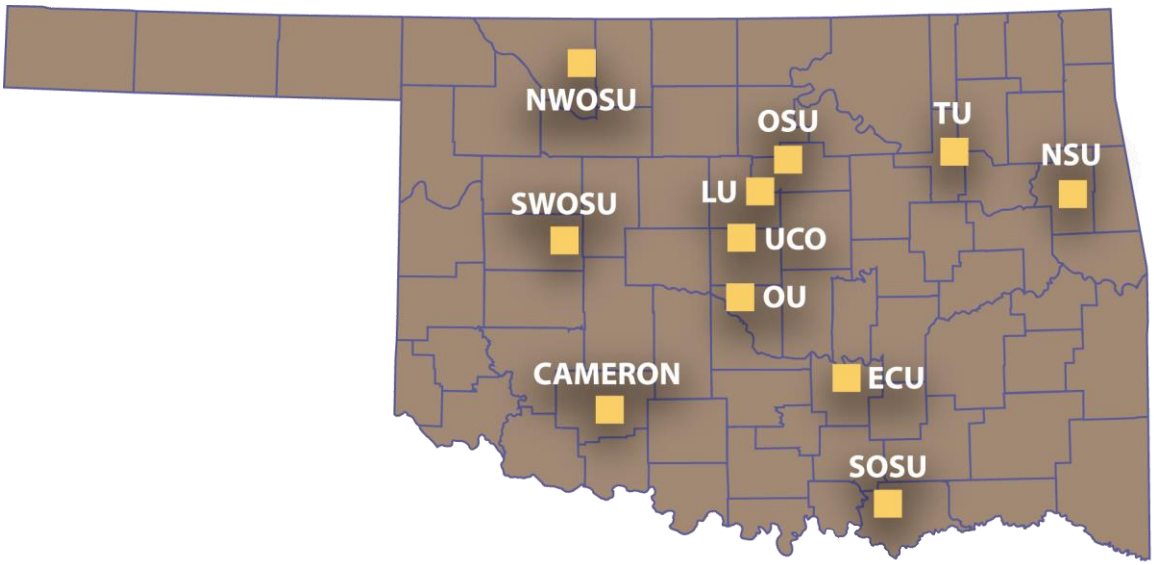
2015

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



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P.E.R.

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Louis Stokes Alliance for Minority Participation

in Science, Technology, Engineering, and Mathematics

(OK-LSAMP STEM)

Submitted by

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INTRODUCTION

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.

The Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) program received a renewal for the National Science Foundation (NSF) grant (HRD 1408748 – 2014-2019) and concluded *Year One* of the grant (Appendix A). This also concludes 21 years of successful LSAMP activities in Oklahoma.

In 2014-2015, the Oklahoma Alliance had 252 Scholars; of those 72 completed Bachelor of Science degrees and 28 of the graduates were admitted to graduate schools for a total of 39% of scholars. During the academic year 58% of the Alliance scholars participated in research activities, and 49% of the scholars, participated in summer research experiences at national and international locations.

Dr. Jason F. Kirksey, continued to serve as Principal Investigator and Program Director for the Bridge to the Doctorate programs. He was promoted to Vice President for Institutional Diversity. For the third year, Oklahoma State University (OSU) received the *Higher Education Excellence in Diversity* (HEED) award. This award honors U.S. colleges and universities that demonstrate an outstanding commitment to diversity and inclusion (Appendix B). Dr. Kirksey was responsible for securing funding for Phase V of the LSAMP award along with supplemental awards to Brookhaven National Labs in Upton, New York for Native American faculty and student teams. Dr. Kirksey was also a presenter for the 2014 Louis Stokes Midwest Center for Excellence (LSMCE) Conference in Chicago, IL.

The 20th Annual Research Symposium welcomed over 200 attendees for a day of workshops, poster and oral presentations, ethics training, and guest speakers. Dr. Brett Walker, former OK-LSAMP Scholar from Oklahoma State University, was the featured speaker.

Bridge to the Doctorate Fellows continued to make satisfactory progress toward completing graduate degree requirements.

Two OSU Scholars received honors at the National Society for the Advancement of Chicanos and Native Americans in Sciences (SACNAS) conference in Los Angeles, California for their poster presentations.

One Scholar from Southwestern Oklahoma State University (SWOSU) completed six months of research in Grenoble, France and two Scholars from OSU travelled to Grenoble, to begin a six month research project. The Scholars were part of the International Research Experiences for Undergraduates through Louisiana State University (LSU) and Dr. Randy Duran. This collaboration between OSU and LSU has promoted international research and publications for undergraduate students.

One Scholar from OSU received the prestigious Morris K. Udall Award, one Scholar from the University of Tulsa received the National Science Foundation Graduate Research Fellowship Program (NSF GRFP) award, and one scholar from the University of Tulsa received the Goldwater Scholarship.

Scholars from across the Alliance participated in numerous activities promoting STEM and the OK-LSAMP program. They attended state, national, and international conferences, participated in research throughout the academic year, and many participated in summer research projects. Scholars were admitted to prestigious graduate programs such as the Mayo Clinic and Harvard University and four Scholars received Bridge to the Doctorate funding. OK-LSAMP Scholars are sought out by faculty on each campus and are held in high esteem for their dedication to research and the promotion of STEM programs.

PROGRAM OBJECTIVES AND ACTIVITIES

The Oklahoma Alliance, consisting of 11 institutions of higher education (three comprehensive research institutions, one historically black university, and seven regional universities), proposed a five-year continuation of the Louis Stokes Alliance for Minority Participation activities. Based on 20 years of previous success, the Alliance will continue to support the NSF mission to recruit and retain underrepresented students in the Science, Technology, Engineering, and Mathematics (STEM) disciplines. To accomplish these goals, the following program objectives were proposed and met.

Program Component One

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

Scholar Demographics

The 11 Oklahoma Alliance institutions supported 252 LSAMP scholars in the 2014 – 2015 academic year. The objective was to increase the number of scholars each year of the project. Objective One has been met and OK-LSAMP continues to work toward increasing URMs in STEM programs across the Alliance (Table 1).

Table 1. Comparison Numbers to Meet Stated Goal

Institution	No. Scholars	
	2013-2014	2014-2015
Cameron	12	9
East Central University	19	16
Langston University	40	36
Northeastern State University	9	8
Northwestern Oklahoma State University	7	4
Oklahoma State University	97	106
Southeastern Oklahoma State University	11	11
Southwestern State University	6	9
University of Central Oklahoma	12	14
University ok Oklahoma	36	24
University of Tulsa	8	15
Totals	257	252

Year one of Phase Five also showed more females than males becoming LSAMP Scholars in the Oklahoma Alliance. Female scholars totaled 132, compared to 120 males (Table 2). Table 3 compares Scholars by ethnicity.

Table 2. Comparison of Scholars by Gender

Category	Year	
	2013-2014	2014-2015
Male	114	120
Female	143	132
	257	252

Table 3. Comparison of Scholars by Ethnicity

Ethnicity	2013-2014	2014-2015
African American	47	80
Native American	100	85
Hispanic	48	58
Pacific Islander	1	2
Asian American	7	6
First Generation / Caucasian	25	21
Total	257	252

Table 4. Scholars by Discipline and Gender

Degree Program	Male	Females	Totals
Agriculture	5	5	10
Biological Sciences			
Biochemistry	4	12	16
Biology	18	43	61
Chemistry	20	17	37
Microbiology	4	6	10
Nutritional Science	1	7	8
Zoology	0	4	4
Computer Science	11	4	15
Engineering			
Architecture	1	0	1
Chemical	9	5	14
Civil	4	6	10
Electrical	6	2	8
Mechanical	20	7	27
Environmental	1	4	5
Engineering	6	2	8
Fire Protection	2	0	2
Geology	0	2	2
Mathematics	2	3	5
Physics	8	1	9

On-Site and Community College Recruitment

The recruitment of scholars was evidenced on each of the 11 Alliance institution campuses. Campus Coordinators sought top underrepresented 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 also 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, as well as personal contact with prospective scholars. OK-LSAMP opportunities were presented during sessions at the Cherokee Nation Foundation College Preparatory Institute (CCPI), and Oklahoma Native American Students in Higher Education (ONASHE) conference, and other events throughout the state.

Alliance schools are actively associated with community and tribal colleges in their region. Campus coordinators work closely with faculty at the community/tribal college to bring students to their campus to complete four-year degree programs in the STEM fields. Table 5 shows the connections.

Table 5. Primary Community/Tribal College Connections

Alliance Institution	Community/Tribal College Connection	
Cameron University	Western Oklahoma State College Redlands Community College Amarillo Community College, Texas	Vernon Junior College, Texas Comanche Nation College Fort Sill AFB
East Central University	Murray State College Eastern Oklahoma College Seminole Community College Rose State College	Oklahoma City Community College Redlands Community College Center for Health Sciences – Early Entry: Chickasaw Nation
Langston University	Tulsa Community College Rose State College	
Northeastern State University	NSU – Broken Arrow Campus Tulsa Community College	Connors State College Northeastern Oklahoma College
Northwestern Oklahoma State University	Northern Oklahoma College Enid Campus; Tonkawa Campus; Stillwater Campus	Selmon Living Lab
Oklahoma State University	Northern Oklahoma College, Tulsa Community College	Pawnee Nation College Cheyenne-Arapaho College College of Muskogee Nation
Southeastern Oklahoma State University	Murray State College Eastern Oklahoma State College	Higher Education Center Native American Intertribal Grant
Southwestern Oklahoma State University	SWOSU –Sayre Campus Western Oklahoma State College	Redlands Community College Cheyenne-Arapaho College
University of Central Oklahoma	Oklahoma City Community College Redlands Community College	Northern Oklahoma College
University of Oklahoma	Oklahoma City Community College Rose State College	
University of Tulsa	Tulsa Community College	

Campus Coordinators on Alliance campuses continued to use every avenue available to recruit eligible scholars. Methods used include, but are not limited to: high school visitation days, freshman orientation programs, articles in local newspapers, on-campus flyers, faculty mentor inquiries, and invitation by Scholars and BD Fellows to present their research at specific research programs.

For the third year, the Grant Coordinator participated in the Cherokee Nation College Preparatory Institute (CCPI). CCPI is an intense week-long event where high school juniors and seniors receive instruction and one-on-one help in searching and applying for college programs and funding opportunities. For the 2014 CCPI, 55 Native American students received expert advice on STEM programs from each of the Alliance institutions and from college and university admissions counselors and other representatives from across the nation. Institutions represented included: Bacone College, Cherokee Nation College Resource Center; Dartmouth College, Duke University, Northeastern State University, North Carolina State University, Oklahoma State University, Rogers State University, Stanford University, University of Arkansas, University of Central Arkansas, University of Central Oklahoma, University of Illinois Urbana-Champaign, University of Pennsylvania, and Yale University.

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. Many of the summer academies are sponsored by the Oklahoma State Regents for Higher Education (OSRHE). Chancellor Glen D. Johnson stated: "Summer Academies provide Oklahoma middle and high school students the opportunity to experience a college campus environment while exploring new and exciting career options. This program offers young people the chance to study with top professors and explore hands-on learning that exceeds anything they've encountered in a traditional classroom" (Appendix C).

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:

> ***College of Engineering, Architecture, and Technology Summer Bridge Program –*** Designed for incoming freshmen engineering students to spend eight weeks on the OSU campus. Students selected for the program take two summer classes and become familiar with transitioning into the academic atmosphere prior to the beginning of the fall semester. The program is supported with LSAMP Scholars as mentors, living in the dorm with program participants and attending daily group activities. In addition, students who

complete the MEP program have the opportunity to live on the MEP Living Learning Community floor in the dormitory housing.

***Inclusion Leadership Program (ILP*) —-** The ILP is a year-long leadership program designed to equip OSU students with the skills and knowledge to become effective leaders in a more diversely inclusive society. The program is organized for experiential learning rather than standard teaching. The mission of the program is to provide a supportive environment through mentoring and programming to enrich the lives of our students. The students in the ILP program share their understanding of leadership with teams from select high schools in Tulsa and Oklahoma City. ILP students become mentors to the high school students, and pass on the leadership skills they have developed through the program.

***RISE-JumpStart Program* –** The JumpStart program is a four-week summer residential experience for selected first generation students who have been admitted to OSU for the upcoming fall semester and feel they are in need of academic support. The focus and intent of the RISE JumpStart Program is to provide an environment conducive and supportive for student learning and personal growth. The four-week session allows the students to take a summer college course as a group. The program also provides free room and board, books and supplies, and numerous social and cultural activities for the summer.

***Retention Initiative for Student Excellence (RISE)* –** The RISE program within the Division of Institutional Diversity was designed to assist a select group of talented first year students as they transition from high school to OSU. The program primarily focuses on addressing academic issues that might challenge students. RISE is attentive to the variety of social and financial challenges that students often face in college. Students interested in RISE may also be interested in the summer residential component known as RISE-JumpStart.

***Retired Educators for Youth Agricultural Programs (REYAP)* –** Designed to bring underrepresented youth, ages 14-18, to the OSU campus for a week of activities promoting diversity awareness, advocacy, leadership, and education in the STEM disciplines, particularly agriculture. LSAMP Scholars serve as mentors to the program participants during the week-long residential experience.

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

***AT&T Summer Bridge Program* –** Designed for incoming freshmen students who have been accepted to the University of Oklahoma and who are planning to major in an engineering discipline. The camp has been designed to help students prepare for the first year of engineering and math coursework.

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.

BP Engineering Academy – A residential camp which encouraged young men who are entering their sophomore, junior, or senior grade level for the fall 2013 semester. The Academy is an opportunity for hands-on exploration in engineering, math, and science.

Regional Alliance Universities: The regional universities within the Alliance and the community college partners, along with support by the Oklahoma State Regents for Higher Education (OSHRE), sponsored summer academies for high school students interested in STEM programs. Over 17,000 public school students have participated in summer academies and 73% of the participants continue on to college in STEM degree programs.

Cameron University: (1) Science Detectives Summer Academy for Grades 8-10; (2) Nano Explorers: A High School Summer Science Academy for Grades 10-12.

Connors State College: (1) Ecological Investigations and Wilderness Adventure for Grades 9-12.

East Central University: (1) Coding Theory, Competitive Strategies, Risk Analysis and Other Mathematical Pursuits for Grades 10-11.

Langston University: Intensive Academy in Math, Science and Technology for Grades 10-12.

Murray State College: 2015 MSC Summer College STEM Academy for Grades 8-9.

Northeastern State University: Get Green for Blue: Outdoor Investigations to Connect Water to You for Grades 8-10.

Oklahoma State University Center for Health Sciences: Native Explorers for Grades 11-12.

Oklahoma State University Institute of Technology: (1) Emerging and Converging Technologies Academy for Grades 8-10.

Oral Roberts University: A Hands-On Program in Mathematics and Science for Grades 8-9.

Seminole State College: Peek Into Engineering (PIE) Academy for Grades 9-12.

Southwestern Oklahoma State University: SSMA: Summer Science and Mathematics Academy for Grades 11-12.

Tulsa Community College: Math and Science in Health Careers (MASH) Camp, Session I and II for Grades 10-12.

University of Oklahoma Health Sciences Center: Exploring Math & Science Academy (EMSA) for Grade 9.

University of Science and Arts of Oklahoma: Where Does Our Food Come From and How Did it Get Here? for Grades 8-9.

University of Central Oklahoma: (1) Discovering Chemistry in Human Health, Session I and II for Grades 8-10; (2) Engineering Physics Exploration, Session I and II for Grades 8-10; (3) CSI: A High School Summer Forensics Academy for Grades 9-12.

The University of Tulsa: Summer Engineering Academy for grades 8-11.

Data Collection

The collection of data continues to be a priority for the LSAMP program. An on-line application, approved by campus coordinators, was implemented during the spring 2015 semester. All current Scholars were asked to complete the on-line application. After each current Scholar completed the on-line forms their data was uploaded into the new data collection system. The data base and collection of data continues to be maintained by the Data Coordinator at the lead institution, OSU. The on-line application allows the campus coordinator final approval of applicants into the program and insures the data for each Scholar is uploaded into a database allowing the information to be used for reporting to NSF. Additionally, the data collected is used to update the LSAMP Listserv for current Scholars. An Alumni listserv and database continue to be updated and used to promote the LSAMP program and Scholar accomplishments.

