEW)
030599	Forestry, Other
030601	Wildlife and Wildlands Science and Management
039999	Natural Resources and Conservation, Other
110101	Computer and Information Sciences, General
110102	Artificial Intelligence and Robotics (NEW)
110103	Information Technology (NEW)
110199	Computer and Information Sciences, Other (NEW)
110401	Information Science/Studies
110701	Computer Science
140101	Engineering, General
140201	Aerospace, Aeronautical and Astronautical Engineering
140301	Agricultural/Biological Engineering and Bioengineering
140401	Architectural Engineering
140501	Biomedical/Medical Engineering
140601	Ceramic Sciences and Engineering
140701	Chemical Engineering
140801	Civil Engineering, General
140802	Geotechnical Engineering
140803	Structural Engineering
140804	Transportation and Highway Engineering
140805	Water Resources Engineering
140899	Civil Engineering, Other
140901	Computer Engineering, General

140902	Computer Hardware Engineering (NEW)
140903	Computer Software Engineering (NEW)
140999	Computer Engineering, Other (NEW)
141001	Electrical, Electronics and Communications Engineering
141101	Engineering Mechanics
141201	Engineering Physics
141301	Engineering Science
141401	Environmental/Environmental Health Engineering
141801	Materials Engineering
141901	Mechanical Engineering
142001	Metallurgical Engineering
142101	Mining and Mineral Engineering
142201	Naval Architecture and Marine Engineering
142301	Nuclear Engineering
142401	Ocean Engineering
142501	Petroleum Engineering
142701	Systems Engineering
142801	Textile Sciences and Engineering
143101	Materials Science
143201	Polymer/Plastics Engineering
143701	Operations Research
149999	Engineering, Other
260101	Biology/Biological Sciences, General
260102	Biomedical Sciences, General (NEW)
260202	Biochemistry
260203	Biophysics
260204	Molecular Biology
260301	Botany/Plant Biology
260305	Plant Pathology/Phytopathology
260307	Plant Physiology
260308	Plant Molecular Biology (NEW)
260399	Botany/Plant Biology, Other
260401	Cell/Cellular Biology and Histology
260403	Anatomy
260404	Developmental Biology and Embryology (NEW)
260405	Neuroanatomy (NEW)
260406	Cell/Cellular and Molecular Biology (NEW)
260407	Cell Biology and Anatomy (NEW)
260499	Cell/Cellular Biology and Anatomical Sciences, Other
260502	Microbiology, General (NEW)
260503	Medical Microbiology and Bacteriology (NEW)
260504	Virology
260505	Parasitology
260506	Mycology (NEW)
260507	Immunology
260599	Microbiological Sciences and Immunology, Other (NEW)
260701	Zoology/Animal Biology
260702	Entomology
260707	Animal Physiology (NEW)
260708	Animal Behavior and Ethology (NEW)
260709	Wildlife Biology (NEW)
260799	Zoology/Animal Biology, Other
260801	Genetics, General (NEW)
260804	Animal Genetics (NEW)
260805	Plant Genetics (NEW)
260806	Human/Medical Genetics

260901 Physiology, General (NEW)  
 260902 Molecular Physiology (NEW)  
 260903 Cell Physiology (NEW)  
 260904 Endocrinology (NEW)  
 260905 Reproductive Biology (NEW)  
 260906 Neurobiology and Neurophysiology (NEW)  
 260907 Cardiovascular Science (NEW)  
 260908 Exercise Physiology (NEW)  
 260909 Vision Science/Physiological Optics (NEW)  
 260910 Pathology/Experimental Pathology (NEW)  
 260911 Oncology and Cancer Biology (NEW)  
 260999 Physiology, Pathology, and Related Sciences, Other (NEW)  
 261001 Pharmacology  
 261004 Toxicology  
 261101 Biometry/Biometrics  
 261102 Biostatistics  
 261201 Biotechnology  
 261301 Ecology  
 261302 Marine Biology and Biological Oceanography  
 261303 Evolutionary Biology  
 261309 Epidemiology  
 269999 Biological and Biomedical Sciences, Other  
 270101 Mathematics, General  
 270102 Algebra and Number Theory (NEW)  
 270103 Analysis and Functional Analysis (NEW)  
 270104 Geometry/Geometric Analysis (NEW)  
 270105 Topology and Foundations (NEW)  
 270199 Mathematics, Other (NEW)  
 270301 Applied Mathematics  
 270303 Computational Mathematics (NEW)  
 270399 Applied Mathematics, Other  
 270501 Statistics, General  
 270502 Mathematical Statistics and Probability (NEW)  
 270599 Statistics, Other (NEW)  
 279999 Mathematics and Statistics, Other  
 301901 Nutrition Sciences  
 302401 Neuroscience  
 400201 Astronomy  
 400202 Astrophysics  
 400203 Planetary Astronomy and Science (NEW)  
 400299 Astronomy and Astrophysics, Other (NEW)  
 400501 Chemistry, General  
 400502 Analytical Chemistry  
 400503 Inorganic Chemistry  
 400504 Organic Chemistry  
 400506 Physical and Theoretical Chemistry  
 400507 Polymer Chemistry  
 400508 Chemical Physics (NEW)  
 400599 Chemistry, Other  
 400601 Geology/Earth Science, General  
 400602 Geochemistry  
 400603 Geophysics and Seismology  
 400604 Paleontology  
 400605 Hydrology and Water Resources Science (NEW)  
 400606 Geochemistry and Petrology (NEW)  
 400607 Oceanography, Chemical and Physical

400699 Geological and Earth Sciences/Geosciences, Other  
 400801 Physics, General  
 400802 Atomic/Molecular Physics  
 400804 Elementary Particle Physics  
 400805 Plasma and High-Temperature Physics  
 400806 Nuclear Physics  
 400807 Optics/Optical Sciences  
 400808 Solid State and Low-Temperature Physics  
 400809 Acoustics  
 400810 Theoretical and Mathematical Physics  
 400899 Physics, Other  
 409999 Physical Sciences, Other  
 010000 Agriculture, General  
 010801 Agricultural and Extension Education Services  
 011101 Plant Sciences, General  
 011102 Agronomy and Crop Science  
 011103 Horticultural Science  
 011104 Agricultural and Horticultural Plant Breeding (NEW)  
 011105 Plant Protection and Integrated Pest Management  
 011106 Range Science and Management  
 011199 Plant Sciences, Other  
 030199 Natural Resources Conservation and Research, Other (NEW)  
 110201 Computer Programming/Programmer, General  
 110202 Computer Programming, Specific Applications (NEW)  
 110203 Computer Programming, Vendor/Product Certification (NEW)  
 110299 Computer Programming, Other (NEW)  
 110301 Data Processing and Data Processing Technology/Technician  
 110501 Computer Systems Analysis/Analyst  
 110601 Data Entry/Microcomputer Applications, General (NEW)  
 110602 Word Processing (NEW)  
 110699 Data Entry/Microcomputer Applications, Other (NEW)  
 110801 Web Page, Digital/Multimedia and Information Resources Design (NEW)  
 110802 Data Modeling/Warehousing and Database Administration (NEW)  
 110803 Computer Graphics (NEW)  
 110899 Computer Software and Media Applications, Other (NEW)  
 110901 Computer Systems Networking and Telecommunications (NEW)  
 111001 System Administration/Administrator (NEW)  
 111002 System, Networking, and LAN/WAN Management/Manager (NEW)  
 111003 Computer and Information Systems Security (NEW)  
 111004 Web/Multimedia Management and Webmaster (NEW)  
 111099 Computer/Information Technology Services Administration and Management, Other  
 119999 Computer and Information Sciences and Support Services, Other  
 143301 Construction Engineering (NEW)  
 143401 Forest Engineering (NEW)  
 143501 Industrial Engineering (NEW)  
 143601 Manufacturing Engineering (NEW)  
 143801 Surveying Engineering (NEW)  
 143901 Geological/Geophysical Engineering (NEW)  
 150000 Engineering Technology, General  
 150101 Architectural Engineering Technology/Technician  
 150201 Civil Engineering Technology/Technician  
 150303 Electrical, Electronic and Communications Engineering Technology/Technician  
 150304 Laser and Optical Technology/Technician  
 150305 Telecommunications Technology/Technician (NEW)

