

2012

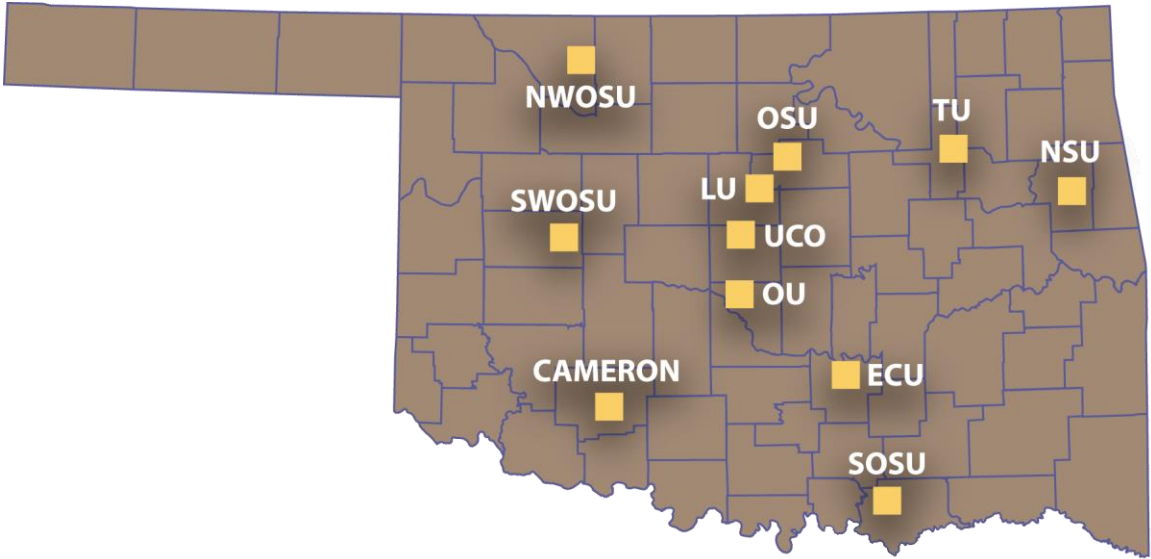
PERFORMANCE EFFECTIVENESS

REVIEW

Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP)



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



Oklahoma Alliance Institutions

2012
PERFORMANCE EFFECTIVENESS REVIEW
P.E.R.

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

Submitted by

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INTRODUCTION

The Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) program concluded *Year Three* of the five year National Science Foundation (NSF) grant (HRD 09020027--2009-2014). This also concludes 18 years of successful LSAMP activities in Oklahoma.

Oklahoma continues to meet the NSF goal to increase the number of minority and under-represented students majoring in science, technology, engineering, and mathematics at the 11 alliance institutions.

In 2011-2012, the Oklahoma Alliance had 191 Scholars; of those, 51 completed Bachelor of Science degrees and 19 of the graduates were admitted to graduate schools. During the academic year, 91 percent participated in research activities and 87 percent of the scholars participated in summer research at national and international locations.

Dr. Mark E. Payton, Professor of Statistics, Oklahoma State University, completed his second year as the Principal Investigator/Program Director for both the OK-LSAMP and Bridge to the Doctorate programs. Dr. Payton travelled to Alliance institutions to meet the campus coordinators and scholars. During these sessions, he discussed Alliance objectives and goals. In addition, he discussed graduate school opportunities and suggested procedures for admission. Dr. Payton left the LSAMP program May 31, 2012, to dedicate more time to teaching.

Dr. Jean Van Delinder, Associate Dean, OSU Graduate College, assumed the role of Principal Investigator/Program Director on June 1, 2012. Dr. Van Delinder brings with her dedication of advancing a more diverse workforce through STEM education. She has received NSF funding for an ADVANCE grant and serves on numerous committees across the nation.

An Oklahoma Impact Report was created which included a 17 year history of the impact LSAMP has had on Oklahoma. In addition, a profiles report was developed with photos of current and former scholars and information highlighting their experiences with LSAMP and their current projects. Printed copies were sent to the National Science Foundation. Both reports were combined with other LSAMP alliance reports and distributed to members of Congress with a letter signed by Presidents of Alliance institutions (Appendix A).

The 17th Annual Research Symposium welcomed approximately 200 attendees for a day of workshops, poster and oral presentations, ethics training, and guest speakers. Dr. Tyrone Hayes, Professor, University of California, served as the keynote speaker.

Oklahoma State University Bridge to the Doctorate Cohort V selected six Fellows who began graduate course work in the Spring 2012 semester. Two Fellows were selected to begin with the summer 2012 term and four in the fall 2012 term. Fellows in the University of Oklahoma Bridge to the Doctorate Cohort IV program continued to make progress. Cohort III Fellows worked toward completion of their fourth year of graduate studies. Three Fellows completed Master of Science degrees. Five Fellows are continuing work toward Ph.D.

requirements and two Fellows took employment in their respective fields of study. Five Fellows in Cohorts I and II are still working toward completion of graduate degrees.

Overall, the OK-LSAMP program has met the goals established in the initial proposal to the National Science Foundation. Throughout the current grant period, OK-LSAMP has continued to hold high standards for scholars, thus producing quality graduates in the STEM disciplines. Scholars maintained high grade point averages, participated in research with faculty mentors (several with publications), and received internship opportunities. All this and more aided in graduation with the qualifications that open the potential for receiving advanced degrees.

PROGRAM OBJECTIVES AND ACTIVITIES

The Oklahoma Alliance, consisting of 11 institutions of higher education (three comprehensive research institutions, one historically black college, and seven regional universities), proposed a five year continuation of Louis Stokes Alliance for Minority Participation activities. Based on 18 years of previous success, the Alliance will continue to support the NSF mission to recruit and retain under-represented students in the Science, Technology, Engineering, and Mathematics (STEM) disciplines. To accomplish these goals, the following program objectives were proposed and have been met to date.

Program Component One

To recruit and retain a minimum of five percent increase yearly in the number of eligible students in STEM fields.

On-Site and Community College Recruitment

The recruitment of scholars was evidenced on each of the 11 Alliance institution campuses. Campus Coordinators sought top under-represented students in the STEM fields. Coordinators used a variety of avenues in the recruitment process. Events such as High School Visitation Days, Freshman Orientation Events, and Parent-Student Campus Tour Days were utilized to identify potential scholars. Additional recruitment was conducted on-site at high school and community college events. Information tables were set up at science fairs, summer workshops for high school students, tribal events and powwows, and personal contact with students. OK-LSAMP opportunities were presented during sessions at the first Oklahoma Native American Research Symposium (ONARS), Cherokee Nation Counselor Enrichment Event, Cherokee Nation Foundation College Preparatory Institute (CCPI), and Oklahoma Native American Students in Higher Education (ONASHE) conference.

Oklahoma State University sponsored the first Annual Oklahoma Native American Research Symposium: *Sustaining Culture through Knowledge and Research*, through an OSU ADVANCE grant. Native American faculty and students from across the state were invited to showcase their research projects through poster or oral presentations. In addition, Native American moderators provided opportunities for conversations on the need for more involvement by Native Americans in the field of research. Topics discussed during the event included, but were not limited to: Cultural Competency and Sensitivity in Working with Tribal Communities, Giving Back to the Community, and Introduction to Research.

The Cherokee Nation Foundation sponsored a two day workshop for select individuals who counsel Native American students in preparation for college. The goals of the workshop were to gather information that may be used to assist tribal citizens as they prepare for college. The workshop collaborated with: OSU, Harvard University, MIT, Dartmouth, Princeton Review, the University of Oklahoma and the University of Tulsa. In addition to better informing high school counselors and administrators, the efforts of this project also lead to the development of the Cherokee College Preparatory Institute (CCPI). CCPI was an intense, week-long event in which Cherokee Nation high school juniors and seniors were given information and tips on preparing for college and successfully completing the application process. Fara Williams participated as a representative for OK-LSAMP and alliance institutions for both of these events.

The fifth Oklahoma Native Americans in Higher Education (ONASHE) conference continued to provide opportunities for Native faculty and students from across Oklahoma to strengthen their leadership skills by interacting with tribal leaders and participating in workshops. Twenty-five different tribes were represented at the conference.

The 11 Oklahoma Alliance institutions supported 191 LSAMP scholars in the 2011 – 2012 academic year. This total reflects a 12 percent increase from the previous year of 170 scholars. The objective was to increase the number of scholars by 5 percent each year of the project. Objective One has not only been met, it has exceeded the 5 percent increase in the original proposal (Table 1).

Table 1. Comparison Numbers to Meet Stated Goal

Institution	No. Scholars		No. Scholars Increase/Decrease
	2010-2011	2011-2012	
Cameron University	4	7	+3
East Central University	20	22	+2
Langston University	24	28	+4
Northeastern State University	11	12	+1
Northwestern Oklahoma State University	3	5	+2
Oklahoma State University	51	63	+12
Southeastern Oklahoma State University	15	16	+1
Southwestern State University	6	6	0
University of Central Oklahoma	11	9	-2
University of Oklahoma	19	15	-4
University of Tulsa	6	8	+2
Totals	170	191	

Table 2. Comparison of Scholars by Gender

Category	Year		Percent
	2010-2011	2011-2012	
Male	81	91	48
Female	89	100	52
	170	191	

Table 3. Number of Scholars by Ethnicity

Ethnicity	2010-2011	2011-2012
African American	65	57
Native American	57	75
Hispanic	21	32
Pacific Islander	0	1
Asian American	3	2
White—First Generation	14	20
More than One Race & Unknown	10	4
Total	170	191

Campus Coordinators on Alliance campuses recruited students based on degree emphasis, grade point averages, and desire to complete an undergraduate degree and seek admission into graduate school programs. The recruitment of scholars began during high school visitation days and freshman orientation programs. Additional recruitments were by school and local newspaper articles, on-campus flyers, faculty mentor inquiries, and invitation by Scholars and BD Fellows to present their research at specific research programs.

Alliance Supplementary Activities

Summer academies/camps, research and bridge programs continue to be a critical part of the Alliance experience and offer a unique time to “get the word out” regarding the OK-LSAMP program and the benefits of being a STEM major and an LSAMP Scholar. Several Alliance institutions held workshops for incoming freshmen and high school juniors and seniors. Each of these workshops offered opportunities for local presentations on the benefits of being a Scholar in the LSAMP program (Appendix B).

Oklahoma State University: As lead institution, OSU continued to participate in several on-campus summer workshops for minority high school students from across the state. OK-LSAMP has close working relationships with several programs. The programs include, but are not limited to:

Retention Initiative for Student Excellence (RISE) and RISE Jumpstart – programs designed to aid minority students as they make a smooth transition into college life. This program may also lead into the Inclusion Leadership Program.



Inclusion Leadership Program (ILP) — a year-long program designed to pair minority college students and students from high schools in Tulsa, Stillwater, and Oklahoma City to develop the skills and knowledge to become effective leaders in a more diversely inclusive society.

ConocoPhillips Minority Engineering Program (MEP) Summer Bridge – designed for incoming freshmen Engineering majors to spend one month on campus, taking class and transitioning into the academic atmosphere. In addition, students may choose to live in the MEP Leaving Learning Community housing.

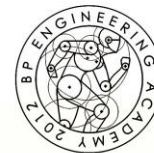


The Retired Educators for Youth Agricultural Programs (REYAP) was designed to bring under-represented youth, ages 14-18, to the OSU campus for a week of activities promoting diversity awareness, advocacy, leadership, and education in the STEM disciplines.

Other programs sponsored by the Oklahoma State Regents for Higher Education were designed to promote awareness of STEM programs to under-represented high school students. Examples include: ***Fired Up About Engineering Camp, Smart Cars, Camp T.U.R.F. (Tomorrow's Undergraduates Realizing the Future), Exploring Quantitative Analysis: A Basic Introduction.***

The University of Oklahoma: Several residential and day camps for under-represented youth were organized and offered to under-represented high school youth throughout the summer. These camps included, but are not limited to:

BP Engineering Academy – a residential camp which encouraged young men who have completed their 9th grade year and/or be in the graduating class of 2012 to 2013 and demonstrate an interest in mathematics and/or science to participate.



BP DEVAS Summer Camp (Discovering Engineering Via Adventure in Science) –

designed as a residential camp for young women, with a strong interest in engineering, mathematics, science, and/or technology, a curiosity of how things work, or want to help solve big problems of the world.

AT&T Summer Bridge Program – designed for incoming freshmen students to help with the transition from high school to the university atmosphere and to increase their math competency.

Other programs sponsored by the Oklahoma State Regents for Higher Education were designed to promote awareness of STEM programs to under-represented high school students. Examples include: **Bridges to College Math, Science, and Engineering; Going Green: Partnering Five Architecture Disciplines; Sky High: An Exploration of Aeronautics from the Basics and Beyond;** and **Field Studies in Biology.**

Regional Alliance Universities: The regional universities within the Alliance and with support by the Oklahoma State Regents for Higher Education (OSHRE), sponsored summer academies for high school students interested in STEM programs. Examples include:

Math and Science Academy – Langston University. A three week residential camp designed to present materials on biological sciences, chemistry, and mathematics (including pre-calculus and calculus) in addition to ACT preparation. The camp is co-sponsored by NASA.





Science Detectives Summer Academy – Cameron University. Through the course of this

academy, students will be introduced to methods of collecting samples, scientific laboratory methods, scientific inquiry and opportunities for high school students to pursue biomedical education.

Additional programs included: (1) NanoExplorers – **Cameron University**; (2) Coding Theory, Competitive Strategies, Rick Analysis and Other Mathematical Analysis – **East Central University**; (3) Explorations in Computer Science and Robotics – **East Central University**; (4) Get Green for Blue: Outdoor Investigations to Connect Water to You – **Northeastern State University**; (5) Science at the Zoo – **Northeastern State University**; (6) Valuing Tradition: Applying Indigenous Stewardship in Ecology – **Northeastern State University**; (7) Exploring the Benefits of Human-Animal Interactions – **Northwestern Oklahoma State University**; (8) Take Flight: Aviation/Science Camp – **Southeastern Oklahoma State University**; (9) SSMA: Summer Science & Mathematics Academy – **Southwestern Oklahoma State University**; (10) Summer Engineering Academy for TU Precollege Students – **University of Tulsa**; (11) Technology Education and Collaborative – **University of Tulsa**; (12) Exploring Chemistry - **University of Central Oklahoma**.

Shared-Database, Listserv, and Facebook

Campus Coordinators continued to work closely with the Grant Coordinator in the collection of Scholar and BD Fellow data. The Grant Coordinator, housed at the lead institution site (Oklahoma State University), maintained the alliance database. Information collected on each of the scholars in Oklahoma was used to complete information requested by the National Science Foundation (NSF) and the program evaluator (Rosemary Hayes, Director of the Center for Institutional Data Exchange and Analysis, Norman, Oklahoma). Data were collected continually throughout the year with updates to the program on an as-needed basis. Information was collected from the Campus Coordinators as well as by email to individual scholars. The information collected includes, but is not limited to: degree program, presentations, awards, research projects, completion of degree, and acceptance into graduate school. The Alliance management team continued to send regular updates regarding opportunities from across the nation aiming to reach more students and increase the quality of academic opportunities. The **listserv** continued to be used for e-mail contact with Scholars. In addition, a **Facebook** page was used for more direct contact with scholars and for posting awards and recognitions.

Program Component Two

To support scholars academically, personally, and professionally, ensuring they build the connections and skills needed to excel.

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

- Graduate school preparation modules are listed on the OK-LSAMP website (www.ok-lsamp.okstate.edu) for all Alliance institution use.
- Scholars continue to take advantage of the on-line Graduate Record Examination (GRE) preparation course offered to the Alliance scholars through Oklahoma State University-OKC. The classes have been developed to provide learning activities to assist students in acquiring knowledge, practicing skills and completing steps necessary to gain admission to graduate school with successful completion. The classes focus on (1) what is the GRE, why it should be taken, how to prepare, contents and format, (2) test-taking skills relevant to computer aided test format, (3) practice tests, (4) scoring, and (5) average score requirements for specific fields of study.
- Scholar meetings implemented throughout the Alliance offered a forum for educational speakers and workshops focused on graduate school preparation and career development.
- Nineteen 2011-2012 OK-LSAMP graduates were accepted to graduate schools throughout the nation. Examples include, but are not limited to:

Arizona State University
Baylor University – Neuroscience Program
Cornell University - Chemistry
Louisiana State University – Entomology BD Program
OSU Center for Health Sciences – DO Program and Biological Sciences
University of Oklahoma
University of North Texas
Washington State University

- Support to state, regional, and national conferences to present research projects. Examples include, but are not limited to:

American Association for the Advancement of Science (AAAS) Southwestern and Rocky Mountain (SWARM) Annual Conference.
Architectural Engineering Institute of ASCE, Omaha, NE
Black Engineer of the Year Alumni (BEYA), Philadelphia, PA
Kansas-INBRE, Kansas City, KS
MGE@MSA/WAESO Annual Student Research Conference, Tucson, AZ
National Conference on Undergraduate Research (NCUR), Ogden, UT
National Society of Black Engineers, Kansas City, KS
Oklahoma Research Day, Lawton, OK
Oklahoma Research Day at the Capitol (invitation only), Oklahoma City, OK

Society for the Advancement of Chicanos and Native Americans in Science
(SACNAS), Anaheim, CA
Women of Color STEM, Dallas, TX
17th Annual Research Symposium, Stillwater, OK

Program Component Three

*To introduce a new focus on enhancing scholar preparation
for global success.*

Participants from each Alliance institution are encouraged to take an active part in activities that enhance and assess academic performance, arouse accountability consciousness, and provide other experiences that lend to graduate school and workforce preparation.

- The Annual Research Symposium offered workshops focusing specifically on Graduate Education.
- The Annual Research Symposium addressed Scientific Integrity and Ethics with a workshop lead by a qualified ethics instructor.
- Scholars were provided opportunities to attend lectures on Ethics during monthly scholar's meetings.
- The University of Tulsa course, *ES 4001: Research Ethics*, continues to be available for scholars. The course is taught by Dr. J. C. Diaz, OK-LSAMP Campus Coordinator for TU.
- Scholars throughout the Alliance continue to be encouraged and supported in traveling to visit graduate schools.
- Scholars were continually advised to enroll in graduate level course work during their senior year. This allowed 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's Ed-2-Go series. This course has proven to be beneficial to the scholars. Copies of the resource book used for the course were supplied to each of the Alliance campuses. This allowed the Scholars to use the book without any additional expenses to them.
- Scholars throughout the Alliance are encouraged to apply to a minimum of five graduate schools.

- Campus Coordinators are provided resources (i.e. GRE Handbook/CD Study Guides) and encouraged to provide scholars with graduate school preparation.
- Scholar meetings are held at a minimum of once per semester on all alliance campuses with most campuses holding monthly meetings. Various topics are presented to the scholars such as graduate school preparation, test taking strategies, study abroad options, and opportunities for summer internships along with ideas for suggestions on completing applications. Scholar meetings were also used as a means for Scholars to present their research to their peers. This provided a “non-intimidating” environment for presentations and the building of presentation skills.

Annual Research Symposium

The 17th Annual Research Symposium was held October 1, 2011, on the Oklahoma State University, Stillwater campus (Appendix C). The Symposium welcomed 195 attendees for a full day of workshops, 41 posters, 15 oral presentations, ethics training and guest speakers. This number indicated a 7.7 percent increase from the 2010 Symposium in the number of people attending.

The program keynote speaker, Dr. Tyrone Hayes, Professor, University of California - Berkeley, spoke on the effects of atrazine on frogs. The research presentation was titled: *From Silent Spring to Silent Night: A Tale of Toads and Men*. Dr. Hayes followed his presentation with a one-on-one with Scholars and graduate students from the Zoology department. Dr. Hayes was honored during the evening grand entry of the OSU Native American Student Association (NASA) Pow-Wow. The event is sponsored by the OSU NASA with support from the Division of Institutional Diversity and the Native American Faculty and Staff Association among others and features members from numerous tribes across Oklahoma.

Table 4. Annual Research Symposium Attendees by Category

	Attendees	
	16 th Annual	17 th Annual
Undergraduate Students	92	108
Graduate Students	22	26
Faculty	42	32
Staff	12	17
K-12 Students	9	5
Special Guests	4	7
Total	181	195

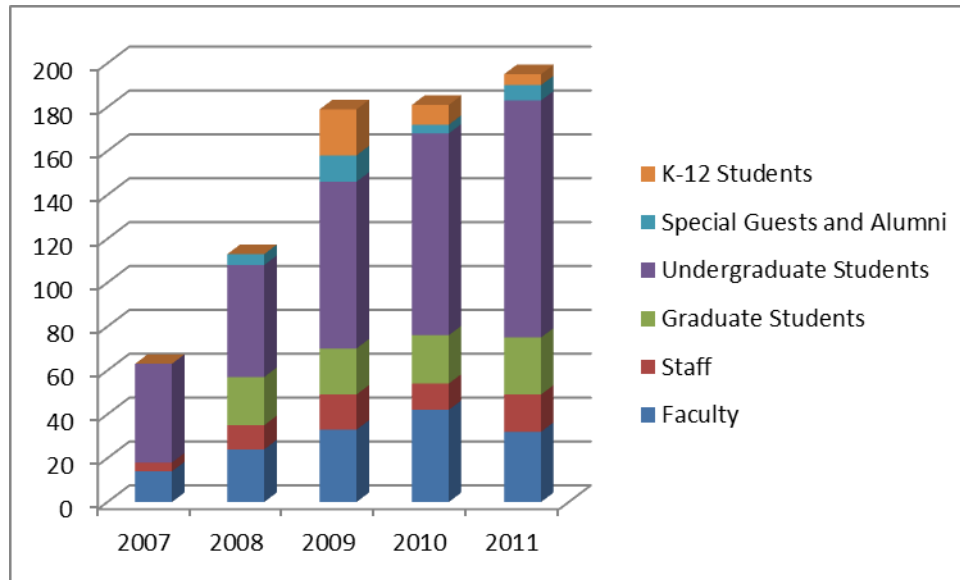


Figure 1. Participants Attending Annual Research Symposium

Ethics in Research Training

Each Scholar in the Oklahoma Alliance is required to attend an annual *Ethics in Research* training session. The training may be a seminar such as at the Annual Research Symposium, Scholar meetings, a class, or as a workshop provided by one of Oklahoma’s Campus Coordinators trained to offer such workshops. Scholars are issued a *certificate of completion* at the end of the training and the information is submitted to the Grant Coordinator for inclusion in the database. A few alliance institutions offer a credit course on ethics in which scholars may enroll for credit to be applied to the undergraduate degree requirements. In addition, some scholars are required to meet ethics training requirements within their academic and/or research department(s).

International Experiences

Scholars were offered research, study abroad, and conference experiences in a variety of locations. These international opportunities prepare them for their future career by adding experiences that can help build relations with foreign clients and add diverse perspectives and experiences to the research skills they acquire during their academic career. Fifteen scholars participated in international experiences in nine different international locations during 2011-2012.

Table 5. Internship Locations Outside the Continental United States

Student	Location
Kymerli Whayne	South Africa
Katherine Stewart	Costa Rica
Alex Hardison	Costa Rica
Paul Martinez	Costa Rica
Vicky Kelly	France
Jason Kimmell	France
Melicia Matthews	Italy
Abby Ramariz	Italy
Kelsey Raus	Italy
Lauren White	Kenya
Sunny Evans	Namibia
Lauren White	Namibia
Ricardo Montoya	Peru
Anna Chica-Mosier	Turkey
Jose Diaz	Puerto Rico
Brandon Burgess	China

Monthly Scholar Meetings

Scholar meetings are held on each campus under the direction of the Campus Coordinator. The meetings are intended to provide support for the scholars while bringing in guest speakers. Presentations were made on current research projects and a variety of other topics, including but not limited to: financial affairs, time management, how to apply for summer internships, applying to graduate school, and creating application packets. The meetings also allow scholars to become better acquainted with each other for peer mentoring and to gain information about other majors, research projects, and activities.