Data collected on each of the scholars in Oklahoma continued to be used to complete information requested by the National Science Foundation (NSF) and the program evaluator. Data were collected continually throughout the year with updates to the program on an as-needed basis. The information collected includes, but is not limited to: degree program, presentations, awards, research projects, completion of degree, and acceptance into graduate school.

Social Media

Social media is an important means of "getting the information out" to Scholars. 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. Scholars were sent email notifications notifying them of opportunities such as: summer internships, research opportunities, and conferences. In addition, the OK-LSAMP Facebook

continued to be used for more direct contact with scholars. The Facebook page was also available for students to post achievements related to research proposals being accepted for national presentations, being admitted to graduate school, accepting internships, and other highlights for the Scholars.

Program Component Two

To provide the support students require, academically and professionally, to ensure they build the connections, skills, and motivation 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.

- Twenty-nine 2014-2015 OK-LSAMP graduates were accepted to graduate schools throughout the nation. Examples include, but are not limited to:

  Binghamton University (BD Fellow)
  Florida State University
  Harvard University
  Indiana University
  Jackson State University (BD Fellow)
  Louisiana State University (BD Fellow)
  North Dakota State University - American Indian Public Health Program
  Oklahoma State University
  Purdue Veterinary School
  Texas State University
  University of Cincinnati
  University of Idaho
  University of Northern Colorado
  University of Oklahoma
  University of Texas – Arlington (BD Fellow)
  University of Texas – Austin (BD Fellow)
  University of Texas – San Antonio
  Wheeling Jesuit University

- 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; (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.

- Scholars were also provided with opportunities for free Kaplan review sessions and free practice exams. Kaplan officials provided the free sessions on select evenings and weekend dates to ensure availability for a variety of schedules.

- Scholar meetings, implemented throughout the Alliance, offered a forum for educational speakers and workshops focused on graduate school preparation and career development.

- Support to state, regional, and national conferences to present research projects. During academic year 2014-15, scholars have participated in 192 documented presentations. Examples include, but are not limited to:

  American Association of Cancer Research, Philadelphia, PA
  American Chemical Society National Conference, Denver, CO
  American Geophysical Union Fall Meeting, San Francisco, CA
  American Institute of Aeronautics and Astronautics-Region IV, Denver, CO
  American Society of Engineering Education, Seattle, WA
  Computational Biophysics to Systems Biology Conference, Oklahoma City, OK
  Global Environment for Network Innovations (GENI), Washington, D.C.
  Gordon Research Conference: Multi-Drug Efflux Systems, Lucca (Barga), Italy
  International Foundations Congress and Equipment Expo 2015, San Antonio, TX
  Interscience Conference on Antimicrobial Agents & Chemotherapy, Washington, D.C.
  Keystone Symposia Conference: Gram-Negative Resistance, Tahoe City, CA
  National Conference on Undergraduate Research (NCUR), Chaney, WA
  OK-LSAMP Annual Research Symposium, Stillwater, OK
  Oklahoma Research Day at the Capitol, Oklahoma City, OK
  Oklahoma Research Day, Tahlequah, OK
  Society for Biomaterials National Conference, Charlotte, NC
  Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference, Los Angeles, CA
  Thirty-First Space Symposium, Denver, CO

Enhanced Academic Performance

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.

- Alliance institutions continue to offer Responsible Conduct in Research (RCR) training for all Scholars. Several institutions offer the program as an on-line, self-paced program, while others offer it as an in-class course.

- GRE resource books are provided to each Campus Coordinator in the Alliance. Scholars used the books to review prior to enrolling in and completing the on-line GRE Preparation course offered through OSU - OKC's Ed-2-Go series.

- Kaplan provided a free study session and a free practice GRE exam to Scholars in the Alliance on a Saturday in September. Attendance was open to any Scholar who wished to participate.

- Scholars throughout the Alliance are encouraged to apply to a minimum of three graduate schools, with a preference of five applications.

- Scholar meetings are held and used as a means for Scholars to present research projects to their peers, hear presentations on graduate school preparation, test taking strategies, study abroad opportunities, and summer internships in addition to a variety of other topics relevant to STEM programs.

Annual Research Symposium

The 20th Annual Research Symposium was held September 27, 2014, on the Oklahoma State University, Stillwater campus (Appendix D). The Symposium welcomed 236 attendees for a full day of workshops, 71 posters, 28 oral presentations, and guest speakers.

The Research Symposium provided opportunities for students to meet one-on-one with Dr. A. James Hicks, NSF Program Director for the Louis Stokes Alliance for Minority Participation program. Dr. Hicks provided a short video of successful LSAMP Scholars across the nation as well as words of encouragement for all Scholars to continue their educational endeavors.

The 20th Annual Research Symposium also celebrated 20 successful years of the LSAMP program in Oklahoma with former Principal Investigators in attendance, as well as former campus coordinators and scholars. Dr. Earl Mitchell, former PI, was presented with a plaque honoring him for his 20 years of work with the LSAMP program, not only in Oklahoma but throughout the nation. Dr. Brett Walker, former Scholar from OSU and Co-Founder and CEO of *Electroninks*

was the keynote speaker. Dr. Walker received his B.S. degree in Mechanical Engineering from OSU in 2004 and his Ph.D. from the University of Illinois in 2014. During his graduate program, he and his colleagues developed a conductive ink that may be used for printing electronics. Awards were presented to Scholars for first, second, and third place in poster and oral presentations. Winners included: Posters: Laura Asaro, ECU; Linzi Thompson, ECU; Adrian Saenz, OSU; Chelsea Spencer, UCO, Alex Guerra, Peter George, and Seamus Hunt, OU. Oral Presentations: Katy Riojas, TU; Roosevelt Matthews, CU; Maeghan Murie-Harting, OSU; Cortez Williams, OU, Alex Moreno, OU.

Table 6. Annual Research Symposium Attendees by Category

	Attendees	
	19th Annual	20th Annual
Undergraduate Students	130	139
Graduate Students	30	36
Faculty	32	30
Staff	13	15
K-12 Students	0	1
Special Guests	27	15
Total	232	236

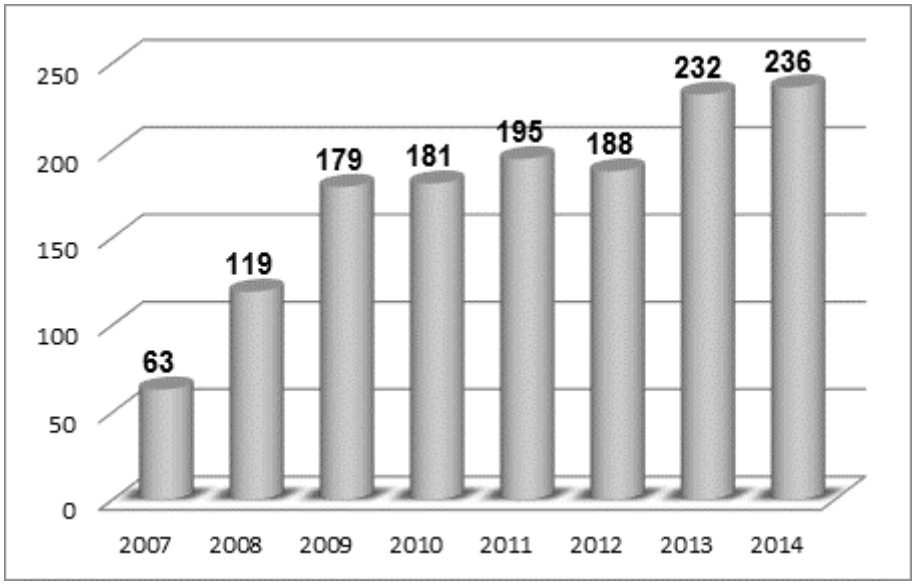

Figure 1. Number of Participants Attending Annual Research Symposium

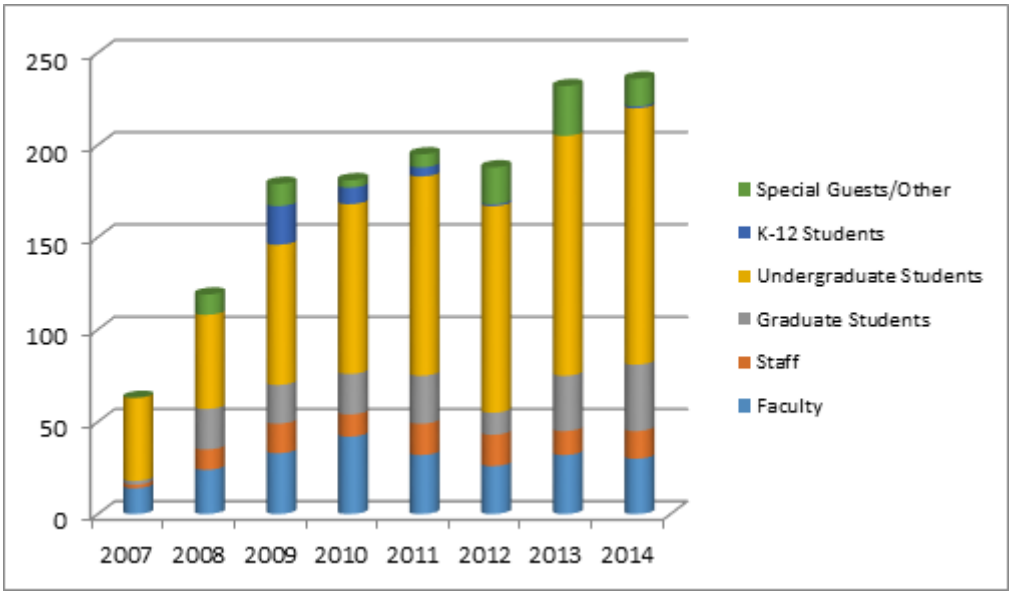

Figure 2. Breakdown of Research Symposium Attendees

Monthly Scholar Meetings

Each campus is responsible for holding monthly scholar meetings. The meetings are intended to provide support for the scholars while bringing in guest speakers. In addition to guest presenters, scholars were provided opportunities to present their own research to their peers, learn more regarding financial costs of attending school at both the undergraduate and graduate level, how to apply for summer internships, how to apply for graduate school, how to create application packets without recreating the wheel every time, and various other topics. The monthly meetings also provide opportunities for the scholars to develop relationships with scholars outside of their field of study.

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 and build their professional networks.

Table 7. Academic Year Research Experiences

Institution	Spring Semester 2014	Summer Internship 2014	Fall Semester 2014	Spring Semester 2015	Summer Internship 2015
Cameron University	5	0	5	5	0
East Central University	2	5	7	7	3
Langston University	9	8	5	7	6
Northeastern State Univ.	3	2	6	6	0
Northwestern OSU	0	0	0	0	0
Oklahoma State Univ.	45	34	39	43	33
Southeastern OSU	6	3	7	8	6
Southwestern OSU	5	4	6	9	6
Univ. of Central OK	11	5	11	10	2
University of OK	12	9	9	7	3
University of Tulsa	5	7	8	9	11
TOTALS	103	77	103	111	70

Internship Partnerships

Scholars are encouraged to apply for summer internship programs. Many Scholars are accepted into more than one program and must make a decision on the best fit for their career goals. Listed below are selected programs:

Ames Research Center, Mountain View, CA – commonly known as NASA Ames, is a major NASA research center at Moffett Federal Airfield in California's Silicon Valley. It provides leadership in astrobiology; small satellites; robotic lunar exploration; the search for habitable planets; supercomputing; intelligent/adaptive systems; advanced thermal protection; and airborne astronomy. Ames also develops tools for a safer, more efficient national airspace. (NASA.gov)

BP Oil Company, Anchorage, AK & Houston, TX – 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 petrochemical products for everyday items. (bp.com)

Brookhaven National Labs (BNL), Upton, NY – A unique opportunity for LSAMP scholars to participate in a 12-week research project with BNL staff and an on-campus mentor. BNL is a multipurpose research institution funded primarily by the U.S. Department of Energy's Office of Science. BNL brings world-class facilities and expertise to the most exciting and important questions in basic and applied science—from the birth of our universe to the sustainable energy technology of tomorrow. (BNL.gov)

Columbia University, New York, NY – Summer Public Health Scholars Program is an eight week program designed for undergraduates to increase interest in and knowledge of public health and biomedical science careers (www.columbia.edu)

C-DEBI, Center for Dark Biosphere Investigations, Salt Lake City, UT – Ten week program characterizing the microbial diversity of groundwater aquifers in southern Utah.

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 improving living standards around the world (www.exxonmobil.com).

Holly Frontier Corporation, Tulsa, OK – Among the largest independent petroleum refiners in the United States with operations throughout the mid-continent, southwestern and Rocky Mountain regions. Subsidiaries of HollyFrontier produce and market gasoline, diesel, jet fuel, asphalt, heavy products and specialty lubricant products. (www.hollyfrontier.com)

Joseph Fourier University, Grenoble, France – The Université Joseph Fourier in Grenoble is a leading University of Science, Technology and Health. It brings together the various stakeholders from Grenoble's healthcare industry (doctors, pharmacists, biologists and chemists, as well as STAPS research professors) working on numerous local or regional research programs, such as NanoBio, Cancéropôle Lyon Auvergne Rhône-Alpes, Rhône-Alpes Genobpole, Neurosciences or Envirhônalp. The diversity of these stakeholders and of the skills found within the CSVSB Centre makes it possible to conduct research programs ranging from basic research to clinical applications. (http://www.ujf-grenoble.fr/research/chemistry-biology-and-health)

Love's Travel Stop, Oklahoma City, OK – A chain of convenience stores and travel centers with over 340 locations in 40 states nationwide. (www.loves.com)

LyondellBasell, LaPorte, TX – One of the world's premier plastics, chemicals, and refining companies, producing materials that are essential to sharing what comes next in electronics, food packaging, construction materials, automotive components, motor fuels, textiles, medical supplies and more. (www.lyondellbasell.com)

Maria Mitchell Observatory, Nantucket, MA – Founded in 1908 in honor of Maria Mitchell, the first American woman astronomer. The observatory has extensive public education and research programs. For more than 50 years, the observatory has offered summer research internships in astronomy and astrophysics for undergraduate students, funded by the National Science Foundation. (www.wikipedia.org)

NASA Goddard Space Flight Center, Greenbelt MD – A major NASA space research laboratory established on May 1, 1959 as NASA's first space flight center. GSFC, one of ten major NASA field centers, is named in recognition of Dr. Robert H. Goddard (1882–1945), the pioneer of modern rocket propulsion in the United States. GSFC is the largest combined organization of scientists and engineers in the United States dedicated to increasing knowledge of the Earth, the Solar System, and the Universe via observations from space. (www.wikipedia.org)

NASA Ames Research Center, Mountain View, CA – NASA Ames Research Center, one of ten NASA field enters, is located in the heart of California's Silicon Valley. For more than 75 years, Ames has led NASA in conducting world-class research and development in aeronautics, exploration technology and science aligned with the center's core capabilities. (www.NASA.gov)

National Instruments, Austin, TX – National Instruments equips engineers and scientists with tools that accelerate productivity, innovation, and discovery to meet not only grand but also daily engineering challenges in an increasingly complex world. A graphical system design approach leverages productive software and reconfigurable hardware platforms, along with a vast community of IP and applications, to simplify system development and arrive at solutions faster. (ni.com)

National Institutes of Diabetes and Digestive and Kidney Diseases, Bethesda, MD – The program is designed to provide an opportunity for ten weeks of building and sustaining biomedical, behavioral, clinical and social science research. Students will also participate in a NIH Summer Research Poster Day.