150399 Electrical and Electronic Engineering Technologies/Technicians, Other  
 150401 Biomedical Technology/Technician  
 150403 Electromechanical Technology/Electromechanical Engineering Technology  
 150404 Instrumentation Technology/Technician  
 150405 Robotics Technology/Technician  
 150499 Electromechanical and Instrumentation and Maintenance  
 Technologies/Technicians, Other  
 150501 Heating, Air Conditioning and Refrigeration Technology/Technician  
 (ACH/ACR/ACHR/HRAC/HVAC/AC Technology)  
 150503 Energy Management and Systems Technology/Technician  
 150505 Solar Energy Technology/Technician  
 150506 Water Quality and Wastewater Treatment Management and Recycling  
 Technology/Technician  
 150507 Environmental Engineering Technology/Environmental Technology  
 150508 Hazardous Materials Management and Waste Technology/Technician  
 150599 Environmental Control Technologies/Technicians, Other  
 150607 Plastics Engineering Technology/Technician  
 150611 Metallurgical Technology/Technician  
 150612 Industrial Technology/Technician (NEW)  
 150613 Manufacturing Technology/Technician (NEW)  
 150699 Industrial Production Technologies/Technicians, Other  
 150701 Occupational Safety and Health Technology/Technician  
 150702 Quality Control Technology/Technician  
 150703 Industrial Safety Technology/Technician (NEW)  
 150704 Hazardous Materials Information Systems Technology/Technician  
 150799 Quality Control and Safety Technologies/Technicians, Other  
 150801 Aeronautical/Aerospace Engineering Technology/Technician  
 150803 Automotive Engineering Technology/Technician  
 150805 Mechanical Engineering/Mechanical Technology/Technician  
 150899 Mechanical Engineering Related Technologies/Technicians, Other  
 150901 Mining Technology/Technician  
 150903 Petroleum Technology/Technician  
 150999 Mining and Petroleum Technologies/Technicians, Other  
 151001 Construction Engineering Technology/Technician  
 151102 Surveying Technology/Surveying  
 151103 Hydraulics and Fluid Power Technology/Technician  
 151199 Engineering-Related Technologies, Other (NEW)  
 151201 Computer Engineering Technology/Technician  
 151202 Computer Technology/Computer Systems Technology (NEW)  
 151203 Computer Hardware Technology/Technician (NEW)  
 151204 Computer Software Technology/Technician (NEW)  
 151299 Computer Engineering Technologies/Technicians, Other (NEW)  
 151301 Drafting and Design Technology/Technician, General  
 151302 CAD/CADD Drafting and/or Design Technology/Technician (NEW)  
 151303 Architectural Drafting and Architectural CAD/CADD  
 151304 Civil Drafting and Civil Engineering CAD/CADD  
 151305 Electrical/Electronics Drafting and Electrical/Electronics CAD/CADD  
 151306 Mechanical Drafting and Mechanical Drafting CAD/CADD  
 151399 Drafting/Design Engineering Technologies/Technicians, Other (NEW)  
 151401 Nuclear Engineering Technology/Technician (NEW)  
 151501 Engineering/Industrial Management  
 159999 Engineering Technologies/Technicians, Other  
 260205 Molecular Biochemistry (NEW)  
 260206 Molecular Biophysics (NEW)  
 260207 Structural Biology (NEW)  
 260208 Photobiology (NEW)



260209 Radiation Biology/Radiobiology  
 260210 Biochemistry/Biophysics and Molecular Biology (NEW)  
 260299 Biochemistry, Biophysics and Molecular Biology, Other (NEW)  
 260802 Molecular Genetics (NEW)  
 260803 Microbial and Eukaryotic Genetics (NEW)  
 260899 Genetics, Other (NEW)  
 261002 Molecular Pharmacology (NEW)  
 261003 Neuropharmacology (NEW)  
 261005 Molecular Toxicology (NEW)  
 261006 Environmental Toxicology (NEW)  
 261007 Pharmacology and Toxicology (NEW)  
 261099 Pharmacology and Toxicology, Other (NEW)  
 261103 Bioinformatics (NEW)  
 261199 Biomathematics and Bioinformatics, Other (NEW)  
 261304 Aquatic Biology/Limnology (NEW)  
 261305 Environmental Biology (NEW)  
 261306 Population Biology (NEW)  
 261307 Conservation Biology (NEW)  
 261308 Systematic Biology/Biological Systematics (NEW)  
 261399 Ecology, Evolution, Systematics and Population Biology, Other (NEW)  
 400101 Physical Sciences  
 400401 Atmospheric Sciences and Meteorology, General  
 400402 Atmospheric Chemistry and Climatology (NEW)  
 400403 Atmospheric Physics and Dynamics (NEW)  
 400404 Meteorology (NEW)  
 400499 Atmospheric Sciences and Meteorology, Other (NEW)  
 040201 Architecture (BArch, BA/BS, MArch, MA/MS, PhD)  
 190501 Foods, Nutrition, and Wellness Studies, General  
 190504 Human Nutrition (NEW)  
 190505 Foodservice Systems Administration/Management  
 190599 Foods, Nutrition, and Related Services, Other  
 300101 Biological and Physical Sciences  
 300601 Systems Science and Theory  
 300801 Mathematics and Computer Science  
 301001 Biopsychology  
 521201 Management Information Systems, General  
 521301 Management Science, General  
 521304 Actuarial Science

APPENDIX B

OK-LSAMP WEBPAGE



At Oklahoma State University, we place great value on the differences of our people. Diversity in action should empower individuals to think and act in ways that will embrace and promote a more inclusive world.

**THE STATE'S UNIVERSITY**

**Oklahoma-Louis Stokes Alliance for Minority Participation at OSU**

Wednesday, 27 February 2008



National Science Foundation  
WHERE DISCOVERIES BEGIN



**Oklahoma-Louis Stokes Alliance for Minority Participation**  
A Consortium of colleges and universities in Oklahoma seeking to improve the quantity and quality of students from underserved populations

[Read more...](#)

Oklahoma State University - Stillwater | Stillwater, OK 74078 | 405.744.5000  
Copyright © 2008 Oklahoma State University | All rights reserved

APPENDIX C

GRADUATE SCHOOL PREPARATION

## **Online GRE Preparation Courses**

### **Enrolling in the Online GRE Course**

Go to <http://www.ed2go.com/osuokc>

On the menu bar on the right, click on Courses

Scroll down to Test Prep Courses and click on it

**Scroll to GRE Preparation and click on it**

Go to register now.

Fill out information, click on the desired start date, and submit.

You will receive an email that gives information regarding what to do next, an orientation you will need to take, etc. Disregard the part about payment options, as OSU-OKC will bill OK-LSAMP.

OK-LSAMP has the required text in our office.

### **How lessons are released:**

Lessons are only released twice each week. Lesson one on Wednesday, lesson two on Friday, and so forth. Lessons are accessible throughout the duration of the six-week period. Therefore, if you cannot retrieve lessons in the first week, you can still complete those lessons later. The 10-day grace period for lessons actually refers to the 'discussion' area. If more than 10 days pass once a lesson is released then access to post a question for the instructor will not be available.