Program Component Four

To institutionalize effective pathways to STEM graduate study and careers at all Alliance institutions.

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

In a recent report, *Diverse Issues in Higher Education* reported Oklahoma schools consistently rank in the top for awarding degrees to Native Americans. Six Oklahoma universities in the OK-LSAMP Alliance rank in the top 15 institutions for Native Americans completing degree requirements. Northeastern State University ranked first with 339 graduates; the University of Oklahoma ranked fourth with 246 graduates; Oklahoma State University ranked fifth with 233 graduates, Southeastern Oklahoma State University ranked tenth with 165 graduates; East Central University ranked twelfth with 144 graduates; and the University of Central Oklahoma tied for fourteenth place with 120 graduates. This represents a total of 1,247 Native American students receiving BS degrees in Oklahoma.

Table 6. Ranking of Alliance Institutions for Native American Degrees Awarded

Ranking	Institution	Number of Degrees Awarded 2011	Number of Degrees Awarded 2012
1	Oklahoma State University	355	
2	Northeastern State University	335	
3	University of Oklahoma	241	
6	Southeastern Oklahoma State University	170	
10	East Central University	143	
12	University of Central Oklahoma	127	
1	Northeastern State University		339
4	University of Oklahoma		246
5	Oklahoma State University		233
10	Southeastern Oklahoma State University		165
12	East Central University		144
14	University of Central Oklahoma		120

Source: *Diverse Issues in Higher Education*, 2012.

Fifty-one (51) scholars received Bachelor of Science degrees in the 2011-2012 academic year. Nineteen scholars were admitted to graduate programs throughout the United States. This indicates 37 percent of OK-LSAMP scholars are continuing their education by entering graduate programs (Table 8).

Table 7. Number of Graduates by Institution Entering into Graduate Programs

Alliance Institution	Number of Graduates 2010-2011	Admitted to Graduate Programs 2010-2011	Number of Graduates 2011-2012	Admitted to Graduate Programs 2011-2012
Cameron University	3	2	0	2
East Central University	4	1	2	0
Langston University	0	0	9	3
Northeastern State University	4	1	5	2
Northwestern OSU	1	0	0	0
Oklahoma State University	11	6	14	6
Southeastern OSU	2	1	4	0
Southwestern OSU	1	0	3	3
University of Central OK	3	1	6	2
University of Oklahoma	7	3	5	1
University of Tulsa	1	0	1	0
TOTALS	37	15	51	19

- All Alliance institutions offer scholar programs including, but not limited to: (1) financial and academic support, (2) academic year research mentoring components and (3) a summer research internship program. Across the Alliance, these programs focus on retention, high academic achievement, and graduate school preparation.
- Tutoring is available for students experiencing difficulty with coursework. The OK-LSAMP program provides compensation to the tutor. Scholars were also referred to Student Success Centers to receive tutoring and study techniques as well as peer mentors.
- Six (6) scholars traveled to Ogden, Utah, for the 2012 National Conference on Undergraduate Research (NCUR). Annually, this trip is funded in part by EPSCoR.
- OSU Scholars participated in research projects sponsored by the Office of Scholar Development. Students are selected to participate as a Freshman Researcher, and may advance their research support further by applying for the NIBLACK Foundation (an \$8,000 scholarship) and/or the Wentz Research Project (\$2750 - \$4,500). The scholars are able to conduct their own research during the academic year (sometimes continued into the summer) and present the results at individual research venues (Appendix D).
- Scholars participated in the National Society of Black Engineering Conference, Kansas City, Missouri.

- Six OSU scholars were chosen to participate in the Scholar Development Program. This invitation only program is designed to “refine students' academic skills through research opportunities, individual mentoring, and special courses.”
- Four Scholars from Langston University presented posters and oral presentations at the Kansas INBRE Conference, January, 2012.
- Scholars presented posters and oral presentations, in addition to taking first place honors, at the 2012 Emerging Researchers National Conference in Atlanta, Georgia.
- Scholars participated in summer internship/research positions throughout the nation and world.
- The Oklahoma Alliance presented a poster at the National Science Foundation Joint Annual Meeting in Washington, D.C., June 12-15, 2012 (Appendix E).
- Inter-institutional collaboration – each summer, a number of scholars conduct internships at Alliance institutions. Each Alliance institution is funded to offer summer internship opportunities on their campus, but, because of inter-institutional collaboration, scholars may also conduct research on Alliance campuses.
- Graduate school preparation information workshops for OK-LSAMP scholars are available to the Alliance through the Oklahoma State University Graduate College and the University of Oklahoma Graduate College.
- Bridge to the Doctorate Fellows from both OSU and OU participated in the Annual Research Symposium. This allowed scholars to ask individual questions regarding graduate school and receive feedback from someone with whom they could relate.
- Graduate school preparation modules and helpful handouts are located on the OK-LSAMP website for use by all Alliance Institutions.
- Alliance meetings with the program administration and Campus Coordinators are held. The meetings are a forum for ongoing communication on overall program operation and specific program implementations on each campus.
- The Principal Investigator visited Alliance campus coordinators and scholars to discuss program goals and objectives and admission into graduate school.
- A web page continues to be maintained by OSU as the lead institution. The page contains active links to the National Science Foundation and Alliance Institutions. Additional links include Alliance activities, forms, current and past newsletters, reports, and graduate school information. The web address: www.ok-lsamp.okstate.edu.

- Program newsletters and other program publications enhance communications between Alliance institutions, maintain the coherence of the program, and provide informational recruiting material for new scholars, mentors and program supporters.
- The data system developed for the Alliance with information on current and past alumni scholars and Bridge to the Doctorate Fellows continues to be upgraded and improved. Information includes, but is not limited to: major, presentations at workshops/conferences, internships, GPA, degrees awarded and graduate school applications.

National Conference on Undergraduate Research

The National Conference on Undergraduate Research (NCUR) is held annually to provide opportunities and “is dedicated to promoting undergraduate research, scholarship, and creative activity in all fields of study” (NCUR, 2010). In 2012, the Oklahoma LSAMP Alliance had six scholars attend the conference in Ogden, Utah. The scholars made both oral and poster presentations. Mark Payton, PI, attended the conference (Appendix F).

Additionally, there was collaboration between non-OK-LSAMP students at the University of Oklahoma (OU) and the University of Central Oklahoma (UCO) for travel and peer support during the conference. Two sponsors and two students were from UCO, and one student from OU participated in the NCUR conference.

National Society of Black Engineers (NSBE)

Nine scholars attended the National Society of Black Engineers Conference in Kansas City, Missouri. The conference/organization is designed to “stimulate and develop student interest in various engineering disciplines, increase the number of minority students studying engineering, and encourage members to seek advanced degrees” (NSBE, 2010). One Scholar serves as President of the OSU chapter. In addition to attending the National conference, 12 Scholars attended the Regional NSBE conference in St. Louis, Missouri. The “*Chant Award*” was presented to OSU for enthusiasm during the conference (See Appendix G).

Society for the Advancement of Chicanos and Native Americans in Science (SACNAS)

The annual SACNAS conference was held in Anaheim, California. Saad Gondal, OSU, Mechanical Engineering senior, and Cassandra Camp, Biological Sciences, senior, both received travel scholarships to the 2011 conference in order to present research posters in their respective disciplines.

The Alliance is currently partnering with SACNAS for a *Scholars in Science: Native American Path (SSNAP)* project. The project goal is to recruit 30 Native American participants to incorporate pre-conference activities focusing on conference preparation and post-conference activities and evaluation. At the SACNAS conference, project participants will meet with other Native American elders and participate in a PowWow/Grand Entry into the event. Additional benefits include a travel scholarship to the 2012 conference.

Black Engineers of the Year Award (BEYA)

The BEYA conference was held in Philadelphia, PA. Five scholars from Oklahoma attended the conference (Appendix H). Desmond Harvey, OSU Multicultural Engineering Program (MEP) Coordinator and OU BD Fellow travelled with the scholars to the conference. Wilmon Brown, III, OSU, was invited to attend the conference as a result of an outstanding poster presentation during the Women of Color STEM Conference in Dallas, Texas.

Women of Color Conference

The Women of Color STEM Conference recognizes outstanding women in the STEM fields and provides excellent opportunities for professional development, networking, and recruiting. It is co-sponsored by CCG's Women of Color Magazine and the IBM Corporation. The 2011 conference was held in Dallas, Texas, November 4-6, 2011. Two Scholars received student achievement awards: Brandi Andrews, OSU, Outstanding Athlete and Courtney Garcia, SWOSU, Outstanding Research. In addition, four Oklahoma students presented posters in the first poster competition: Vicky Kelly, Amy Anderson, Courtney Garcia, and Wilmon Brown, III. Wilmon received the award for Outstanding Poster Presentation and was awarded a trip to the BEYA conference in Philadelphia, PA. Several other scholars received nomination recognition for their research, leadership, and academics (Appendix H).

Research Internship Experiences

Scholars are encouraged to participate in academic year and summer internship programs locally, nationally, and internationally. The academic year research experiences provide opportunities for Scholars to work closely with faculty mentors on their campuses and to learn from some of the best researchers in their field. The summer internship program allows scholars to gain first-hand experiences in their chosen career fields, while learning new skills and acquiring skills that will help them transition from the academic environment into their future work environment. Internships also allow the scholars to apply what they have learned in the classroom to real-work situations.

Table 8. Academic Year Research Experiences and Internship Experiences

Institution	Research By Semester				
	Combined Fall & Spring 2010-2011	Summer Internship 2011	Fall Semester 2011	Spring Semester 2012	Summer Internship 2012
Cameron University	4	3	4	6	7
East Central University	4	4	3	3	7
Langston University	2	14	3	3	23
Northeastern State Univ.	8	7	7	6	9
Northwestern OSU	1	0	0	0	0
Oklahoma State Univ.	32	39	36	46	61
Southeastern OSU	3	1	5	6	18
Southwestern OSU	6	4	6	6	8
Univ. of Central OK	6	3	6	5	9
University of OK	16	17	9	15	18
University of Tulsa	4	6	0	0	6
TOTALS	86	98	79	96	166

Listed below are selected examples of internship activities conducted by OK-LSAMP scholars.

Internship Partnerships

One of the goals of the OK-LSAMP program is to have each Scholar complete applications to a minimum of three internship locations. The following represents a partial list of internship locations.

Bell Helicopter, Hurst, TX – Design, build, and test helicopters for a variety of users from private individuals to the US military.

BP Oil Company, Houston, TX & Wilburton, OK -- BP is one of the world's leading international oil and gas companies, providing its customers with fuel for transportation, energy for heat and light, retail services and petrochemicals products for everyday items (bp.com).

Chesapeake Energy, Oklahoma City, OK – The second largest producer of natural gas, a Top 15 producer of oil and natural gas liquids, and the most active driller of new wells in the United States (chk.com).

ConocoPhillips, Bartlesville, OK – The third-largest integrated energy company in the United States, the fourth largest refiner, and the sixth largest reserves holder of nongovernment controlled companies, known for worldwide technological expertise in reservoir management and exploration (www.conocophillips.com).

DartPhone – A telecommunications company dedicated to supplying telecommunication assistance to low income and government supported individuals.

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

Donald Danforth Plant Science Center, St. Louis, MO – a research center dedicated to improving the human condition through plant science. Research areas include, Biofuels, Biofortification, Disease Resistance, Drought Tolerance, Pesticide and Fertilizer Reduction, and Biosafety and Regulations..

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

Google Android Camp, Mountain View, CA – The camp brings together 30 freshmen and sophomore students whose majors are Computer Science, Computer Engineering, or related areas to experience an interactive and collaborative curriculum focusing on a practical introduction to developing applications for Android and explore the concepts behind Android (www.umbc.edu).

Halliburton Oil Company, Duncan, OK – One of the world's largest providers of products and services to the oil and gas industry. The company employs nearly 70,000 people in approximately 80 countries. In the 1930s, Halliburton established its first research laboratories where the company tested cement mixes. Today, Halliburton offers the world's broadest array of products, services and integrated solutions for oil and gas exploration, development and production (Halliburton.com).

Jet Learning Lab, Houston, Texas – is a learning center and an academic career management service, with the mission to provide high-level academic enrichment and career management to third grade through college undergraduate students that are motivated to learn mathematics and science topics (www.jetlearninglaboratory.com).

Kansas State University – SUROP, Manhattan, KS – The Summer Undergraduate Research Opportunity Program gives undergraduates from under-represented groups a first-hand experience with the research process. This experience is designed to help students prepare for graduate school and other advanced study. Participation in a program such as SUROP provides a first-hand look at the process and excitement of discovery through research and such experience is viewed favorably by the admissions committees for graduate and professional schools (www.pathwaystoscience.org).

Lockheed-Martin, Kansas City, KS – a research, design, development and manufacturing company dedicated to aeronautics, electronic systems, information systems, global solutions and space systems and building the finest military aircraft in the world.

Maternal and Child Health Careers/Research Initiative for Student Enhancement (MCHC/RISE-UP) – a summer program focusing on public health training. Students are able to choose between two experiences in one location from Johns Hopkins University, University of South Dakota/Sanford School of Medicine Center for Disabilities; and the University of Southern California. The program is sponsored by the Kennedy Krieger Institute.

Niblack Research Project, Stillwater, OK – The project supports research of undergraduates on the Oklahoma State University, Stillwater campus. Recipients are sponsored by a member of the research faculty to oversee the progress of the research with day-to-day monitoring.

Occidental Petroleum (OXY), Houston, TX – an international oil and gas exploration and production company and has a subsidiary as a major North American chemical manufacturer (www.oxy.com).

OU Health Science Center (HSC), Norman, OK – a comprehensive academic health center dedicated to the education of students in the professional graduate and undergraduate levels to become highly qualified health service practitioners, educators, and research scientists (www.ouhsc.edu).

Organization for Tropical Studies (OTS) Native American and Pacific Islander Research Experience (NAPIRE), Costa Rica – OTS is a non-profit consortium that has grown to include 63 universities and research institutions from the United States, Latin America and Australia. In the early 1960's, scientists from U.S. universities forged working relationships with colleagues at the Universidad de Costa Rica in the interest of strengthening education and research in tropical biology (www.ots.ac.cr).

Research Experiences for Undergraduates (REU) – REU programs are funded by the National Science Foundation and conducted on specific campuses in specific programs. Programs in which OK-LSAMP scholars participated include, but are not limited to: University of Arkansas-*Assessment and Sustainable Management of Ecosystems*; Oklahoma State University-*Bee research in Turkey*, Florida State University, EPSCoR-University of Oklahoma and University of Arkansas, Louisiana State University.

Shell Oil Company, worldwide – is a global group of energy and petrochemical companies located in more than 80 countries and territories (www.shell.com).

USDA Rural Development Program – works to improve the economy and quality of life in rural America (www.rurdev.usda.gov).

Veteran Affairs Medical Center, Oklahoma City, OK. – government ran hospital and rehabilitation center for America's veterans.

Williams Companies, Tulsa, OK – is an energy infrastructure company focused on connecting North America’s significant hydrocarbon resource plays to growing markets for natural gas, natural gas liquids (NGLs) and olefins. Williams’ operations span from the deep water Gulf of Mexico to the Canadian oil sands (www.williams.com).

EVIDENCE OF INSTITUTIONALIZATION, OUTREACH AND FACULTY HIGHLIGHTS

Faculty and Student Teams (FaST) Grants

During the Summer 2011 one Faculty and Student Teams (FaST) grant was awarded. The FaST grant provided opportunities for faculty and students to travel to three different locations to conduct research. Selected faculty and students associate with members of the respective laboratories and professional staff in an educational training program to help provide the tools, knowledge, and resources needed to compete in future research funding opportunities (www.bnl.gov).

One Native American FaST team conducted research at Argonne Labs in Argonne, Illinois. The teams spent 10 weeks on site and were able to explore, develop and conduct research in different disciplines.

Faculty Publications and Activities

Campus Coordinators are an integral part of the OK-LSAMP program. They not only hold faculty rank at their respective institutions, they also have a dedication to the education of America’s under-represented youth and support the NSF goals and objectives related to the LSAMP program. Coordinators are continually striving to achieve success within their own career paths. Several highlights are below:

Tim Hubin, PI, Southwestern Oklahoma State University

(1) Received the 2012 DaVinci Fellow Award; (2) Received the Bernhardt Academic Excellent Award; (3) Grant Awarded: OK-INBRE Mini-Grant "Synthesis and Evaluation of Transition Metal Complex Dual CXCR4/CCR5 Antagonists" 1 year, \$34,598 (Appendix D).

Articulation Agreements with Community Colleges

The Oklahoma Alliance continues to work with community colleges throughout the state. The Oklahoma State Regents for Higher Education articulation agreement and policy

“guarantees transferring students successfully completing Associate of Science or Associate in Arts degrees into higher education institutions in the Alliance.”

Oklahoma State University continued collaboration with Northern Oklahoma College (NOC) in 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. Students in the NOC-OSU Gateway Program are eligible to be OK-LSAMP Scholars and be paired with a faculty mentor.

The “dual enrollment” program between Tulsa Community College (TCC) and OSU continues to be successful. 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.

Alliance institutions continue to work with community college staff in identifying minority and under-represented STEM major who are transferring to four-year institutions.

SCHOLAR AND BD FELLOW HIGHLIGHTS

Publications

Scholars and Bridge to the Doctorate Fellows, along with their mentors, submitted articles for publication in peer-reviewed journals. Listed below are the scholars and title of their publications. Selected examples of the articles are listed in Appendix I.

Yeary, M. & Dunn, Z. (2012). *Practical Considerations for Laboratory Based Spectral Monitoring in the High Frequency (HF) Band*. 2012 IEEE International Instrumentation and Measurement Conference, Graz, Austria, Conference Proceedings.

Fine, S., McGowen, S. L., Carter, B. J., Bement, L.C., Johnson, W.C., Simms, A. R. & Halfe, A. (2011). *Investigation of a Parna (Silt) Dune Formation in the Panhandle of Oklahoma*. Soil Science Society of America, Conference Proceedings.

Fine, S. (2011). *Badger Hole: Towards Defining a Folsom Bison Hunting Complex along the Beaver River, Oklahoma*. Annual Plains Anthropological Conference Proceedings.

Gonzales, J., Shahmohammad, M., & Abdolvand, R. (October 2011). *Sensing Acoustic Properties of Materials Using Piezoelectric Lateral-Mode Resonators, IEEE International Ultrasonics Symposium (IUS), Orlando, FL*

Mehdizadeh, E., **Gonzales, J.**, Rahafrooz, A., Absolvand, R. & Pourkamali, S. (June, 2012). *Piezoelectric Rotational Mode Disk Resonators for Liquid Viscosity Monitoring*, " Conference proceedings *Hilton Head 2012 Workshop*, Hilton Head, SC.

Shahmohhamdi, M., Harrington, B.P., **Gonzales, J.**, & Abdolvand, R. (June, 2012). *Temperature-Compensated Extensional-Mode MEMS Resonators on Highly N-Type Doped Silicon Substrates*. Conference proceedings *Hilton Head 2012 Workshop*, Hilton Head, SC.

Hajjam, A., Rahafrooz, A., **Gonzales, J.**, Abdolvand, R., & Pourkamali, S. (January, 2012). *Localized Thermal Oxidation for Frequency Trimming and Temperature Compensation of Micromechanical Resonators*, *MEMS 2012*, Paris, France.

Sadate, S., Kassu, A., Farley, C. W., Sharma, A., **Hardisty, J.**, Lifson, M.T.K. (2012). *Standoff Raman Measurement of Nitrates in Water*. Conference Proceedings.

Chang-Ming Y., **Kelly, V.**, Payton, M., Dickman, M., Verchot, J. (2012). *Letter to the Editor: SGT1 Is Induced by the Potato virus X TGBp3 and Enhances Virus Accumulation in Nicotiana benthamiana*. *Molecular Plant*.

Ning Wu, N., Matand, K., Li, B. **Love, Kayla, Stoutermire, Brittany**, Wu, Y. (2012). *Natural rules for Arabidopsis thaliana pre-mRNA splicing site selection*. *Central European Journal of Biology* August 2012, Volume 7, Issue 4, pp. 620-625.

Palmieri, F.P., Wohl, C. J., **Morales, Guillermo**, Williams, T., Hicks, R., Connell, J.W., *Laser Surface Preparation of Titanium Adherends: Green Processing for Improved Bond Durability*. *Electronic Proceedings 57th International SAMPE Symposium and Exhibition*, Baltimore, MD, May 21-24, 2012.

Stone, P., Smith, Chelsea, & Copngdon, J. (2012). *Conservation Triage nd Sonoran Mud Turtles in the Peloncillo Mountains*. Conference Proceedings. 10th Annual Symposium on the Conservation and Biology of Tortoises and Freshwater Turtles. Tucson, Arizona, August 16-19, 2013, pp. 57.

Scholars

OK-LSAMP scholars are among the top students on Alliance campuses and throughout the nation. This year, Oklahoma had Scholars participate as Goldwater Scholars, UDALL Scholars, and BD Fellows and former scholar selected to participate in the Nobel Laureate Conference in Germany.

Additionally, scholars are consistently honored through President and Dean's Honor Rolls, serving as officers and members of student organizations, and recipients of numerous scholarship awards. Additional news articles and related photos are found in Appendix K. Listed below are select examples of Scholar highlights.

Sheila Baradaran, OU, was selected to participate in the Arizona State University, MGE@MSA?WAESO Annual Student Research Conference, February 14, 2012.

Tanner Blair, OU, received an award as the 2012 Outstanding Deans Leadership Council Mentor.

Justina Bradley, LU, was selected to present at the Kansas INBRE conference. She received first place with her oral presentation.

Joseph Brown, OSU, (1) received the Minority Education Program (MEP) Freshman of the Year Award; (2) Awarded a Freshman Research Award.

Wilmon Brown, OSU, (1) awarded for his research presentation at the Women of Color STEM Conference, (2) presented a research poster at the BEYA conference, Philadelphia, PA.

Eric Butson, NSU, was awarded the Bridge to the Doctorate Fellowship at Oklahoma State University. He will pursue a graduate degree in chemistry.

Cassandra Camp, OSU, (1) presented her research at the National Conference on Undergraduate Research (NCUR), Ogden, Utah, April 2012; (2) accepted to graduate school at the University of Oklahoma Health Sciences Center.

Gregory Cook, CU, accepted in to the graduate program at the OSU Health Sciences Center, Tulsa, Oklahoma, to begin graduate studies in Biomedical Sciences.

Courtney Garcia, SWOSU, (1) presented a research poster at the first Women of Color STEM Research Poster Competition, Dallas, Texas, (2) received Research Award at the Women of Color STEM Conference, (3) admitted to the neuroscience graduate program at Baylor University.

Alex Hardison, OSU, selected to participate in the Native Americans and Pacific Islander Research Experience (NAPIRE) program in Costa Rica.

Josh Hardesty, OU, received an award as the 2012 Outstanding Deans Leadership Council Mentor.

Kody Jones, OSU, selected to present his research at the 86th Annual Meeting of the American Association for the Advancement of Science (SWARM)—Southwestern and Rocky Mountain Region, Tulsa, Oklahoma.

Jordan Knight, OSU, received the CEAT Diversity Program of the Year Award for his work as NSBE President.