Naval Research Lab, Washington, D.C. – The NRL is the Navy's corporate laboratory. The Laboratory encourages broadened knowledge in all scientific disciplines to help assure that cutting-edge scientific capabilities exist in the future. Successful candidates at the graduate and postdoc levels can expand career goals by participating in research activities; interacting with scientists from NRL, other laboratories and academia; participating in scientific conferences and seminars; and publishing research results. (nrl.navy.mil)

Native Explorers, Tulsa, OK – The program combines vertebrate fossils and medicine into a scientific expedition. Students explore anatomy at the OSU Center for Health Sciences and conduct a paleontological dig and cultural excursions.

Niblack Research Scholarship Program, Stillwater, OK – The program 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.

NSF Science and Technology Centers Tribal Initiatives Summer Undergraduate Research Internship Experience – various locations. This summer research program is designed to provide opportunities for under-represented students to conduct research in: The Center for Coastal Margin Observation and Prediction; *The Center for Remote Sensing of Ice Sheets; Center for Microbial Oceanography: Research and Education; Center for Layered Polymeric Systems; Center for Dark Energy Biosphere Investigations; Center for Science of Information; Center for Integrated Quantum Materials.*

Oklahoma IDeA Network of Biomedical Research Excellence (OK-INBRE) – A grant awarded by the National Institutes of Health Institutional Development Award (IDeA) Program. The Network is comprised of two lead institutions whose primary missions are bio-medical research, education and patient care, and 12 collaborating institutions. OK-INBRE builds State capacity to carry out biomedical research by supporting promising new faculty, recruiting

students into biomedical research careers, and sustaining vital core facilities. The scientific themes of OK-INBRE are multi-disciplinary, targeting the fields of Microbiology & Immunology, Cancer, and Developmental Biology. (okinbre.weebly.com)

Phillips 66, Los Angeles, CA -- A diversified energy manufacturing and logistics company. With a portfolio of Midstream, Chemicals, Refining, and Marketing and Specialties businesses, the company processes, transports, stores and markets fuels and products globally. (www.phillips66.com)

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: Clemson University, University of Oklahoma, Oklahoma State University, Alabama A&M University (China), Louisiana State University (Brazil and France), University of Georgia; Washington University School of Medicine, St. Louis. MO, and the University of Wisconsin-Madison.

South Central Climate Science Center, University of Oklahoma, Norman, OK – established in 2012, the South Central Climate Science Center provides decision makers with the science, tools, and information they need to address the impacts of climate variability and change on their areas of responsibility. The Center will transform how climate science is conducted and applied in the south-central United States. (www. Southcentralclimate.org)

Summer Undergraduate Research Opportunity Program (SUROP), Manhattan, KS – Hosted by Kansas State University, the program provides first hand experiences with the research process and helps to prepare students for graduate school. (www.k-state.edu)

Tulsa Undergraduate Research Challenge, Tulsa, OK – An innovative program that enables undergraduates to take challenging courses and conduct advanced research with the guidance of top TU professors. Its aim is to create leaders in scholarship, research and public life. Specifically, the program emphasizes undergraduate research and community involvement. (www.utulsa.edu)

University of Colorado, Boulder, CO – 2015 *REU Site: Environmental Sustainability*. Ten week research program in the area of Environmental Sustainability.

Zeeco, Broken Arrow, OK – A global leader in the design, engineering and manufacture of next-generation combustion equipment and advanced environmental systems. Equipment plays mission-critical roles in the refining, production, power, LNG, biogas, pharmaceutical, pulp and paper, and numerous other industries around the world. Headquartered near Tulsa, Oklahoma, Zeeco operates more than 20 locations, the largest product research and test facility on earth, four strategically located manufacturing facilities, more than 1,300 employees and agents, and thousands of installations on virtually every continent. (www.zeeco.com)

Program Component Three

To expand and facilitate opportunities for international research experiences and engagement so at least 25% of Alliance scholars gain international experience

International Experiences

In 2014-2015, seven scholars participated in international experiences. To date, Oklahoma scholars have participated in international research experiences in over 37 different locations. The international opportunities enable scholars to broaden their research experiences. Scholars with international research experiences are better prepared for future career opportunities, develop a diverse perspective on experiences in different locations, and help to build relationships that enhance their future career goals.

Table 8. Select Internship Locations Outside the Continental United States – August 2014-June 2015

Student	Location
Andres Guerrero Criado	France
Nicholas Means	France
Ashlie Walker	France
Bree Cooper	Italy
Linzi Thompson	Cambodia, China
Alejandra Mera	Germany
Cameron Patterson	Netherlands, Belgium, Vienna, Check Republic

For the second year, the Oklahoma LSAMP program coordinated with Louisiana State University (LSU), and sponsored three Native American LSAMP Scholars for an iREU. The 2014 US/France/Belgium iREU Site in Translational Chemistry, directed by Dr. Randy Duran (LSU, Director of the Office of Undergraduate Research) placed a total of 18 LSAMP Scholars in institutions across France.

Andres Guerrero Criado, OSU Microbiology/Cell and Molecular Biology senior, began a research project in February 2015 at Joseph Fourier University in Grenoble, France. During his stay Andres worked with Dr. Thomas Pfannschmidt in the team plastidial Genome in IRTSV CEA Grenoble, which is part of the GRAL axis 2. He will return to OSU in the fall semester to complete degree requirements.

Nicholas Means, OSU Chemistry senior, began a research project in February 2015 at Joseph Fourier University in Grenoble, France. Nicholas is working with Dr. Serge Cosnier researching electrcatalytic reduction of oxygen by films bilirubin oxidase on graphite electrodes. He will return to OSU in the fall semester to complete degree requirements.

Ashlie Walker, SWOSU Chemistry senior, spent six months in Grenoble, France, at Joseph Fourier University. She will work with professors Eric Saint-Aman and Guy Royal. Ashlie was selected to present her research to a Fulbright delegation during a summer conference in Grenoble. She returned to SWOSU in the fall of 2014, completed BS degree requirements in May 2015 and was accepted in to a Ph.D. program at the University of Kansas.

ALLIANCE COLLABORATIONS

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 the July 2014 printing of *Diverse Issues in Higher Education*, Oklahoma universities consistently rank in the top for awarding degrees to Native Americans. Seven Oklahoma universities in the OK-LSAMP Alliance rank in the top 30 institutions for Native Americans completing degree requirements.

Seventy-two Scholars completed Bachelor of Science degrees in the 2014-2015 academic year. Twenty-nine (48%) of the Scholars receiving a B.S. degree have been admitted to advanced degree programs at universities across the United States.

Table 8. Number of Graduates by Institution and Number Attending Graduate School

Alliance Institutions	2013-2014 Graduates		2013-2014 To Grad School		2014-2015 Graduates		2014-2015 To Grad School	
	Male	Female	Male	Female	Male	Female	Male	Female
Cameron University	0	4	0	3	1	2	0	0
East Central University	2	1	0	1	5	3	0	0
Langston University	2	8	1	2	5	8	4	8
Northeastern State University	1	2	1	1	2	1	2	1
Northwestern OSU	1	0	0	0	0	0	0	0
Oklahoma State University	10	15	5	12	13	14	3	4
Southeastern OSU	3	2	1	1	2	1	0	0
Southwestern	1	0	0	0	0	3	0	3
University of Central OK	1	1	0	0	0	0	0	0
University of Oklahoma	6	7	1	5	7	2	1	0
University of Tulsa	2	1	1	1	1	2	1	2
TOTALS	29	41	10	26	36	36	11	18
	70		36		72		29	

- 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.

- Twenty (20) scholars traveled to Chaney, Washington, for the 2015 National Conference on Undergraduate Research (NCUR). Annually, this trip is funded in part by the Oklahoma Experimental Program to Stimulate Competitive Research (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.

- Scholars presented posters and oral presentations in addition to taking honors at respective conferences and workshops.

- Scholars participated in summer internship/research positions throughout the nation and the world.

- 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.

- 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 can 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.

- 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 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.

- An Alumni database continues to be updated with current information. Information returned by alumni will be used to stay connected and to keep alumni informed of upcoming events.

EVIDENCE OF OUTREACH

Scholars are provided opportunities to gain knowledge, insight and experiences in their programs of study and research. These experiences help them to develop better ideas of which

directions they may want to pursue and to provide opportunities to work together with their peers. Selected opportunities are identified below.

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, 2015). In 2015, 96% (22) of Scholar abstracts submitted were accepted for presentation and 88% (28) of non-scholar abstracts were accepted for a total of 50 accepted presentations. Scholars attending also had opportunities to attend a career/graduate school fair and to discover the culture of the area. (Appendix E). The 2018 NCUR conference will be held in Oklahoma at the University of Central Oklahoma, located in Edmond. Dr. Greg Wilson, OK-LSAMP Campus Coordinator and UCO Assistant Vice President of Research and Grants, was instrumental in UCO receiving this honor.

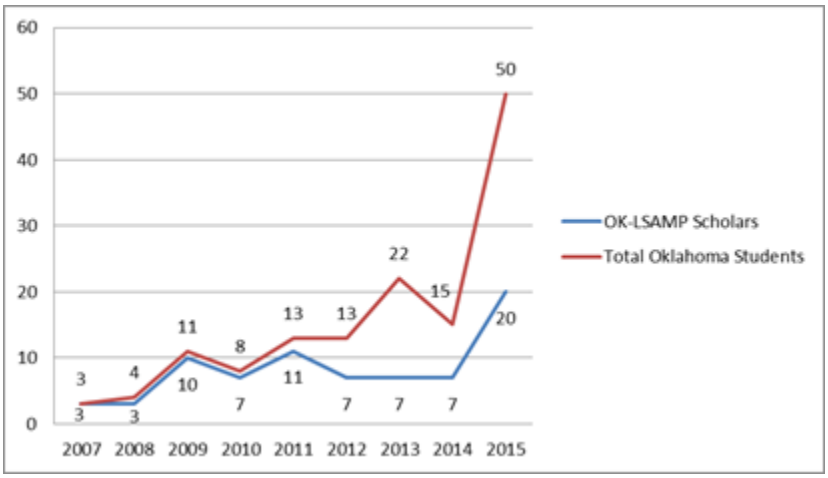

Figure 3. Number of Students Participating in NCUR Over Time.

Oklahoma Research Day

Oklahoma Research Day celebrated its 16th year as a premier annual event celebrating student and faculty research, creative, and scholarly activities. The event has grown in numbers and in stature with contributions from all of Oklahoma's institutions of higher education, including many collaborative contributions from national and international academic and research institutions. The 2015 Oklahoma Research Day event had over 1,200 registered students, faculty, and guests and featured over 700 unique poster presentations. (oklahomaresearchday.com) (Appendix F).

Northeastern State University in Tahlequah, OK hosted the 2015 Oklahoma Research Day event. The one-day conference provided students with opportunities to present their research and to interact with peers and others in their research fields. The Oklahoma LSAMP Alliance had a total of 30 Scholars participate in the event. In addition, two Bridge to the Doctorate Fellows and several OK-LSAMP alumni who are now enrolled in graduate program also participated. Ten Scholars made more than one presentation. Students were also able to listen to a keynote speaker and visit with graduate school representatives during the day.

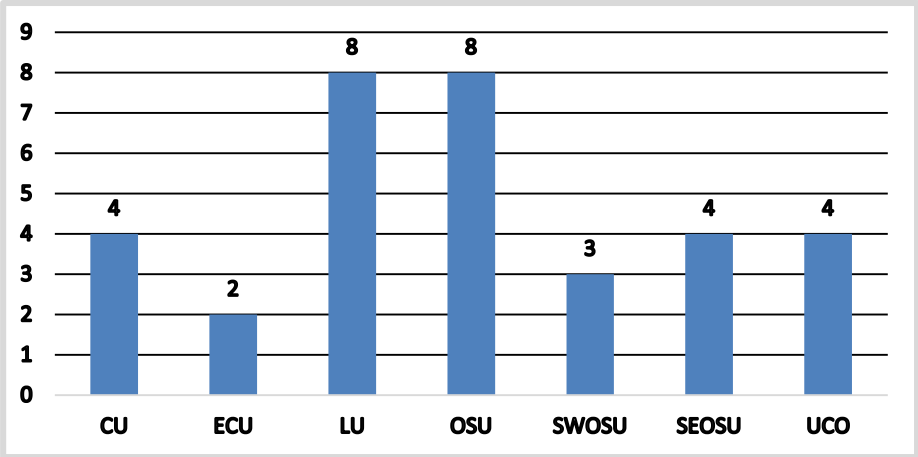

Figure 4. Number of Scholars by Institution Participating in the 2015 Oklahoma Research Day

Table 10. Scholars Participating in Oklahoma Research Day by Institution

School	Scholar	Scholar	Scholar
Cameron University	Karisha Jackson Dominique Thomas	William Johnson	Alexander Rivas
East Central University	Laura Asar	Linzi Thompson	
Langston University	Lindsay Davis Rashad Hall TaJae Lloyd	Eugene DeLoach Morgan James Kellan Pollard	Joseph-Michel Fields Mary Jordan
Oklahoma State University	Tyler Autry Broke Romine Kevn Vo	Blair Baldridge* Brooklin Ryan Gregory Cook*	Geoff Kibble Adrian Saenz
Southeastern Oklahoma State University	Laci LeFlore Rachel Grider	Tyler Shannon	Matt Maxwell
Southwestern Oklahoma State University	Mike Morrison	Mary Phillips	Ashley Rodriquez
University of Central Oklahoma	Ronda Carson Chelsea Spencer	JeAnna Redd	Jessica Webb

*Bridge to the Doctorate Fellow

Research Day at the Capitol

Oklahoma's top undergraduate researchers participated in the 2015 *20th Annual Research Day at the Capitol* event held in Oklahoma City, OK at the State Capitol. Twenty-four undergraduate students from 18 Oklahoma colleges and universities were nominated by their campus President to present scientific research posters. The event was designed to showcase the outstanding research being conducted by students across the state of Oklahoma. The event is sponsored by the Oklahoma State System for Higher Education, the Oklahoma Chancellor, and Oklahoma EPSCoR through a National Science Foundation grant. **Maeghan Murie**, Oklahoma State University placed third in the Research-Intensive Institution category. **Laura Asaro**, East Central University and **Lindsay Davis**, Langston University both participated in the Regional University & Community College category (Appendix G).

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

The annual SACNAS conference was held in Los Angeles, California. For the third year, Scholars received travel scholarships to attend the conference and participate in activities; i.e., poster presentations, career fair, Native American PowWow, and the Hispanic Pachanga dance. Thirty OK-LSAMP scholars and five faculty mentors were in attendance at the conference. Two Scholars received recognition during the awards ceremony for Outstanding Poster Presentations. **Amber Anderson**, Biochemistry major from OSU and **Grant Williams**, Physics major from OSU, received recognition. One graduate student, **Shane Morrison**, also a member of the Scholars in Science: Native American Path (SSNAP) program received recognition for his graduate oral presentation during the conference. Dr. Donald French, Dr. Gilbert John, Kay Porter, and Fara Williams served as judges during the conference. Bridge to Doctorate Fellow, **Allison Sherier**, assisted Kay Porter with judging and score tabulation for the Biological Sciences judging team (Appendix H).

Scholars in Science: Native American Path (SSNAP)

Oklahoma State University completed year three in a three-year partnership with SACNAS for the *Scholars in Science: Native American Path* (SSNAP) project. The project goal was to recruit and retain 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 met with other Native American elders and participated in a PowWow/Grand Entry into the event. Additional benefits include a travel scholarship to the conference. Dr. Dave Wilson, Deputy Director of American Indian Affairs and Policy for SACNAS visited OSU to conduct the first workshop. The workshop presented by Dr. Wilson prepared the students for the SACNAS conference and provided them with one-on-one encouragement and opportunities to discuss concerns and expectations about the SSNAP program

and SACNAS in general. The second workshop was held following the SACNAS conference to discuss conference outcomes and recognize the three award winners. The SSNAP opportunity is directed by Dr. Gilbert John and Dr. Donald French, faculty mentors at OSU; Kay Porter, OK-LSAMP Program Manager; and Fara Williams, OK-LSAMP Data Coordinator (Appendix H).