APPENDIX D

ETHICS WORKSHOP

# BEING A SCIENTIST

## *Responsible Conduct in Research*

Dr. Karen Williams & Dr. Carl Rutledge  
East Central University

February 15, 2008  
6:00 p.m.  
348 Noble Research Center

Presented by  
Office of Vice President for Diversity  
OK-LSAMP  
Department of Biochemistry and Molecular Biology

Topics:  
Experimental Techniques & Treatment of Data Values  
Publication (Credit Due, Authorship, Openness)  
Plagiarism, Misconduct & Error in Science  
Responding to Ethics Violations  
Discussion of Case Studies  
The Scientist in Society

**EVERYONE INVITED**

**Refreshments**



# Certificate of Participation

Presented to



*OK-LSAMP Ethics Workshop*  
*Oklahoma State University*  
*February 15, 2008*





APPENDIX E

JAM POSTER

# Oklahoma

## Louis Stokes Alliance for Minority Participation



**Ms. Cammi Valdez**, Math and Chemistry major, is said to be the "Shining Star" at Southwestern OSU. She has given presentations in Oklahoma, New Mexico, Texas, Massachusetts, Missouri and Kansas. She has been awarded multiple chemistry and mathematics scholarships and has a tier 1 publication. Cammi is the first Oklahoma LSAMP Scholar and SWOSU graduate to be accepted into a Ph.D. program at the Harvard School of Medicine, majoring in Chemical Biology.



**Conrad Thomas**, Program Director  
View President for Institutional Diversity  
www.OK-LSAMP.okstate.edu email  
OKAMP@okstate.edu phone  
405.744.6710 phone

**R. Simin Padat**,  
Bridge to The Doctorate  
OU Campus Liaison  
www.OU.edu  
opat@ou.edu email  
rsimink@ou.edu email  
405.325.1969 phone

**Ray Porter**,  
Alliance Program Manager

**Fara Williams**,  
OSU Data Coordinator

**Susan Cahoney**,  
OU Bridge to The Doctorate  
Program Coordinator

### Oklahoma Alliance Partners



**Brett Cowan** and **Cara Cowan-Watts**, brother and sister, former LSAMP Scholars, Bridge to the Doctorate Fellows and members of the Cherokee Tribe. They have always been dedicated to education. The Cowans are descendants of Old Settlers of the Cherokee Nation, who made their home in Oklahoma prior to the Trail of Tears. Brett completed three degrees at OSU: Bachelor of Science in 1999 (Civil Engineering with an Environmental option), Master of Science in 2000 (Civil Engineering with a Construction Management option) and the Ph.D. in Civil Engineering in 2007. Brett is currently employed with the U.S. Army Corps of Engineers in Tulsa, Oklahoma. Cara has completed two degrees at OSU: Bachelor of Science in 1997 (Mechanical Engineering), Master of Science in 2002 in Telecommunications Management, and expects to complete her Biosystems Engineering Ph.D. in July 2008. Currently, she is a two-term elected Tribal Council Representative of the Cherokee Nation.



The history of the **Oklahoma Alliance Partners** began on November 1, 1994. Oklahoma institutions formed an alliance with support from the National Science Foundation's Alliance for Minority Participation (AMP) which subsequently was mandated by Congress as the Louis Stokes Alliance for Minority Participation (LSAMP) in honor of former Congressman Louis Stokes. The 11 participating institutions are: The University of Oklahoma, University of Tulsa, University of Central Oklahoma, Southwestern OSU, Southeastern OSU, Northwestern OSU, Northeastern State University, Langston University, East Central University, Cameron University and Oklahoma State University as the lead institution. In the past 14 years Oklahoma Alliance Institutions have awarded 7,180 Bachelor of Science degrees in STEM areas to minority and underrepresented students. Nationwide, approximately 30% of all STEM degrees earned by Native Americans were completed in Oklahoma institutions. Oklahoma continues to graduate more Native American students than any other state.

The **Bridge to the Doctorate** program began in 2004 with Oklahoma State University (OSU) as Cohort II followed by The University of Oklahoma (OU) in 2005 as Cohort III. Each program began with 12 former LSAMP Scholars pursuing advanced degrees in STEM disciplines. Overall, eight Master of Science degrees and one Ph.D. to a Native American in Civil Engineering have been awarded. Six Ph.D. candidates are expected to complete requirements within the next 3-24 months. OSU has students in the following disciplines: Natural Resource Ecology, Entomology/Plant Pathology, Cell/Molecular/Micro Biology, Mechanical Engineering, and Biomedical Research. OU has students in Computer Science, Chemistry; Computer/Industrial/Electrical/Mechanical/Petroleum Engineering and Mathematics. All Bridge to The Doctorate students have been integrated in the academic units and are deeply engaged in research but are still mentored by the LSAMP program and monitored by the Graduate Dean.

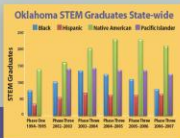
University of Oklahoma Bridge to the Doctorate students along with LSAMP Scholars served as "The Bridge" students during the 2007 "NSF" "B2D" Science Bridge program. The "The Bridge" was mentored by Dr. James Brubaker. "The Bridge" is a 2 week summer camp designed to enhance critical thinking of the incoming engineering students and to give them the necessary skills to succeed in their first year of college.



Cohort II: Oklahoma State University and Cohort III: The University of Oklahoma Bridge to the Doctorate students accepting the challenge of completing graduate degrees in their selected STEM disciplines and serving role models to underrepresented LSAMP scholars.



The University of Tulsa Junior Robotics Institute invites 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 their building and programming.



APPENDIX F

DATABASE

Data Entry Layout			
First Name		Mentor(s)	
Middle Name		Summer Bridge Program	
Last Name		Summer Internship 1	
Gender			
Ethnicity			
Tribe(s) / Island		Summer Internship 2	
Second Ethnicity			
Current Address		Summer Internship 3	
Permenant Address			
Home Phone		BD Program	
Campus or Cell Phone		Program Exit Date / Left after	
Email Address		Reason for Exiting Program	
Program Entry Date		Ethics Training	<input type="checkbox"/> TU Credit Course <input type="checkbox"/> 3 Hour Seminar <input type="checkbox"/> 3 Hour Video <input type="checkbox"/> Symposium Seminar <input type="checkbox"/> Other...
Bachelors Degree			
Date of Bachelors			
Institution of Bachelors		Hours Enrolled	
Status	<input type="radio"/> Current Scholar <input type="radio"/> Current BD <input type="radio"/> Alumni <input type="radio"/> Other...	Completed Credit Hours	
Classification	<input type="radio"/> Freshman <input type="radio"/> Sophomore <input type="radio"/> Junior <input type="radio"/> Senior <input type="radio"/> Graduate	GPA	
Summer 2007 Participation	<input type="checkbox"/> Yes - Funded <input type="checkbox"/> Yes - Not Funded <input type="checkbox"/> No <input type="checkbox"/> Other...		
Fall 2007 Participation	<input type="checkbox"/> Yes - Funded <input type="checkbox"/> Yes - Not Funded <input type="checkbox"/> No <input type="checkbox"/> Other...		
Spring 2008 Participation	<input type="checkbox"/> Yes - Funded <input type="checkbox"/> Yes - Not Funded <input type="checkbox"/> No <input type="checkbox"/> Other...		
Conducted Reserach Fall 2007	<input type="radio"/> Yes <input type="radio"/> No	Conducted Reserach Spring 2008	<input type="radio"/> Yes <input type="radio"/> No
GRE Prep Courses	<input type="radio"/> One <input type="radio"/> Both <input type="radio"/> Neither		
GRE Date		Grad School Application 1	
GRE Scores		Grad School Application 2	
Verbal		Grad School Application 3	
Quantitative		Grad School Application 4	
Analytical Writing		Grad School Application 5	

## Data Entry Layout

Conferences  
and  
Meetings

Honors  
and  
Awards

Publications

Notes

Photo

Masters Degree

Date of Masters

Institution of Masters

Doctorate Degree

Date of Doctorate

Institution of Doctorate

Contacted

None

Once

Twice

Three Times!