Vicky Kelly, OSU, (1) awarded a Bridge to the Doctorate Fellowship at Louisiana State University. She will pursue a graduate degree in entomology, (2) presented research at the National Conference on Undergraduate Research (NCUR), Ogden, Utah, (3) represented the College of Agriculture at the National FFA Convention, (4) served as a Student Ambassador for the College of Agricultural Sciences, OSU; (5) participated in the Women of Color STEM conference; (6) selected to participate in a summer research experience in Grenoble, France.

Phoebe Lewis, LU, (1) received first place honors in the Cell and Microbiology division of the Emerging Researchers National Conference in STEM, Atlanta, Georgia, (2) participated in the Women in Science annual conference; (3) participated in the Women of Color STEM conference; (4) accepted into the graduate program at Baylor University.

Kayla Love, LU, (1) received first place honors in the Chemistry and Chemical Sciences division of the Emerging Researchers National Conference in STEM, Atlanta, Georgia, (2) participated in the Women of Color STEM Conference; (3) participated in the Women in Science annual conference.

Amanda Mathias, OSU, (1) presented her research at the National Conference on Undergraduate Research (NCUR), Ogden, Utah, April 2012; (2) serve on the College of Agricultural and Natural Resources Department of Animal Science department head and faculty search committee as the undergraduate student representative.

Paul Martinez, NSU, accepted to participate in the NAPIRE program in Costa Rica.

Devon McLeod, OSU, served as an Animal Science Leadership Appliance member for the 2011-2012 academic year.

Josh McLoud, OSU, (1) accepted as a Bridge to the Doctorate Fellow at Oklahoma State University; (2) selected to present his research at the 86th Annual Meeting of the American Association for the Advancement of Science (SWARM)—Southwestern and Rocky Mountain Region, Tulsa, Oklahoma;

Ricardo Montoya, OSU, (1) presented his research at the National Conference on Undergraduate Research (NCUR), Ogden, Utah, April 2012, (2) presented his research at the 2012 Architectural Engineering Institute of ASCE, Omaha, NE; (3) participated in the Engineers Without Borders Program.

Moises Martinez, OU, received the 2012 Outstanding Senior, College of Engineering Award.

Candice Pawnee, LU, (1) attended the Women of Color STEM Conference in Dallas, Texas, (2) attended Oklahoma Research Day, Lawton, OK.

Allison Quiroga, OU, (1) received the 2012 Outstanding Senior in Architectural Engineering Award; (2) accepted into the graduate program at the University of Oklahoma in Engineering.

Megan Salisbury, OU, (1) received the 2012 Outstanding Senior in Environmental Engineering Award; (2) accepted into the graduate program at the University of Oklahoma in Geology and Geochemistry.

Jason Semien, OSU, received the MEP Student of the Year Award.

Ana Tehrani, UCO, (1) presented her research at the National Conference on Undergraduate Research (NCUR), Ogden, Utah, April 2012; (2) accepted as a Bridge to the Doctorate Fellow, Oklahoma State University.

Ondreia Thomas, OSU, (1) Attended the Women of Color STEM Conference, Dallas, Texas; (2) presented research at the National Conference on Undergraduate Research (NCUR), Ogden, Utah, April, 2012.

Kymerli Wayne, LU, (1) selected to present her research on *Biomedical Science Experience in West Africa: The Gambia and Senegal* at the 2012 National Association of African American Studies Conference, February 13-18 in Baton Rouge, LA. First Lady Michele Obama served as the guest speaker, (2) presented her research at the K-INBRE Conference, January, 2012, (3) presented her research at the National Conference on Undergraduate Research (NCUR), Ogden, Utah, (4) presented her research during OSU Research Week, (4) participated in a summer 2012 internship in Africa.

Lauren White, OSU, (1) selected to present her research at the 7th World Congress of Herpetology in Vancouver, Canada, (2) participated in an internship as a Firewoman for the Montana Department of Forestry.

BD Fellows

The Oklahoma Bridge to the Doctorate program has completed two cohorts of the program. Cohort III was awarded to Oklahoma State University in August 2008, for two years of NSF funding. Cohort IV, University of Oklahoma, was awarded in April 2009, to begin August 2009. Cohort V, Oklahoma State University, was awarded in October 2011 with fellow support beginning January 2012. Appendix L highlights Fellows from the University of Oklahoma and Oklahoma State University.

Cohort I and II

Cohorts I and II Bridge to the Doctorate Fellows at both OSU and OU have been successful in completing a total of 15 Master of Science degrees and 6 Doctor of Philosophy degrees. Additionally, four fellows expect to complete Doctor of Philosophy degrees in the near future. Four fellows either transferred to another institution or left the program,

Cohort I and II Fellow Highlights

Steven Harris, University of Oklahoma Cohort II, completed requirements for the Ph.D. in Biochemistry, May 2011. He was accepted into the Seeding Postdoctoral Innovators in Research and Education (SPIRE) program at the University of North Carolina.

Quintin Hughes, University of Oklahoma Cohort II, completed requirements for the Ph.D. degree in December 2011. He is currently employed as Director of the University of Oklahoma K-20 Center.

Jacob Manjarrez, Oklahoma State University Cohort I, completed requirements for the Ph.D. in Biochemistry and Molecular Biology in May 2012, and accepted a post-doc position with the Center for Health Sciences in Oklahoma City, OK.

Lila Peal, Oklahoma State University Cohort I, completed requirements for the Ph.D. in Biochemistry and Molecular Biology in August 2011, and accepted a faculty position at Cameron University, Lawton, OK.

Brek Wilkins, Oklahoma State University Cohort I, completed degree requirements for the Ph.D. in August 2011, and accepted a post-doc with the Oklahoma State University Center for Health Sciences, Tulsa, OK.

Cohort III

Cohort III, awarded to Oklahoma State University, recruited 12 Fellows for entry into graduate programs. Eight began in the Fall 2008 term and four began in the Spring 2009 term. One additional Fellow was added in May, 2011 to fulfill grant funds left by Fellows who completed MS degrees and left the program. To date, one Fellow left the program without completing a graduate degree; ten (10) received MS degrees, and five continue to work toward completion of the Ph.D. degree. Cohort III Fellows participated in the 17th Annual Research Symposium, OSU Research Week activities, and provided one-on-one mentoring to undergraduate students.

Cohort III Fellow Highlights

Tomica Blocker, received funding for continued graduate studies through the NSF Graduate Research Fellowship Program (GRFP). She will continue toward the Ph.D. in Zoology

Marcus Benjamin, completed the MS degree in Chemistry, Spring 2012 and returned to industry.

Zachery Carpenter, (1) Presented his research at the 86th Annual Meeting of the American Association for the Advancement of Science (SWARM)—Southwestern and Rocky Mountain Region, Tulsa, Oklahoma; (2) Volunteer - organization and execution of the Robotics Contest at the 2012 IEEE Region 5 Annual Business Meeting and Student Contests, Tulsa, Oklahoma.

Scott Fine, had two articles accepted for publication and attended international and national conferences to present the research completed. (1) Investigation of a Parna (Silt) Dune Formation in the Panhandle of Oklahoma. Soil Science Society of America, October, 2011; (2) Supporting Author: **Badger Hole: Towards Defining a Folsom Bison Hunting Complex along the Beaver River**, OK Annual Plains Anthropological Conference, October, 2011; (3) presenter, Plant and Soil Sciences Seminar Series, Fall 2011, OSU; (4) Selected to present his current research, **Parna (silt) Dune Formation in the Panhandle of Oklahoma**, at the 2012 American Quaternary Association Meeting in Duluth, Minnesota.

Erik Gonzales, completed the MS degree in Physics, December 2011 and returned to industry.

Jonathan Gonzales, (1) Presented research at national conferences in Orlando, Florida, and Hilton Head, South Carolina, and (2) had four articles/conference proceedings accepted: Jonathan M. Gonzales, Mohsen Shahmohammadi, and Reza Abdolvand, "**Sensing Acoustic Properties of Materials Using Piezoelectric Lateral-Mode Resonators**," *IEEE International Ultrasonics Symposium (IUS)*, Orlando, FL, Oct. 2011; Emad Mehdizadeh, Jonathan Gonzales, Amir Rahafrooz, Reza Abdolvand, and Siavash Pourkamali, "**Piezoelectric Rotational Mode Disk Resonators for Liquid Viscosity Monitoring**," *to appear in Hilton Head 2012 Workshop*, Hilton Head, SC, June. 2012; M. Shahmohamdi, B.P. Harrington, J. Gonzales, and R. Abdolvand, "**Temperature-Compensated Extensional-Mode MEMS Resonators on Highly N-Type Doped Silicon Substrates**," *to appear in Hilton Head 2012 Workshop*, Hilton Head, SC, June. 2012; Arash Hajjam, Amir Rahafrooz, Jonathan Gonzales, Reza Abdolvand, and Siavash Pourkamali, "**Localized Thermal Oxidation for Frequency Trimming and Temperature Compensation of Micromechanical Resonators**," *MEMS 2012*, Paris, France, Jan. 2012.

Shawna Hughes, completed the MS degree in Food Science, December 2011 and returned to industry.

Molly Parkhurst, completed requirements for the MS degree in Botany and will continue pursuing her Ph.D. as a Bridge to the Doctorate Cohort V Fellow at Oklahoma State University. Part of her research involved traveling to Puerto Rico in order to collect plant data.

Cohort IV

The University of Oklahoma was awarded a Bridge to the Doctorate (Cohort IV) program to begin in the Fall 2009 semester. To date, four MS degrees have been awarded and one Fellow has left the program. The remaining Fellows are continuing satisfactory work toward completion of graduate degrees. Below are selected highlights.

Cohort IV Fellow Highlights

Chris Aguayo – Accepted into the U.S. Air Force Officer Candidate School for Professional Flight training.

Brittanie Atkinson – Passed her qualifying exams for the Master of Science degree.

Zachary Dunn – (1) Accepted as a BD Fellow, January 2012, in the area of Electrical and Computer Engineering. (2) He completed his BS degree from the University of Oklahoma in December 2011. His career goals are to work for a U.S. defense contractor dealing with radar systems or electromagnetic radiation effects. (3) Lead author with Dr. Mark Yeary, paper accepted for presentation at the 2012 IEEE International Instrumentation and Measurement Conference in Graz, Austria, ***Practical Considerations for Laboratory Based Spectral Monitoring in the High Frequency (HF) Band.***

Jason Kimmel – Served as a mentor on the College of Engineering Dean's Leadership Council, mentoring undergraduate students.

Lorne Jordan -- Article accepted for publication in the Biochemistry Journal, entitled: ***Role of Catecholate Siderophores in Gram-negative Bacterial Colonization of the Mouse Gut.***

Ryan Jordan – Completed the MS degree in Geology and returned to industry.

L. Meghan Liles – (1) Attend the 99th Annual Meeting of the American Association of Immunologist, IMMUNOLOGY 2012, May 4-8, 2012 in Boston, Massachusetts. She presented her research in both oral and poster presentations; (2) passed her qualifying exams for the Ph.D. program.

Chris Mace – (1) Completed the MS degree in Geology and returned to industry; (2) article published in Journal of Geophysical Research, entitled: ***Oblique Fault Systems Crossing the Seattle Basin: Seismic and Aeromagnetic Evidence for Additional Shallow Fault Systems in the Central Puget Sound***

Shawna Ong – Completed the MS degree in Electrical Engineering and returned to industry.

Cohort V

Cohort V was awarded through the National Science Foundation as grant number HRD-1139824 for a two year period. Five Fellows were selected to begin graduate studies Spring 2012, three began Summer 2012, and four will begin with the Fall 2012 semester. Nine Fellows attended the Joint Annual Meeting in Washington, D.C in June 2012. Listed below are the Fellows for Cohort V along with brief background statements.

RaiAnna Paula Arscott – BS degree: Chemistry, Texas Southern University, 2011; BD Emphasis: Chemistry; Career Goals: To help people by unraveling causes and exacting cures for cancer, pulmonary, neurological, and autoimmune diseases.

Nicole Bryant – BS degree: Botany, Oklahoma State University, 2011; BD Emphasis: Botany; Career Goals: To become a plant pathology and genetics professor.

Eric Butson – BS degree: Chemistry, Northeastern State University, 2012; BD Emphasis: Chemistry; Career Goals: To conduct research at a national laboratory and eventually teach college chemistry, to motivate students to go into chemistry.

Jamere King – BS degree: Computer Engineering Technology, Southwestern Oklahoma State University, 2012; BD Emphasis: Computer Engineering; Career Goals: To become a Chief Information Security Officer and Chief Information Officer.

Darron "DJ" Lamkin – BS degree: Mechanical Engineering Technology, Oklahoma State University, 2010, MS: Industrial Engineering, 2012; BD Emphasis: Industrial Engineering; Career Goals: To become a manufacturing engineer and to encourage under-represented minority students to seek engineering degrees and careers.

Josh McLoud – BS degree: Biological Sciences, Oklahoma State University, 2012; BD Emphasis: Botany and Microbiology; Career Goals: To become a professor in order to continue conducting research as well as encourage and mentor minority students.

Molly Parkhurst – BS degree: Botany, Oklahoma State University, 2010; MS: Botany, Oklahoma State University, 2012; BD Emphasis: Plant Sciences; Career Goals: To become a research scientist with a federal agency such as the USDA, FDA, or EPA with a focus on genetically modified organisms.

Marissa Rice – BS degree: Biological Sciences, Virginia Tech, 2011; BD Emphasis: Zoology; Career Goals: To make significant contributions to the field of ecology, evolution, and behavior and to be a distinguished professor in her field.

Joseph Ross – BS degree: Physics, East Central University, 2009; BD Emphasis: Medical Physics; Career Goals: To participate in clinical service by performing treatment planning for patients according to the treatment regimen prescribed by the radiation oncologist.

David Supeck – BS degree: Chemistry, Southwestern Oklahoma State University, 2008; BD Emphasis: Immunology and Biochemistry; Career Goals: To have a career in industry and become a research professor.

Ana Tehrani – BS degree: Mathematics and Statistics, University of Central Oklahoma, 2011; BD Emphasis: Statistics; Career Goals: To become an ethical researcher and to keep current with new material and technology.

Charles “CJ” Williams, Jr. – BS degree: Computer Engineering, Oklahoma State University, 2012; BD Emphasis: Industrial Engineering Management; Career Goals: To pursue a project management position with a fortune 500 company.

Cohort VI Fellow Highlights

Darron (DJ) Lamkin – received funding to travel to South Africa to conduct research related to his Ph.D. thesis work.

Molly Parkhurst – received funding to travel to Puerto Rico to conduct research during the summer of 2012.

Marissa Rice – received funding through the **Graduate Research Fellowship Program** (GRFP). Marissa will begin the GRFP Fellowship at the completion of her two years of NSF BD funding. Selected to present her research at the Animal Behavior Society meeting in Tucson, Arizona, June 2012.

STAFF TRAINING AND DEVELOPMENT

OK-LSAMP support 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 and OK-LSAMP Program Staff Coordinator, the University of Oklahoma: (1) member, American Society of Engineering Education (ASEE); (2) served as recruiter and outreach coordinator for the College of Engineering; (3) Dean’s Leadership Council Staff Advisor; (4) coordinated Dean’s Leadership Council Retreat; (5) E-1 First Year Engineering Student Club, staff adviser; (6), attended the Joint Annual Meeting in Washington, D.C., June, 2012; (7) attended the Oklahoma Engineering Foundation Engineering Fair, Oklahoma City, OK; (8) Delegate to World Creativity Forum; (9) Member, Women’s Philanthropy Network, University of Oklahoma; (10) Board Member, Norman Community Foundation; (11) Member, Oklahoma Creative Forum.

Kay Porter, Program Manager, Oklahoma State University: (1) State Coordinator for Women of Color STEM Conference; (2) served on the Planning Committee for the Women in Science Conference, Oklahoma City, OK for junior and high school girls; (3) served on the OSU Institutional Diversity Board; (4) member, Oklahoma State University Native American Faculty and Staff Association; (5) Council Member, OSU Alumni Council and Alumni Leadership Council, representing the American Indian Alumni Association; (6) served on the Minority Engineering Program (MEP) summer selection committee; (7) member Mexican American Engineers and Scientists (MAES) organization; (8) advisory council member, NSF project Red Light/Green Light; (9) advisory panel member, Center for Research on STEM Teaching and Learning (CRSTL) *NextGen*: STEM Career Outreach; (10) board member, Oklahoma Distinguished Young Women of America; (11) participated in *Read Across America* program;

(12) Board member, Native American Studies Center; (13) completed various professional development and safety training programs including two days of Photoshop training; (14) attended the Joint Annual Meeting in Washington, D.C., June 2012, (15) Reviewer for the SACNAS 2012 Conference; (16) advisory board member, Tulsa Tech Center Pre-engineering Program.

Fara Williams, Grant Coordinator, Oklahoma State University: (1) volunteer during the Women in Science Conference, Oklahoma City, Oklahoma; (2) presented the LSAMP/BD program to faculty on the OSU campus; (3) met with parents and prospective scholars to explain one-on-one the benefits of OK-LSAMP; (4) served on the planning committee for the first Oklahoma Native American Research Symposium (ONARS), Stillwater, Oklahoma; (5) presenter/volunteer for “How to Sell the Standout Student” an enrichment event for high school teachers, counselors, and administrators designed, developed, and hosted by the Cherokee Nation Foundation; (6) attended the Joint Annual Meeting in Washington, D.C., June 2012; (7) Instructor/volunteer for the Cherokee College Prep Institute, a week-long workshop preparing Native American high school students for the college application process, developed and hosted by the Cherokee Nation Foundation; (8) facilitator, Oklahoma Project WILD, K-12 outdoor curriculum; (9) trained to facilitate Growing Up WILD workshops, a PreK-2 outdoor curriculum; (10) Served as a recruiter for the Hispanic American Foundation College Days; (11) attended Women of Color STEM Conference; (12) presentation, Cherokee Meet and Greet reception; and (13) completed various professional development and safety training programs including two days of Photoshop training.

EVALUATION PROCEDURES

Dr. Rosemary Hayes, Director for the Center for Institutional Data Exchange and Analysis, located on the University of Oklahoma campus, Norman, Oklahoma, remains as the outside evaluator for the Oklahoma Louis Stokes Alliance for Minority Participation program. Dr. Hayes works closely with the Grant Coordinator to collect data on all Scholars in the Alliance. The data is used to prepare a yearly evaluation report by Alliance institution. The report contains recommendations for improvement on each Alliance campus as well as Alliance-wide. In addition to recommendations, evaluators report on the positive efforts and activities that are being conducted both by Alliance campuses as well as Alliance-wide. Once-per year, the evaluation team meets with program staff and the Principal Investigator to discuss project outcomes and changes in the data base. A report is located in Appendix O.

APPENDIXES

APPENDIX A

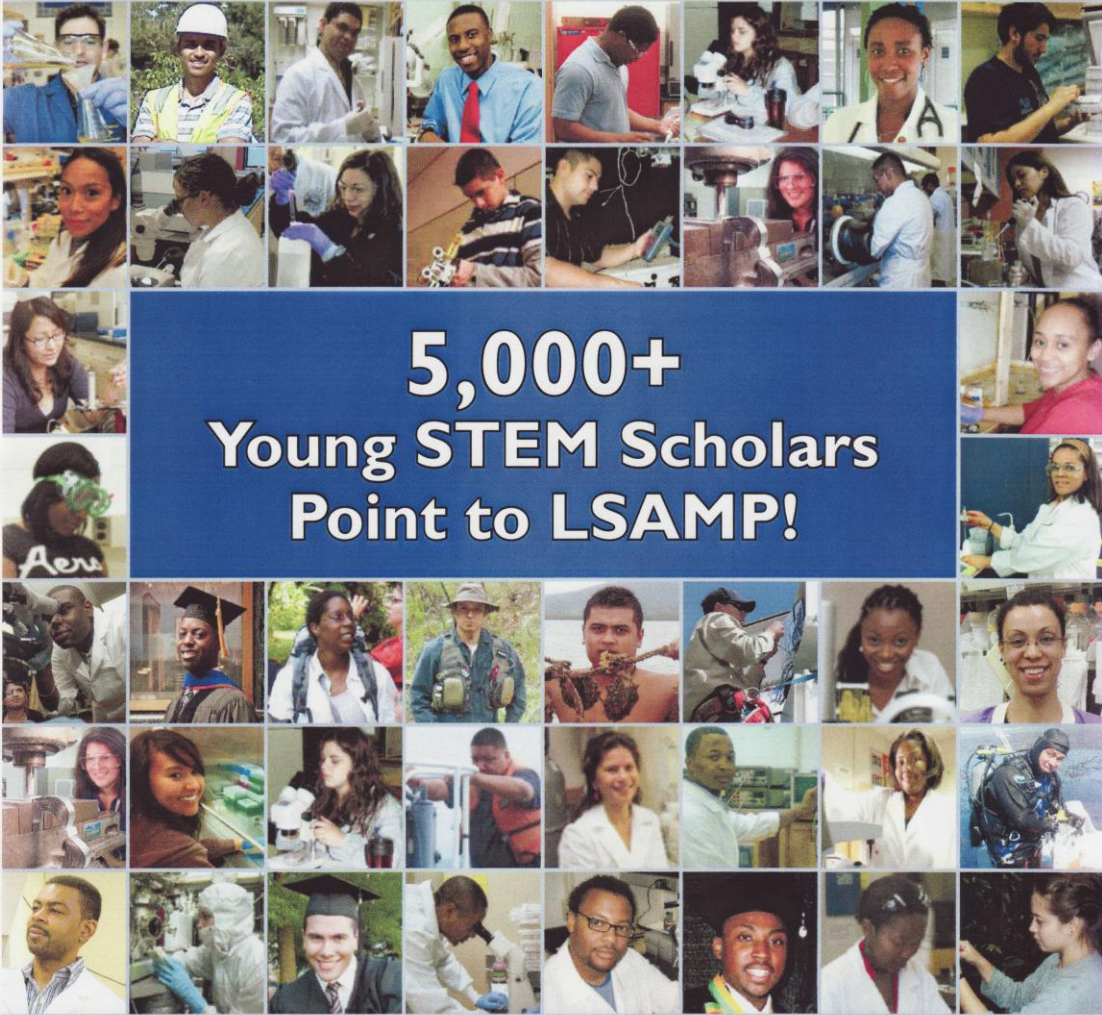
LETTER SIGNED BY ALLIANCE PRESIDENTS

ACCOMPANYING THE 5,000+ *YOUNG STEM*

SCHOLARS POINT TO LSAMP!

Underrepresented Minorities: A Rich Pool of STEM Talent

Who Will Do Science, Technology, Engineering and Mathematics in the Future?



5,000+
Young STEM Scholars
Point to LSAMP!



Louis Stokes Alliances for Minority Participation
Central Region

Presidents of Louis Stokes Alliances for Minority Participation Institutions

March 14, 2012

Dear Fellow Americans:

We the undersigned university presidents are proud to report to you that, with the help of the National Science Foundation's (NSF's) Louis Stokes Alliance for Minority Participation Program (LSAMP), our universities came together in a nation-wide effort that has been successful in helping to build a stronger and more vital national science, technology, engineering and mathematics (STEM) workforce for now and the future. The LSAMP program is a nation-wide alliance of 644 universities, colleges, community colleges, corporations, foundations, educational associations, government laboratories, museums and field stations.

By means of these alliances, the NSF LSAMP Program promotes prosperity through the creation of opportunities for growing segments of our national population that have historically been less than fully engaged in the national engine of economic growth, namely the STEM fields. In the 21st century, technological prowess and the full engagement of ALL of our citizenry in working toward the goal of out-innovating, out-educating, and out-building the rest of the world is without doubt the tried, true and surest way to continue the legacy of national prosperity in the United States.