Women in Science STEM Conference

Scholars from across the Alliance assisted with the Women in Science conference. The 2014 Conference was held in Tulsa, Oklahoma, at the Mabee Center due to increased attendance by students and teachers. This annual event is hosted by Oklahoma EPSCoR with staff, students, and faculty from universities and colleges across Oklahoma assisting with the day's activities. The conference registered 669 K-12 female students (220 were underrepresented students) and 52 teachers (13 were underrepresented minorities). Additionally, there were over 190 exhibitors, including representatives from academic, government, business, and the non-profit sector with information regarding college admission, scholarships, and professional activities. Teachers were provided free teaching resources and students had opportunities to visit with various programs as well as experience science first hand in the "hands-on" portion of the day. Several Scholars participated in the "hands-on" room by allowing the students to handle bugs, view a human brain, and make paper airplanes learning more about aerodynamics and flight. Lunch was provided to all attendees with the remaining lunch boxes donated to the local food bank (Appendix I).

NSF-LSAMP Internship Program at BNL

Oklahoma State University was awarded a supplemental grant for the 2015 summer with Brookhaven National Laboratory (BNL) located in Long Island, New York. Dr. Gilbert John, professor and faculty mentor from OSU led the project. Two scholars from OSU (**Zack Ridge**, Chemistry junior and **Marla Ichord**, Microbiology junior, participated in the 10-week program. The project entitled *Crystallization and X-Ray Diffraction Studies of Azoreductase from Clostridiium Perfringens and Enterococcus faecium* is a continuation of a project which began in a lab on the OSU campus in 2013. The team worked closely with the Environmental Science Department within BNL. The Scholars and faculty mentor spent the first two weeks on the OSU campus before travelling to Upton, NY and spending 8 weeks on the BNL campus, experiencing research techniques in a national lab, taking part in cultural activities, and participating in a sponsored research symposium. The Scholars were also provided with opportunities to visit universities in the area and visit with research faculty (Appendix J).

Indigenous Scholar Development

Oklahoma Native American Students in Higher Education (ONASHE). The ONASHE program was implemented to support Native American students in higher education by hosting a yearly event to promote interaction among tribal leaders and students. The mission of "*ONASHE is to provide opportunities for students to continue to develop and strengthen their leadership skills by interacting with current tribal leaders, participate in workshops that are relevant to contemporary student and leadership issues and fellowship with students."* The ONASHE conference is held on a different Alliance campus each year with Native American OK-LSAMP scholars and Native American students from the campus overseeing the conference logistics. The 2015 Conference was held on the Cheyenne & Arapaho Tribal College and the Southwestern Oklahoma State University campus. The OSU Native American Student Association received recognition as the Outstanding Organization of the year during the conference. Dr. Henrietta Mann, is the founding president of the Cheyenne & Arapaho Tribal College, has more than 50 years dedicated to Native American education and been sought as a spiritual mentor. Schools participating included: Bacone College; College of Muscogee Nation; Cheyenne Arapaho Tribal College; East Central University; Northeastern State University; Northeastern Oklahoma A&M; Oklahoma State University; Pawnee Nation College; Rogers State University; Southwestern Oklahoma State University; Southeastern Oklahoma State University; University of Nebraska Lincoln; and University of Tulsa (Appendix K).

Native American Student Associations. Alliance campuses also have Native American Student Associations and/or Native American Student Centers. These groups encourage Native American students to pursue careers in higher education, while focusing on protection and preservation of Native history and cultures. Scholars are involved in activities on Alliance campuses to strengthen the culture of learning and discovery between students and faculty in relation to indigenous cultures.

Cameron University – The Cameron American Indian Student Association (CAISA) provides Native students with numerous opportunities for social fellowship and campus activities.

East Central University – The *Hays Native American Study Center*, located on the East Central University campus is the "hub" for Native American students. "The center is a place to recognize and celebrate the rich contributions that American Indians have made, and continue to make, to ECU, the much larger community, and our shared history,"(Thomas Cowger, ECU professor of history). The Native American Student Association conducts numerous activities during Native American Heritage Month, as well as throughout the academic year.

Northeastern State University – On the Northeastern State University campus in Tahlequah, a predominantly Native American population, OK-LSAMP scholars were involved for the second year as mentors in the Indigenous Scholar Development Center. The Center's mission is to *"strengthen the capacity of NSU to provide a comprehensive, holistic approach to serving American Indian Students and their Communities through extensive programming, creative implementation of academic success strategies and supporting faculty and staff development, while creating a safe place for Indigenous peoples to gather, learn from and strengthen each other.***"** OK-LSAMP Campus Coordinator, Dr. Jody Buckholtz, continues to serve as the faculty academic advisor.

Oklahoma State University – Native American students and faculty may become involved in the Native Americans Resiliency through Education and Leadership Program (NARELP). NARELP was designed to promote the successful transition of incoming freshmen and transfer students to the OSU community, as well as promoting mentorship, leadership, and community for all Native American students in order to build a stronger Native American community on and off campus. Additionally, Native American students may choose to live in the "Ketchum House." The Ketchum House is a way for students to experience social and cultural programming activities. Other opportunities include organizations such as the American Indian Science and Engineering Society; Society for the Advancement of Chicanos and Native Americans in Sciences Student Chapter; Alpha Pi Omega Sorority; Minority Women's Association; Phi Sigma Nu Fraternity; Native Americans in Biological Sciences; American Indians into Psychology; and the Choctaw Scholarship Advisement Program. The Native American Student Association holds an annual Native American graduation ceremony honoring seniors and graduate students completing degree program requirements and help sponsor numerous cultural events during the academic year. Additionally, the NASA supports a Native American High School Visitation Weekend, providing an opportunity for high school students to spend two days on campus visiting with faculty, staff, and attending workshops. The OSU NASA Powwow is one of the largest student-ran powwows in the nation.

Southwestern Oklahoma State University – Native American students on campus can attend monthly meetings of the H.O.P.E. Native American Club, along with students from the Cheyenne & Arapaho College. Dr. Henrietta Mann, President of the Cheyenne & Arapaho College is a distinguished elder who is nationally known for her trailblazer activities.

University of Central Oklahoma – Students involved in the NASA program on the UCO campus host a spring pow wow each year bringing Native Americans together from across Oklahoma and the nation to renew their traditions, heritage and celebrate friendships through dance and singing while dressed in Native American ceremonial regalia (www.UCO.edu). Throughout the academic year, Native American students meet on a regular basis to learn native languages, host events such as the Miss Native American pageant, and numerous other activities.

University of Oklahoma – The University of Oklahoma has several American Indian student. Programs support undedrgraduate, graduate, and law students in different program areas. The university also has a Native American Studies Center and the Amerian Indian Student Life (AISL) program. The AISL program is "dedicated to providing the needed support and assistance necessary to help American

Indian students achieve their educational and personal goals. AISL is the designated liaison office for students, university departments, alumni, and tribes/Nations throughout the country." (www.ou.edu) The Native American Studies Program supports students through a disciplinary approach to the study of Native American tribes and their cultures.

University of Tulsa – The University of Tulsa Native American Law Student Association is involved in both on-campus and community programs, as well as providing a job fair and networking opportunities for Native American students on campus.

Native American Enrollment Opportunities

Office for the Advancement of American Indians in Medicine and Science. Oklahoma State University's Center for Health Sciences launched an effort to recruit more American Indian high school and college students into medicine and science careers. OSU established the Office for the Advancement of American Indians in Medicine and Science under the direction of Kent Smith, Ph.D., a member of the Comanche and Chickasaw Nations, an associate professor of anatomy and cell biology, and an OK-LSAMP Mentor. Dr. Smith is quoted: "Our initiative will increase the number of American Indians practicing medicine and working in the science fields through mentoring and targeted programs." The efforts will help our Native American students in Oklahoma excel in these fields by offering hands-on experiences that combine Native culture and science" (Appendix L).

Center for Sovereign Nations. Oklahoma State University, through the Oklahoma State Regents for Higher Education, created the Center for Sovereign Nations Engagement and Partnership program. Provost Gary Sandefur stated, "The multi-disciplinary program reports to the Office of the Provost and is expected to be a place of connection and relationship building among Sovereign Nation partners, students and faculty. The Center will also ensure that sovereignty of American Indian Nations is respected and recognized in the creation and implementation of initiatives across the OSU system; increase the number of American Indian graduates from OSU; and increase the number and quality of partnerships between OSU and Sovereign Tribal Nations (Appendix L).

Native American Studies. Several Alliance institutions have Native American Studies programs, degree options, and centers. Individual programs generally offer classes in Native American history, language, and social issues, and unique opportunities to meet educational needs and foster diversity among all cultures.

FACULTY HIGHLIGHTS AND PUBLICATIONS

Campus Coordinators and mentors 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 underrepresented youth and support the NSF goals and objectives related to the LSAMP program. Coordinators and mentors are continually striving to achieve success within their own career paths. Several highlights are below and in Appendix L).

Campus Coordinators

Jason F. Kirksey – OSU – (1) promoted to Vice President for Institutional Diversity from Associate Vice President; (2) featured in the STATE Magazine (Appendix L); (3) received NSF funding for two supplemental grants for summer research at Brookhaven National Labs; (4) presenter at the 2014 LSMCE Conference in Chicago, IL.

J.C. Diaz – TU – (1) presented research in London and published in conference book: Beckfield, C., & Diaz, J.C. (2014, July 8-10). *Tulsa's Art Deco Cross-Platform Mobile Tour App*. Electronic Visualization and the Arts (EVA), London, UK; (2) accepted for oral presentation and publication in conference proceedings: Diaz, J.C. (2015, April 16-18). "Sustaining a Multidisciplinary Undergraduate Research Community for Underrepresented Populations." Faculty-Administrator Network (FAN) Sessions, National Conference of Undergraduate Research (NCUR) 2015, Eastern Washington University, Cheney, WA.

Tim Hubin – SWOSU -- Received the Oklahoma Excellence in Teaching Award for community/regional colleges for 2015.

Publications: Shircliff, A. D.; Wilson, K. R.; Cannon-Smith, D. J.; Jones, D. J.; Zhang, Z.; Chen, Z.; Yin, G.; Prior, T. J.; Hubin, T. J. (2015, in press). "Synthesis, structural studies, and oxidation catalysis of the manganese(II), iron(II), and copper(II) complexes of a 2-pyridylmethyl pendant armed side-bridged cyclam" *Inorg. Chem. Commun.*

Matz, D. L.; Jones, D. G.; Roewe, K. D.; Gorbet, M.-J.; Zhang, Z.; Chen, Z.; Prior, T. J.; Archibald, S. J.; Yin, G.; Hubin, T. J. (2015, in press). "Synthesis, structural studies, kinetic stability, and oxidation catalysis of the late first row transition metal complexes of 4,10-dimethyl-1,4,7,10-tetraazabicyclo[6.5.2]pentadecane." *Dalton Trans.*, DOI:10.1039/c5dt00742a.

Panneerselvan, J.; Jin, J.; Shanker, M.; Lauderdale, J.; Bates, J.; Wang, Q.; Zhao, Y. D.; Archibald, S. J.; Hubin, T. J.; Ramesh, R. (2015). "IL-24 prevents lung cancer cell migration and invasion by disrupting the SDF-1α/CXCR4 signaling axis." *PLOS ONE*, *10*, 0122439.

*Jones, D. G.; *Wilson, K. R.; *Cannon-Smith, D. J.; *Shircliff, A. D.; Zhang, Z.; Chen, Z.; Yin, G.; Prior, T. J.; Hubin, T. J. (2015). "Synthesis, structural studies, and oxidation catalysis of the late first row transition metal complexes of a 2-pyridylmethyl pendant armed ethylene cross-bridged cyclam." *Inorg. Chem.*, 54, 2221-2234.

On-Going Research/Grants: (1) received the 2015 Oklahoma Medal for Excellence grant $5,000; (2) received Experimental Therapeutics Seed Grant in the amount of $25,000; (3) received OK-INBRE Large Equipment Grant in the amount of $35,000; (4) received OK-INBRE Release Time for Proposal Development Grant in the amount of $19,535.

Presentations: Hubin, T. J. (2015, April 16). "Recent *in vitro* and *in vivo* results with the transition metal complex CXCR4 chemokine receptor antagonist SJA5" Stephenson Cancer Center of OUHSC, Experimental Therapeutics seminar, Oklahoma City, OK.

Hubin, T. J.; Jones, D. G.; Shircliff, A. D.; Yin, G.; Prior, T. J. (2015, March 26). "Synthesis, structural studies, and oxidation catalysis of the late first row transition metal complexes of a 2-pyridylmethyl pendant armed ethylene cross-bridged cyclam" 249th ACS National Meeting, Denver, CO.

Davilla, D. J.; Schols, D.; Archibald, S. J.; Hubin, T. J. (2015, March22-26). "Transition metal complex dual CXCR4/CCR5 antagonists." 249th ACS National Meeting, Denver, CO.

Ayala, M. A.; Walker, A.; Hubin, T. J. (2015, March 22-16). "1,7-Dimethyl-1,4,7,10-tetraazacyclododecane complexes of Mn, Fe, Co, Ni, Cu, and Zn: synthesis and characterization." 249th ACS National Meeting, Denver, CO.

Gorbet, M.J.; Allen, M. B.; Shircliff, A. D.; Yin, G.; Hubin, T. J. (2015, March 22-16). "New ethylene cross-bridged and side-bridged tetraazamacrocycles featuring acid and amide pendant arms and their transition metal complexes for oxidation catalysis." 249th ACS National Meeting, Denver, CO.

Oertel, M.; Hubin, T. J.; Gwyn, L. (2015, April 14). "Cobalt chelates as potential DNA cleavage agents for artificial nucleases." 22nd Annual SWOSU Research and Scholarly Activity Fair. Weatherford, OK.

O'Neal-Johnson, S.; Hubin, T. J.; Gwyn, L. (2015, April 14). "Copper ligands as a DNA cleavage component for use in artificial nucleases." 22nd Annual SWOSU Research and Scholarly Activity Fair. Weatherford, OK.

Hubin, T. J.; Jones, D. G.; Shircliff, A. D.; Yin, G.; Prior, T. J. (2015, April 14). "Synthesis, structural studies, and oxidation catalysis of the late first row transition metal complexes of a 2-pyridylmethyl pendant armed ethylene cross-bridged cyclam." 22nd Annual SWOSU Research and Scholarly Activity Fair. Weatherford, OK.

Davilla, D. J.; Schols, D.; Archibald, S. J.; Hubin, T. J. (2015, April 14). "Transition metal complex dual CXCR4/CCR5 antagonists." 22nd Annual SWOSU Research and Scholarly Activity Fair. Weatherford, OK.

Ayala, M. A.; Walker, A.; Hubin, T. J. (2015, April14). "1,7-Dimethyl-1,4,7,10-tetraazacyclododecane complexes of Mn, Fe, Co, Ni, Cu, and Zn: synthesis and characterization." 22nd Annual SWOSU Research and Scholarly Activity Fair. Weatherford, OK.

Gorbet, M.-J.; Allen, M. B.; Shircliff, A. D.; Yin, G.; Hubin, T. J. (2015, April 14). "New ethylene cross-bridged and side-bridged tetraazamacrocycles featuring acid and amide pendant arms and their transition metal complexes for oxidation catalysis." 22nd Annual SWOSU Research and Scholarly Activity Fair. Weatherford, OK.

Hubin, T. J.; Won, P.; Birdsong, O. C.; Cannon, Desiray J. ; Davilla, D. J.; Garcia, C. D.; Archibald, S. J.; Schols, D. (2015, April 8). "Dual CXCR4/CCR5 Chemokine Receptor Antagonists." Oklahoma Health Research Conference. Oklahoma City, OK.

Hubin, T. J.; Won, P.; Birdsong, O. C.; Cannon, D. J.; Walker, A.; Epley, B. M.; Klassen, S.; Davilla, D. J.; Garcia, C. D.; Shockey, B. N.; Archibald, S. J.; Schols, D. (2015, January 30). "Dual CXCR4/CCR5 chemokine receptor antagonists." 4th Cancer Research Symposium. Oklahoma City, OK.