Contact Made

Method & Date of Last Contact

Date Last Update Received

Date Record Created

Last Update

Company Name

Job Title

Work Address

Work Phone

Work Fax Number

APPENDIX G

FULBRIGHT ACADEMY



## FULBRIGHT ACADEMY OF SCIENCE & TECHNOLOGY

An international organization founded by alumni of the Fulbright Exchange Program.

### Selected institutional members and collaborative partners:

- Alfred P. Sloan Foundation
- American Institute of Maghrib Studies
- Aristotle University
- Assumption College
- Azusa Pacific University
- Barbados Community College
- Booz Allen Hamilton
- Brigham Young University
- Catholic University, Leuven, Belgium
- Commission on Graduates of Foreign Nursing Schools
- Council on Undergraduate Research
- Emory University
- Ferris State University
- Fulbright Commission in Germany
- German Academic Exchange Service
- Georgia Institute of Technology
- Indiana State University
- Lemelson Foundation
- Lincoln University
- Metropolitan University, Caracas
- Moroccan Ministry of Higher Education
- National Secretariat for Science and Innovation (SENACYT), Panama
- Nebraska Institute of Forensic Sciences
- Northeastern University
- Pontificia Universidad Católica del Ecuador
- Qatar Foundation
- Simmons College
- Singapore Agency for Science Technology & Research
- Singapore Management University
- Syracuse University
- Thomson-Reuters
- Tufts University
- Universidad Autónoma de Yucatán
- Universidad Autónoma Metropolitana, Mexico City
- Universidad Metropolitana, Caracas
- Universidad Pedagógica de El Salvador
- University of Karachi – ICCS
- University of Michigan, Ann Arbor
- University of Nebraska, Lincoln
- University of Pittsburgh
- University of South Florida
- University of Texas, LSAMP program
- US Civilian Research & Development Foundation
- US Department of Justice
- US Department of State
- US National Science Foundation

Dr. Thomas & Dr. Emslie  
Oklahoma State University  
Stillwater, OK

June 25, 2008

Dear Dr. Thomas and Dr. Emslie,

Thank you for your interest in including the Fulbright Academy of Science & Technology (FAST) in your proposal to the NSF-LSAMP program. FAST helps institutions advance science & technology by creating linkages among Fulbright scholars and the institutions that host or employ Fulbright scholars, or send faculty or students abroad as Fulbrighters.

This year we are working on three Federal grants/contracts. (1) A five-year NSF project with the University of Texas System LSAMP (described below). (2) A three-year NSF project with Indiana University to test a model for using the Fulbright alumni network as a means for communicating NSF research to public audiences – this addresses the need in most NSF proposals to explore the broader implications and applications of the research. (3) A project with NASA and the State Department, Bureau of Oceans Environment & Science to install new equipment at Morocco's largest telescope, which is housed at an astronomy education center/planetarium outside of Rabat.

The Texas-LSAMP program has two components. (1) Students and advisors will be attending FAST conferences and meetings. The participating campuses receive an average of \$4,000/year to send student(s) to a FAST program. Most programs will be in Latin America. (2) Students and advisors will receive information about the Fulbright Exchange Program, with the expectation that some of them will apply to go overseas to do research and/or teach. For students, this could be after completing their BA or during their PhD studies.

Information about past activities and future programs is enclosed. We hope that the AMP will be able to join as an alliance (\$1,500/year) as well as incorporate FAST into your Phase 4 NSF proposal. If you have questions, please call me at 207-799-3098.

We look forward to serving you and having your staff and students as active participants in FAST.

Sincerely,

Eric Howard  
Executive Director

FAST, PO Box 284, Cape Elizabeth, Maine 04107-0284 USA  
Tel: 207-799-3098 / 866-F-BRIGHT Fax: 815-846-1756  
[www.FulbrightAcademy.org](http://www.FulbrightAcademy.org)



## FULBRIGHT ACADEMY OF SCIENCE & TECHNOLOGY

An international organization founded by alumni of the Fulbright Exchange Program.

### “What are the benefits of membership?”

#### Ten Examples of Collaboration between FAST and institutions

1. **Invitations to international meetings.** FAST obtained funding from the National Science Foundation for a project in North Africa which included travel to Morocco for a dozen US experts on digital libraries. Similarly, a Panamanian government agency funded 15 people at our 2007 annual conference in Panama and a US foundation funded 15 people at our 2008 Conference in Boston.
2. **Given opportunities** for faculty, graduate students and undergrads to participate and/or present research at meetings organized by FAST. Your employees get reduced rates for registration – more than half of our institutional members have taken advantage of this benefit.
3. **Research collaborations or letters of support** on grant applications. Several institutions and alumni have asked FAST to partner with them on funding requests.
4. **Serving as a subcontractor**, such as organizing meetings or conducting specialized research. This work may be done in-house or in collaboration with Fulbright scholars or other experts. Fulbright scholars are found in nearly all countries and disciplines, so we can help you find the expertise you need.
5. **Visited the campus or organization.** Examples: spoke to faculty and students during “Research Week”, advised a small non-profit on program and institutional development, advised a department on program development, served as judge for a poster session, and spoke at an international luncheon for faculty, senior administrators, state government officials and the private sector.
6. **Discounts on booth space** and opportunities to distribute your literature even when none of the institution’s employees are able to attend a meeting or your institution is not exhibiting.
7. **Disseminating your news and PR** to FAST members and the scientific community through our electronic bulletin, a quarterly report to institutional members, and press releases.
8. **Finding experts.** We have provided volunteers – speakers for programs, interviewees for the press, and reviewers for grant-giving bodies. We can find the expert. We also can refer others to experts at your institution.
9. **Recruiting.** Members have used FAST to recruit faculty/staff/students and to promote themselves as a destination for students, researchers, visiting scholars, and prospective employees.
10. **Publishing a quarterly report** specifically tailored to networking and the special needs of our institutional members.

**Learn more by watching a 10-minute video at [www.FulbrightAcademy.org](http://www.FulbrightAcademy.org)**

**Note:** We recognize that institutions have different needs and interests.

At a university, the membership interest may come from the International Programs Office, the Office of Sponsored Research, the President or Provost, or a particular school or department. Each has their own goals and needs, and FAST seeks to serve them.

Corporations, government agencies, non-profits, foundations and associations have also joined as institutional members.

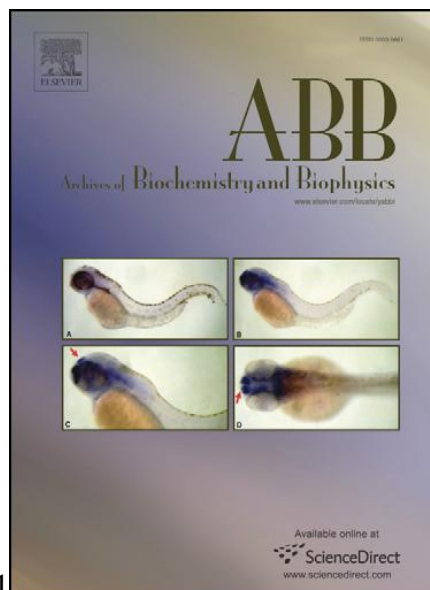
Call us to see how FAST might help you.