In 2003 the Supreme Court declared that, "We have repeatedly acknowledged the overriding importance of preparing students for work and citizenship, describing education as pivotal to 'sustaining our political and cultural heritage' with a fundamental role in maintaining the fabric of society. . . ." For our institutions and the NSF LSAMP alliances led by them, this declaration has been molded into action.

Attached is a compilation of the tremendously successful impact that the National Science Foundation's LSAMP Program has had across the USA. We invite you to review it and judge for yourselves what has transpired thus far and hopefully use it to help plan for what we can all do together to further expand this model ultimately to reach every institution and student in this great nation.

Sincerely,

Eric Kaler
President, The University of Minnesota, Twin Cities

Burns Hargis
President, Oklahoma State University

Michael Young
President, University of Washington

John A. Fry
President, Drexel University

George E. Cooper
President, South Carolina State University

Portia Holmes Shields
President, Tennessee State University

Diana Natalicio
President, The University of Texas at El Paso

Nancy Cantor
Chancellor, Syracuse University

Teresa A. Sullivan
President, The University of Virginia

Michael M. Crow
President, Arizona State University

Robert C. Holub
Chancellor, University of Massachusetts, Amherst

Tom Case
Chancellor, The University of Alaska Anchorage

Michael F. Adams
President, The University of Georgia

Miguel A. Muñoz
President, University of Puerto Rico

Samuel L. Stanley Jr.
President, Stony Brook University

R. Bowen Loftin
President, Texas A&M University

Freeman A. Hrabowski, III
President, The University of Maryland, Baltimore County

J. Keith Motley
Chancellor, The University of Massachusetts, Boston

Sidney A. Ribeau
President, Howard University

David Ward
Interim Chancellor, The University of Wisconsin-Madison

Carol Z. Garrison

Carol Z. Garrison
President, University of Alabama at Birmingham

Lawrence A. Davis, Jr

Lawrence A. Davis, Jr
Chancellor, The University of Arkansas at Pine Bluff

Alexander Gonzalez

Alexander Gonzalez
President, California State University, Sacramento

James H. Ammons

James H. Ammons
President, Florida A&M University

Carlton E. Brown

Carlton E. Brown
President, Clark Atlanta University

Wayne D. Watson

Wayne D. Watson
President, Chicago State University

Donald Straney

Donald Straney
President, University of Hawaii at Hilo

James Llorens

James Llorens
Chancellor, Southern University and A&M College

Carolyn Meyers

Carolyn Meyers
President, Jackson State University

Lisa S. Coico

Lisa S. Coico
President, City College of New York

Luna Ross

Luna Ross
President, Salish Kootenai College

Michael V. Drake

Michael V. Drake
Chancellor, The University of California, Irvine

Anthony A. Frank

Anthony A. Frank
President, Colorado State University

Philip Yeagle

Philip Yeagle
Interim Chancellor, Rutgers-University Newark

John M. Rudley

John M. Rudley
President, Texas Southern University

France A. Córdova

France A. Córdova
President, Purdue University

Eli Capilouto

Eli Capilouto
President, University of Kentucky

Mary Sue Coleman

Mary Sue Coleman
President, University of Michigan

Barbara Couture

Barbara Couture
President, New Mexico State University

Harold L. Martin, Sr

Harold L. Martin, Sr
Chancellor, North Carolina A&T State University

APPENDIX B

SUMMER ACADEMIES

PROGRAM OUTLINE

Dates:

- July 4—July 29

Benefits:

- 3 credit hours paid (in-state)
- Room and Board
- Books and Supplies



Programs:

- Academic Success
- Cultural Awareness
- Career Interests
- Health & Wellness
- Social Awareness

DIVERSITY ACADEMIC SUPPORT



422 Scott Hall
Stillwater, OK 74078

Phone: 405-744-2920

Fax: 405-744-4202

Email: diversityacadsupport@okstate.edu
or monica.dudley@okstate.edu

DIVERSITY ACADEMIC SUPPORT

R.I.S.E.

JUMP START

PROGRAM

"All our dreams can come true - if we have the courage to pursue them."

Walt Disney

Office of Institutional Diversity

MISSION

RISE Jumpstart will provide resources, opportunities, and programs that promote academic, social, and emotional growth.



VISION

RISE Jumpstart will provide students with opportunities to get an early start on a successful collegiate career, enhance their cultural knowledge, and create a more diverse and inclusive college campus.



PROGRAM

RISE Jumpstart is a four-week summer residential experience designed to afford incoming first year students to Oklahoma State University opportunities to achieve a smooth transition to college life. The focus and intent for the Jumpstart Program is to provide an environment conducive and supportive for student learning and personal growth.

RISE Jumpstart places importance on academic activities and student preparation as well as life skills seminars. We will provide students with educational based activities and classes to assist in their preparations as they begin their post-secondary careers.

Life skills seminars emphasizing social, emotional, physical health and wellness along with career resource activities will be intertwined throughout into the programs' schedule. We place a special emphasis on study habits, time management, and financial literacy to highlight and demonstrate the importance of effective and efficient college practices.

RISE Jumpstart will assist incoming first year students as they adapt academically, socially, and emotionally while transitioning from high school to college.

Oklahoma State University does not discriminate on the basis of race, color, national origin, sex, disability, ethnicity, religion, sexual orientation, veterans' status, or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Title IX Coordinator 408 Whitehurst Stillwater, Oklahoma 74078 405-744-5371

ACTIVITIES

- Interactive study groups
- Tutoring
- Social Outings
- Cultural Programs and Events
- Team Building Events
- Seminars, workshops, and other activities that afford individuals opportunities to broaden their perspectives regarding differences and notions of inclusion.



BENEFITS

- All inclusive financial package
 - Paid tuition (in-state)
 - Books
 - Room & Board
 - Meal Plan
- Acclimation to college life
- Jumpstart on college career
- 3 hours completed toward college degree
- Networking

College of Engineering, Architecture, and Technology
Student Services

Search okstate...
 Calendar | Directory | Hours | FAQ

Student Services | Career Services | AEC Tutoring | Programs | Organizations | **Apply Now**

OKLAHOMA STATE UNIVERSITY

CEAT SCHOLARSHIPS 2012

MULTICULTURAL ENGINEERING

MEP Homepage
 About MEP
 Photo Galleries
 ConocoPhillips Summer Bridge Program
 Living/Learning Community
 Student Organizations

Upcoming Events

MEP Multicultural Engineering Program
 OKLAHOMA STATE UNIVERSITY

MEP News:

2012 ConocoPhillips Summer Bridge Program
 Applications are now available for the 2012 ConocoPhillips Summer Bridge Program (CSBP). The ConocoPhillips Summer Bridge Program is a 3-week residential program for incoming freshmen in the College of Engineering, Architecture, and Technology (CEAT).

2012-2013 MEP Living/Learning Community
 Applications are now available for the 2012-2013 MEP Living/Learning Community (MEP LLC). The purpose of the MEP LLC is to enhance the first year experience of students in the Multicultural Engineering Program. Click [here](#) for more information and [here](#) for the 2012-2013 Application.



create / Innovate / educate / Go STATE

OKLAHOMA EPSCOR
 Experimental Program to Stimulate Competitive Research

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K-12 Students
 K-12 Teachers
 College Students
 Faculty Development

Latest News

Women in Science Conference-- Student/Teacher Registration Now Closed
 Tuesday, May 15, 2012

OU and OSU Students Take Top Prizes in Cellulosic Biofuels Research Competition
 Wednesday, April 11, 2012

Students Selected for Research Experience for Undergrads (REU) Summer Program
 Tuesday, April 03, 2012

Upcoming Events

SBIR/STTR Workshop
 Tuesday, August 28, 2012 - 8:00am - Wednesday, August 29, 2012 - 4:00pm

Oklahoma Supercomputing Symposium 2012
 Tuesday, October 2, 2012 - 5:30pm - Wednesday, October 3, 2012 - 5:00pm

2012 Sun Grant Initiative National Conference
 Tuesday, October 2, 2012 - 6:30pm - Friday, October 5, 2012 - 1:00pm



Retired Educators for Youth Agricultural Program (REYAP)

Retired Educators for Youth Agricultural Program (REYAP) provides African American high school students and other culturally diverse youth with opportunities in the field of agriculture. The program, which aims to address the goals of increased leadership, scholarship, citizenship and economic development, is held on the Oklahoma State University campus in Stillwater each summer.

Participants gain an appreciation for agricultural sciences and technology, while also increasing their understanding of the diversity of agriculture; they leave the program with an awareness that agriculture encompasses more than the task of farming.



Students participate in hands-on, interactive scientific experiences in the food and nutritional sciences; entomology; biosystems and agricultural engineering; and plant pathology career fields. Participants also participate in oral and poster presentations to gain public speaking experience, while highlighting the research they learned about in the program.

Contact Rita Combs, REYAP executive director, at 918.619.3111 for more information.

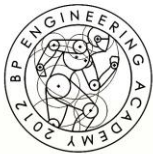
Available Programs:

- Bioenergy Summer Technology Academies
- Botball Educational Robotics Teams
- OK Museum Network Mobile Science Vehicle
- Retired Educators for Youth Agricultural Program (REYAP)
- Starbase Oklahoma
- Women in Science Conferences

OU College of Engineering Summer Programs

BP DEVAS

Did you Know....While women constitute 51% of the American population and 46% of our labor force, only 9% of today's practicing engineers are women!




BP Engineering Academy

Less than 10% of US engineers are from critically under-represented minority groups but they represent more than 25% of the US population. Engineers invent, design, and develop all of the products you see every day. We want to show you what engineers do and help YOU see engineering as a possibility in YOUR future!

AT&T SUMMER BRIDGE PROGRAM

Sometimes engineering coursework can be a challenge. We want YOU to be prepared academically for your first semester of calculus at OU and have designed this program to meet those needs. The program also includes all housing, meals, seminars, team building exercises, and much more. We have also included a course entitled; "Experiencing College Life as an Engineer" (OU acclimation course) specifically tailored to meet the needs of future engineers.



 College of Engineering

[OU JOB SEARCH](#) [CONTACT US](#)

865 Asp Ave, Felgar Hall 112 Norman, OK 73019-1052

Updated 2/3/2012 by Williams Student Services Center: coeadvising@ou.edu

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The University of Oklahoma is an Equal Opportunity Employer

Mission Statement

2012 Summer Academies in Math, Science and Technology – Grades 11-12

This summer, spend time at an Oklahoma college or university and discover the fascinating worlds of aeronautics, engineering, environmental conservation, forensic science and much more!

Summer Academies are FREE!



Cameron University - NanoExplorers: A High School Summer Science Academy

During this 10-day academy, 24 highly motivated and talented Oklahoma high school students will live on campus and participate in activities designed to provide an intensive science and mathematics experience. The students will be introduced to the principles of nanotechnology and will use equipment that students will not likely find in a high school setting. Interactive activities will enable students to understand why very small systems exhibit unique behavior polymers.

Cameron University - Science Detective Summer Academy

This academy asks, “Are there a growing number of organisms developing resistance to antibiotics?” This academy will include experience in field biology, laboratory science and inquiry, as well as exploration of health care careers. It is also an opportunity to experience what it is like to study and live on a college campus. Through the course of the academy, students will be introduced to methods of sample collection, scientific laboratory methods, scientific inquiry and opportunities for students to pursue biomedical education through the Oklahoma Technology Centers, as well as explore and experience health care careers in a hospital setting.

East Central University - Coding Theory, Risk Analysis and Other Mathematical Pursuits

The aim of this academy is to introduce participants to a hands-on, technology-based, fun-filled, stimulating interdisciplinary experience, exposing them to connections between math and related scientific areas such as operations research, probability, statistics and cryptography, which are used extensively in the real world. The attempt is to generate an interest and improve mathematics performance at the high school level, thereby encouraging, exciting and motivating a pursuit of mathematics and its applications as a major area of study at the college level and beyond and/or as available and lucrative career options.

East Central University - Explorations in Computer Science and Robotics

This academy is a one-week residential experience that will engage participants in the exciting imagination-stretching, logic-building and fun world of computer science. Students will learn programming in C, explore the endless possibilities of computer science careers, interact with professionals, and invoke their creativity and problem-solving skills by designing, building and programming robots.

Langston University - An Intensive Academy in Math, Science, and Technology

This is a two-week residential academy for 36 aspiring mathematicians, scientists and engineers. The focus will be on improving students’ appreciation for and enrollment in Oklahoma core curricula through intense, positive experiences in mathematics, chemistry, biology, technology and preparation for success. Oklahoma core curricula, ACT preparation, scholarships, and undergraduate and graduate school matriculation are addressed. Experiences will incorporate cutting-edge technologies that support hands-on activities and innovative teaching and learning.

Northeastern Oklahoma A&M College Valuing Traditions: Applying Indigenous Stewardship in Ecology

“Niyohito:k Ongwa’nigoha” is a Seneca-Cayuga proverb that can be translated as “the way it will be in our mind,” “of one mind” or “let our minds come together.” Students are invited to come together in this engaging residential academy that is an investigation into the scientific and cultural applications of ethnobotany as it pertains to medicinal remedies and the reclamation of a significantly damaged ecosystem. Students will have the opportunity to study “one of the most challenging sites in the United States,” which encompasses more than 104 km² of mine tailing and chat piles that have traumatized ecosystems. Under the

guidance of scientists and tribal leaders, students will have the unique opportunity to study multiple sites and evaluate reclamation efforts as well as observe preserved areas of native habitats. Students will actively participate in data collection and analysis and conduct multiple laboratory and field studies designed to evaluate the impact of ethnobotany on phytoremediation and on its implications for medicinal remedies. During this culturally rich academy, students will explore how native species can be used to improve quality of life and provide solutions for restoring ecological balance.

Northeastern State University, Broken Arrow - Science at the Zoo

Working at the Tulsa Zoo, students will integrate multidisciplinary techniques to move beyond memorizing facts about animals. Through observation and critical thinking, students will formulate hypotheses about animals and their adaptations and relationships to their environments. Digital images and video will record data to test hypotheses. Students will apply math and science knowledge and build leadership, team-building and deductive-reasoning skills. On the final day, students will present an Internet video of their research to their families.

Northeastern State University, Broken Arrow - Get Green for Blue: Outdoor Investigations to Connect Water to You

Put on your waders, grab your net and let's catch those critters! In teams, students will learn about water quality through collecting data, analyzing the health of water bodies and determining possible solutions to water quality problems. The program is open to students entering the eighth, ninth or 10th grade. Come to Northeastern State University in Broken Arrow and the Rogers County Reserve and be a part of this fun, activity-based adventure!

Northwestern Oklahoma State University - Exploring the Benefits of Human-Animal Interaction

This academy uses animals as tools to teach scientific concepts, mathematics and enhanced health care for humans. The students will apply their learning through hands-on experiences, workshops and real human-animal interactions by visiting assisted living centers and child care centers and by participating in a "reading to dogs" program. They will also develop innovative and creative ways of solving environmental and wildlife issues by observing science in action during trips to the Great Salt Plains, Wildlife Refuge Park, and Alabaster State Park. Furthermore, they will learn other therapeutic values of animals in human educational, emotional and health care fields.

Oklahoma State University - Smart Cars Summer Academy

One of the fastest growing technologies is use of hi-tech sensors. "Smart sensors" are being used in hundreds of application areas like environmental monitoring, homeland security, medicine, aerospace and automobiles. Students will use smart sensor concepts to stimulate interest in science, math and technology during a weeklong residential academy. The students will develop a smart sensor system for steering an autonomous race car.

Oklahoma State University - Fired Up About Research Science and Engineering

Explore and experience the excitement of the technology and sciences that reshape our world. During an intensive weeklong residential program, participants are challenged with laboratory- and field-based scenarios centered on a common theme: fire. Participants

investigate careers, learn new skills and prepare for the fascinating world of technology. Specific activities include biosystems, robotics, and the science and engineering of fire.

Oklahoma State University - Exploring Quantitative Analysis: A Basic Introduction

Students will learn basic concepts of research design and statistics, learn more about careers in math and science, and increase their mathematical and scientific reasoning abilities. Sessions mainly consist of students putting their knowledge into action through hands-on learning experiences, including observational research with people and animals, a survey design exercise and Web page design during this two-week long residential academy. The academy will also cover creativity, innovation and social entrepreneurship in an attempt to solve a major environmental issue of the day.

Oklahoma State University Camp T.U.R.F. – Tomorrow’s Undergraduates Realizing the Future

At this two-week, residential academy for upcoming ninth and 10th graders, students will explore horticulture, landscape contracting and landscape architecture in sessions led by faculty, staff and industry professionals. Activities will be varied and hands-on, with typical activities including cloning plants, filming TV segments about gardening, drawing landscape symbols, making pervious concrete pavers and touring research facilities. Recreational activities often include swimming, bowling, live theatre, museum visits and mini golf. Activities occur both indoors and outdoors. Minorities are encouraged to apply.

Southeastern Oklahoma State University - Take Flight – Aviation/Science Camp 2012

This academy offers participating students, who will be starting the eighth and ninth grades, an opportunity to learn about science, technology and engineering as they relate to aviation and the effects of flight. This camp will also explore career paths within the various fields of aviation, offering a hands-on experience, while incorporating aspects of science, technology, engineering and mathematics principles that are involved in flight and aerodynamics. While staying the week in Southeastern Oklahoma State University residence halls, participants will get a glimpse of college life from the inside and take part in interpersonal and self-discovery discussions with peers and camp counselors regarding college life and preparing for life after high school. The academy will be held at Eaker Field near the SE main campus in Durant.

Southwestern Oklahoma State University -SSMA: Summer Science and Mathematics Academy at SWOSU

This academy is designed to give 32 high school juniors and seniors a two-week experience in science, mathematics and technology. The program is designed to motivate students toward pursuing higher education and careers in STEM disciplines. SSMA participants will live in campus dormitories, eat in the cafeterias and take classes in a variety of science content areas. Laboratory and field experiences will enhance the participants’ problem-solving skills. During the last two days, participants will be involved in a problem-solving competition.

University of Central Oklahoma - Discovering Chemistry

This academy introduces participants to chemistry in everyday life, followed by hands-on activities that reinforce those concepts. Students who have attended previously will be introduced to advanced topics. The academy will include chemistry magic performed by

participants, chemistry of household products, food chemistry and sports nutrition, product synthesis, and biochemical analysis of proteins and DNA. Students will work in teams of five with a college mentor and then present their findings by PowerPoint presentation on the last day. Guest speakers will talk with the students about education and career opportunities in the field.

University of Oklahoma - Sky High: An Exploration of Aeronautics from the Basics and Beyond

Ready for takeoff? This academy offers rising eighth- and ninth-grade students the unique opportunity to study at the Max Westheimer Airport. The combination of classroom instruction, field experiences and flight time in university Piper Warrior aircrafts will offer a hands-on approach to learning about aeronautics.

University of Oklahoma - Going Green: Partnering Five Architecture Disciplines

This academy offers high school juniors and seniors a one-week opportunity to study the process for “designing and building green” within the five built environment programs in the University of Oklahoma’s College of Architecture. By incorporating all five disciplines – architecture, interior design, construction science, landscape architecture, and regional and city planning – the academy introduces students to interdisciplinary study focused in areas not typically available in their high schools. Students will have class activities and field trips throughout each day, and evening educational activities are also scheduled.

University of Oklahoma - Bridges to College Math, Science and Engineering

This academy offers two, weeklong sessions providing students entering their junior or senior year with experience in the area of mathematics as it pertains to the study of physics, engineering and mathematics. Areas covered include probability, logic, statistics and calculus. The sessions will emphasize the use of extensive symbolic notation required to represent mathematical ideas. Students move from concrete examples to more abstract ones using hands-on methods. Students will be introduced to careers that stem from the fields of math, science and engineering. The experience gives students unique exposure to a college atmosphere. Twenty-five students will be accepted for each session.

University of Oklahoma - Field Studies in Multidisciplinary Biology

This academy offers two, two-week sessions focusing on botany and zoology and using the “outdoors” as the classroom. Students will study organisms in their natural habitats and participate in discussions on research methodology. Students will spend most of their time outdoors gathering insects and plant collections and writing scientific papers based on their extensive field studies. The combination of field studies and hands-on laboratory sessions will assist the students in developing such skills as observation, measurement, classification, experimentation, interpretations, communication, modeling and safety. Students will gain firsthand knowledge and experiences that cannot be equaled in a school classroom setting. Thirty students will be accepted into each two-week session.

The University of Tulsa - Summer Engineering Academy at The University of Tulsa for Precollege Students

This academy makes students aware of career opportunities in electrical and mechanical engineering through hands-on design projects, interaction with industry professionals and an

integrating project. High school teachers will receive training and assist investigators with the academy's activities. Students will present their experiences in their math and science classes during the school year. Teachers will be supported in implementing academy exercises within their classrooms. The goal is to attract more Oklahoma students into engineering to help meet Oklahoma technical employer needs.

The University of Tulsa - Technology Education and Collaborative (TEC) – A Summer Technology Academy

This residential technology academy for students interested in computers and GPS-related technologies will focus on an energy theme. Students will use GPS receivers for data collection during a field trip and then process data to create interactive GIS maps. Digital cameras/ camcorders will be used for MovieMaker, data sets downloaded from the Internet will be in Excel, chat rooms and journaling will be done with WebCT, GPS scavenger hunts and geo-caches will use ArcVoyager, and presentations will be prepared in PowerPoint and Comic Life.



APPENDIX C

17th ANNUAL RESEARCH SYMPOSIUM

Oklahoma Louis Stokes
Alliance for Minority Participation
17th Annual Research Symposium



Saturday, October 1, 2011
Oklahoma State University
Noble Research Center
Stillwater, Oklahoma

You are invited to hear

Tyrone B. Hayes

Oklahoma State University, Stillwater, OK
Two Chances to See!



Dr. Hayes is a Professor in the Department of Integrative Biology at the University of California-Berkeley. He is perhaps best known for his research on the affects of atrazine on frogs. Dr. Hayes has been featured as an Emerging Explorer by National Geographic and there are a number of videos on YouTube.

Friday, September 30, 2011, 4-5 PM
001 Willard Hall

Sponsored by the College of Education Center for Research on STEM Teaching and Learning and the Institute for Creativity and Innovation

For More Information: education.okstate.edu/centers-a-clinics/crstl or 405-744-3840



COLLEGE OF
 Education

Saturday, October 1, 2011, 10 AM
106 Noble Research Center

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

17th Annual Research Symposium

For More Information: www.ok-lsamp.okstate.edu or 405-744-7820



APPENDIX D

OSU SCHOLAR DEVELOPMENT



THE
SCHOLAR... MUST TAKE UP...
ALL THE ABILITY OF THE TIME,
ALL THE CONTRIBUTIONS OF THE PAST,
ALL THE HOPES OF THE FUTURE.
S/HE MUST BE
A UNIVERSITY OF KNOWLEDGES. R. W. EMERSON

Six Former Freshmen Research Scholars (FRS) Selected for the 2011-12 Niblack Research Scholars Program

Oklahoma State University has selected 12 undergraduate students to participate in the 2011-12 Niblack Research Scholars program. Funded by a gift from OSU alumnus Dr. John Niblack, each student will receive an \$8,000 scholarship and will have the unique opportunity to conduct research in a university lab, assisted by a faculty sponsor and graduate student mentor. This year six former FRS were selected for the program:

- Kelsie Brooks, microbiology, cell and molecular biology major from Norman, OK
- **Kayla Davis**, biochemistry and molecular biology major from Stillwater, OK
- Brandi Gallaher, physiology major from Tulsa, OK
- Mackenzie Jochim, entomology and plant pathology major from Broken Arrow, OK
- Mrinalini Patil, biochemistry and psychology major from Stillwater, OK
- Zachary Sheffert, chemical engineering major from Stillwater, OK



The purpose of the Niblack Research Scholars program is to develop undergraduate student interest in scholarly research within the various disciplines offered at OSU. The award is intended to provide students with a valuable educational experience not available to most undergraduate students.