Panneerselvam, J.; Jin, J.; Shanker, M.; Lauderdale, J.; Bates, J.; Wang, Q.; Zhao, D.; Archibald, S. J.; Hubin, T. J.; Ramesh, R. (2015, January 30). "IL-24 inhibits lung cancer cell migration and invasion by disrupting the SDF-1/CXCR4 signaling axis." 4th Cancer Research Symposium. Oklahoma City, OK.

Mike Husak – CU **– (1)** Dr. Husak became the campus coordinator in spring 2015 at Cameron University. He holds a Ph.D. in Biological Sciences from Mississippi State University and has been on the CU faculty since 2003; (2) inducted into the Cameron University Alumni Association Faculty Hall of Fame; (3) received the Faculty Award for Excellence in Mentoring Student Research in 2015; (4) In addition to his Associate Professor position at CU, Dr. Husak serves as an adjunct professor at Portland State University and Midwestern State University. He has numerous publications, presentations, research projects, and committee responsibilities.

Publications and Presentations with students: 62nd Annual Meeting of the Southwestern Association of Naturalists (2015). Effects of a landscape gradient on predation of Scissor-tailed Flycatcher nests. 62nd Annual Meeting of the Southwestern Association of Naturalists, San Diego, California.

Richards, H.M., Landoll, D.V. & Husak, M.S. (2015). Effects of large-scale fire on nesting of Scissor-tailed Flycatchers in the Wichita Mountains. Oklahoma Research Day, Tahlequah, Oklahoma.

White, J.W. & Husak, M.S. (2014). New County Records and Range Expansion of the Mediterranean gecko *(Hemidactylus turcicus)* in Southwestern Oklahoma. Southwestern Naturalist. *In Press.*

White, J.W. & Husak, M.S. (2014). *Hemidactylus turcicus* – Geographic Distribution (Kansas). *Herpetological Review*, 45(4):659.

Quickle, A.D. & Husak, M.S. (2014). Mississippi Kite Predation on a Fledgling Western Kingbird. *Bulletin of the Oklahoma Ornithological Society*, 47(1):5 – 6.

Sharon Lewis – LU – Publications: Lewis, S. A., Phillips, T., Love, K., McKinney, M., Jackson, Q., Pugh, D., Comeaux, E., Davis, L., Bowlin, M., Singh, R., Carter, P., Newman, N., Lott, L., Johnson, R., & Vann, B. (May, 2015). "Asphalt Chemistry," *Global Journal of Research in Engineering* (GJSFR), vol. 15, issue 2.

Lewis, S. A. (April 1, 2015). THE AFFILIATE, NAMI Edmond/North OKC Newsletter, "Simply, No."

Lewis, S. A. (March 1, 2015). THE AFFILIATE, NAMI Edmond/North OKC Newsletter, "Conundrums" pg.9.

Lewis, S. A. (February 1, 2015). THE AFFILIATE, NAMI Edmond/North OKC Newsletter, "An Exceptional Human Being" pg.9.

Lewis, S. A. (January 1, 2015). THE AFFILIATE, NAMI Edmond/North OKC Newsletter, "Gift Yourself the Best that You Have." (January 1, 2015), pg.9.

Lewis, S. A. (December 1, 2014). THE AFFILIATE, NAMI Edmond/North OKC Newsletter, "Mind, Body, and Soul and the Holiday Season "Bipolar Secrets and Fallout." pg.4.

Lewis, S. A. (November 1, 2014). THE AFFILIATE, NAMI Edmond/North OKC Newsletter, "The Twinkle in My Eyes." pg.4.

Lewis, S. A. (October 1, 2014). THE AFFILIATE, NAMI Edmond/North OKC Newsletter, "Bipolar Secrets and Fallout." pg.4.

Lewis, S. A. (September 1, 2014). THE AFFILIATE, NAMI Edmond/North OKC Newsletter, "The Psychiatrist Revolving Door." pg.7.

Lewis, S.A. (Septemer, 2014). "My Five Attributes of Mania," *International Journal of Research in Medical and Health Sciences*, vol. 4, (5), IJRMHS: Vol. 4 Issue 5 http://ijsk.org/ijrmhs-volume-4-issue-1-2-3-4-5-6-7-8-9-10.html

Grants: Sub-agreement with University of Oklahoma, Department of Engineering "Southern Plains Transportation Center." --- $235,500 October 1, 2013-September 30, 2015.

Sub-agreement with University of Oklahoma Health Sciences Center, National Institutes of Health funded "Oklahoma IdeA Network of Biomedical Research Excellence." --- $25,000, December 1, 2014-March 31, 2015.

Brad Ludrick – SEOSU – Publications: LeFlore, L., & Ludrick, B. (2015). Autofluorescence in *C. elegans* can be used as an indirect measure of pore-forming toxin activity. Oklahoma Research Day (05.03.09), p. 26.

LeFlore, L., & Ludrick, B. (2014). Autofluorescence in *C. elegans* can be used as an indirect measure of pore-forming toxin activity. Proceedings in the OK-LSAMP 20th Annual Research Symposium (p15), p. 48.

LeFlore, L., & Ludrick, B. (2015, April). Autofluorescence in *C. elegans* can be used as an indirect measure of pore-forming toxin activity. Poster presented at BrainStorm, SE, Durant, OK.

LeFlore, L., & Ludrick, B. (2015, March). Autofluorescence in *C. elegans* can be used as an indirect measure of pore-forming toxin activity. Poster presented at Oklahoma Research Day, NEOSU, Tahlequah, OK.

2015, Reviewer, Oklahoma Journal of Undergraduate Research, 2014, Faculty Senate, Southeastern Oklahoma State University.

Carl Rutledge – ECU **–** (1) Chair, Department of Physics; (2) Director of Judging, Oklahoma State Science and Engineering Fair; (3) McNair Scholar Mentor

Susan Walden – OU – Publications: Walden, S.E., Foor, C.E., Pan, R., Shehab, R.L., & Trytten, D.A. (2015, June). "Leadership, Management, and Diversity: Missed Opportunities Within Student Design Competition Teams." *Proceedings of the 2015 American Society for Engineering Education Annual Conference,* Seattle WA. This paper was ranked third for the year (zone, section, and annual conferences) for papers related to building diversity in engineering and thus was invited for additional presentation in a session highlighting the top 6 Best Diversity Papers.

Trytten, D.A., Pan, R., Foor, C.E., Shehab, R.L., and Walden, S.E (2015, June). "Inclusion or Exclusion? The Impact of the Intersection of Team Culture and Student Identity and Pathway on Team Diversity." *Proceedings of the 2015 American Society for Engineering Education Annual Conference,* Seattle WA.

Pan, R., Shehab, R.L, Foor, C.E., Trytten, D.A., and Walden, S.E. (June, 2015). "Building Diversity in Engineering Competition Teams by Modeling Industry Best-Practice." *Proceedings of the 2015 American Society for Engineering Education Annual Conference*, Seattle WA.

Shehab, R.L, Walden, S.E., & Wellborn, E. (2015, June). "Motivating Factors for Choosing Engineering among Minority Students." *Proceedings of the 2015 American Society for Engineering Education Annual Conference*, Seattle WA.

Orr, M., Ohland, M., Lord, S., Layton, R., Walden, S.E., Foor, C.E., Pan, R., Shehab, R.L., Trytten, D.A. (2015, June). "Attracting, Developing, and Retaining Diverse Talent in Mechanical Engineering." Invited interactive panel session, *the 2015 American Society for Engineering Education Annual Conference*, Seattle WA.

Mentors

Mentors play a vital role in the research experiences of LSAMP Scholars. A listserv has been developed to keep mentors in all 11 campus locations informed of internships, opportunities for Scholars, and any other information that is appropriate. During National Mentor Month, mentors receive "thank you" notes and special recognitions along with highlights of their successes (Appendix L).

Charles Abramson, OSU – conducted research in Chile and Columbia during the spring-summer 2015 semesters. Assisted three students with publications in referred journals.

John Chaney, OSU – (1) appointed as Director for the Native American Studies Center on the OSU campus; (2) served as Native American Liaison to native tribes throughout Oklahoma; (3) third year to serve as a faculty mentor to the Scholars in Science: Native American Path program; (4) secured funding from the Chickasaw Nation for the Center for Sovereign Nations grant to OSU;

Heather Fahlencamp, OSU – featured on the OSU Vanguard magazine for her research and mentoring contributions to OSU students.

Donald French, OSU – (1) received a grant from the Howard Hughes Medical Institute (HHMI); (2) third year to serve as faculty sponsor for the Scholars in Science: Native American Path; (3) SACNAS faculty advisor; (4) attended the 2015 National SACNAS Conference in Los Angeles, CA.

Syed Hussaini, TU – (1) promoted to Associate Professor with tenure; (2) received the University of Tulsa Teacher of the Year for 2014 award; (3) received the 2014 Teaching Excellence Award by the College of Engineering & Natural Sciences in recognition of outstanding achievements in education; (4) three publications in referred journals.

Gilbert John, OSU – (1) received NSF funding for the 2014 Faculty and Student Team grants at Brookhaven National Labs for summer research; (2) received NSF funding for the 2015 Faculty and Student Team grants at Brookhaven National Labs for summer research; (3) third year to serve as the co-principal investigator for the Scholars in Science: Native American Path program; (4) attended the National SACNAS Conference in Los Angeles, CA; (5) served as the faculty advisor to the OSU SACNAS chapter.

Scott Loss, OSU – (1) three publications in 2015; (2) four publications in 2014; (3) four research presentations with LSAMP Scholar E. Elizondo; (4) 4 proposals funded and 2 pending approval; (5) numerous articles in national and international journals, as well as numerous activities on the Discovery Channel, CNN, CBS News, and the BBC.

E. Ann Nalley, CU – (1) at age 72 received the American Chemical Society Award for Encouraging Women Into Careers in the Chemical Sciences in 2015; (2) one of the first women to receive a Ph.D. in chemistry and still teaching.

Daniel Resasco, OU – inducted as a Fellow of the National Academy of Inventors. This award only goes to individuals who have made a tangible impact on the quality of life, economic development and the welfare of society.

Melville Vaughan, UCO – (1) 1 publication in a referred journal with an LSAMP Scholar as co-author; (2) 4 publications in referred journals.

SCHOLAR AND BD FELLOW HIGHLIGHTS

OK-LSAMP scholars are among the top students on Alliance campuses and throughout the nation. This year, Oklahoma had Scholars participate in national, state, and local conferences, have articles accepted for publication and numerous other outstanding activities. 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 (Appendix M).

National Awards

Three OK-LSAMP Scholars were recipients of prestigious national competitive scholarship awards

Mr. **Mason Linscott**, received a Bachelor of Science degree in 2014 from the University of Tulsa. The National Science Foundation announced Mason as the recipient of the **Graduate Research Fellowship**. Mason is currently enrolled at the University of Idaho in Bioinformatics and Computational Biology.

Ms. **Maeghan Murie**, a junior at Oklahoma State University, is pursuing a double major in Biochemistry and Chemistry. Maeghan was awarded the **UDALL** scholarship to continue her studies in Native American health issues.

Ms. **Katy Riojas**, a mechanical engineering junior at the University of Tulsa, was awarded the **Goldwater** Scholarship for 2015. Katy was selected from over 1,200 applications.

Publications

Scholars and Bridge to the Doctorate Fellows, submitted articles for publication in peer-reviewed journals. Selected examples of the articles are listed in Appendix N).

Scholar Highlights

Amber Anderson – OSU – (1) participated in the SSNAP program; (2) received recognition for her research poster at the 41st National SACNAS Conference in Los Angeles, CA; (3) completed B.S. degree requirements and accepted into the graduate MPH Public Health program with an option in American Indian Public Health at North Dakota State University; (4) President Native American Student Association.

Elizabeth Apala – ECU – (1) accepted a summer internship at the Maria Mitchell Observatory in Nantucket, MA; (2) received the 2015 ECU Physics Department Scholarship.

Laura Asaro – ECU – (1) represented East Central University at Oklahoma Research Day at the Capitol. She was one of 24 participants representing 18 Oklahoma colleges and universities; (2) received first place for her poster presentation at the 20st Annual Research Symposium, Stillwater, OK; (3) presented two research posters at Oklahoma Research Day at Northeastern State College, Tahlequah, OK.

Mira Bakine – LU – (1) accepted for a summer internship with the Navel Research Labs in Washington, D.C.; (2) presented at the 21st Annual Research Symposium, Stillwater, OK.

Garrett Batschelett – OSU – offered two summer internship opportunities: Native Explorers and the 2015 Bioenergy NSF REU. He accepted the 2015 NSF REU.

Matheus Barbosa – OSU – (1) presented a research poster at the National Conference on Undergraduate Research, Spokane, WA; (2) presented at the OSU Research Week Conference.

Ramiro Brigueda – OU – (1) conducted summer research on the OU campus; (2) head counselor for the summer 2015 AT&T Summer Bridge Program, Norman, OK.

Austin Burrus – OU – (1) undergraduate research assistant in graphine-inlayed polymers for use in high heat conductors; (2) Felger machinist in OU machine shop; (3) presented research at the American Society of Engineering Education (ASEE) conference in Seattle, WA.

Ana Chicas-Mosier – OSU – (1) WENTZ Research Scholar; (2) presented a research poster at the National Conference on Undergraduate Research, Spokane, WA; (3) presented research at annual Wentz Research Symposium, Stillwater, OK; (4) presented a research poster at the 21st Annual Research Symposium, Stillwater, OK: (5) completed B.S. degree (with HONORS) and accepted into a M.S. program at OSU.

Bree Cooper – OU – (1) summer internship with BP Oil in Anchorage, Alaska, in the contracts and procurement engineering—global operations division; (2) officer in several STEM related student groups.

Sharonda Carson – UCO – (1) presented research at Oklahoma Research Day, Tahlequah, OK; (2) accepted to present at the National Conference on Undergraduate Research, Spokane, WA; (3) presented research at the 20th Annual Research Symposium, Stillwater, OK; (4) participated in an REU in Turkey.

Natalie Ruiz Castillo – CU – (1) 2014-2015 Outstanding Senior; (2) top 20 student award at Cameron University; (3) inducted into Phi Kappa Phi (top 5% of graduating class); (4) awarded Who's Who Among Students in American Universities and Colleges; (5) participant in Cameron University Dance Team; (6) presented research at the National Weather Center, Norman, OK; (7) interned at the South Central Climate Science Center, University of Oklahoma, Norman, OK.

Maria Castaneda – TU – (1) presented research at the 2014 Joint Meeting of the 17th Annual Student Research Colloquium and the 12th Annual OU-Tulsa Research Forum, Tulsa, OK; (2) received Honorable Mention for her research poster on *Synthesis of Enaminones Utilizing Copper Catalysts*.

Andres Guerrero Criado – OSU – (1) spent six months in Grenoble, France on a research internship; (2) OSU nomination for the Goldwater Scholarship; (3) presented research at the Annual Research Symposium, Stillwater, OK; (4) presented research at the 2015 French American Workshop; (5) outstanding senior in the department of microbiology, OSU.

Lindsay Davis – LU – (1) represented Langston University at Oklahoma Research Day at the Capitol. She was one of 24 participants representing 18 Oklahoma colleges and universities; (2) presented research at Oklahoma Research Day, Northeastern State University, Tahlequah, OK; (3) completed the B.S. degree in Chemistry; (4) accepted into the graduate program at the University of Texas at Arlington.

Nicholas Davis – LU – summer internship with NASA, Ames Research Center, Mt. View, California.

Taylor Dismuke – LU – (1) completed requirements for the B.S. degree; (2) accepted into the graduate program at Texas State University for a Master's in Biochemistry.