FULBRIGHT ACADEMY OF SCIENCE & TECHNOLOGY  
PO Box 284, Cape Elizabeth, ME 04107-0284 U.S.A.  
TEL: 207-799-3098 / 866-F-BRIGHT FAX: 815-846-1756  
[www.FulbrightAcademy.org](http://www.FulbrightAcademy.org)



APPENDIX H

SCHOLAR PUBLISHED ARTICLES



ACCEPTED MANUSCRIPT #1

*Function and Structure of Lipid Storage Droplet Protein 1 Studied in Lipoprotein Complexes*

Estella, A., Rivera, L., Masakazu, H., Mirza, S., Hartson, S., Weintraub, S., & Soulages, J.

PII: S0003-9861(08)00112-4  
DOI: 10.1016/j.abb.2008/02036  
Reference: YABB15037

To appear in: Archives of Biochemistry and Biophysics

Received Date: 17 January 2008  
Revised Date: 25 February 2008  
Accepted Date: 26 February 2008

**Purification and Characterization of Recombinant Lipid Storage Protein-2 from *Drosophila melanogaster***

Estela L. Arrese, Laticia Rivera, Masakazu Hamada, and Jose L. Soulages

From the Department of Biochemistry and Molecular Biology  
Oklahoma State University  
Stillwater, OK, 74078

**ABSTRACT**

Lipid storage protein 2 (Lsd 2) is a conserved insect protein that belongs to the small PAT family of proteins. PAT proteins are found associated to the lipid droplets of adipocytes and play significant roles in the regulation of triacylglycerides metabolism. Here we describe the expression and purification of Lsd2, its reconstitution in lipoprotein particles, the location of putative lipid binding sites and its secondary structure. This study provides the starting point for future studies on the mechanism of function of Lsd2. The similarities and differences between Lsd1 and Lsd2, the only PAT proteins found in insects, are discussed.

## **Expression of lipid storage droplet protein-1 may define the role of AKH as a lipid mobilizing hormone in *Manduca sexta***

Estela L. Arrese, Saima Mirza, Laticia Rivera, Alisha D. Howard, Palaniappan S. Chetty, and Jose L. Soulages. Department of Biochemistry and Molecular Biology, Oklahoma State University, Stillwater, OK, 74078

Corresponding Author:

Estela Arrese

146 Noble Research Center

Department of Biochemistry and Molecular Biology

Oklahoma State University Stillwater, OK, 74078

Phone: 405-744-7505

Fax:405-744-7799

e-mail: destela@okstate.edu

### **ABSTRACT**

Adipokinetic hormone (AKH) is the main hormone involved in the acute regulation of hemolymph lipid levels in several insects. In adult *Manduca sexta* AKH promotes a rapid phosphorylation of “Lipid storage protein-1”, Lsd1, and a concomitant activation of the rate of hydrolysis of triglycerides by the main fat body lipase. In contrast, in the larval stage AKH modulates hemolymph trehalose levels. The present study describes the sequence of a full length Lsd1 cDNA obtained from *M. sexta* fat body and investigates a possible link between Lsd1 expression and the distinct effects of AKH in larva and adult insects. The deduced protein sequence showed a high degree of conservation compared to other insect Lsd1s, particularly in the central region of the protein (amino acids 211-276) in which the predicted lipid binding helices are found. Lsd1 was absent in feeding larva and its abundance progressively increased as the insect develops from the non-feeding larva to adult. Contrasting with the levels of protein, Lsd1 transcripts were maximal during the feeding larval stages. The subcellular distribution of Lsd1 showed that the protein exclusively localizes in the lipid droplets. Lsd1 was found in the fat body but it was undetectable in lipid droplets isolated from oocytes or embryos. The present study suggests a link between AKH-stimulated lipolysis in the fat body and the expression of Lsd1.

**Keywords:** Lipid storage droplet protein, Lsd, fat body, *Manduca sexta*, lipolysis, lipid mobilization, adipokinetic hormone, AKH.

Apidologie 39 (2008) 428–435 Available online at:  
c\_ INRA/DIB-AGIB/ EDP Sciences, 2008 www.apidologie.org  
DOI: 10.1051/apido:2008025

**Original article: 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. Abramson<sup>1</sup>, T. Andrew Mixson<sup>1</sup>, Ibrahim Çakmak<sup>2</sup>, Aaron J. Place<sup>3</sup>,  
Harrington Wells<sup>4</sup>

<sup>1</sup> Laboratory of Comparative Psychology and Behavioral Biology, Departments of Psychology and Zoology, Oklahoma State University, 215 N. Murray, Stillwater, OK 74078, USA

<sup>2</sup> Uludag Universitesi, M. Kemalpaşa MYO, M. Kemalpaşa, Bursa 16500, Turkey

<sup>3</sup> Northwestern Oklahoma State University, Department of Natural Sciences, Alva, Oklahoma 73717, USA

<sup>4</sup> University of Tulsa, Department of Biology, Tulsa, OK 74104, USA

Received 5 November 2007 – Revised 15 February 2008 – Accepted 3 March 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.

**Proboscis conditioning / discrimination learning / *Apis mellifera caucasica* / *Apis mellifera carnica* / *Apis mellifera syriaca*.**

Article published by EDP Sciences and available at <http://www.apidologie.org>  
or <http://dx.doi.org/10.1051/apido:2008025>

## THE USE OF HONEY BEES TO TEACH PRINCIPLES OF LEARNING

### ARI B \_ L \_ M \_ / BEE SCIENCE

Uludag Arıcılık Dergisi Kasım 2007 / Uludag Bee Journal November 2007

126

### Bal Arılarından Yararlanarak Öğrenim \_lkelerinin Anlatılması

(Extended Summary in Turkish can be found at the end of this article)

Charles I. ABRAMSON<sup>1</sup>, T. Andrew MIXSON<sup>1</sup>, Ibrahim ÇAKMAK<sup>2</sup>,  
Harrington WELLS<sup>3</sup>

<sup>1</sup>Oklahoma State University, Department of Psychology, Laboratory of Comparative Psychology and Behavioral Biology, Departments of Psychology and Zoology, 215 N. Murray, Stillwater, OK 74078, USA

<sup>2</sup>Uludag Üniversitesi, M.Kemalpasa MYO, M.Kemalpasa, Bursa 16500, TURKEY

<sup>3</sup>University of Tulsa, Department of Biology, Tulsa, OK 74104, USA

**ABSTRACT:** Experiments are described with harnessed and free-flying forager honey bees suitable for classroom exercises and zoological/botanical park demonstrations. The experiments require bees to discriminate between two scents or two colored targets. Both experiments are easy to perform with minimal training, and the apparatus is inexpensive and constructed from common items such as plastic straws. Suggestions are provided on how the study of learning can be used to educate the general public and students about the importance of honey bees.

**Key Words:** Teaching, Honey bees, *Apis mellifera*, Conditioning, Learning

Uludag Arıcılık Dergisi Kasım 2007 / Uludag Bee Journal November 2007

APPENDIX I

BRIDGE TO THE DOCTORATE STUDENTS

OKLAHOMA STATE UNIVERSITY

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 32,600. 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 4,326, 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 4,326.

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

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# 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 Kauffmann 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).

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

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APPENDIX J

MISCELLANEOUS NEWS ARTICLES

Tue, Aug 19 2008




# NewsPress

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Published: July 24, 2008 02:37 pm   

‘Bridge’ gets OSU student to doctorate

Program pays minority students to attend grad school, work on research

Jacob Longan - NewsPress

Cara Cowan Watts has a list of achievements. She has a bachelor’s degree in mechanical engineering and a master’s in telecommunications management. She represents District 7 on the Cherokee Nation Tribal Council. She spent five years as a telecommunications engineer for Witel Communications and was a mechanical engineer for Hewlett-Packard for almost two years.