RESEARCH
EXPERIENCES **FOR**
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APPENDIX E

2012 JOINT ANNUAL

MEETING POSTER



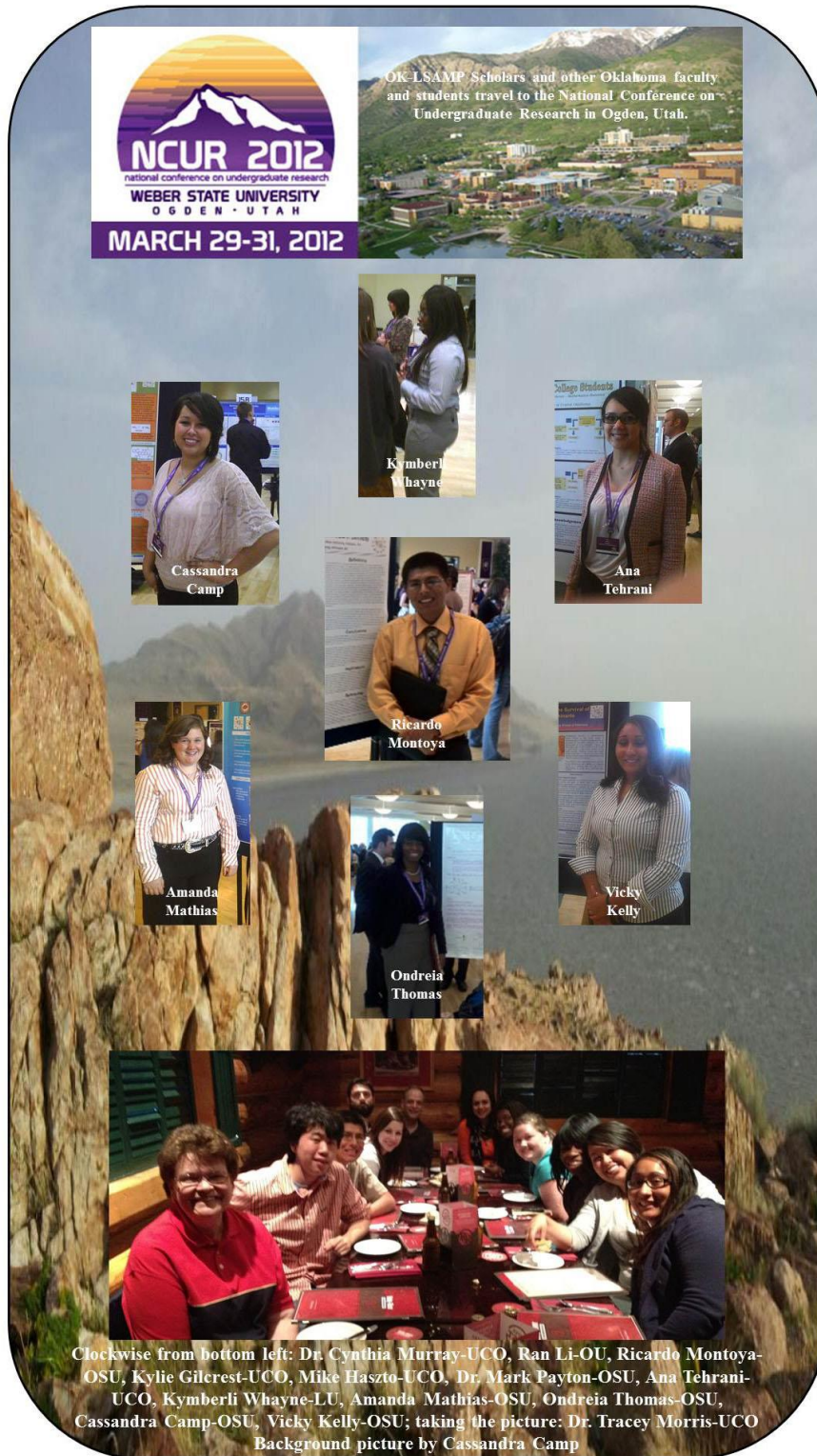
Poster designed by former Scholar
Dalton Kelley, BS, Oklahoma State University, 2011

APPENDIX F

NATIONAL CONFERENCE ON UNDERGRADUATE
RESEARCH (NCUR)



Program Booklet



Clockwise from bottom left: Dr. Cynthia Murray-UCO, Ran Li-OU, Ricardo Montoya-OSU, Kylie Gilcrest-UCO, Mike Haszto-UCO, Dr. Mark Payton-OSU, Ana Tehrani-UCO, Kimberli Whayne-LU, Amanda Mathias-OSU, Ondreia Thomas-OSU, Cassandra Camp-OSU, Vicky Kelly-OSU; taking the picture: Dr. Tracey Morris-UCO
Background picture by Cassandra Camp

Oklahoma Schoalrs Participating in 2012 NCUR, Ogden, Utah

APPENDIX G

NATIONAL SOCIETY OF BLACK ENGINEERS

(NSBE)



OSU NSBE Chapter won the First Regional “Chant Award.”

OK-LSAMP Scholars attending included:

Jordan Knight, President; Jeremy Hall, Gabbie Brown, Joseph Brown, Jason Semien, Rachel Morgan, DeYawna Jackson, and Charles Williams

APPENDIX H

WOMEN OF COLOR STEM CONFERENCE



OSU Scholars, Wilmon Brown, III (Outstanding Poster Competition Finalist) and Brandi Andrews (Outstanding Athlete) received honors during the Women of Color Conference.

Student Attendees from across the nation.



SWOSU Scholar:
Courtney Garcia, Research Award

APPENDIX I

CAMPUS COORDINATOR HIGHLIGHTS



PRESS RELEASE: March 2, 2012

FOR MORE INFORMATION

Contact: Kyle Dahlem, Executive Director DaVinci Institute

davinci@osrhe.edu 405-503-3224

The Davinci Institute Announces Recipients of the 2012 DaVinci Awards

The DaVinci Institute, a non-profit organization dedicated to nurturing the Arts, Sciences, Humanities, and Education in Oklahoma as these fields undergo transformations in the twenty-first century, will honor the recipients of the 2012 DaVinci Awards at the annual banquet to be held March 23 at the Oklahoma History Center. Dr. John Feaver, President of the University of Science and Arts of Oklahoma, will deliver the keynote, "Just Where Does Creativity Belong?"

2006 saw the establishment of the **DaVinci Fellows** awards. Acting on the premise that creative thought and insight are fundamental components of extraordinary scholarship across academic disciplines, this award recognizes higher education faculty whose accomplishments reflect a creative approach and a high degree of innovation to complex issues and have made a significant contribution to their academic discipline. At the banquet, each recipient will receive a monetary prize as well as a medallion which depicts Leonardo DaVinci's Vitruvian Man.

2012 DaVinci Fellows

- Dr. Tim Hubin, Southwestern Oklahoma State University Chemistry Professor, has demonstrated a sustained creative insight into the design of useful transition metal complexes that has resulted in over 35 peer reviewed publications over the past decade or so. Although such publications are prized by academic researchers, he is perhaps most proud of the potential *utility* of the novel synthetic molecules he and his research partners have created, resulting in 8 patents, which detail how these compounds might be used in a variety of commercial contexts ranging from cleaning clothes to treating diseases to producing new types of materials.

Hubin Wins 2012 Bernhardt Academic Excellence Award

April 18, 2012



Dr. Tim Hubin (far right) won the Bernhardt Academic Excellence Award for 2012 at Southwestern Oklahoma State University in Weatherford. The award for exceptional achievement in teaching, scholarship and service is made possible by Dr. William and Theta Juan Bernhardt (centered) of Midwest City. SWOSU President Randy Beutler (left) is also pictured. Hubin won a \$5,000 cash award made possible by the Bernhardts.

Dr. Tim Hubin is the winner of the Bernhardt Academic Excellence Award for 2012, which was presented during the annual Bernhardt banquet held April 17 at Southwestern Oklahoma State University in Weatherford. Hubin, associate professor in the SWOSU Department of Chemistry and Physics, won the prestigious award at a banquet held in the Memorial Student Center on the SWOSU campus. For winning the award, Hubin received a \$5,000 cash award and Waterford crystal clock.

SWOSU alumni Dr. William and Theta Juan Bernhardt of Midwest City are sponsors of the annual award that goes to an outstanding faculty member who exhibits exceptional achievement in teaching, scholarship and service. Guest speaker for the evening was Rep. Harold Wright, a 1971 graduate of SWOSU.

Dr. Tim Hubin was raised in the town of Hanston (KS), where he was valedictorian of his 1990 graduating class and a National Merit Finalist. He chose high school teaching as his likely career and decided to attend Kansas State University, where he graduated with a B.S. in secondary science education and another B.S. in chemistry in 1994.

He chose to attend graduate school in chemistry at the University of Kansas rather than begin his career as a high school teacher. A fellowship at KU provided tuition and a stipend nearly equivalent to a teaching.

APPENDIX J

SCHOLAR AND FELLOW

PUBLICATIONS

69TH ANNUAL

PLAINS ANTHROPOLOGICAL CONFERENCE



OCTOBER 26-29, 2011
TUCSON, ARIZONA

OF THE PLAINS ANTHROPOLOGICAL SOCIETY

Baugh, Timothy (Oklahoma Historical Society)

Session 17: *Changing Patterns of Wichita Warfare*

In this paper, I will examine the structure of Kirikir'is or Wichita warfare on the central and southern Plains from the 16th through the 19th centuries using the model presented in Secoy's *Changing Military Patterns on the Great Plains*. More specifically, archaeological and ethnohistorical data are applied to clarify Secoy's military pattern for the Wichita tribes in Kansas, Oklahoma, and Texas. Although Wichita warriors were considered skilled horsemen and fighters, this approach reveals the evolving role and necessity of fortifications as a defensive tool in managing conflict.

Bement, Leland (University of Oklahoma), **Brian Carter** (Oklahoma State University), **PollyAnna Jelley** (University of Oklahoma), **Kristen Carlson** (University of Oklahoma), and **Scott Fine** (University of Oklahoma)

Session 11: *Badger Hole: Towards Defining a Folsom Bison Hunting Complex along the Beaver River, OK*

Badger Hole, 34HP194, is a Folsom-age arroyo bison kill along the north side of the Beaver River floodplain in northwestern Oklahoma. It joins the three bison kills at the Cooper Site and a component at the Jake Bluff site to define one of the highest density Folsom site concentrations in this area of the southern Plains. Together these sites belie a Folsom bison hunting complex that is structured on bison migration, gully formation, and seasonally specific intercept patterns by Folsom hunters.

Berman, Tressa (California College of the Arts & Institute for Inter-Cultural Practice)

Session 1: *Postcards from Indian Country: Snapshots, Memories and Ethnographic Flashbacks from the Northern Plains*

This presentation is a reflection on fieldwork conducted over the course of 10 years of living and working on the Fort Berthold reservation (Mandan-Hidatsa-Arikara). Part memoir, part "ethnographic flashback," a series of narrative snapshots and imaginings combine creative writing with descriptive story through the lens of what anthropologist Ruth Behar calls the "vulnerable observer." Using techniques of personal accounts enmeshed with oral history and ethno-poetics, creative writing can also be explored as a teaching tool for healing the wounds of postcolonial trauma and cultural recovery.

Berna, Francesco (see Christopher I. Roos)

Bethke, Brandi (University of Arizona)

Session 16: *Dogs at Dinner: Preliminary Observations of the Role of Canids in Subsistence Patterns among Plains Village Groups*

Canid remains are relatively common in the Plains region. However, archaeologists have conducted little actual analysis on the significance and



364-1 Investigation of a Parna (Silt) Dune Formation in the Panhandle of Oklahoma.

See more from this Division: [S05 Pedology](#)

See more from this Session: [Soil Genesis and Classification: I \(Includes Graduate Student Competition\)](#)

Wednesday, October 19, 2011: 7:35 AM

Henry Gonzalez Convention Center, Room 006D, River Level



Scott T. Fine¹, S. L. McGowen², Brian J. Carter¹, L. C. Bement³, W. C. Johnson⁴, A. R. Simms⁵ and Alan Halfen⁴,
(1)Plant and Soil Science, Oklahoma State University, Stillwater, OK
(2)USDA-NRCS, Woodward, OK
(3)Oklahoma Archeological Survey, University of Oklahoma, Norman, OK
(4)Department of Geography, University of Kansas, Lawrence, KS
(5)Department of Earth Science, Univerisy of California-Santa Barbara, Santa Barbara, CA

Significant, large dune-like features located in southwestern Beaver County in the Panhandle of Oklahoma offer intrigue and insight into past environmental conditions. Yet, what make these dunes especially intriguing is the inclusion of parna (sand-sized carbonate cemented silt/clay aggregates) sediment unlike the commonly recognized sand dunes of the region (adjacent to playas and rivers). Eight currently identified mounds range from 10 to 150 ha in area, with relief ranging from 4.5 to 14 m. Deep-core observation was performed on the summit of two mounds, Blue and Gray, for stratigraphical interpretation and chemical and physical analysis. Resulting 10-13 m cores showed pedologic and stratigraphical features along with physical and chemical data that suggest a period of landscape stability with soil formation followed by a significant period of soil landscape instability for the region.

Radiocarbon dating of a well-developed soil sequence below the parna sediment has yielded AMS ¹⁴C ages of 19.0 k RC yrs BP (directly below) and ages of 19.8 k and 20.8 k RC yrs BP (150-200 cm below). Optically stimulated luminescence dating from within the parna sediment will aid in determining actual time of dune formation. Thin-section analysis of individual grains will also aide in determining if the parna (carbonate cemented aggregates) is pedogenic or detrital in origin. Another key distinction between the parna dunes in this study and other river and playa associated dunes in the region is the apparent lack of source material for parna dune formation. Detailed analysis and interpretation of parna dunes of the Panhandle of Oklahoma is yielding significant insight into environmental conditions that dominated landscape formation of the past and may hold clues to possible future climate change.

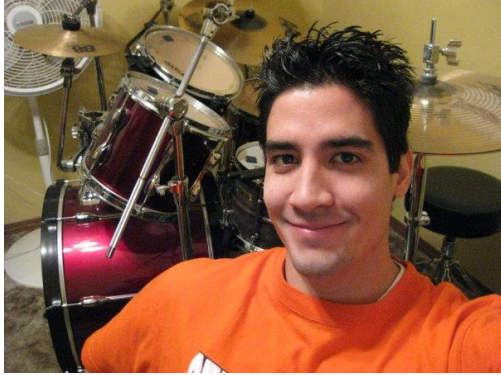
See more from this Division: [S05 Pedology](#)

See more from this Session: [Soil Genesis and Classification: I \(Includes Graduate Student Competition\)](#)

[Previous Abstract](#) | [Next Abstract >>](#)



Jonathan Gonzales



Jonathan Gonzales received his B.S. degree in Physics from [East Central University](#) in Ada, Oklahoma in May 2007 and an M.S. in Electrical and Computer Engineering from [OSU-Stillwater](#) in December 2009. He is currently pursuing a PhD in ECE at OSU-Tulsa and is employed as a research assistant at the Helmerich Research Center.

Jonathan's research focuses on MEMS sensors and sputtered aluminum nitride thin films. He is currently working on resonant based accelerometers and similar sensors based on the TPOs resonators, specifically moving towards applications in bio systems.

Publications :

Emad Mehdizadeh, Jonathan Gonzales, Amir Rahafrooz, Reza Abdolvand, and Siavash Pourkamali, "Piezoelectric Rotational Mode Disk Resonators for Liquid Viscosity Monitoring," *to appear in Hilton Head 2012 Workshop*, Hilton Head, SC, June. 2012.

M. Shahmohamdi, B.P. Harrington, J. Gonzales, and R. Abdolvand, "Temperature-Compensated Extensional-Mode MEMS Resonators on Highly N-Type Doped Silicon Substrates," *to appear in Hilton Head 2012 Workshop*, Hilton Head, SC, June. 2012.

Arash Hajjam, Amir Rahafrooz, Jonathan Gonzales, Reza Abdolvand, and Siavash Pourkamali, "Localized Thermal Oxidation for Frequency Trimming and Temperature Compensation of Micromechanical Resonators," *MEMS 2012*, Paris, France, Jan. 2012.

Jonathan M. Gonzales, Mohsen Shahmohammadi, and Reza Abdolvand, "Sensing Acoustic Properties of Materials Using Piezoelectric Lateral-Mode Resonators," *IEEE International Ultrasonics Symposium (IUS)*, Orlando, FL, Oct. 2011.

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LETTER TO THE EDITOR

SGT1 Is Induced by the *Potato virus X* TGBp3 and Enhances Virus Accumulation in *Nicotiana benthamiana*

Dear Editor,

Host chaperone proteins are critical factors in plant virus infection. One of the most commonly identified host factors involved in plant virus infection is Hsp70, which functions in ATP hydrolysis, protein folding, assembly of protein complexes, and translocation between cellular compartments. A comparative study of plant virus infection, including *Potato virus X* (PVX), reported that Hsp70 is up-regulated by virus infection and possibly contributes to pathogenesis in both *Arabidopsis* and *N. benthamiana* plants (Aparicio et al., 2005). Cytosolic Hsp70 interacts with the tombusvirus and tymovirus replication complexes (Wang et al., 2009), the potyvirus coat protein (Hafren et al., 2010), and closteroviruses encode an HSP70 homolog that functions to enable virus intercellular transport (Agranovsky et al., 1998).

SGT1 is a promiscuous co-chaperone that stabilizes protein complexes. The SGT1–HSP70 chaperone complex is important for plant responses to environmental stresses including heat shock and pathogen invasion (Noel et al., 2007; Zabka et al., 2008; Cazale et al., 2009). In yeast and in plants, SGT1 physically associates with SCF (SKP1–Cullin–F-box) ubiquitin E3 ligase complexes (Kadota et al., 2008; Stuttmann et al., 2008).

SKP1, a component of the SCF complex, is up-regulated by the PVX TGBp3 during virus infection in *N. benthamiana* plants. Since HSP70 and the SCF complex are linked to PVX infection, we were not surprised to discover that, in the pathogenesis-related gene expression profiles reported by Garcia-Marcos et al. (2009), PVX also up-regulates *NbSGT1* (AF494083). We used qRT-PCR and the comparative C_T method for relative quantitation of *NbSGT1* transcript accumulation in PVX–GFP-infected *N. benthamiana* leaves at 0, 3, and 9 d post inoculation (dpi) (Ye et al., 2011). Non-parametric analysis revealed a general and significant increase in *NbSGT1* expression between 0 and 9 dpi with PVX–GFP (Bamunusinghe et al., 2009) (Figure 1A). Kruskal–Wallis tests were performed and the *P*-value associated with the test of equality of medians for *NbSGT1* was less than 0.001. The median value at 9 dpi is three to fourfold higher, the border of the box representing the upper 75th percentile reaches four to fivefold increase, and there is a maximum increase of 10-fold among outliers (Figure 1A; $P < 0.0001$).

The entire PVX genome or each PVX gene individually were fused to the *Cauliflower mosaic virus* (CaMV) 35S promoter (Ye et al., 2011) and were agro-infiltrated into *N. benthamiana* leaves to determine whether a specific viral gene is responsible for triggering SGT1 expression (Figure 1B). PVX infection as well as TGBp3 delivery resulted in greater than two to 3.4-fold higher levels of *NbSGT1* transcript accumulation at 2 and 5 dpi compared to control leaves infiltrated with buffer (mock) or *A. tumefaciens* alone (Figure 1B; $P < 0.05$). Immunoblot analysis confirmed that the levels of TGBp3 expression from the PVX genome and directly from the CaMV35S promoter are comparable (Ye et al., 2011).

TGBp3 was fused either to the NOS or CaMV 35S promoter and expression in Agro-infiltrated leaves was relatively lower from the NOS promoter (Ye et al., 2011) and this led to somewhat lower fold changes in the expression of *NbSGT1* (Figure 1C). *NbSGT1* induction was greatest when the *A. tumefaciens* solution was 1.0 OD₆₀₀ and was proportionally less with lower dilutions (OD₆₀₀ = 0.1, 0.01; Figure 1C). Collectively, these data demonstrate that PVX TGBp3 alone is sufficient to induce expression of *NbSGT1* and that the TGBp3 levels correlate with the magnitude of induction.

Evidence that TGBp3 is a specific elicitor of *NbSGT1* is particularly interesting, considering that ER resident chaperones such as BIP, protein disulfide isomerase, calmodulin, and calreticulin are also induced by TGBp3 (Ye et al., 2011). Since SGT1 plays a pivotal role in stabilizing proteins and protein complexes involved in a wide range of plant signaling components often related to pathogen interactions (Azevedo et al., 2006; Kadota et al., 2008), it is intriguing to learn that PVX TGBp3 is a specific elicitor of SGT1 alongside other cellular chaperones controlling protein stability.

Several studies employed virus-induced gene silencing (VIGS) to knock down *NbSGT1* expression or used transgenic

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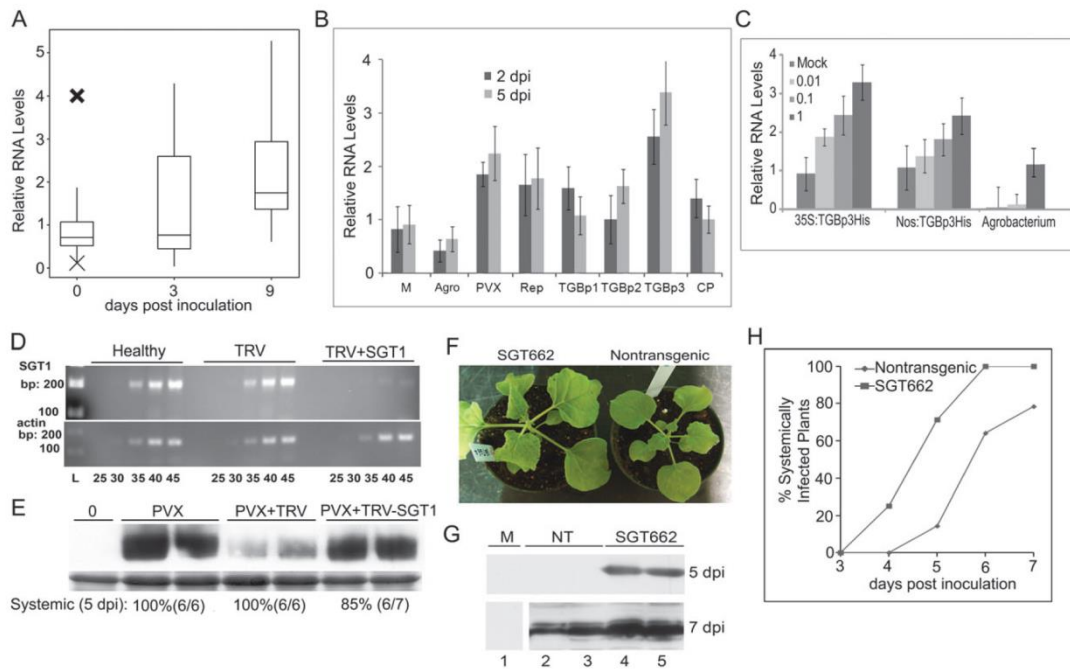


Figure 1. Plot represents the increasing percent of nontransgenic (♦) and SGT662 (■) plants that were systemically infected with PVX-GFP between 3 and 7 dpi. Each day the percent of infected SGT662 plants is higher than nontransgenic.