Lisa Elizondo – OSU – (1) presented research at the National Conference on Undergraduate Research, Chaney, WA; (2) presented research at the Wildlife Society Western Conclave, Kingsville, TX; (3) oral research presentation at the Oklahoma Invasive Species Conference, Oklahoma City, OK: (4) oral research presentation at the Oklahoma Chapter of the Wildlife Society, Tulsa, OK; (5) poster research presentation at the OU/COS/SCO Joint Meeting, Estes Park, CO; (6) 2nd Place Poster Presentation Award, The Wildlife Society Western Conclave; (7) 2nd Place Student Oral Presentation Award, Oklahoma Invasives Conference; (8) received the Oklahoma Chapter of the Wildlife Society Undergraduate Scholarship; (9) received the American Ornithologists Union/Cooper Ornithological Society, Society for Canadian Ornithologists Joint Travel Award; (10) received the Oklahoma Ornithological Society Special Projects Grant; (11) served as The Wildlife Society President (leading the chapter to place 2nd overall at conclave, a regional academic and field skill competition; (12) completed two B.S. degrees (Biological Sciences and Natural Resource Ecology and Management: Wildlife Biology) and two minors (Spanish, Zoology) (13) accepted for a summer internship in North Dakota working on a grassland bird project; (14) received the Bridge to the Doctorate at LSU.

Joseph Michael Fields – LU – (1) presented research at the National Conference on Undergraduate Research, Chaney, WA; (2) accepted for a summer 2015 internship at University of Utah, Salt Lake City, UT.

Becca Funderburg – OU – (1) presented research at the American Geophysical Union Fall Meeting; (2) presented research at the OU Geology Department Undergraduate Research Symposium; (3) intern at NASA Goddard Space Flight Center, Greenbelt, MD, research topic: *Chemical Analysis of Planetary Materials.*

Jessica Gesell – CU – (1) presented research at Oklahoma Research Day, Tahlequah, OK; (2) presented research at the American Chemical Society National Conference, Fort Worth, TX; (3) presented both an oral and poster presentation at the National American Chemical Society meeting in Denver, CO; (4) accepted as an American Chemical Society Scholar.

Halina Garraway – LU – accepted for a summer internship with NASA AMES Research Center in Mt. View, California;

Rachel Grider – SE – presented research at the Oklahoma Research Day, Tahlequah, OK;

Marla Ichord – OSU – (1) conducted research during the academic year; (2) selected to participate in a special REU at Brookhaven National Labs in Upton, NY.

Ryan Johnson – LU – (1) completed requirements for the B.S. degree; (2) accepted a summer internship at Indiana University; (3) accepted into the graduate program at Louisiana State University.

Mary Jordan – LU – (1) completed requirements for the B.S. degree; (2) accepted into the professional program at Purdue's College of Veterinary Medicine

Laci LeFlore – SEOSU – presented research at the Oklahoma Research Day, Tahlequah, OK.

Abby Jessell – OSU – (1) accepted for a 2015 spring study abroad at Universidad Popular Autónoma del Estado de Puebla (UPAEP) in Puebla, México for ACE Certified GFI & Certified Nursing Assistant (LTC, HHA); (2) attended the national AISES Conference in Florida; (3) accepted to conduct research at the University of Utah with Dr. William Brazelton in the Center for Dark Energy Biosphere Investigations.

Geoffery Kibble – OSU – (1) presented research at Oklahoma Research Day, Northeastern State University, Tahlequah, OK; (2) presented research at the 31st Annual Space Symposium, Denver, CO; (3) presented research at the 2015 National SACNAS Conference, Los Angeles, CA; (4) participated in the Scholars in Science: Native American Path program; (5) one research article accepted for publication in the *SAE International* magazine; (5) completed B.S. degree requirements; (6) accepted employment with Edge Aerodynamixs in Florida; (7) enrolled in a Master of Science program at OSU.

Mason Linscott – TU – (1) Awarded the Graduate Research Fellowship Program (GRFP) award totaling over $132,000; (2) admitted to the University of Idaho graduate program; (3) one article in review for publication and one published.

LeMarcus Lott – LU – accepted for a summer internship with Michigan State University in their College of Veterinary Medicine.

Tajae Lloyd – LU – accepted for a summer internship with the Kansas State University SUROP program in Manhattan, KS.

Alex Lopez – OSU – (1) presented a research poster at the 4th Annual Water Conference, Stillwater, OK; (2) presented an oral presentation at the 2015 Clean Lakes and Watershed Conference, Stillwater, OK.

Alexus Mason – LU – (1) accepted for a summer internship with the Kansas State University SUROP program in Manhattan, KS.

Matthew Maxwell – SEOSU – (1) presented a research poster at Oklahoma Research Day, Tahlequah, OK; (2) accepted a summer REU experience on the Oklahoma State University campus in the College of Agriculture.

Quintin McAlester – OSU – (1) internship with inaugural Bridgestone Leadership Development Program; (2) invited to Bridgestone Nashville Experience; (3) job offer extended upon graduation.

Martell McKinney – LU – (1) completed requirements for the B.S. degree; (2) accepted into the graduate program at Binghamton University to study Chemistry; (3) awarded the Bridge to the Doctorate Fellowship

Nick Means – OSU – (1) spent six months in Grenoble, France on a research internship; (2) presented research at the 2015 French American Workshop; (3) member, OSU Marching Band.

Alejandra Mera – NSU – (1) completed the B.S. degree with honors in Biology from Northeastern State University; (2) chosen as outstanding scholar in the department of health and science professions; (3) presented a research poster at NSU Undergraduate Research Day; (4) presented a research poster at the American Society of Microbiology National Conference, Washington, D.C.; (5) invited to Germany to interview for a graduate school position at the Max Planck Institute; (6) accepted for graduate study in marine microbiology at the Max Planck Institute for Marine Microbiology in Germany.

Maeghan Murie – OSU – (1) received the prestigious **Udall Scholars Award;** (2) received third place at the 20th Annual Research Day at the Capitol. She was one of 24 participants representing 18 Oklahoma colleges and universities; (3) completed requirements for the NIBLACK Research Award, (4) WENTZ Research Scholar; (5) presented research at annual Wentz Research Symposium, Stillwater, OK; (6) President, American Chemical Society Student Affiliate Chapter at OSU; (7) two publications in refereed journals; (8) presented research at the OSU 3 Minute Thesis competition; (9) presented research at the 2014 APSA Regional Meeting, MD Anderson Research Center, Houston, TX; (10) received highest GPA Award in the Miss Indian Oklahoma Pageant Competition; (11) summer intern in the OU Health Sciences Center/Oklahoma Center for Neuroscience program.

Zach Mussett – OU – (1) presented research at the 2015 Society for Biomaterials Conference, Charlotte, NC; (2) presented research at the OU Graduate Research Symposium; (3) summer research with Dr. Sikavitsas at OU.

Autumn Only a Chief – OSU – (1) Participated in the SSNAP program; (2) attended the 2015 National SACNAS Conference in Los Angeles, California; (3) selected as the National Liaison for the OSU SACNAS chapter; (4) serving as the 2015 Miss American Indian for OSU; (5) student researcher for Eagle Adventure program for Native American families in Oklahoma; (6) summer internship in the Columbia University Public Health Scholars Program, New York, NY; (6) won "Up and Coming Leader of the Year" from the ONASHE conference.

Zach Ridge – OSU – (1) finalist OSU Three Minute Thesis competition; (2) received Outstanding Chemistry Student scholarship; (3) accepted for summer internship at Brookhaven National Labs, Upton, NY.

Katy Riojas – TU – (1) received the Goldwater Scholarship for 2015; (2) presented research at the 2014 Joint Meeting of the 17th Annual Student Research Colloquium and the 12th Annual OU-Tulsa Research Forum, Tulsa, OK; (3) Best Presentation in the Community Service Session of the 2014 Joint Meeting of the 17th Annual Student Research Colloquium and the 12th Annual OU-Tulsa Research Forum, Tulsa, OK; (4) member TU Women's Soccer Team.

Alexander Rivas – CU – (1) accepted summer internship with the National Institutes of Health Office of Minority Health and Research Coordination, NIDDK/DSRTP Program in Bethesda, Maryland; (2) presented a research poster at the NIH Poster Day Presentation ceremony; (3) presented research at Oklahoma Research Day, Tahlequah, OK; (4) Chemistry Club President; (5) member, National Chemistry Honor Society; (6) received the Undergraduate Research and Presentation Award at Cameron University for 2015.

Jaron Redman – OSU – (1) National Society of Black Engineers Academic Excellence Chair-OSU Chapter; (2) National Society of Black Engineers Community Excellence Chair-OSU Chapter.

Brooke Romine – OSU – (1) presented a research poster at the National Conference on Undergraduate Research, Spokane, WA; (2) presented research at Oklahoma Research Day, Tahlequah, OK; (3) received 3rd place for her first poster presentation at OSU Research Week.

Brooke Ryan – OSU – (1) Participated in the SSNAP program; (2) attended the 2015 National SACNAS Conference in Los Angeles, California; (3) student presenter for STEM programs at Stillwater High School events.

Adrian Saenz – OSU – (1) presented research at the 20th Annual LSAMP Research Symposium, Stillwater, OK; (2) Chosen as OSU's Mr. Hispanic for 2015; (3) received a summer internship at the University of Colorado-Boulder in Environmental Sustainability; (4) presented research at Oklahoma Research Day, Tahlequah, OK; (5) presented research at the 2015 National Conference on Undergraduate Research, Chaney, WA.

Natalie Santa-Pinter – TU – (1) TU "Top Ten Freshmen;" (2) TU Presidential Scholar; (3) Engineers Without Borders Outreach Coordinator; (4) TU Undergraduate Research Challenge Scholar; (5) Alpha Epsilon Delta National Health Pre-professional Honor Society (Vice President); (6) Mortar Board National College Senior Honor Society Historian; (7) Tau Beta Pi Engineering Honor Society; (8) President's Honor Roll; (9) presented at OK-LSAMP 20th Annual Research Symposium; (10)

presented at the TU Research Colloquium; (11) presented research at the National Conferences on Undergraduate Research in Chaney, WA.

Katie Schwartz – OSU – (1) participated in a study abroad program in Ecuador and Galapagos; (2) accepted into an internship program at the OSU Veterinary School.

Tyler Shannon – SEOSU – (1) presented research at the Oklahoma Research Day, Tahlequah, OK;

Nicholas Simon – LU – accepted a summer REU at Oklahoma State University, Stillwater, OK.

Aaron Simmons – OU – (1) presented a research poster at the 2015 Annual Biomedical Engineering Society, San Antonio, TX; (2) presented a research poster at the Oklahoma Center for the Advancement of Science and Technology (OCAST), Oklahoma City, OK; (3) accepted into the Accelerated Master's Program at the University of Oklahoma; (4) summer intern with Lyondellbasell in LaPorte, TX.

Chelsea Spencer – UCO – (1) one article accepted for publication in a referred journal; (2) presented research at Oklahoma Research Day, Northeastern State University, Tahlequah, OK.

Chase Tillar – ECU – (1) presented research at the ECU Honors Showcase; (2) inducted into Alpha Chi National Honor Society; (3) Student researcher Kerr Labs, Ada, OK; (4) ECU soccer club president.

Linzi Thompson – ECU – (1) received first place for her research poster at the 20st Annual Research Symposium, Stillwater, OK; (2) served as ECU Student Rotary Club President and the club received National Recognition for their work; (3) continued work at the Kerr Environmental Research Lab; (4) research projected for platform presentation at the National Environmental Health Association Conference in Orlando, Florida; (5) presented research at Oklahoma Research Day, Tahlequah, OK; (6) summer internship in Alaska; (7) keynote speaker in Nepal; (8) featured in the ECU Alumni Magazine.

Thong Than – ECU – Accepted into the graduate program in Medical Physics at the University of Cincinnati.

Katelyn Whittaker – OSU – (1) accepted a summer internship through the OSU School of Veterinary Medicine - Center for Veterinary Health Sciences summer Research Training Program; (2) presented a research poster at the 2015 National Merial Veterinary Scholars Program Conference on the University of California-Davis campus; (3) participated in the Scholars in Science: Native American Path (SSNAP) pre-conference workshop; (4) received the Native American Faculty and Staff Scholarship.

Gabrielle Williams – LU – (1) accepted for a summer internship with NASA AMES Research Center in Mt. View, California, with a rotation at Indiana University, Bloomington, IN; (2) received the NASA Oklahoma EPSCoR scholarship; (3) received a University of Texas

Southwestern Medical School internship; (4) dean's list; (5) elected Vice President, Scholar's Club.

Grant Williams – OSU – (1) participated in the Scholars in Science: Native American Path (SSNAP) program; (2) presented his research at the 41st National SACNAS conference in Los Angeles, CA; (3) received recognition at the SACNAS conference for his poster presentation; (3) first place OSU Research Week undergraduate oral presentations; (4) received second place for his research presentation at the American Meteorological Society's 13th Annual Conference on Artificial Intelligence in Phoenix, Arizona; (5) first place oral presentation, OSU Optimization Talk; (6) finalist, Undergraduate Three-Minute Thesis competition; (7) second place OSU Automation Society poster presentation; (8) serving as secretary of the OSU SACNAS chapter.

Danielle Wright – LU – accepted for a summer internship with NASA AMES Research Center in Mt. View, California.

Zach Zafar – OSU – (1) attended the GENI conference in Washington, D.C.; (2) research presentation at the GENI conference received third place recognition.

BD Fellow Highlights

The Oklahoma Bridge to the Doctorate program has received funding for seven programs, with Cohort I and II completed. 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. Cohort VI was awarded to the University of Oklahoma; Cohort VII was awarded to Oklahoma State University. Cohorts VI and VII began funding participants in fall 2013.

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 7 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. Cara Cowan-Watts is on course to complete Ph.D. requirements.

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. degrees.

Tomica Blocker – (1) continued to meet Ph.D. requirements and finish research project at OSU; (2) continued to take course work at the University of Kansas Medical School for a MD degree; (3) selected to participate in a program with President Obama.

Scott Fine – (1) continued to meet Ph.D. degree requirements, with anticipated completion of December 2015.

Jonathan Gonzales – (1) continuing with Ph.D. degree requirements; (2) teaching assistant for ECEN 3314 (Electronic Devices), OSU undergraduate engineering program; (3) Principal Investigator to an NSF grant for Small Business Innovation Research (SBIR).

Cody Pinkerman – (1) teaching assistant for aerospace engineering undergraduate programs; (2) Completed Ph.D. degree requirements, July 2015; (3) on course to complete Ph.D. requirements, summer 2015.

Zach Carpenter – (1) continuing to work toward Ph.D. completion, while working full-time in industry.

Cohort IV. The University of Oklahoma was awarded a Bridge to the Doctorate (Cohort IV) program to begin in the fall 2009 semester. Four Fellows completed Master of Science degree requirements and left the program for positions in industry.

Zachary Dunn – (1) continuing with graduate requirements; (2) completed course work and general exams, spring 2015; (3) summer 2015 internship with Raytheon, Dallas, TX; (4) presented research at the IEEE International Radar Conference, Arlington, VA; (5) presented research at the OU-Raytheon Research Day, Norman, OK; (6) presented research at the NATO Science and Technology Organization Specialists' Meeting on Waveform Diversity, Berlin, Germany; (7) presented research at the IEEE 57th International Midwest Symposium on Circuits and Systems, College Station, TX; (8) research submitted for review of presentation to the IEEE Transactions on Aerospace and Electronic Systems meeting, Fall 2015; (9) research submitted for review for presentation at the AMS Radar Meteorology Conference, Norman, OK.

Jason Kimmel – accepted employment as a Design Engineer at Flight Safety International, Tulsa, OK.

L. Meghan Liles – accepted into Physician Assistant program at the University of Oklahoma Center for Health Sciences, 2015.

Ryan Watley – continuing with Ph.D. graduate degree requirements.

Cohort V. Cohort V was awarded through the National Science Foundation as grant number HRD-1139824 for a two year period. Six Fellows were selected to begin graduate studies Spring 2012, two began Summer 2012, and four began in the Fall 2012 semester. Four Fellows completed Master of Science degree requirements and left the program for employment in industry

positions. One additional Fellow was selected to begin receiving funds July 2014. Nine Fellows continue to work toward Ph.D. degree requirements, though two (Marissa Rice and Josh McLoud) have transferred from OSU.