But reached by e-mail, Cowan Watts wrote she would not have had the opportunity to pursue her doctorate — she expects to earn a Ph.D. in biosystems engineering in December — without a program called “Bridge to the Doctorate.”

It is an initiative of the Louis Stokes Alliance for Minority Participation within the National Science Foundation. It pays up to 12 graduate students at participating schools a \$30,000 annual stipend plus waivers for tuition, fees and health insurance.

To be eligible, students must have been in the Oklahoma-LSAMP as undergraduates. OK-LSAMP, which pays undergrads a \$500 to \$2,000 stipend per semester, is open to African-Americans, Native Americans, Hispanics and Pacific Islanders.

The graduate students must also be pursuing degrees in science, technology, engineering or math. They will not be allowed to work outside of their requisite obligations assisting the university.

“They are expected to be in the lab,” said Kay Porter, Oklahoma State University’s program manager for the OK-LSAMP. “They will have a mentor and certain course requirements. Their job is to be in the lab conducting research.”

The idea is to give students incentive to pursue postgraduate degrees rather than accept jobs after obtaining their bachelor’s or master’s. It is also to help them avoid debt.

“This program is designed to get under-represented groups — usually students of color or women — in fields you don’t normally see them,” said Dr. Cornell Thomas, OSU’s vice president for institutional diversity and co-principal investigator for the NSF award. “Primarily (we want) to get them into the professorate so they can begin to teach on university campuses. ... They know when you have diverse perspectives in the labs identifying different ideas, I think we will have more informed decisions.”

OSU was approved for a two-year, \$987,000 grant by the program.

The accepted students have five years to earn a Ph.D., including a master’s, if necessary.

This program funds two years.

The university is pursuing another program to cover the additional window of up to three years, but Dr. Gordon Emslie, dean of the Graduate College and co-principal investigator for the NSF award, said the school will take care of the students even if that funding doesn’t come through.

He said students would be given graduate assistantships and the school would add a \$10,000 supplement to that for years three and four, which would get the students close to the \$30,000 they had the first two years.

The supplement drops to \$5,000 on top of the stipend the fifth year as a way to encourage them to graduate before then, he said.

He added, “This is not about money. I (trust) people aren’t doing this to make money (while in graduate school). This is about keeping the wolf away from the door while they are earning their (postgraduate) degree.”

Thomas said aside from financial benefits for the students, they also benefit from connections with professors and others who can help them in a lifetime of research.

The school benefits by having graduate students for assistantships and gets recognition when students win awards.

“These individuals may be the ones to solve a lot of the issues in our society — cancer and a lot of other things,” Thomas said. “Those individuals could be walking this campus right now.”

OSU previously received funding in 2004.

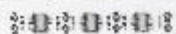
Cowan Watts is one of the 12 in the first group. Of those 12, six have graduate degrees, five are scheduled to graduate by December 2009 and one has withdrawn.



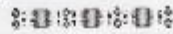
# Chickasaw Times

Official publication of the Chickasaw Nation

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No. 2



February 2008 Edition



Ada, Oklahoma

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## **National Science Foundation seeks minority students in science, math, technology**

Contributed by Brooke Tidwell, Tribal Media Relations

A program funded by the National Science Foundation supports educational Opportunities to strengthen the number of minority students who Successfully complete degrees in science, technology, engineering, and Mathematics (STEM fields).

The Oklahoma Louis Stokes Alliance for Minority Participation in Science, Technology, Engineering and Mathematics (OK-LSAMP STEM) is a consortium of Oklahoma colleges and universities. Through this program, colleges and universities work together to develop programs to increase the number of students from under-represented populations who receive degrees in science, technology, engineering and mathematics (STEM fields).

OK-LSAMP provides undergraduates with financial support, faculty mentoring and research opportunities. The program also includes support for research at local, regional and national conferences and meetings, networking contacts, tutoring and more.

OK-LSAMP scholars are also qualified to apply for related research programs and advanced degree options, including the Bridge to the Doctorate programs. The Bridge to the Doctorate initiative provides support of \$30,000 per year for up to five years toward graduate education. This allows students to dedicate full attention to the pursuit of graduate degrees without the fear of creating additional financial indebtedness associated with initial graduate education.

Undergraduate students are required to maintain a 3.0 retention grade point average, be a full-time student enrolled in an approved STEM field, be a U.S. citizen or permanent resident and participate and contribute to program activities. The student must also demonstrate intent in pursuing investigative studies and a graduate degree in a STEM field.

To obtain an application and more information about the Ok-LSAMP program, call (405) 744-7820, email: [okamp@okstate.edu](mailto:okamp@okstate.edu) or visit [www.ok-lsamp.okstate.edu](http://www.ok-lsamp.okstate.edu)

APPENDIX K  
EVALUATION REPORT



*The University of Oklahoma*

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

August 11, 2008

Cornell Thomas  
Vice President for Institutional Diversity  
Principal Investigator  
408 Whitehurst Hall  
Oklahoma State University  
Stillwater, OK 74078

Dear Dr. Thomas,

Congratulations to you and all of the Partners in the OK-LSAMP Alliance on another successful year.

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. Our analysis shows that based on the most currently available data approximately 47% of the Phase III graduates in this evaluation period have been accepted to graduate school.***

With very few exceptions, students that participate in the OK-LSAMP program will graduate. This in itself, is a triumph given the low graduation rates for minority students generally and within STEM fields specifically. Eighty-nine percent of the OK-LSAMP graduates had a grade point average over a 3.0. Knowing the dedication of the Alliance Partners and their desire to maximize the number of students going to graduate school, I am sure that you want to build on your success and encourage the other 53% of OK-LSAMP graduates who were not admitted to graduate school to take that path. Based on the data we have reviewed, we have identified three areas that would be worthy of consideration alliance wide.

- Increased graduate school applications and earlier GREs. The process of completing an application is an important element in the design of this program. During this reporting period only 4 students were identified as having completed 5 or more applications. The eighteen students admitted to graduate school had applied to one or more institutions. It is recommended that the partners continue to encourage students to take the GRE and apply to graduate college. If application fees are a stumbling block, perhaps the Alliance Office can assist the student.
- Increased opportunities to present research. The Alliance has done an exceptional job in providing research opportunities to students during the course of the academic year. However, only 53% of the students had the opportunity to present. Speaking before an audience about research is a valuable learning experience for students. It is also a skill that will be important as a graduate student. How can the Alliance increase opportunities for the students to present their research?

- Increased summer internships. Only 37% of the OK-LSAMP graduates during this period had two summer internships. Summer research provides a wonderful opportunity for students to forge relationships with faculty and crystallize graduate school aspirations.

Enclosed please find your copy of the OK-LSAMP Program Evaluation. This evaluation covered the period of Fall 2007 through Summer 2008. This evaluation document has been prepared exclusively for you. The attached narrative addresses specific alliance wide goals as well as the goals of the individual partners. I know that Fara Williams has been meeting individually with the Alliance Partners and the institutional summaries will be helpful for those meetings

The OK-LSAMP home office has done a super job improving the quality of the data used in the annual evaluation. There is more work to be done with the partners in terms of tracking program activity. There were some elements of program participation that could not be commented upon because of the limitations of the data. However, the Alliance home office has consistently demonstrated an interest and willingness to improve the administration of the program. The Alliance faced many hurdles this year and despite late funding and early reporting requirements, it has proved to be vital and resilient.