(A–C) qRT-PCR detecting *NbSGT1* transcripts in *N. benthamiana* plants. The comparative C_T method employs the formula $2^{-\Delta\Delta C_T}$ to represent the RNA fold accumulation. The endogenous control (18S rRNA) and calibrator (healthy sample template) were used to calculate the $\Delta\Delta C_T$ value. Validation reactions determined the efficiencies of the target and control amplifications. (A) Boxplots representing data obtained from 20 PVX-GFP-infected leaves. (B) Bars represent the average ($n = 3$) relative levels of *NbSGT1* at 2 and 5 dpi in leaves that were infiltrated with buffer (M); *A. tumefaciens* only (Agro) or containing CaMV35S driven PVX-GFP; mycRep (Rep); TGBp1; mycTGBp2; TGBp3His; or CP. (C) Bars represent *NbSGT1* induction ($n = 3$) at 2 d following leaf infiltrations with buffer (mock) or various dilutions of Agro containing CaMV35S-TGBp3 or Nos-TGBp3 fusions. ANOVA verified TGBp3-induced higher levels of host transcripts ($p < 0.05$).

(D) Ethidium bromide-stained gel showing semi-quantitative RT-PCR products obtained using RNA extract from healthy, TRV, or TRV-SGT1-treated leaves and primers detecting *NbSGT1* or actin. The sizes in base pairs (bp) of the DNA ladder (L) are indicated. The numbers of PCR cycles are indicated.

(E) Fourteen days after pre-treatment with buffer (0), TRV and TRV-NbSGT1 (indicated above the lanes) plants were inoculated with PVX-GFP. Immunoblot detecting PVX CP in systemic leaf extracts a 5-dpi Coomassie blue-stained gel below the immunoblot shows equal sample loading. The percentage values at the bottom indicate the proportion of plants that were systemically infected at 5 dpi.

(F) PVX-GFP-infected SGT662 and nontransgenic plants at 5 dpi.

(G) Immunoblot detecting PVX CP in systemic leaves at 5 dpi in SGT662 and nontransgenic plants.

(H) Plot shows the percentage of plants that showed systemic PVX-GFP accumulation between 3 and 7 dpi.

plants overexpressing SGT1 (Peart et al., 2002; Azevedo et al., 2006) and revealed that SGT1 impacts several host phenotypic responses simultaneously. To determine whether *NbSGT1* is a factor in PVX pathogenesis, we used the *Tobacco rattle virus* (TRV)-based VIGS to knock down *NbSGT1* expression. *N. benthamiana* plants were pre-treated with buffer, TRV1 plus TRV2 empty vector, or TRV1 plus TRV2-SGT1. At 12 d post infiltration, semi-quantitative RT-PCR using RNA extracted from the fourth leaf above the TRV-pre-treated leaf confirmed *NbSGT1* transcript levels were reduced by at least 85% compared with the TRV-infected control (Figure 1D).

One hundred percent of the plants that were pre-treated with buffer or TRV were systemically infected with PVX-GFP

by 5 dpi (Figure 1E). The level of PVX coat protein (CP) at 7 dpi was lower in TRV pre-treated leaves (Figure 1E) than in buffer pre-treated leaves. On the other hand, systemic spread of PVX-GFP was delayed in SGT1-silenced leaves, although the disease symptoms and amount of PVX CP in systemic tissues were comparable. Only 85% of silenced plants became infected by 5 dpi, which points to *NbSGT1* as a potential factor for optimum PVX accumulation in systemic tissues. While we cannot conclude an effect of SGT-silencing on CP accumulation, we can argue that silencing *NbSGT1* reduces the impact of TRV on PVX accumulation. Thus, *NbSGT1* contributes to virus infection in a manner that is not yet understood.

Transgenic line SGT662 overexpresses *NbSGT1* (Wang et al., 2010) and was inoculated with purified ($3 \mu\text{g ml}^{-1}$) PVX-GFP. We observed an average of six green fluorescent foci per nontransgenic leaf and, almost twice as many, 11 foci per leaf per SGT662 transgenic leaf at 3 dpi. In SGT662 plants, systemic mosaic and chlorotic symptoms first appeared at 4 dpi. By 5 dpi, 70% of the SGT662 plants were systemically infected and 100% were infected at 6 dpi. Less than 20% of nontransgenic plants showed mosaic disease at 5 dpi and 80% showed systemic infection by 7 dpi (Figure 1H). Immunoblots confirmed earlier accumulation of PVX in SGT662 plants than in nontransgenic plants (Figure 1G).

These data demonstrate that PVX TGBp3 induces *NbSGT1* expression and that higher levels of *NbSGT1* accelerate PVX infection. In eukaryotes, SGT1 is essential in a number of physiological responses. Thus, we cannot rule out the possibility that SGT1 functions to stabilize cellular components that mediate virus infection in plants. Given that SGT1 interacts with Hsp70 (Noel et al., 2007) and that both genes are induced by PVX infection (Aparicio et al., 2005), it will be interesting to learn whether these proteins form a complex necessary for PVX infection or whether there are other viral or cellular protein partners for SGT1.

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Proceedings Article

Standoff Raman measurement of nitrates in water

[S. Sadate](#) ; [A. Kassu](#) ; [C. W. Farley](#) ; [A. Sharma](#) ; [J. Hardisty](#) ; [Miles T. K. Lifson](#)

[\[+\] Author Affiliations](#)

Proc. SPIE 8156, Remote Sensing and Modeling of Ecosystems for Sustainability VIII, 81560D (September 15, 2011); doi:10.1117/12.893571

Text Size: [A](#) [A](#) [A](#)

From Conference Volume 8156

Remote Sensing and Modeling of Ecosystems for Sustainability VIII
Wei Gao; Thomas J. Jackson; Jinnian Wang; Ni-Bin Chang
San Diego, California | August 21, 2011

[Abstract](#) [References](#)

abstract

The identification and real time detection of explosives and hazardous materials are of great interest to the Army and environmental monitoring/protection agencies. The application and efficiency of the remote Raman spectroscopy system for real time detection and identification of explosives and other hazardous chemicals of interest, air pollution monitoring, planetary and geological mineral analysis at various standoff distances have been demonstrated. In this paper, we report the adequacy of stand-off Raman system for remote detection and identification of chemicals in water using dissolved sodium nitrate and ammonium nitrate for concentrations between 200ppm and 5000ppm. Nitrates are used in explosives and are also necessary nutrients required for effective fertilizers. The nitrates in fertilizers are considered as potential sources of atmospheric and water pollution. The standoff Raman system used in this work consists of a 2-inch refracting telescope for collecting the scattered Raman light and a 785nm laser operating at 400mW coupled with a small portable spectrometer.

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**10th Annual Symposium on the
Conservation and Biology of
Tortoises and Freshwater Turtles**
Turtle Survival Alliance
2012 Conference Highlights
Program Abstracts 2012

***Conservation Triage and Sonoran Mud Turtles in the
Peloncillo Mountains***

PAUL STONE¹, CHELSEA SMITH¹, AND JUSTIN CONGDON²

¹Department of Biology, University of Central Oklahoma, Edmond, Oklahoma, USA
²Savannah River Ecology Laboratory, Drawer E, Aiken, South Carolina, USA
[pstone@uco.edu]

Current levels of conservation funding are several orders of magnitude lower than what is needed to reduce extinction rates to background levels. As a result, conservation organizations are faced with difficult decisions about how to allocate resources. Conservation triage is a method for allocating resources to obtain the largest conservation impact. Advocates of this approach recommend concentrating resources on situations where there are serious threats but also a high probability of recovery if action is taken. However, current environmental policy and funding priorities remain focused on critically endangered species. This policy may need revision. By taking a small fraction of resources devoted to endangered species and diverting them to less extreme problems, we could perhaps reduce matriculation of vulnerable and threatened species into the endangered ranks. Sonoran Mud Turtles (*Kinosternon sonoriense*), listed as Near Threatened by the IUCN, are ideal candidates for conservation triage. In the Peloncillo Mountains, large populations are associated with small impoundments constructed during the New Deal. Many impoundments are failing due to siltation or dam failures, which likely threatens otherwise thriving turtle populations. We began calling attention to this problem in 2008. Neither the landowner (USFS) nor funding agencies (including TCF) could allocate resources to restoring these habitats because the problem was not considered sufficiently grave to warrant attention. During 14-28 May 2012, a group of biologists, ranchers, and private citizens began restoration efforts at two impoundments. The first impoundment was completely silted in. We removed about 50 m³ of sediment, creating a 15 x 5 m impoundment that will improve habitat connectivity in the drainage. The other impoundment was larger and held some water during the wet season, despite heavy silt accumulation and a leaky plate on the dam. We removed about 140 m³ of silt from this impoundment, dramatically increasing its surface area. We also removed and replaced the dam plate. These efforts required about 50 person days and \$5000. In the next year, we plan to restore two other impoundments and construct silt traps upstream from restored impoundments. We believe these efforts will forestall the decline of Mud Turtle populations in our study area.

Conservation: Oral

Natural rules for *Arabidopsis thaliana* pre-mRNA splicing site selection

Research Article

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Brittany Stoutermire³, Yanfeng Wu²

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and Chemical Analysis, 100089 Beijing, China

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Langston University, Langston, Oklahoma 73050, USA

Received 13 February 2012; Accepted 08 May 2012

Abstract: The accurate prediction of plant pre-mRNA splicing sites has been studied extensively. The rules for plant pre-mRNA splicing still remain unknown. This study, based on confirmed sequence data, systematically analyzed all expressed genes on *Arabidopsis thaliana* chromosome IV to quantitatively explore the natural splicing rules. The results indicated that defining *Arabidopsis thaliana* pre-mRNA splicing sites required a combination of multiple factors including (1) relative conserved consensus sequence at splicing site; (2) individual nucleotide distribution pattern in 50 nucleotides up- and down-stream regions of splicing site; (3) quantitative analysis of individual nucleotide distribution by using the formulations concluded from this study. The combination of all these factors together can bring the accuracy of *Arabidopsis thaliana* splicing site recognition over 99%. The results provide additional information to the future of plant pre-mRNA splicing research.

Keywords: *Arabidopsis thaliana* • Pre-mRNA splicing

© Versita Sp. z o.o.

1. Introduction

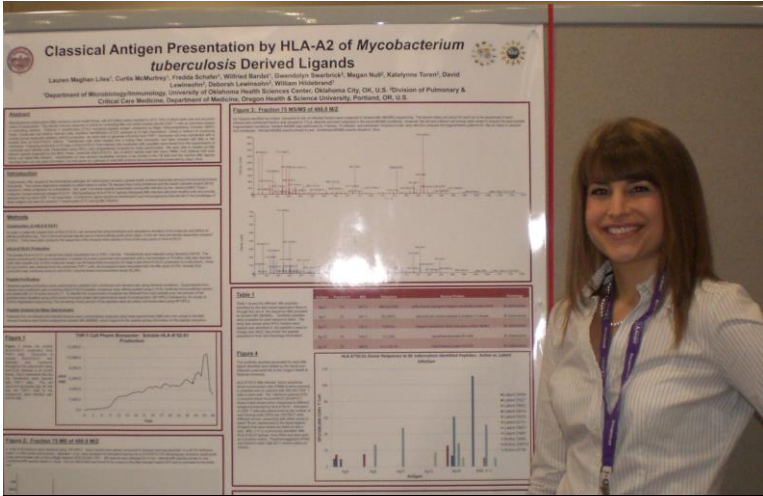
The accurate removal of introns from precursor messenger RNA (pre-mRNA) is an essential procedure for gene expression. Several key factors involved in intron removal have been suggested by previous studies. These include: the relative consensus sequence at the splicing sites, the individual nucleotide distribution pattern in flank regions of splicing sites, and a conserved branch point sequence [1,2]. According to past studies, some conserved short sequences within introns have been identified to function in intron splicing across all species, which include dinucleotide guanine (G) and uridine (U) at 5' splicing site and adenine (A) and guanine at 3' splicing site, and a short conserved "branch point" sequence located within 50 nucleotides upstream of the 3' splicing site [3]. However, particular

structural and sequence features distinguish plant introns from the other species. Although plant introns share a high level sequence similarity with other species, there is a lack of a conserved branch point sequence when comparing vertebrate and yeast introns [4,5]. Former studies demonstrated that alternation of the sequences around splicing sites might lead to the change of intron/exon recognition mechanisms [6] and lead to different transcripts and functions [7], which indicated that splicing of a particular intron depends on a fine balance of multiple splicing signals of varying strengths in the sequence context of an intron/exon organization [5,8]. Based on current available information, several plant splicing site prediction methods have been developed [9-11]. However, because of the lack of an *in vitro* system capable of efficiently splicing plant introns experimentally and

APPENDIX K

SCHOLAR AND FELLOW

HIGHLIGHTS



L. Megan Liles, BD Fellow, University of Oklahoma,
 Poster Presentation: 99th Annual Meeting of the American
 Association of Immunologist, Boston, MA



BD Fellow, Ryan Watley.
 University of Oklahoma
 completed his general exams and
 is now an official Ph.D.
 Candidate.



Darryl Wells, OSU,
 Received the 2012
 NSBE Fellows
 Scholarship



OK-LSAMP current and former Scholars attending the BEYA Conference,
 Philadelphia, PA



Langston University Scholars,
Phoebe Lewis (left) and Kayla Love
(right),
won FIRST PLACE in Biological
Sciences



Moises Martinez, University of Oklahoma,
Outstanding Senior



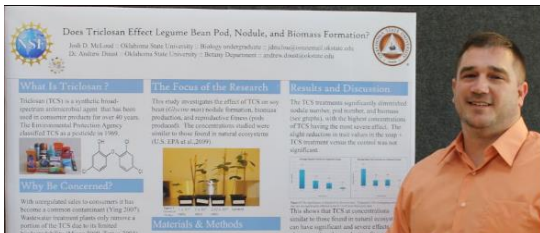
Women in Science Conference, Oklahoma City, OK
Fara Williams, OK-LSAMP Coordinator along with scholars from
Oklahoma State University and Langston University



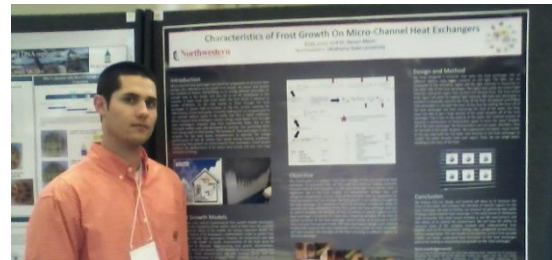
Darron "DJ" Lamkin, OSU BD Fellow, Named Region V Chair Elect at the 2012 NSBE Convention



Allison Quiroga, University of Oklahoma, Outstanding Senior in Architectural Engineering



Josh McLoud, OSU, SWARM 2012 Conference, Tulsa, OK



Kody Jones, OSU, SWARM 2012 Conference, Tulsa, OK





2012 University of Oklahoma GPiS Graduate Symposium



Megan Salisbury,
University of Oklahoma,
Outstanding Senior in
Environmental Engineering



Dr. Pulat and Shawna Ong at OU
Graduate Research Symposium



Zack Dunn, OU, presenting his research at the GPiS
Graduate Research Symposium and discussing the
research with Scholar Josh Hardesty.



OSU zoology graduate student Marissa Rice has been awarded a National Science Foundation Graduate Research Fellowship. The fellowship will provide \$126,000 over the next three year to help her complete her research which focuses on the influence of the neuro-hormone oxytocin on social and spatial memory and its effects on reproduction.

Marissa Rice, a graduate student in zoology at Oklahoma State University from Virginia Beach, VA, has captured the prestigious National Science Foundation Graduate Research Fellowship, providing her \$126,000 over the next three years to support her research.

“It’s great to know that the National Science Foundation has confidence in my proposed research and my ability as a scientist,” Rice said.

Rice’s research focuses on the influence of the neuro-hormone oxytocin on social and spatial memory and how it shapes reproductive tactics.

“This award is a great honor, and it distinguishes the excellence of the zoology department and the graduate college at OSU,” Rice said. “I see it as a personal challenge to conduct meaningful research that will truly reflect the The program recognizes and supports outstanding graduate students in NSF supported science, technology, engineering and mathematics disciplines pursuing research-based masters and doctoral degrees.

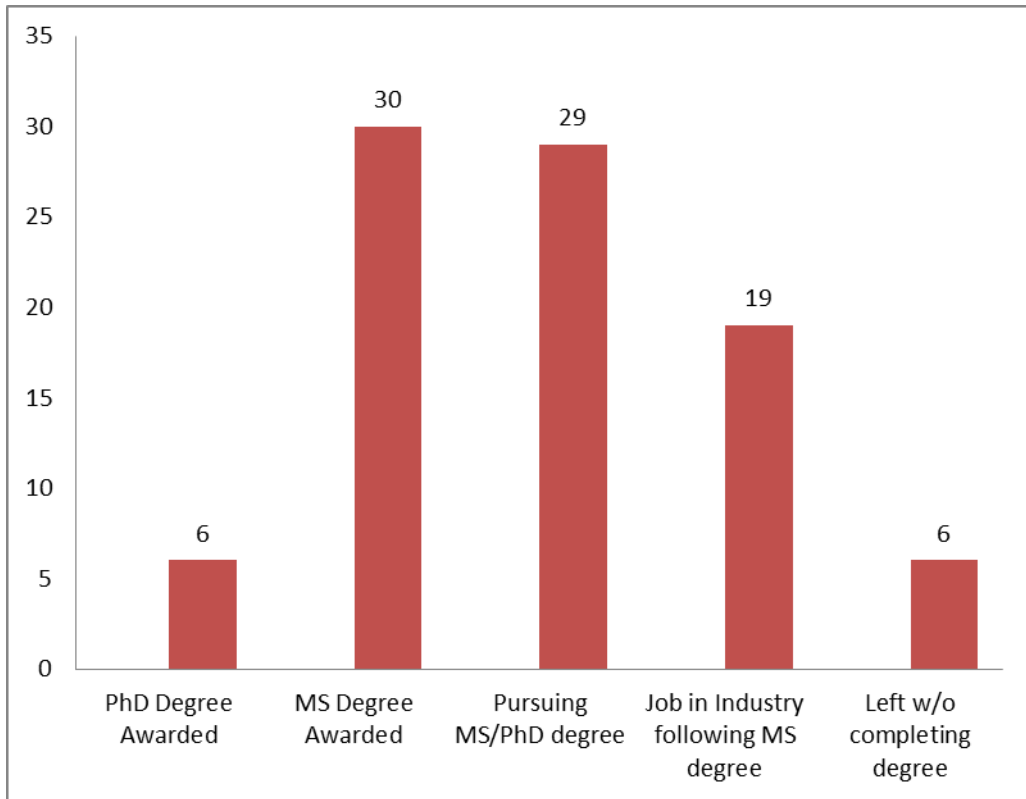
APPENDIX L

BRIDGE TO THE DOCTORATE

FELLOWS

Cohort	Last name	First name	Ethnicity	Discipline	Began M.S. Program	Continuing with program	Completed M.S. Degree	Alternate Plans	Began Ph.D. Program	Completed PHD	Employment	Company	Location
5	Arscott	Rai/Anna	African American	Chemistry		X			August 1, 2011				
5	Bryant	Nicole	Native American	Botany	August 1, 2010	X							
5	Butson	Eric	Native American	Chemistry	August 1, 2012	X							
5	King	Jamere	African American	Engineering	August 1, 2012	X							
5	Lamkin	DJ	African American	Engineering	August 1, 2010	X	MS - May 2012		June 1, 2012				
5	McLoud	Josh	Native American	Botany	June 1, 2012	X							
5	Parkhurst	Molly	First Gen-White	Botany	August 1, 2010	X			June 1, 2012				
5	Rice	Marissa	African American	Zoology	August 1, 2012	X			August 1, 2011				
5	Ross	Joseph	Native American	Physics	August 1, 2011	X							
5	Supeck	David	Native American	Biochemistry	August 1, 2011	X							
5	Tehrani	Ana	Hispanic	Statistics	August 1, 2012	X							
5	Williams	CJ	African American	Engineering	August 1, 2012	X							
4	Aguayo	Chris	Hispanic	Aerospace Engineering	August 1, 2010								
4	Atkinson	Brittanie	African American	Biochemistry-Gpibs	August 1, 2009	X	MS - August 2012	Left Program	NO DEGREE	NO DEGREE	Flight School	US Air Force	
4	Dunn	Zack	Native American	Electrical Engineering	September 1, 2011	X		Job in Industry					
4	Franklin	Mario	African American	Industrial Engineering	August 1, 2010	X	MS - August 2012		September 1, 2012				
4	Herrera	Juan	Hispanic	Electrical Engineering	January 1, 2010	X			January 1, 2010				
4	Jordan	Lorne	African American	Biochemistry	August 1, 2009	X							
4	Jordan	Ryan	Native American	Geology	August 1, 2010	X	MS - May 2012	Job in Industry					
4	Kimmel	Jason	Cauc-First Gen	Electrical Engineering	June 1, 2011	X							
4	Liles	Meghan	Native American	Biochemistry-Gpibs	August 1, 2009	X			August 1, 2010		Geophysists	Exxon	OK
4	Mace	Chris	Native American	Geology	August 1, 2009		MS - August 2011	Job in Industry					
4	Mcandrews	Chyistle	Native American	Botany Microbiology	August 1, 2009		MS - December 2011	Non-STEM degree program					
4	Ong	Shawna	Pacific Islander	Electrical Engineering	August 1, 2010		MS - May 2012	Job in Industry					
4	Watley	Ryan	African American	Chemistry	August 1, 2009	X			August 1, 2009				
3	Benjamin	Marcus	African American	Chemistry	August 1, 2008		MS - May 2012	Job in Industry					
3	Blocker	Tomica	African American	Zoology	January 1, 2009	X		GRFP Award					
3	Carpenter	Zachary	Native American	Electrical & Computer Engineering		X			August 1, 2010				
3	Fine	Scott	Native American	Plant & Soil Science	August 1, 2008		MS - May 2010		August 1, 2010				
3	Gonzales	Erik	Hispanic	Physics	January 1, 2009		MS - December 2011	Job in Industry				Oil Industry	Sulphur
3	Gonzales	Jonathan	Hispanic	Electrical & Computer Engineering	January 1, 2008		MS - December 2010		January 1, 2010				

3	Hough	Matthew	Native American	Plant & Soil Science	August 2, 2008	MS - May 2011	Job in Industry	Wildlife Ecologist	AK
3	Hughes	Shawna	African American	Food Sciences	January 1, 2009	MS - December 2011	Job in Industry	Research Analyst	LA
3	Ngo	Minh	Asian/First Gen	Forensics	August 4, 2008	MS - December 2010	Job in Industry	Forensic	TN
3	Osei	Richard	African American	Computer Science	August 5, 2008	MS - August 2012	Left Program	NO DEGREE	NO DEGREE
3	Parkhurst	Molly	First Gen-White	Botany	May 1, 2011	X		June 1, 2012	NO DEGREE
3	Prinkerman	Cody	Native American	Aerospace & Mechanical Engineering	August 6, 2008	MS - July 2010		August 1, 2010	
3	Yarnolar	Doug	Native American	Civil Engineering	May 1, 2009	MS - May 2010	Job in Industry	Civil Engineer	OKC
2	De la Cruz	Felix	Hispanic	Mechanical Engineering	Fall 2007	MS - May, 2009	Job in Industry	Industry	
2	Harris	Steven	African American	Chemistry				Summer 2006	Ph.D. May 2011
2	Harvey	Desmond	African American	Industrial Engineering	Summer 2006	MS - May, 2008		Fall-2010 in Higher Education	Post Doc
2	Henderson	Jacob	Native American	Electrical Engineering	Fall 2006	MS - May, 2011		Began PhD Summer 2011	MEP Coord Tinker AFB-OU instructor
2	Hughes	Quintin	African American	Industrial Engineering	Spring 2006	MS - May, 2009		Summer 2009 PhD in Engineering Education	K-20 Center
2	James	Kevin	African American	Electrical Engineering	Spring 2006	MS - December, 2009		2009-Began PhD Engineering Education	
2	McCarroll	Shawn	Native American	Computer Science	Summer 2006	MS - May, 2009	Job in Industry	NO DEGREE	Analyst
2	McCutchen	Marshall	Native American	Physics	Spring 2006	MS - May, 2008	Job in Industry	NO DEGREE	NO DEGREE
2	Osisanya	Israel	African American	Chemical Engineering	Spring 2006	MS - May, 2008	Left Program	NO DEGREE	Engineer
2	Rowland	Marquita	African American	Biology	Summer 2006	MS - May, 2008	Left Program	NO DEGREE	NO DEGREE
2	Vazquez	William	Hispanic	Mathematics	Spring 2006	MS - May, 2008	Job in Industry	NO DEGREE	NO DEGREE
2	Wallace	T'Aire	African American	Microbiology	Spring 2006		Left Program	NO DEGREE	NO DEGREE
1	Barrett	Dominic	Native American	Natural Resource Ecology	January 1, 2005	MS - May, 2008	Job in Industry	Game Warden	Arizona Fish & Wildlife
1	Cowan	Brett	Native American	Civil Engineering				August 1, 2004	GRDA/Tulsa OK
1	Cowan-Watts	Cara	Native American	Biosystems Engineering and Environmental Sciences				July 1, 2005	Cherokee Nation
1	Heppler	Marty	Native American	Entomology	January 1, 2005	MS - May 2002	Job in Industry	Tribal Rep	Wansato Corp
1	Manjarrez	Jacob	Hispanic	Biochemistry	January 1, 2004	MS - July, 2007	Job in Industry	Technician	MO
1	Patton	Thomas	Native American	Mechanical Engineering	August 1, 2004				OU-CHS
1	Peal	Lila	African American	Biochemistry	August 1, 2004	MS - July 2009			Dallas TX
1	Rush	Loretta	Native American	Plant Pathology	August 1, 2004			August 1, 2004	Ph.D. August 2011
1	Sherman	Adrienne	African American	Environmental Science	August 1, 2005	MS - May, 2009	Job in Industry	Asst Prof	Cameron Univ
1	Singleton	Nicole	African American	Toxicology-Veterinary Biomedical Sciences	August 1, 2004	MS - May 2008	Job in Industry	NO DEGREE	NO DEGREE
1	Wilkins	Brek	Native American	Biomedical Sciences	August 1, 2004				OK Dept of Environmental Envr Control
1	Wright	Cristee	African American	Microbiology	August 1, 2004	MS - July, 2007	Pharmacy School	January 1, 2005	Ph.D. December 2011
									Post-doc Pharmacy Intern
									Tulsa-CHS OK
									OK



Ph.D. Degree Awarded:	6
M.S. Degree Awarded:	30
Continuing with Graduate Program	29
Left Without Completing Any Degree:	6
Job in Industry:	19

OKLAHOMA STATE UNIVERSITY – COHORT V

OKLAHOMA LSAMP BRIDGE TO THE DOCTORATE 2011 COHORT V

OK-LSAMP - OKLAHOMA STATE UNIVERSITY
430 SCOTT HALL, STILLWATER, OK 74078
OKAMP@OKSTATE.EDU / 405-744-6710
WWW.OK-LSAMP.OKSTATE.EDU



ERIC BUTSON
Northeastern State University, 2012
BS, Chemistry
BD Emphasis: Chemistry
Career Goals: To conduct research at a national lab and eventually teach college chemistry to motivate students to go into chemistry.