RaiAnna Paula Arscott Hopson – continuing with Ph.D. program requirements.

Nicole Bryant Parker – (1) continuing with Ph.D. program requirements; (2) presented at the 2014 Arabidopsis International Conference, Australia; (3) presented at the 2015 Arabidopsis International Conference in Paris, France; (4) article accepted for publication.

Eric Butson – continuing with Ph.D. program requirements.

Bill Jones – (1) continuing with Ph.D. program requirements; (2) Attended and presented his research at the 2015 Annual Meeting of Synergy in Science: Partnering for Solutions meeting in Minneapolis, Minnesota (3) presented research at the National American Society of Agronomy Conference in Long Beach, California; (4) article accepted for publication.

Daron "DJ" Lamkin – (1) continued with Ph.D. program requirements; (2) continuing part-time employment with Oklahoma City Public Schools as a STEM Mentor; (3) completed the M.S. degree in Entrepreneurship, December 2014; (4) received the 2015 Advisory Board Champion Award for his leadership with under-represented youth in the Oklahoma City Public Schools..

Josh McLoud – (1) received GRFP support; (2) completed M.S. degree requirements in December 2014; (3) transferred to Ph.D. program at the University of Tulsa.

Marissa Rice – continued to complete degree requirements for the Ph.D. at Cornell University.

Joseph Ross – completed requirements for the Master of Science degree in Medical Physics, July, 2015.

David Supeck – (1) participated in the Scholars in Science: Native American Path (SSNAP) program sponsored by the Society for the Advancement of Chicanos and Native American Students in Science; (2) attended the National SACNAS conference in Los Angeles, CA (3) served as OSU Student Liaison for the OSU SACNAS chapter; (4) featured in the Annual SACNAS report; (5) continuing with Ph.D. program requirements; (6) accepted to the OSU School of Osteopathy program.

Cohort VI. The University of Oklahoma received funding for Cohort VI Bridge to the Doctorate. Fellows in the program include:

Christina Bruxvoot – (1) continuing with M.S. degree requirements in Biochemistry; (2) presented research at the Computational Biophysics to Systems Biology Conference, May, 2015, Oklahoma City, OK.

Daniel Dixon – (1) completed the M.S. degree; (2) enrolled in the Ph.D. degree program in Chemical Engineering.

Robert Donatto – continuing with M.S. degree requirements in Electrical and Computer Engineering.

Jared Giem – (1) continuing with M.S. degree requirements by changing from Radiological Sciences to Mechanical Engineering; (2) transferring to Oklahoma State University; (3) one publication in the *Medical Dosimetry Journal.*

Josh Hardisty – (1) completed M.S. degree requirements in Geophysics, July 2015; (2) employed by Noble Energy, Houston, TX as a Geophysicist.

Kayla Love – continuing with M.S. degree requirements in Biochemistry.

Alex Moreno – continuing with M.S. degree requirements in Electrical Engineering.

Abigail Ntreh – (1) continuing with Ph.D. requirements in Biochemistry; (2) two publications; (3) presented a research poser at the 2015 Gordon Research Seminar: Multi-Drug Efflux Systems, Poster, Lucca (Barga), Italy, April 26, 2015; (4) made a second presentation at the 2015 Gordon Research Conference: Multi-Drug Efflux Systems, Poster, Lucca (Barga), Italy, April 29, 2015; (5) presented a research poster at the 2015 Keystone Symposia Conference: Gram-Negative Resistance, Tahoe City, CA, March 31, 2015; (6) presented a research poster at the 54th Interscience Conference on Antimicrobial Agents and Chemotherapy, Washington, D.C., Sept 6, 2014.

Allison Quiroga – (1) continuing with Ph.D. requirements in Civil Engineering; (2) one publication in conference proceedings: The International Foundations Congress and Equipment Expo 2015, San Antonio, TX; (3) One research presentation: The International Foundations Congress and Equipment Expo 2015, San Antonio, TX.

Cortes Williams – (1) Continuing with M.S. degree requirements in Bio-Engineering; (2) presented research at the 2014 BMES conference.

Sergio Zegarra – Continuing with M.S. degree requirements in Mechanical Engineering.

Jadith Ziegler – (1) Continuing with Ph.D. degree requirements in Microbiology; (2) presented research at the American Association of Cancer Research National Conference, Philadelphia, PA; (3) co-authored an article for publication in the *Free Radical Biology and Medicine* magazine (in press); (4) presented research as the Stephenson Cancer Center 2015 Cancer Symposium, Norman, OK; (5) presented at the 2015 OU Health Sciences Center GREAT Symposium, Norman, OK; (6) presented research at the Oklahoma Medical Research Foundation 2015 Research Retreat, Oklahoma City, OK; (7) 15th Annual Paul Kimmelstiel Graduate Student Award recipient for Excellence in Research and Presentation Skills Competition.

Cohort VII. Oklahoma State University received funding for Cohort VII Bridge to the Doctorate. Seven Fellows began in Fall 2013 and four began in 2014. One Fellow completed

degree requirements for the Master of Science degree and left for a position in industry, one Fellow left the program without completing degree requirements. An additional Fellow was selected to begin receiving support June 2015. Fellows in the program include:

Blair Baldridge – (1) completed requirements for a M.S. in Electrical and Computer Engineering, July 2015; (2) submitted research presentation to the 2015 Conference on Acoustic Research Applications, Chicago, IL; (3) seeking employment in industry.

Brandon Burgess – (1) completed M.S. degree requirements December 2014; (2) accepted employment in industry.

Gregory Cook – (1) continuing to meet program requirements for the Ph.D. in Biomedical Sciences with an emphasis in immunology; (2) presented research as Oklahoma Research Day, Northeastern State University, Tahlequah, OK; (3) presented research at 2014 Tulsa Research Day, (4) presented research at the 2014 ASCD/IFCB meeting in Philadelphia, PA; (5) presented research at the Frontiers in Neuroscience Conference Series, Laureate Institute for Brain Research; (6) presented research at the Society for Neuroscience 44th Annual meeting; (7) designed and implements an after school science program for elementary students entitled: *Way Cool Science Stuff*; (8) presented research at the Society for Neuroscience National Conference, Washington, D.C., 2015.

Joseph Dyer – (1) continuing with Ph.D. program requirements; (2) attended the Oklahoma State Fisheries Annual Meeting, Oklahoma City, OK; (3) received a $214,878 four-year grant to fund his doctoral research.

Jessica Sunny Evans – (1) continuing to meet program requirements for the Master of Science in Entomology; (2) transferring to GRFP funding in the same program.

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Brice Fiddler – (1) continuing to meet program requirements for a Master of Science degree in Civil Engineering.

Shelby Fraser – (1) continuing to meet program requirements for a Master of Science degree in Natural Resources, Ecology and Management; (2) received a scholarship from Friends of the Library for her essay on animal behavior; (3) participated in a study abroad program during the spring 2015 semester as part of her degree requirements; (4) only female president for the Collegiate Triathlete clubs of Oklahoma; (5) presented at the OSU 3-Minute Thesis competition.

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Jorge Lightfoot – (1) continuing to meet program requirements for the Ph.D. in Microbiology; (2) elected Vice President in the OSU SACNAS Chapter; (3) participated in the Scholars in Science: Native American Path (SSNAP) program; (4) attended the 2014 National SACNAS conference in Los Angeles, California and presented his research.

Milecia Matthews – (1) continuing to meet program requirements for a Master of Science in Aerospace Engineering; (2) received the American Association of University Women Fellowship for 2015; (3) accepted to present research in Paris, France.

Danielle Perryman – (1) selected to begin receiving BD support June 2015; (2) continuing to meet program requirements for the M.S. degree in Integrative Biology, with a minor in Avian Biology.

Allison Potts-Sherier – (1) participated in the Scholars in Science: Native American Path (SSNAP) program for the third year; (3) presented research at the 2014 SACNAS conference, Los Angeles, CA; (3) continued to foster and train "therapy" dogs; (4) continued with Ph.D. requirements.

Liz Zehren – (1) participated in the Scholars in Science: Native American Path (SSNAP) program; (2) attended the 2014 SACNAS conference in Los Angeles, CA; (3) served as the National Liaison for the OSU SACNAS Chapter; (4) attended staff development training and met Jim Morris; completed M.S. degree program requirements in Medical Physics; (5) accepted in the University of Texas – San Antonio Dosimetry program for Fall, 2015.

Former Scholar/BD Fellow Accomplishments

Scholars who have completed degree requirements, accepted employment in industry and/or continue with graduate programs are highlighted in Appendix O.

Wesley Co, (1) presenter at the 20th Annual Research Symposium, Stillwater, OK; (2) General Manager, Owens Corning; (3) completed degree requirements at the Harvard Business School.

Amber Douglas, was accepted into the medical program at University of Virginia, and waitlisted for the OSU School of Osteopathy.

Jacob Henderson, (1) CEO, H^2 Innovations, LLC; (2) instructor, OU engineering undergraduate courses; (3) Co-advisor, Sooner One Racing Team, University of Oklahoma; (4) four publications

Keely Redhage, began her graduate studies at the Mayo Clinic and was featured in the SACNAS Annual Report for her undergraduate commitment to the Scholars in Science: Native American Path program.

Cammi Valdez, (1) serving as Assistant Director of Undergraduate Research at Harvard University; (2) mentor to undergraduate students through the Office of Undergraduate Research and Fellowships (URAF).

Brett Walker, (1) co-founder and CEO of *Electroninks*; (2) Kickstarter video raised over $300,000; (3) completed Ph.D. at the University of Illinois, May 2014; (4) served as keynote speaker at the 20th Annual Research Symposium, Stillwater, OK; (5) named *30 Under 30 in Manufacturing and Industry* in the January 2015 issue of *Forbes Magazine* for his design and development of a pen whose ink works as an electrical conductor, literally allowing people to draw

an electrical circuit on to a piece of paper; (6) opened manufacturing facilities for Electroninks in Austin, Texas.

Daniel Wilson, (1) released a voice-command game app "Mayday! Deep Space." This app is a unique mix of audiobook and video game designed for the iPad and iPhone; (2) writing a weekly comic book series and film scripts.

STAFF TRAINING AND DEVELOPMENT

OK-LSAMP support staff is an integral part of the program. Project staff continually seek professional opportunities. Highlights include, but are not limited to:

Susy Calonkey, OK-LSAMP Program and Bridge to the Doctorate Staff Coordinator left her positon in October 2014.

Mike Faneros, (1) OK-LSAMP Program and Bridge to the Doctorate Staff Coordinator accepted responsibilities in November 2014, replacing Susy Calonkey; (2) Program Associate in the Office of Undergraduate Research; (3) web developer, newsletter developer and deployment, program assessment, and OUR marketing and promotion; (4) workshop developer; (5) assistant coordinator--the Council on Undergraduate Research (CUR) conference and business meeting at the University of Oklahoma, Norman campus, June 2015.

Kay Porter, Program Manager, Oklahoma State University: (1) Co-Director for Scholars in Science: Native American Path (SSNAP); (2) served on the planning committee for the Oklahoma EPSCoR Women in Science Conference; (3) member, Oklahoma State University Native American Faculty and Staff Association; (4) council member, OSU Alumni Council and Alumni Leadership Council, representing the American Indian Alumni Association; (5) attended the 2014 NSF Louis Stokes Midwest Center for Excellence (LSMCE) conference, Chicago, IL; (6) assisted Dr. Jason Kirksey with presentation at the LSMCE conference; (7) judge for the 2015 FCCLA state competition, Stillwater, Oklahoma; (8) attended Oklahoma Research Day, Tahlequah, Oklahoma; (9) attended the National SACNAS conference in Los Angeles, CA; (10) served as a judge for poster presentations at the National SACNAS conference; (11) member of CASEnergy Coalition; (12) reviewer for 2015 NCUR conference proceedings book.

Fara Williams, Grant Coordinator, Oklahoma State University: (1) planning committee and presenter/volunteer counselor for Cherokee College Preparatory Institute (CCPI), college readiness activity sponsored by the Cherokee Nation Foundation for Cherokee Nation junior and senior high school students, July 2014; (2) facilitator, Oklahoma Project WILD and Growing Up WILD, Pre K-12 outdoor curriculum; (3) judge for the 2015 FCCLA state competition, Stillwater, Oklahoma; (4) attended the National Conference on Undergraduate Research, Spokane, WA; (5) attended Oklahoma Research Day, Tahlequah, Oklahoma; (6) participated as mentor for the Scholars in Science: Native American Path (SSNAP) program sponsored by the Society for the Advancement of Chicanos and Native Americans in Science; (7) attended the 2014 national

SACNAS Conference, Los Angeles, CA; (8) served as a judge for poster presentations at the National 2015 SACNAS conference; (9) served on the OSU Wentz Leadership Award committee.

EVALUATION PROCEDURES

Sandra Whalen, Director for the Center for Institutional Data Exchange and Analysis, located on the University of Oklahoma campus, Norman, Oklahoma, served as the OK-LSAMP outside evaluator for the Oklahoma Louis Stokes Alliance for Minority Participation program.

APPENDIXES

APPENDIX A

AWARD RENEWAL

OSU Division of Institutional Diversity awarded $3.4 million NSF grant for OK-LSAMP

Wed, September 24, 2014

The National Science Foundation has awarded a five-year grant totaling $3.4 million to Dr. Jason F. Kirksey with Oklahoma State University to further opportunities for undergraduate minority students to prepare for graduate school.

Kirksey, associate vice president of Institutional Diversity and associate professor of political science at OSU, is the principal investigator for the Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP). The alliance is a consortium of 11 universities that work together to develop programs aimed at increasing minority student involvement in higher education and other career goals. The OK-LSAMP program is housed in the OSU Division of Institutional Diversity.

The NSF grant will provide undergraduate minority students with opportunities to conduct research with faculty mentors, attend conferences, and prepare for graduate school. The current award is for the fifth phase of a program that works to increase the number of underrepresented minority students earning degrees in science, technology, engineering and mathematics (STEM) disciplines.

"We are proud and honored to receive this NSF grant, which enables us to continue increasing the number of underrepresented minority scholars in STEM at OSU, as well as across the state of Oklahoma" said Kirksey.

Kirksey will work closely with campus coordinators on each of the alliance campuses, along with each campus president to facilitate the success of current and future OK-LSAMP scholars. In addition to OSU, the alliance includes the University of Oklahoma, University of Tulsa, Cameron University, East Central University, Langston University, Southeastern OSU, Southwestern OSU, Northeastern State University, Northwestern OSU, and the University of Central Oklahoma. Currently, there are over 250 Scholars in the alliance, with approximately 90 at OSU.

OSU will be hosting the 20th Annual Research Symposium on Saturday, Sept. 27, on the OSU campus. Dr. Brett Walker, former OSU LSAMP scholar, will be the guest speaker along with Dr. A. J. Hicks, NSF program director. More than 200 alliance scholars will be presenting their research projects at the symposium. Click here to read additional details about this Saturday's Annual Research mposium.

APPENDIX B

HEED AWARD

Third year for OSU to receive the award.

The INSIGHT Into Diversity HEED Award, open to all colleges and universities throughout the U.S., measures an institution's level of achievement and intensity of commitment in regard to broadening diversity and inclusion on campus through initiatives, programs and outreach; student recruitment, retention and completion; and hiring practices for faculty and staff.