On a final note, I typically also provide the Chief PI with some summary data that compares the retention and graduation rates of minority STEM cohorts in Oklahoma with the national data I collect for our STEM study. I have not been able to provide you with that this year. The data for that study and for the Oklahoma STEM retention/graduation analysis is supplied by the Oklahoma State Regents Office. The Regents, for a second year, have not been able to provide that data. Once they do provide that data to me, I will put together a brief comparison report for you. Although not essential for this evaluation, I have always found it interesting to compare the retention and graduation rates of minority STEM students in Oklahoma and the OK-LSAMP institutions with those of national peers.

Thank you for the opportunity to be associated with this program. Should you have any question, I will be happy to discuss them with you.

Warm regards,

Rosemary Hayes, Ph.D.  
NSF Program Evaluator

Cc: Kay Porter  
Fara Williams



## **Alliance Wide Goals**

The OK-LSAMP program proposes to significantly increase the number of targeted students entering into graduate programs over the next five years, 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 over the next five years eligible for graduate school admission and subsequently enrollment.

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 overall goal achieved**

The goal of the Alliance is to have a minimum of 10% of the available baccalaureate degree graduates over the next five years eligible for graduate school for admission and subsequently enrollment. Given the GPAs and research experience of the group, many students have the potential to move on to graduate STEM work. The most currently available data shows that ***47% of participating OK-LSAMP graduates were identified as having been admitted to graduate school.***

The OK-LSAMP graduates achieved the following results.

- 38 of the OK-LSAMP participants graduated
- 89% had a GPA of 3.0 or higher
- 37% had at least two full summer internships
- 53% presented their research at least once during the reporting period
- Although 18 of the graduates were admitted to graduate school, it was reported that only one of them took the GRE by the end of the Fall 2007 semester. It is recommended that this aspect of the program be examined and adjustments made as needed.

Research is a significant component of the program to help students reach the goals of graduate school eligibility, not only for the graduating seniors but all of the participants. The program has done very well with this aspect of the program.

- 71% of the fall 2007 Phase III OK-LSAMP students participated in research
- 90% of the spring 2008 students conducted research
- 41% (30 of 73) of the spring 2008 students were scheduled for internships in the summer of 2008. Given that 24 of the 73 students graduated in the spring, this actually represents 61% of the remaining students.

During the 2007-08 academic year, only 4 of the 87 Phase III participants completed 5 or more graduate school applications. There were 18 students who completed at least one application. Below is a summary of activity for each of the institutions.

## **Cameron University**

- 6 out of the 7 students were used for this evaluation.
- 1 was a junior and 5 were seniors.
- 1 was left out because of a discrepancy in the data. He left the program after fall 2007 because of being part-time but was still participating in spring 2008.
- 1 junior and 1 senior returned from the spring to fall 2007, and 4 new seniors were in the fall 2007 class. All 6 students returned in spring 2008 and no new students entered in spring 2008.
- 2 seniors graduated in May 2008
- All 6 students were funded for both fall 2007 and spring 2008

### **Research**

1. Goal: Have 100% of previous summer interns have an opportunity to present locally.
  - a. 1 out of 6 students (about 17%) had a summer internship in 2006 and then made a presentation in 2007. It is not known if the presentation was done locally or at a professional meeting. This goal was not met.
2. Goal: Have 50% of previous summer interns present at a professional meeting.
  - a. This could be what was stated previously because it is not known if the presentation done by the student was done locally or at a professional meeting.
3. 4 out of 6 students had conducted research in fall 2007 and all 6 students had conducted research in spring 2008.

### **Grad Preparation**

1. Goal: Have 100% of eligible juniors apply for the GRE in February.
  - a. 0 out of 6 students (0%) applied for the GRE. This goal was not met.
2. Goal: Have 100% of participating seniors submit 5 graduate school applications by Oct. 31 of senior year.
  - a. 0 out of 6 students (0%) had 5 graduate school applications submitted, but 2 out of 6 students (about 33%) had 2 graduate school applications sent out. This goal was not met.

## Support

1. Goal: Have an unknown percentage of students receive support in the OK-LSAMP program.
  - a. 6 out of 6 students (100%) received support from the program for both fall 2007 and spring 2008.
2. Goal: Have 100% of recipients be involved in research with a faculty member by the end of the 1<sup>st</sup> year of support.
  - a. 6 out of 6 students (100%) had done research by spring 2008. This goal was met.
3. Goal: Have an unknown percentage of students participate in summer internships after 1<sup>st</sup> year of support
  - a. 4 out of 6 students (about 67%) had a summer internship in 2007. 1 out of 6 students (about 17%) had a summer internship in both 2007 and 2008.
4. Goal: Have an unknown percent of students receive continued support during their fourth year.
  - a. 5 out of 6 students are seniors and all 6 students receive support.
5. Goal: Have 100% of fourth year students be involved in research.
  - a. 3 out of 5 seniors (60%) were involved in research. This goal was not met.

## East Central University

- 11 out of 12 students were used for this evaluation.
- 4 were juniors and 7 were seniors.
- 1 was left out because they were classified as a sophomore
- 1 junior and 4 seniors that started on or before spring 2007 returned in fall 2007. 3 juniors and 3 seniors were admitted in fall 2007. 8 students continued on to spring 2008, and no new students were admitted in spring 2008.
- 10 out of 11 students that started or continued to fall 2007 were funded in fall 2007 and 7 out of 8 students that started or continued on to spring 2008 were funded in spring 2008.

## Research

1. Goal: Have 100% of Phase III students make additional presentations each year.
  - a. 1 out of 11 students (about 9%) made an additional presentation over thermodynamics of the zinc-oxygen-hydrogen system. This goal was not met.

2. 2 out of 11 students that continued to fall 2007 conducted research in fall 2007 and 2 out of 8 students that continued to spring 2008 conducted research in spring 2008.

### **Grad Preparation**

1. Goal: Have 100% of the students take the GRE by fall of their senior year.
  - a. 1 out of 7 seniors (about 14%) took the GRE. 1 junior also took the GRE already. This goal was not met.

### **Support**

1. Goal: Have an unknown percent of students apply to graduate school.
  - a. 3 out of 11 students (about 27%) applied to graduate school.
2. 3 out of 11 students had at least 1 summer internship

## **Langston University**

- 12 out of 17 students were used for this evaluation.
- 2 were juniors and 10 were seniors
- 4 were left out because they were sophomores and 1 was left out because they were a freshman.
- 1 junior and 9 seniors that started on or before spring 2007 returned in fall 2007. No new students were admitted in fall 2007. 9 out of 10 students continued from fall 2007 to spring 2008, and 2 new students were admitted in spring 2008
- 5 seniors graduated in May 2008
- 9 out of 10 students that started or continued to fall 2007 received funding in fall 2007, and 10 out of 11 students that started or continued to spring 2008 received funding in spring 2008.

### **Research**

1. Goal: Have 100% of Phase III students make additional presentations each year.
  - a. 0 out of 12 students (0%) made additional presentations. This goal was not met.
2. Number of students doing research in X-ray crystallography, knot theory, statistics, and high-energy physics.
  - a. Specific fields are unknown but do have how many did research each year
    - i. Fall 2007 – 9 out of 11 students (about 82%) did research
    - ii. Spring 2008 – 11 out of 11 students (100%) did research

3. Goal: Increase the participation in internships by an unknown percentage each year.
  - a. 11 out of 11 students (100%) had a summer internship.