JEAN VAN DELINDER, PH.D.
Oklahoma State University
Principal Investigator
Oklahoma Louis Stokes Alliance for
Minority Participation



JAMERE KING
Southwestern Oklahoma State University, 2012
BS, Computer Engineering Technology
BD Emphasis: Computer Engineering
Career Goals: To become a Chief Information Security Officer & Chief Information Officer.



JOSH MCLLOUD
Oklahoma State University, 2012
BS, Biological Sciences
BD Emphasis: Botany & Microbiology
Career Goals: To become a professor in order to continue conducting research as well as encourage and mentor minority students.



DAVID SUPECK
Southwestern Oklahoma State University, 2008
BS, Chemistry & Physics
BD Emphasis: Immunology & Biochemistry
Career Goals: To have a career in industry and become a research professor.



MOLLY PARKHURST
Oklahoma State University, 2010
BS, Botany; MS, Botany
BD Emphasis: Plant Science
Career Goals: To become a research scientist with a federal agency such as the USDA, FDA, or EPA with a focus on genetically modified organisms.



CHARLES "CJ" WILLIAMS JR.
Oklahoma State University, 2012
BS, Computer Engineering
BD Emphasis: Industrial Engineering Management
Career Goals: To pursue a project management position with a Fortune 500 company.



RAIANNA ARSCOTT
Texas Southern University, 2011
BS, Chemistry
BD Emphasis: Chemistry
Career Goals: To help people by unraveling causes and exacting cures for cancer, pulmonary, neurological, and autoimmune diseases.



ANA TEHRANI
University of Central Oklahoma, 2012
BS, Mathematics & Statistics
BD Emphasis: Statistics
Career Goals: To become an ethical researcher and to keep current with new material and technology.



JOSEPH ROSS
East Central University, 2009
BS, Medical Physics
BD Emphasis: Medical Physics
Career Goals: To participate in clinical service by performing treatment planning for patients according to the treatment regimen prescribed by the Radiation Oncologist.



DARRON "DJ" LAMKIN
Oklahoma State University, 2010
BS, Mechanical Engineering Technology; MS, Industrial Engineering
BD Emphasis: Industrial Engineering
Career Goals: To become a Manufacturing Engineer and to encourage minority students to seek engineering degrees and careers.

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



NICOLE BRYANT
Oklahoma State University, 2011
BS, Botany
BD Emphasis: Botany
Career Goals: To become a Plant Pathology & Genetics professor.










MARISSA RICE
Virginia Tech, 2011
BS, Biological Sciences
BD Emphasis: Zoology
Career Goals: To make significant contributions to the fields of ecology, evolution, and behavior and to be a distinguished professor in her field.





UNIVERSITY OF OKLAHOMA

The National Science Foundation Directorate for Education and Human Resources (EHR) through the Division of Human Resources Development (HRD) sponsors the Bridge to the Doctorate program as a competitive supplemental activity to the undergraduate Louis Stokes Alliances for Minority Participation Program. The Bridge to the Doctorate program is designed to broaden participation through the attraction of underrepresented minority students in science, technology, engineering and mathematics (STEM) disciplines. In addition, this activity seeks to remove minority students' hesitancy about entering graduate school and the fear of creating additional financial indebtedness associated with initial graduate education. In 2009, the University of Oklahoma welcomed its second cohort of Bridge to Doctorate Fellows.

	<p style="text-align: center;">RYAN JORDAN</p> <p style="text-align: center;">GRADUATED</p> <p>BS Institution: Oklahoma State University- Stillwater Major: Geology Career Goals: To reveal earth's history by utilizing geophysics in creative ways. He completed his M.S. in Spring 2012 and is working in industry.</p>
	<p style="text-align: center;">SHAWNA ONG</p> <p style="text-align: center;">GRADUATED</p> <p>BS Institution: University of Oklahoma-Norman Major: Electrical Engineering Career Goals: To further research experience and impact in the defense industry with an independent research division. She completed her M.S. in Spring 2012 and is working in industry.</p>
	<p style="text-align: center;">JACOB HENDERSON</p> <p style="text-align: center;">2007 COHORT</p> <p>BS Institution: The University of Oklahoma-Norman Major: Computer and Electrical Engineering Career Goals: To continue research in the vibrant academic atmosphere. He completed his M.S. in the Spring of 2011. He is now pursuing his Ph.D.</p>

	<p style="text-align: center;">BRITTANIE ATKINSON</p> <p style="text-align: center;">2009 COHORT</p> <p>BS Institution: Langston University-Langston, OK Major: Biology Career Goals: To perform research investigating mechanisms that are operative in the pathogenesis of "diabetes mellitus." PASSED MS Thesis Exams: May, 2012.</p>
	<p style="text-align: center;">ZACHARY DUNN</p> <p style="text-align: center;">2009 COHORT</p> <p>BS Institution: University of Oklahoma-Norman Major: Electrical and Computer Engineering Career Goals: He would like to join the workforce and work for a major U.S. defense contractor dealing primarily with radar systems or electromagnetic radiation effects.</p>
	<p style="text-align: center;">MARIO FRANKLIN</p> <p style="text-align: center;">2009 COHORT</p> <p>BS Institution: University of Oklahoma-Norman Major: Industrial Engineering Career Goals: to pursue a Ph.D in Industrial Engineering with an emphasis in engineering education.</p>
	<p style="text-align: center;">DESMOND HARVEY</p> <p style="text-align: center;">2007 COHORT</p> <p>BS Institution: Langston University-Langston, OK Major: He is continuing on his PhD in Adult and Higher Education at OSU. Mr. Harvey received his Master of Science degree from OU in 2008.</p>

	<p style="text-align: center;">JACOB HENDERSON</p> <p style="text-align: center;">2007 COHORT</p> <p>BS Institution: The University of Oklahoma-Norman Major: Computer and Electrical Engineering Career Goals: To continue research in the vibrant academic atmosphere. He completed his M.S. in the Spring of 2011. He is now pursuing his Ph.D.</p>
	<p style="text-align: center;">JUAN HERRERA</p> <p style="text-align: center;">2009 COHORT</p> <p>BS Institution: University of Oklahoma-Norman Major: Computer Engineering Career Goals: to pursue a PhD and develop novel computer architectures using less power and increase reliability and performance.</p>
	<p style="text-align: center;">KEVIN JAMES</p> <p style="text-align: center;">2007 COHORT</p> <p>BS Institution: Southern University A&M College- Baton Rouge, LA Major: Electrical and Computer Engineering Career goals: To be a professor at an institution, conduct research, and to establish a mentoring and support program for underserved minorities. Mr. James completed his Master of Science in 2009 and is continuing toward PhD.</p>
	<p style="text-align: center;">LORNE D. JORDAN</p> <p style="text-align: center;">2009 COHORT</p> <p>BS Institution: Bowling Green St. University-B.G., Ohio Major: Chemistry and Biochemistry Career Goals: To become a leader in oncological research and contribute to the efforts of the National Cancer Institute.</p>

	<p style="text-align: center;">JASON KIMMEL</p> <p style="text-align: center;">2009 COHORT</p> <p>BS Institution: Oklahoma University- Norman Major: Mechanical Engineering Career Goals: To become an engineering professor and earn a graduate degree in electrical engineering.</p>
	<p style="text-align: center;">MEGHAN LILES</p> <p style="text-align: center;">2009 COHORT</p> <p>BS Institution: Oklahoma State University-Stillwater Major: Biochemistry and Molecular Biology Career Goals: To perform research investigating mechanisms that are operative in the pathogenesis of autoimmune diseases.</p> <p>PASSED Qualifying Exams for admission to Ph.D. – May 2012</p>
	<p style="text-align: center;">RYAN WATLEY</p> <p style="text-align: center;">2009 COHORT</p> <p>BS Institution: University of Arkansas – Pine Bluff Major: Chemistry Career Goals: To work with organic synthesis mechanisms and to impact biological research.</p> <p>PASSED Qualifying Exams for admission to Ph.D. - 2012</p>

APPENDIX M

UPDATED CIP CODE LIST

CIP Code Family – updated 2012
New additions are in BOLD

Code Numeric		CIP Code Title
Order	Order	CIP Code Title
	1.0308	Agroecology and Sustainable Agriculture.
1	1.0901	Animal Sciences, General
1	1.0902	Agricultural Animal Breeding
1	1.0903	Animal Health
1	1.0904	Animal Nutrition
1	1.0905	Dairy Science
1	1.0906	Livestock Management
1	1.0907	Poultry Science
1	1.0999	Animal Sciences, Other.
1	1.1001	Food Science
1	1.1002	Food Technology and Processing
1	1.1099	Food Science and Technology, Other.
1	1.1101	Plant Sciences, General
1	1.1102	Agronomy and Crop Science
1	1.1103	Horticultural Science
1	1.1104	Agricultural and Horticultural Plant Breeding
1	1.1105	Plant Protection and Integrated Pest Management
1	1.1106	Range Science and Management
1	1.1199	Plant Sciences, Other.
1	1.1201	Soil Science and Agronomy, General
1	1.1202	Soil Chemistry and Physics
1	1.1203	Soil Microbiology
1	1.1299	Soil Sciences, Other.
3	3.0101	Natural Resources/Conservation, General.
3	3.0103	Environmental Studies.
3	3.0104	Environmental Science
3	3.0199	Natural Resources Conservation and Research, Other.
3	3.0205	Water, Wetlands, and Marine Resources Management.
3	3.0502	Forest Sciences and Biology
3	3.0508	Urban Forestry.
3	3.0509	Wood Science and Wood Products/Pulp and Paper Technology
3	3.0601	Wildlife, Fish and Wildlands Science and Management.
4	4.0902	Architectural and Building Sciences/Technology.
9	9.0702	Digital Communication and Media/Multimedia
10	10.0304	Animation, Interactive Technology, Video Graphics and Special Effects
11	11.0101	Computer and Information Sciences, General
11	11.0102	Artificial Intelligence
11	11.0103	Information Technology
11	11.0104	Informatics
11	11.0199	Computer and Information Sciences, Other.
11	11.0201	Computer Programming/Programmer, General
11	11.0202	Computer Programming, Specific Applications
11	11.0203	Computer Programming, Vendor/Product Certification
11	11.0299	Computer Programming, Other.
11	11.0301	Data Processing and Data Processing Technology/Technician
11	11.0401	Information Science/Studies
11	11.0501	Computer Systems Analysis/Analyst
11	11.0701	Computer Science
11	11.0801	Web Page, Digital/Multimedia and Information Resources Design

11	11.0802	Data Modeling/Warehousing and Database Administration
11	11.0803	Computer Graphics
11	11.0804	Modeling, Virtual Environments and Simulation
11	11.0899	Computer Software and Media Applications, Other.
11	11.0901	Computer Systems Networking and Telecommunications
11	11.1001	Network and System Administration/Administrator
11	11.1002	System, Networking, and LAN/WAN Management/Manager
11	11.1003	Computer and Information Systems Security/Information Assurance
11	11.1004	Web/Multimedia Management and Webmaster
11	11.1005	Information Technology Project Management
11	11.1006	Computer Support Specialist
11	11.1099	Computer/Information Technology Services Administration and Management, Other.
13	13.0501	Educational/Instructional Technology.
13	13.0601	Educational Evaluation and Research.
13	13.0603	Educational Statistics and Research Methods
14	14.0101	Engineering, General
14	14.0102	Pre-Engineering
14	14.0201	Aerospace, Aeronautical and Astronautical/Space Engineering
14	14.0301	Agricultural Engineering
14	14.0401	Architectural Engineering
14	14.0501	Bioengineering and Biomedical Engineering
14	14.0601	Ceramic Sciences and Engineering
14	14.0701	Chemical Engineering
14	14.0702	Chemical and Biomolecular Engineering
14	14.0799	Chemical Engineering, Other.
14	14.0801	Civil Engineering, General
14	14.0802	Geotechnical and Geoenvironmental Engineering
14	14.0803	Structural Engineering
14	14.0804	Transportation and Highway Engineering
14	14.0805	Water Resources Engineering
14	14.0899	Civil Engineering, Other.
14	14.0901	Computer Engineering, General
14	14.0902	Computer Hardware Engineering
14	14.0903	Computer Software Engineering
14	14.0999	Computer Engineering, Other.
14	14.1001	Electrical and Electronics Engineering
14	14.1003	Laser and Optical Engineering
14	14.1004	Telecommunications Engineering
14	14.1099	Electrical, Electronics and Communications Engineering, Other.
14	14.1101	Engineering Mechanics
14	14.1201	Engineering Physics/Applied Physics
14	14.1301	Engineering Science
14	14.1401	Environmental/Environmental Health Engineering
14	14.1801	Materials Engineering
14	14.1901	Mechanical Engineering
14	14.2001	Metallurgical Engineering
14	14.2101	Mining and Mineral Engineering
14	14.2201	Naval Architecture and Marine Engineering
14	14.2301	Nuclear Engineering
14	14.2401	Ocean Engineering
14	14.2501	Petroleum Engineering
14	14.2701	Systems Engineering
14	14.2801	Textile Sciences and Engineering
14	14.3201	Polymer/Plastics Engineering
14	14.3301	Construction Engineering
14	14.3401	Forest Engineering

14	14.3501	Industrial Engineering
14	14.3601	Manufacturing Engineering
14	14.3701	Operations Research
14	14.3801	Surveying Engineering
14	14.3901	Geological/Geophysical Engineering
14	14.4001	Paper Science and Engineering
14	14.4101	Electromechanical Engineering
14	14.4201	Mechatronics, Robotics, and Automation Engineering
14	14.4301	Biochemical Engineering
14	14.4401	Engineering Chemistry
14	14.4501	Biological/Biosystems Engineering
14	14.9999	Engineering, Other.
15	15.0000	Engineering Technology, General
15	15.0101	Architectural Engineering Technology/Technician
15	15.0201	Civil Engineering Technology/Technician
15	15.0303	Electrical, Electronic and Communications Engineering Technology/Technician
15	15.0304	Laser and Optical Technology/Technician
15	15.0305	Telecommunications Technology/Technician
15	15.0306	Integrated Circuit Design
15	15.0399	Electrical and Electronic Engineering Technologies/Technicians, Other.
15	15.0401	Biomedical Technology/Technician
15	15.0403	Electromechanical Technology/Electromechanical Engineering Technology
15	15.0404	Instrumentation Technology/Technician
15	15.0405	Robotics Technology/Technician
15	15.0406	Automation Engineer Technology/Technician
15	15.0499	Electromechanical & Instrumentation & Maintenance Technologies/Technicians, Other.
15	15.0501	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/Technician
15	15.0503	Energy Management and Systems Technology/Technician
15	15.0505	Solar Energy Technology/Technician.
15	15.0506	Water Quality & Wastewater Treatment Management and Recycling Technology/Technician
15	15.0507	Environmental Engineering Technology/Environmental Technology
15	15.0508	Hazardous Materials Management and Waste Technology/Technician
15	15.0599	Environmental Control Technologies/Technicians, Other.
15	15.0607	Plastics and Polymer Engineering Technology/Technician
15	15.0611	Metallurgical Technology/Technician
15	15.0612	Industrial Technology/Technician
15	15.0613	Manufacturing Engineering Technology/Technician
15	15.0614	Welding Engineering Technology/Technician
15	15.0615	Chemical Engineering Technology/Technician
15	15.0616	Semiconductor Manufacturing Technology
15	15.0699	Industrial Production Technologies/Technicians, Other.
15	15.0701	Occupational Safety and Health Technology/Technician
15	15.0702	Quality Control Technology/Technician
15	15.0703	Industrial Safety Technology/Technician
15	15.0704	Hazardous Materials Information Systems Technology/Technician
15	15.0799	Quality Control and Safety Technologies/Technicians, Other.
15	15.0801	Aeronautical/Aerospace Engineering Technology/Technician
15	15.0803	Automotive Engineering Technology/Technician
15	15.0805	Mechanical Engineering/Mechanical Technology/Technician
15	15.0899	Mechanical Engineering Related Technologies/Technicians, Other.
15	15.0901	Mining Technology/Technician
15	15.0903	Petroleum Technology/Technician
15	15.0999	Mining and Petroleum Technologies/Technicians, Other.
15	15.1001	Construction Engineering Technology/Technician
15	15.1102	Surveying Technology/Surveying
15	15.1103	Hydraulics and Fluid Power Technology/Technician

15	15.1199	Engineering-Related Technologies, Other.
15	15.1201	Computer Engineering Technology/Technician
15	15.1202	Computer Technology/Computer Systems Technology
15	15.1203	Computer Hardware Technology/Technician
15	15.1204	Computer Software Technology/Technician
15	15.1299	Computer Engineering Technologies/Technicians, Other.
15	15.1301	Drafting and Design Technology/Technician, General
15	15.1302	CAD/CADD Drafting and/or Design Technology/Technician
15	15.1303	Architectural Drafting and Architectural CAD/CADD
15	15.1304	Civil Drafting and Civil Engineering CAD/CADD
15	15.1305	Electrical/Electronics Drafting and Electrical/Electronics CAD/CADD
15	15.1306	Mechanical Drafting and Mechanical Drafting CAD/CADD
15	15.1399	Drafting/Design Engineering Technologies/Technicians, Other.
15	15.1401	Nuclear Engineering Technology/Technician
15	15.1501	Engineering/Industrial Management
15	15.1502	Engineering Design
15	15.1503	Packaging Science
15	15.1599	Engineering-Related Fields, Other.
15	15.1601	Nanotechnology
15	15.9999	Engineering Technologies and Engineering-Related Fields, Other.
26	26.0101	Biology/Biological Sciences, General
26	26.0102	Biomedical Sciences, General
26	26.0202	Biochemistry
26	26.0203	Biophysics
26	26.0204	Molecular Biology
26	26.0205	Molecular Biochemistry
26	26.0206	Molecular Biophysics
26	26.0207	Structural Biology
26	26.0208	Photobiology
26	26.0209	Radiation Biology/Radiobiology
26	26.0210	Biochemistry and Molecular Biology
26	26.0299	Biochemistry, Biophysics and Molecular Biology, Other.
26	26.0301	Botany/Plant Biology
26	26.0305	Plant Pathology/Phytopathology
26	26.0307	Plant Physiology
26	26.0308	Plant Molecular Biology
26	26.0399	Botany/Plant Biology, Other.
26	26.0401	Cell/Cellular Biology and Histology
26	26.0403	Anatomy
26	26.0404	Developmental Biology and Embryology
26	26.0406	Cell/Cellular and Molecular Biology
26	26.0407	Cell Biology and Anatomy
26	26.0499	Cell/Cellular Biology and Anatomical Sciences, Other.
26	26.0502	Microbiology, General
26	26.0503	Medical Microbiology and Bacteriology
26	26.0504	Virology
26	26.0505	Parasitology
26	26.0506	Mycology
26	26.0507	Immunology
26	26.0508	Microbiology and Immunology
26	26.0599	Microbiological Sciences and Immunology, Other.
26	26.0701	Zoology/Animal Biology
26	26.0702	Entomology
26	26.0707	Animal Physiology
26	26.0708	Animal Behavior and Ethology
26	26.0709	Wildlife Biology

26	26.0799	Zoology/Animal Biology, Other.
26	26.0801	Genetics, General
26	26.0802	Molecular Genetics
26	26.0803	Microbial and Eukaryotic Genetics
26	26.0804	Animal Genetics
26	26.0805	Plant Genetics
26	26.0806	Human/Medical Genetics
26	26.0807	Genome Sciences/Genomics
26	26.0899	Genetics, Other.
26	26.0901	Physiology, General
26	26.0902	Molecular Physiology
26	26.0903	Cell Physiology
26	26.0904	Endocrinology
26	26.0905	Reproductive Biology
26	26.0907	Cardiovascular Science
26	26.0908	Exercise Physiology
26	26.0909	Vision Science/Physiological Optics
26	26.0910	Pathology/Experimental Pathology
26	26.0911	Oncology and Cancer Biology
26	26.0912	Aerospace Physiology and Medicine
26	26.0999	Physiology, Pathology, and Related Sciences, Other.
26	26.1001	Pharmacology
26	26.1002	Molecular Pharmacology
26	26.1003	Neuropharmacology
26	26.1004	Toxicology
26	26.1005	Molecular Toxicology
26	26.1006	Environmental Toxicology
26	26.1007	Pharmacology and Toxicology
26	26.1099	Pharmacology and Toxicology, Other.
26	26.1101	Biometry/Biometrics
26	26.1102	Biostatistics
26	26.1103	Bioinformatics
26	26.1104	Computational Biology
26	26.1199	Biomathematics, Bioinformatics, and Computational Biology, Other.
26	26.1201	Biotechnology
26	26.1301	Ecology
26	26.1302	Marine Biology and Biological Oceanography
26	26.1303	Evolutionary Biology
26	26.1304	Aquatic Biology/Limnology
26	26.1305	Environmental Biology
26	26.1306	Population Biology
26	26.1307	Conservation Biology
26	26.1308	Systematic Biology/Biological Systematics
26	26.1309	Epidemiology
26	26.1310	Ecology and Evolutionary Biology
26	26.1399	Ecology, Evolution, Systematics and Population Biology, Other.
26	26.1401	Molecular Medicine
26	26.1501	Neuroscience
26	26.1502	Neuroanatomy
26	26.1503	Neurobiology and Anatomy
26	26.1504	Neurobiology and Behavior
26	26.1599	Neurobiology and Neurosciences, Other.
26	26.9999	Biological and Biomedical Sciences, Other.
27	27.0101	Mathematics, General
27	27.0102	Algebra and Number Theory
27	27.0103	Analysis and Functional Analysis

27	27.0104	Geometry/Geometric Analysis
27	27.0105	Topology and Foundations
27	27.0199	Mathematics, Other.
27	27.0301	Applied Mathematics, General
27	27.0303	Computational Mathematics
27	27.0304	Computational and Applied Mathematics
27	27.0305	Financial Mathematics
27	27.0306	Mathematical Biology
27	27.0399	Applied Mathematics, Other.
27	27.0501	Statistics, General
27	27.0502	Mathematical Statistics and Probability
27	27.0503	Mathematics and Statistics
27	27.0599	Statistics, Other.
27	27.9999	Mathematics and Statistics, Other.
28	28.0501	Air Science/Airpower Studies.
28	28.0502	Air and Space Operational Art and Science.
28	28.0505	Naval Science and Operational Studies.
29	29.0201	Intelligence, General
29	29.0202	Strategic Intelligence
29	29.0203	Signal/Geospatial Intelligence
29	29.0204	Command & Control (C3, C4I) Systems and Operations
29	29.0205	Information Operations/Joint Information Operations
29	29.0206	Information/Psychological Warfare and Military Media Relations
29	29.0207	Cyber/Electronic Operations and Warfare
29	29.0299	Intelligence, Command Control and Information Operations, Other.
29	29.0301	Combat Systems Engineering
29	29.0302	Directed Energy Systems
29	29.0303	Engineering Acoustics
29	29.0304	Low-Observables and Stealth Technology
29	29.0305	Space Systems Operations
29	29.0306	Operational Oceanography
29	29.0307	Undersea Warfare
29	29.0399	Military Applied Sciences, Other.
29	29.0401	Aerospace Ground Equipment Technology
29	29.0402	Air and Space Operations Technology
29	29.0403	Aircraft Armament Systems Technology
29	29.0404	Explosive Ordnance/Bomb Disposal
29	29.0405	Joint Command/Task Force (C3, C4I) Systems
29	29.0406	Military Information Systems Technology
29	29.0407	Missile and Space Systems Technology
29	29.0408	Munitions Systems/Ordnance Technology
29	29.0409	Radar Communications and Systems Technology
29	29.0499	Military Systems and Maintenance Technology, Other.
29	29.9999	Military Technologies and Applied Sciences, Other.
30	30.0101	Biological and Physical Sciences
30	30.0601	Systems Science and Theory
30	30.0801	Mathematics and Computer Science
30	30.1001	Biopsychology
30	30.1701	Behavioral Sciences.
30	30.1801	Natural Sciences
30	30.1901	Nutrition Sciences
30	30.2501	Cognitive Science
30	30.2701	Human Biology.
30	30.3001	Computational Science.
30	30.3101	Human Computer Interaction.
30	30.3201	Marine Sciences

30	30.3301	Sustainability Studies.
40	40.0101	Physical Sciences
40	40.0201	Astronomy
40	40.0202	Astrophysics
40	40.0203	Planetary Astronomy and Science
40	40.0299	Astronomy and Astrophysics, Other.
40	40.0401	Atmospheric Sciences and Meteorology, General
40	40.0402	Atmospheric Chemistry and Climatology
40	40.0403	Atmospheric Physics and Dynamics
40	40.0404	Meteorology
40	40.0499	Atmospheric Sciences and Meteorology, Other.
40	40.0501	Chemistry, General
40	40.0502	Analytical Chemistry
40	40.0503	Inorganic Chemistry
40	40.0504	Organic Chemistry
40	40.0506	Physical Chemistry
40	40.0507	Polymer Chemistry
40	40.0508	Chemical Physics
40	40.0509	Environmental Chemistry
40	40.0510	Forensic Chemistry
40	40.0511	Theoretical Chemistry
40	40.0599	Chemistry, Other.
40	40.0601	Geology/Earth Science, General
40	40.0602	Geochemistry
40	40.0603	Geophysics and Seismology
40	40.0604	Paleontology
40	40.0605	Hydrology and Water Resources Science
40	40.0606	Geochemistry and Petrology
40	40.0607	Oceanography, Chemical and Physical
40	40.0699	Geological and Earth Sciences/Geosciences, Other.
40	40.0801	Physics, General
40	40.0802	Atomic/Molecular Physics
40	40.0804	Elementary Particle Physics
40	40.0805	Plasma and High-Temperature Physics
40	40.0806	Nuclear Physics
40	40.0807	Optics/Optical Sciences
40	40.0808	Condensed Matter and Materials Physics
40	40.0809	Acoustics
40	40.0810	Theoretical and Mathematical Physics
40	40.0899	Physics, Other.
40	40.1001	Materials Science
40	40.1002	Materials Chemistry
40	40.1099	Materials Sciences, Other.
40	40.9999	Physical Sciences, Other.
41	41.0000	Science Technologies/Technicians, General
41	41.0101	Biology Technician/Biotechnology Laboratory Technician
41	41.0204	Industrial Radiologic Technology/Technician
41	41.0205	Nuclear/Nuclear Power Technology/Technician
41	41.0299	Nuclear and Industrial Radiologic Technologies/Technicians, Other.
41	41.0301	Chemical Technology/Technician
41	41.0303	Chemical Process Technology
41	41.0399	Physical Science Technologies/Technicians, Other.
41	41.9999	Science Technologies/Technicians, Other.
42	42.2701	Cognitive Psychology and Psycholinguistics
42	42.2702	Comparative Psychology
42	42.2703	Developmental and Child Psychology

42	42.2704	Experimental Psychology
42	42.2705	Personality Psychology
42	42.2706	Physiological Psychology/Psychobiology
42	42.2707	Social Psychology
42	42.2708	Psychometrics and Quantitative Psychology
42	42.2709	Psychopharmacology
42	42.2799	Research and Experimental Psychology, Other.
43	43.0106	Forensic Science and Technology
43	43.0116	Cyber/Computer Forensics and Counterterrorism.
45	45.0301	Archeology.
45	45.0603	Econometrics and Quantitative Economics.
45	45.0702	Geographic Information Science and Cartography
49	49.0101	Aeronautics/Aviation/Aerospace Science and Technology, General.
51	51.1002	Cytotechnology/Cytotechnologist.
51	51.1005	Clinical Laboratory Science/Medical Technology/Technologist.
51	51.1401	Medical Scientist
51	51.2003	Pharmaceutics and Drug Design
51	51.2004	Medicinal and Pharmaceutical Chemistry
51	51.2005	Natural Products Chemistry and Pharmacognosy
51	51.2006	Clinical and Industrial Drug Development.
51	51.2007	Pharmacoeconomics/Pharmaceutical Economics.
51	51.2009	Industrial and Physical Pharmacy and Cosmetic Sciences.
51	51.2010	Pharmaceutical Sciences.
51	51.2202	Environmental Health.
51	51.2205	Health/Medical Physics.
51	51.2502	Veterinary Anatomy
51	51.2503	Veterinary Physiology
51	51.2504	Veterinary Microbiology and Immunobiology
51	51.2505	Veterinary Pathology and Pathobiology
51	51.2506	Veterinary Toxicology and Pharmacology
51	51.2510	Veterinary Preventive Medicine Epidemiology and Public Health
51	51.2511	Veterinary Infectious Diseases
51	51.2706	Medical Informatics
52	52.1301	Management Science
52	52.1302	Business Statistics
52	52.1304	Actuarial Science
52	52.1399	Management Science and Quantitative Methods, Other

APPENDIX N

2011-2012 SCHOLARS BY INSTITUTION

Number of Scholars	Institution	First Name	Last Name	Graduated
1	Cameron University	Gregory	Cook	Yes
2	Cameron University	Briawn	Franklin	
3	Cameron University	Elaine	Harder-Kimble	Yes
4	Cameron University	Molly	Lord	
5	Cameron University	Melissa	Merriemfield	
6	Cameron University	Onrella	Nelson	
7	Cameron University	John	Whitlow	
1	East Central University	Stephanie	Barnett	Yes
2	East Central University	Jaime	Cervantes	
3	East Central University	Tanya	Chapman	
4	East Central University	Joshua	Crittenden	
5	East Central University	Kelsey	Dalmont	
6	East Central University	Brianna	Davis	
7	East Central University	David	Dickinson	
8	East Central University	Justin	Erwin	
9	East Central University	Lessa	Estrada	
10	East Central University	Jared	Giem	
11	East Central University	Rafael	Lopez	
12	East Central University	Shundricka	Love	Yes
13	East Central University	Antonio	MacDonald	
14	East Central University	Patrick	McGirt	
15	East Central University	Karen	Myers	
16	East Central University	Teri	O'Flanagan	
17	East Central University	Hilary	Sanchez	
18	East Central University	Rocio	Villanueva	
19	East Central University	Quinton	Webb	
20	East Central University	Sharon	Whorton	
21	East Central University	Casey	Williamson	
22	East Central University	Timothy	Wolfe	
1	Langston University	Tristan	Allen	Yes
2	Langston University	Megan	Bowlin	
3	Langston University	Justina	Bradley	Yes
4	Langston University	Rashawnda	Brown	Yes
5	Langston University	Shanel	Byron	
6	Langston University	Stephen	Cobb	Yes
7	Langston University	Tiffany	Glover	
8	Langston University	Princess	Hays	
9	Langston University	Katerias	Hill	
10	Langston University	Phoebe	Lewis	Yes
11	Langston University	Kayla	Love	
12	Langston University	Martel	McKinney	
13	Langston University	Candice	Pawnee	
14	Langston University	Terry	Phillips	
15	Langston University	ShaRhonda	Pickett	Yes
16	Langston University	Denzel	Pugh	
17	Langston University	Tiease	Rand	
18	Langston University	Jodeci	Ross	

Number of Scholars	Institution	First Name	Last Name	Graduated
19	Langston University	Rajah	Singh	
20	Langston University	Jazmenn	Smith	
21	Langston University	De'Angelo	Stephens	
22	Langston University	Brittany	Stoutermire	Yes
23	Langston University	Britani	Vann	
24	Langston University	Quanisha	Vickers	
25	Langston University	Detrick	Watson	
26	Langston University	Kymberli	Whayne	Yes
27	Langston University	Justin	Williams	Yes
28	Langston University	Danielle	Wilson	
1	Northeastern State University	Eric	Butson	Yes
2	Northeastern State University	Anjula	Ceesay	Yes
3	Northeastern State University	Kelsey	Dozier	
4	Northeastern State University	Coam	Hansen	Yes
5	Northeastern State University	Dawn	Kennedy	
6	Northeastern State University	Nicholas	Martin	
7	Northeastern State University	Paul	Martinez	
8	Northeastern State University	Anthony	McKenzie	
9	Northeastern State University	Tanisha	Payne	Yes
10	Northeastern State University	Bryer	Sears	
11	Northeastern State University	Katherine	Stewart	
12	Northeastern State University	Anthony	Wellman	Yes
1	Northwestern OSU	Carlos	De Jesus Gomez	
2	Northwestern OSU	Jose	Gallegos	
3	Northwestern OSU	Lena	Jordan	
4	Northwestern OSU	Angelo	Majike	
5	Northwestern OSU	Kaitlin	McAllister	
1	Oklahoma State University	Ben	Ahiabor	Yes
2	Oklahoma State University	Brandi	Andrews	Yes
3	Oklahoma State University	Zoe	Austin	
4	Oklahoma State University	Tyler	Autry	
5	Oklahoma State University	Holly	Bramer	
6	Oklahoma State University	Gabrielle	Brown	
7	Oklahoma State University	Joseph	Brown	
8	Oklahoma State University	Wilmon	Brown, III	
9	Oklahoma State University	Nicole	Bryant	
10	Oklahoma State University	Brandon	Burgess	
11	Oklahoma State University	Cassandra	Camp	Yes
12	Oklahoma State University	Ana	Chicas-Monsier	
13	Oklahoma State University	Maria	Dang	
14	Oklahoma State University	Kayla	Davis	
15	Oklahoma State University	Daniel	Dixon	
16	Oklahoma State University	Amber	Douglas	
17	Oklahoma State University	Ashlee	Dowdy	Yes
18	Oklahoma State University	Anna	Eckhoff	
19	Oklahoma State University	Ahtia	Edwards	

Number of Scholars	Institution	First Name	Last Name	Graduated
21	Oklahoma State University	Jessica	Evans	
20	Oklahoma State University	Kristen	Enyart	
22	Oklahoma State University	Brice	Fiddler	
23	Oklahoma State University	Darren	Figuerido	
24	Oklahoma State University	Steven	Garrett	Yes
25	Oklahoma State University	Saad	Gondal	
26	Oklahoma State University	Elliott	Haastrup	
27	Oklahoma State University	Jeremy	Hall	
28	Oklahoma State University	Alexander	Hardison	
29	Oklahoma State University	DeYawna	Jackson	
30	Oklahoma State University	Stephen	James	
31	Oklahoma State University	Danica	Johnson	
32	Oklahoma State University	Kody	Jones	
33	Oklahoma State University	Dalton	Kelley	Yes
34	Oklahoma State University	Vicky	Kelly	
35	Oklahoma State University	Jordan	Knight	
36	Oklahoma State University	Lauren	Leven	Yes
37	Oklahoma State University	Michelle	Lopez	
38	Oklahoma State University	Amanda	Mathias	
39	Oklahoma State University	Milecia	Matthews	
40	Oklahoma State University	Brenton	McCullough	Yes
41	Oklahoma State University	Devon	McLeod	
42	Oklahoma State University	Josh	McLoud	Yes
43	Oklahoma State University	Isaac	Monreal	Yes
44	Oklahoma State University	Ricardo	Montoya	Yes
45	Oklahoma State University	Rachel	Morgan	
46	Oklahoma State University	Munyardzi "Munya"	Nyamanzi	
47	Oklahoma State University	Athena	Padgett	
48	Oklahoma State University	Abbey	Ramirez	
49	Oklahoma State University	Jamee	Ramsey	
50	Oklahoma State University	Hannah	Ray	
51	Oklahoma State University	Monica	Ruiz	
52	Oklahoma State University	Valentin	Sanchez	
53	Oklahoma State University	Kristin	Schieffer	Yes
54	Oklahoma State University	Jason	Semien	
55	Oklahoma State University	Alesia	Sharber	Yes
56	Oklahoma State University	Isaac	Smith	
57	Oklahoma State University	Matthew	Takyi-Micah	
58	Oklahoma State University	Ondreia	Thomas	
59	Oklahoma State University	Joshua	Warren	
60	Oklahoma State University	Darryl	Wells	
61	Oklahoma State University	Lauren	White	
62	Oklahoma State University	Charles "CJ"	Williams	Yes
63	Oklahoma State University	Shawn	Witt	

Number of Scholars	Institution	First Name	Last Name	Graduated
1	Southeastern OSU	Roberto	Aguilar	Yes
2	Southeastern OSU	Shaun	Brown	
3	Southeastern OSU	Teresa	Chapman	
4	Southeastern OSU	Kent	Davidson	
5	Southeastern OSU	Joseph	Diaz	
6	Southeastern OSU	Shelby	Fraser	
7	Southeastern OSU	Stephen	Garner	
8	Southeastern OSU	Shawn	Kirkland	Yes
9	Southeastern OSU	Ashley	Lemons	
10	Southeastern OSU	Ricky	Lemons	
11	Southeastern OSU	Megan	McBride	
12	Southeastern OSU	Allie	McKinzie	
13	Southeastern OSU	Chelsea	Nwankwo	
14	Southeastern OSU	Matthew	Shupert	Yes
15	Southeastern OSU	Jessica	Smith	Yes
16	Southeastern OSU	Bailey	Wallace	
1	Southwestern OSU	Zachary	Daniel	
2	Southwestern OSU	Courtney	Garcia	Yes
3	Southwestern OSU	Jamere	King	Yes
4	Southwestern OSU	Irene	Lopez	Yes
5	Southwestern OSU	Mary	Phillips	
6	Southwestern OSU	Tanner	Wheeler	
1	Univ. of Central Oklahoma	Alexandra	Anwuli	Yes
2	Univ. of Central Oklahoma	Christina	Bruxvoort	Yes
3	Univ. of Central Oklahoma	Rebecca	Miller	Yes
4	Univ. of Central Oklahoma	Brennan	Ochoa	Yes
5	Univ. of Central Oklahoma	Samantha	Peno	
6	Univ. of Central Oklahoma	Priscilla	Seaborne	Yes
7	Univ. of Central Oklahoma	Chelsea	Smith	
8	Univ. of Central Oklahoma	Ana	Tehrani	Yes
9	Univ. of Central Oklahoma	BrieAunna	Webster	
1	University of Oklahoma	Sheila	Baradaran	Yes
2	University of Oklahoma	Tanner	Blair	
3	University of Oklahoma	Ryan	Edwards	
4	University of Oklahoma	Joshua	Hardisty	
5	University of Oklahoma	Emmanuel	Livingston, III	
6	University of Oklahoma	Diana	Lucero	Yes
7	University of Oklahoma	Moises	Martinez	Yes
8	University of Oklahoma	Guillermo	Morales	
9	University of Oklahoma	Shynette	Porter	
10	University of Oklahoma	Allison	Quiroga	Yes
11	University of Oklahoma	Kelsey	Raus	
12	University of Oklahoma	Megan	Salisbury	Yes
13	University of Oklahoma	Erin	Thornton	
14	University of Oklahoma	Tyeshia	Waters	
15	University of Oklahoma	Sergio	Zegarra Cabello	

Number of Scholars	Institution	First Name	Last Name	Graduated
1	University of Tulsa	Maria	Castaneda	
2	University of Tulsa	Bryce	Culhane	
3	University of Tulsa	Justin	Davis	
4	University of Tulsa	Tiffany	Evans	
5	University of Tulsa	Annette	Ibarra	
6	University of Tulsa	Trokon	Johnson	
7	University of Tulsa	Brandon	Neal	Yes
8	University of Tulsa	Shannon	Suddath	

APPENDIX O

EVALUATION REPORT



The University of Oklahoma
CENTER FOR INSTITUTIONAL DATA EXCHANGE AND ANALYSIS (C-IDEA)
Consortium for Student Retention Data Exchange (CSRDE)
August 31, 2012

Jean Van Delinder
PI, OK-LSAMP
Associate Dean, Graduate College
Oklahoma State University
412 Murray Hall
Stillwater, OK 74078

Dear Dr. Van Delinder,

Congratulations on a successful year in the Oklahoma Louis Stokes Alliance for Minority Participation program. The OK-LSAMP program has had a consistent history of success in developing minority graduates in the STEM field, and in recent years, for increasing the number of its STEM graduates who continue on to graduate school.

For this current five-year project the Alliance has accepted a bold challenge:

- *To increase by 25% the number of underrepresented minority (URM) students graduating in STEM fields over the life of this project (i.e. Recruit and retain a minimum of 5% increase yearly in the number of eligible students).* Moreover, the overall goal is that these students would be quality students who are also eligible for acceptance into graduate school.

The Oklahoma Alliance is currently exceeding this goal. During this evaluation period, summer 2011 through May 2012, the OK-LSAMP program graduated 10% more students with STEM degrees than the previous academic year. In addition, 43% of the students were admitted into graduate school. This reflects a 23% increase over the previous year in the actual number of seniors who were admitted to graduate school, thus the Oklahoma Alliance is succeeding in adding more scholars to the total number of STEM graduate students nationally.

We also know that 22% of the OK-LSAMP graduates chose to enter the industrial workforce rather than attend graduate school; more than half of these students had a GPA of at least 3.0 and had taken the GRE. They were clearly excellent students who were capable of pursuing a graduate degree. We can only speculate about the reasons that they chose to forego a graduate education at this time, but the state of the economy may have played a role in their decisions. In several cases we do know that the students had participated in a summer internship opportunity through the OK-LSAMP program and were such outstanding students that the employers offered them a position with the company upon graduation. It should be noted that part of their benefits package included graduate school education, so the evaluator believes that the Alliance has succeeded with these students as well, even though they did not attend graduate school immediately after graduation and they are not included in those percentages.

It is also noteworthy that 75% of all the OK-LSAMP graduates had a GPA of 3.0 or better. In addition, the percentage of graduates taking the GRE increased from 26% during the 2010-2011 academic year to 33% during this evaluation period. More of the students are looking toward a future graduate degree, and the OK-LSAMP program is successfully preparing them for this academic goal.

The support that the OK-LSAMP institutions provide to the scholars is evident by the large number of students who participate in activities that encourage success and graduation in a STEM field. Sixty-one percent of the OK-LSAMP juniors and seniors participated in research activities during the evaluation period. Even more students participated in at least one summer internship during their time in the program. Out of 109 seniors, 79% participated in at least one summer internship, and 41% participated in two or more during their undergraduate studies. It is also interesting to note that 78% of the 51 graduates participated in at least one summer internship. In addition, 67% of the juniors had already accepted at least one summer internship before their senior year. These internships provided excellent experiences for the scholars, and included organizations and higher education institutions such as NASA, Haliburton, Boeing, Lockheed Martin, Exxon Mobile, BP, USDA, Chesapeake Energy, Johns Hopkins University, and Georgia Institute of Technology, as well as several international internships.

Juniors and seniors involved in the OK-LSAMP program with rare exception graduate in a STEM field. The success found in the OK-LSAMP program does not represent the experience of most URM STEM majors throughout the country. The most recently available data from the CSRDE Survey on the Retention and Graduation Rates of Underrepresented Minority Stem Majors show that approximately 26% of URM students that begin in STEM fields graduate in STEM fields. However, nearly every student who enters the OK-LSAMP program graduates in a STEM field. This is a major accomplishment.

Kay Porter and Fara Williams have done a superb job at devising methods to track activity. In addition, your team has consistently communicated with the other partners about opportunities and events that would be beneficial to the students. They are always willing to try new approaches to improve the Alliance processes. Finally, there is one recommendation that I would like to offer for your consideration.

- **Aim to increase the numbers of seniors taking the GRE from 33% to 40% and making application to graduate schools from 57% to 60%.** As noted above, the percentage of graduates who took the GRE increased from 26% last year to 33% during the current evaluation period. In addition, the percentage of graduates who applied to at least one graduate school increased from 54% during the 2010-2011 academic year to 57% during the current evaluation period. I recognize that some graduate programs may not require the GRE. However, I do think that it is worth considering the possibility that more students will have more advanced degree options available to them if they take the GRE and submit graduate school applications.

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

Warm regards,



Sandra Whalen
NSF Program Evaluator