## **Northeastern State University**

- All 8 students were used for this evaluation
- 1 was a junior and 7 were seniors
- 1 junior and 4 seniors started on or before spring 2007 and returned in fall 2007. 3 new seniors were admitted in fall 2007. 7 out of 8 students continued from fall 2007 to spring 2008, and no new students were admitted in spring 2008.
- 1 senior graduated in May 2007 and 4 seniors graduated in May 2008
- 4 out of 8 students that started or continued to fall 2007 received funding for fall 2007, and 3 out of 7 students that started or continued to spring 2008 received funding for spring 2008.

### **Research**

1. 7 out of 8 students that started or continued to fall 2007 conducted research in fall 2007, and 7 out of 7 students that started or continued to spring 2008 conducted research in spring 2008.

### **Grad Preparation**

1. Goal: Have 100% of participants take the GRE and apply to a minimum of 5 graduate schools.
  - a. 0 out of 8 (0%) students took the GRE. 2 out of 8 students (25%) applied to 1 graduate school each. This goal was not met.

### **Support**

1. 3 out of 8 students had a summer internship
2. 2 out of 8 students applied to 1 graduate school each.

## **Northwestern Oklahoma State University**

- No students could be used for this evaluation because 3 out of 4 of the students were sophomores, and 1 out of 4 students was unclassified.

## **Southeastern Oklahoma State University**

- 4 out of the 8 participating students were included in this evaluation (4 students were sophomores)
- 3 were juniors and 1 was a senior

- No students returned from the spring to fall 2007. The 4 students evaluated began the program in fall 2007, and each of them was funded during that semester
- 1 junior and 1 senior returned and were funded for the spring 2008 semester
- The senior graduated in May 2008

### **Research**

1. Goal: 100% of Phase III students will make additional presentations each year
  - a. No information was reported concerning presentations, therefore it is assumed that none were given and this goal was not met.
2. Both the junior and senior who were in the program in spring 2008 conducted research.

### **Graduate Preparation**

1. Goal: Facilitate GRE test preparation, including financial assistance for exam preparation
  - a. None of the students took the GRE and it is unclear whether or not Southeastern facilitated test preparation.

### **Support**

1. Southeastern held routine meetings with participants each semester to provide support

## **Southwestern Oklahoma State University**

- 2 students participated in the OK-LSAMP program during the 2007-08 academic year, and both were included in this evaluation
- Both students were seniors who returned from spring 2007
- Both students received funding for the fall 2007 and spring 2008 semesters
- Both students graduated in May 2008

### **Research**

1. Both students conducted research in both the fall 2007 and spring 2008 semesters
2. Both students were very active in presenting their research at forums including the OK-LSAMP Symposium, Oklahoma Research Day, and SWOSU Research Fair. In addition, one student presented his research and the OK-LSAMP program to juniors and seniors at a local high school.

3. One of the students published her research in 2007.
4. Both students had internships during the Summer of 2007, and one of them also had an internship for Summer 2006.

### **Graduate Preparation**

1. One of the students took the GRE in January 2008
2. Both students applied to at least 4 graduate schools

### **Support**

1. Southwestern held routine meetings with participants each semester to provide support

## **Oklahoma State University**

- 21 of the 24 participating students were included in this evaluation (1 freshman and 2 sophomores were not included)
- 8 were juniors and 13 were seniors
- 4 of the 21 students returned from spring to fall 2007, and all were funded during the fall semester
- 4 new students began the program and were funded in the fall 2007 semester
- 13 additional students joined the OK-LSAMP program in the spring 2008 semester and received funding
- 1 junior left the program after the fall 2007 semester
- 9 of the seniors graduated (2 in December 2007 and 7 in May 2008,)

### **Research**

1. Goal: 100% of Phase III students make additional presentations each year
  - a. 2 of the 21 students presented their research at a forum, not including the OK-LSAMP Symposium, so this goal was not met
2. Goal: 100% of scholars will participate in the Research Component
  - a. All 21 of the students participated in research activities in the fall and/or spring semesters, so this goal was met
3. Goal: 100% of scholars will be involved in research projects during the summer
  - a. All of the students participated in a summer internship except the 1 junior who left the program, and 3 of the graduating seniors, so this goal was met
4. 7 of the 21 students presented at the OK-LSAMP Symposium

5. 3 of the seniors had their research published

### **Graduate Preparation**

1. 4 of the 13 seniors took the GRE
2. 6 of the 13 seniors completed at least 1 graduate school application (2 completed 5 applications)

### **Support**

1. OSU held routine meetings with participants each semester to provide support

## **University of Central Oklahoma**

- 4 of 7 students in the OK-LSAMP program were included in this evaluation (3 were sophomores)
- 1 senior returned from spring to fall 2007 and was funded
- 1 junior and 2 seniors started the program and received funding during the fall 2007 semester
- All 4 students returned for spring 2008 and received funding
- 1 senior graduated in May 2008

### **Research**

1. Goal: 100% of Phase III students make additional presentations each year
  - a. No students made presentations at any forum, so this goal was not met
2. All 4 students conducted research in both the fall 2007 and spring 2008 semester

### **Graduate Preparation**

1. None of the students took the GRE or completed the online GRE prep course
2. None of the students applied to graduate school
3. None of the students had summer internships in either 2007 or 2008

### **Support**

1. UCO held routine meetings each semester with the participants to provide support

## **University of Oklahoma**

- 11 of the 13 students in the OK-LSAMP program were included in this evaluation (2 students were sophomores)



- 8 seniors returned from spring to fall 2007 and 7 of the 8 received funding during the fall
- 1 junior and 2 seniors began the program and were funded in the fall 2007 semester
- 1 of the new senior participants left the program after the fall 2007 semester, 1 senior graduated in December 2007, and the rest of the participants continued to the spring and received funding
- 7 seniors graduated (1 in December 2007 and 6 in May 2008)

### **Research**

1. Goal: 100% of Phase III students make additional presentations each year
  - a. 6 of the 11 students made presentations at forums other than the OK-LSAMP Symposium (54.5%), so this goal was not met
  - b. All 11 students participated in research activities in the fall and/or spring semesters
  - c. 7 of the 11 students had a research internship for Summer 2008 (4 of the graduating seniors did not have an internship after their graduation)

### **Graduate Preparation**

1. 3 of the seniors applied to at least one graduate school
2. None of the students took the GRE during the 2007-08 academic year

### **Support**

1. OU held routine meetings each semester with the participants

## **University of Tulsa**

- 8 out of 9 students were used for this evaluation
- 3 were juniors and 5 were seniors
- 1 student was left out because they left after spring 2007 and should not be part of the fall 2007 – spring 2008 evaluation.
- All 8 students that started on or before spring 2007 continued to fall 2007. No new students were admitted in fall 2007. 6 out of 8 students continued from fall 2007 to spring 2008, and no new students were admitted in spring 2008.
- 1 senior graduated in fall 2007 and 2 seniors graduated in May 2008
- 5 out of 8 students that started or continued to fall 2007 received funding for fall 2007, and 5 out of 6 students that started or continued to spring 2008 received funding for spring 2008.

## **Research**

1. Goal: Have 100% of Phase III students make additional presentations each year.
  - a. 3 out of 8 students (about 38%) at least submitted an abstract to an additional conference. This goal was not met.
2. Goal: Have 100% of summer interns seek internships outside of Tulsa U.
  - a. 2 out of 8 students (25%) gained an internship outside of Tulsa U. This goal was not met.

## **Grad Preparation**

1. Goal: Have 100% of participants will take GRE no later than the 1<sup>st</sup> term of their junior year.
  - a. 0 out of 8 students (0%) took the GRE. This goal was not met.

## **Support**

1. 1 out of 8 students applied to 1 graduate school.
2. 6 out of 8 students had at least one summer internship.

APPENDIX L

YEAR FOUR BUDGETS

APPENDIX L

YEAR FOUR BUDGET SHEETS