APPENDIX C

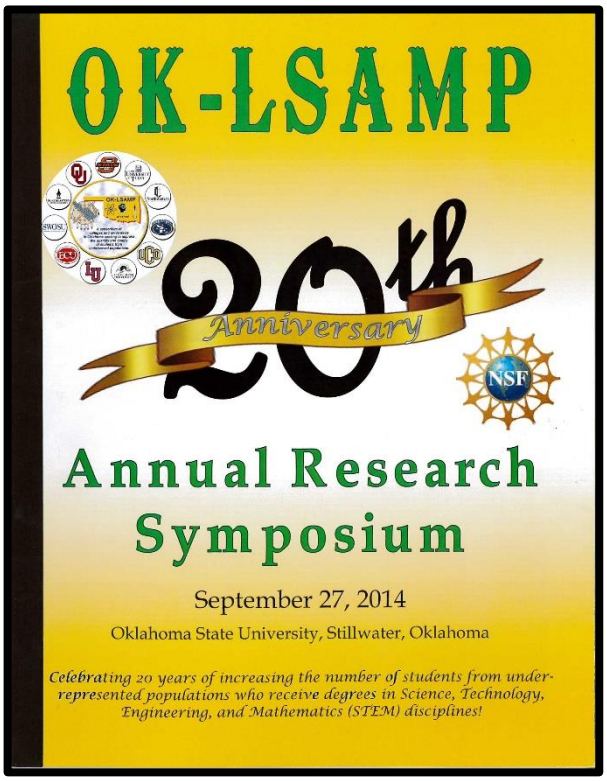
OSRHE SUMMER ACADEMIES

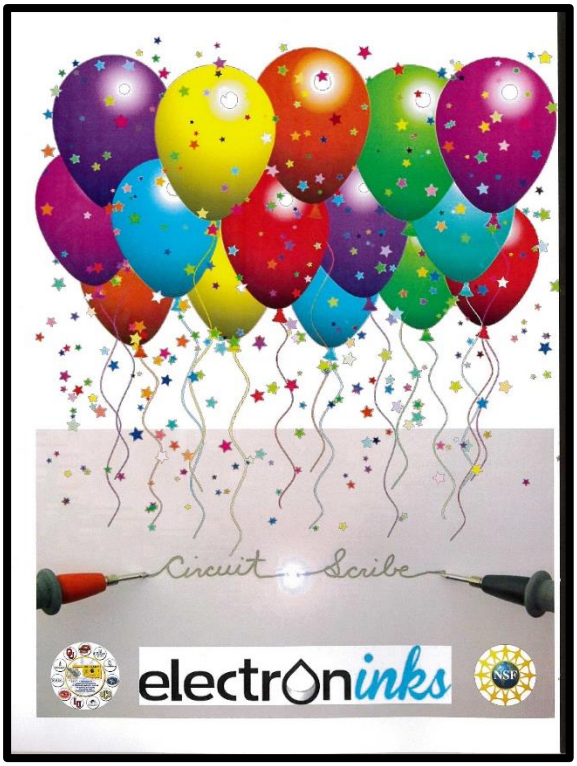

math • science • technology
SUMMER ACADEMIES
ZOOLOGY
BIOMEDICAL SCIENCES
AVIATION
ENGINEERING
DNA ANALYSIS
FREE!
for students in 8th-12th grade
Explore an Oklahoma college or university this summer FOR A UNIQUE, HANDS-ON LEARNING EXPERIENCE!
FOR MORE INFORMATION, VISIT
WWW.OKHIGHERED.ORG/SUMMER-ACADEMIES
OR CALL 1.800.858.1840.

APPENDIX D

20th ANNUAL RESEARCH SYMPOSIUM

Stillwater, OK

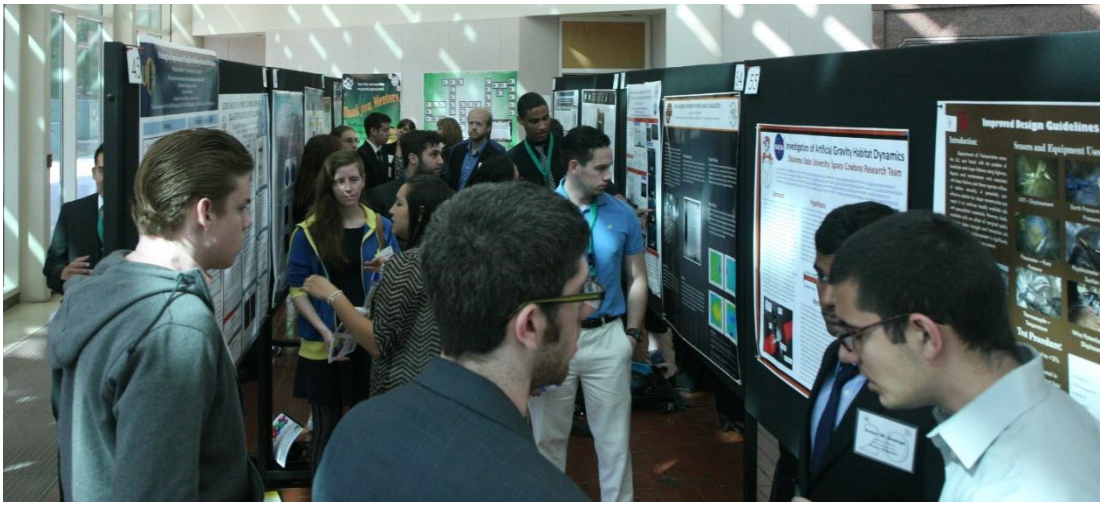

OK-LSAMP
20th
Anniversary
NSF
Annual Research Symposium
September 27, 2014
Oklahoma State University, Stillwater, Oklahoma
Celebrating 20 years of increasing the number of students from under-represented populations who receive degrees in Science, Technology, Engineering, and Mathematics (STEM) disciplines!


Circuit Scribe
electroninks
NSF

Dr. A. James Hicks, NSF Program Director, Dr. S. Brett Walker, Keynote, & Dr. Jason Kirksey, PI

Dr. Wesley Co, former scholar and Dr. Jason Kirksey, PI

Oklahoma Campus Coordinators, Dr. Earl Mitchell, former PI, & Dr. Hicks



Poster Presentations

Prize Winners

Posters

1st Place
Laura Asaro, ECU

1st Place
Linzi Thompson, ECU

2nd Place
Adrian Saenz, OSU

2nd Place
Chelsea Spencer, UCO

3rd Place
Alex Guerra, Peter George, and
Seamus Hunt, OU

Oral Presentations

1st Place
Katy Riojas, TU

2nd Place
Roosevelt Mathews, CU

2nd Place
Maeghan Murie-Harting, OSU

2nd Place
Cortez Williams, OU

3rd Place
Alex Moreno, OU

OK-LSAMP 20th Annual Research Symposium
TENTATIVE Agenda

08:00 AM - 09:30 AM	Video Loop	Alumni - Where are they now?	Room 106
08:00 AM - 11:00 AM	Registration Refreshments	ALL POSTERS MUST BE IN PLACE BY 10 AM Provided by DairyMax	1st Floor Atrium
09:00 AM - 09:30 AM	Welcome and Introductions	Kay Porter, OK-LSAMP Manager Jason F. Kirksey, PhD OK-LSAMP PI, Assoc VP for Institutional Diversity Gary Sandefur, PhD, Provost & Senior VP, Academic Affairs A. James Hicks, PhD, NSF LSAMP Program Director	Room 106
09:30 AM - 10:45 AM	Keynote Address	S. Brett Walker, PhD Co-Founder and CEO Electroninks, Inc.	Room 106
10:45 AM - 11:15 AM	Special Presentation	Celebrating 20 Years of Success A. James Hicks, Phd, NSF LSAMP Program Director	Room 106
11:15 AM - 11:20 AM	Announcements	Fara Williams, OK-LSAMP Coordinator	Room 106
11:20 AM - 11:30 AM		BREAK	
11:30 AM - 12:30 PM	Alliance Meeting	OK-LSAMP Administration, Campus Coordinators, and Invited Guests	Room 107
11:30 AM - 12:00 PM	NSF Q&A	A. James Hicks, PhD	Room 106
11:30 PM - 01:15 PM	Lunch	Klein's Catering, Perry, Oklahoma	1st Floor Atrium
12:15 PM - 01:15 PM	Poster Presentations	Presenters must be by their posters 12:15-1:15 PM	
01:15 PM - 01:30 PM		BREAK	
01:30 PM - 03:00 PM	Oral Presentations	*For Specific Times, See "Presentations at a Glance"*	
		Biological & Wildlife Sciences	Room 108
		Mechanical Engineering & Physics	Room 207
		Computer & Electrical Engineering	Room 216/218
		Biochemistry, Fire Protection, & Geoscience	Room 246
		Chemistry, Math, & Enviornmental Health Science	Room 348
03:00 PM - 03:30 PM	Awards Presentation	1st, 2nd, and 3rd Place Presentations Life Sciences Posters Engineering, etc. Posters Oral Presentations	Room 106
03:30 PM - 04:00 PM	Networking Social	Ice Cream Provided by DairyMax	1st Floor Atrium
04:00 PM - 04:15 PM	Closing Remarks	Jason F. Kirksey, OK-LSAMP PI	1st Floor Atrium

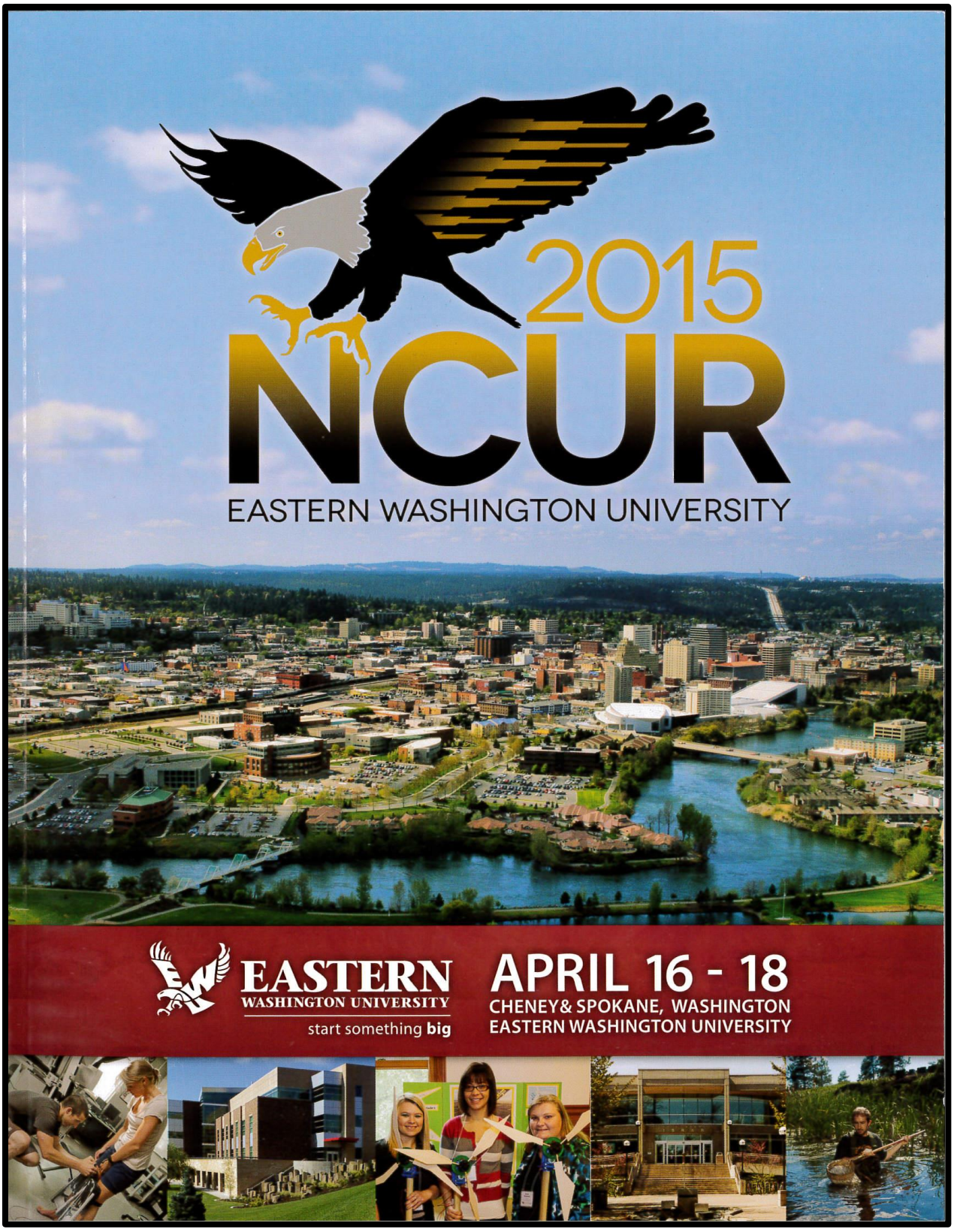
PLEASE VISIT ATRIUM TABLES THROUGHOUT THE DAY.

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

APPENDIX E

NATIONAL CONFERENCE ON UNDERGRADUATE RESEARCH (NCUR)

Chaney, WA


2015
NCUR
EASTERN WASHINGTON UNIVERSITY
EASTERN
WASHINGTON UNIVERSITY
start something big
APRIL 16 - 18
CHENEY& SPOKANE, WASHINGTON
EASTERN WASHINGTON UNIVERSITY

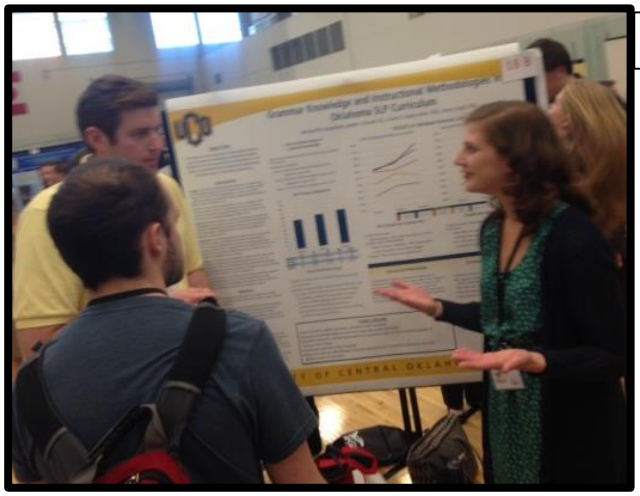
OK-LSAMP Scholars from Oklahoma State Univeristy, Langston University, Southwestern Oklahoma State University, and the University of Tulsa.

Front Row (Left to Right): Brooke Romine, Hannah White, Amber Washington, Evan Flanagan, Ashlyn Newsome, Tyler Autry, Lisa Elizondo, Matt Takyi-Micah
Second Row (Left to Right): Nicole Santa-Pinter, Matheus Barbosa, Jordan Hoyt, Adrian Saenz, Joseph-Michael Fields, Kevin Vo, Ana Chicas Mosier, Ryan Martinez, Zoe Austin, T.J. Johnson, Jonathan Aston, Nicole Davalos, Michael-Joseph Fields

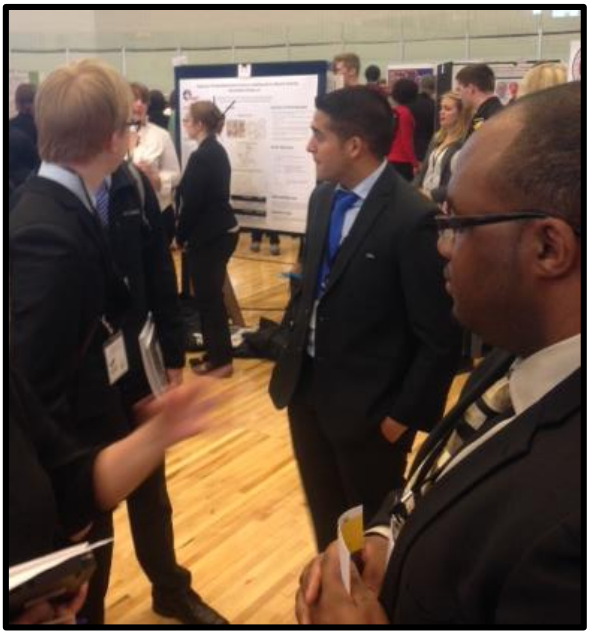
Joseph-Michael Fields, LU; Brooke Romine & Hannah White, OSU

Matheus Barbosa, OSU

Joseph-Michael Fields, LU
Matt Takyi-Micah, OSU



UCO Student



Adrian Saenz, OSU
Tyler Autry, OSU

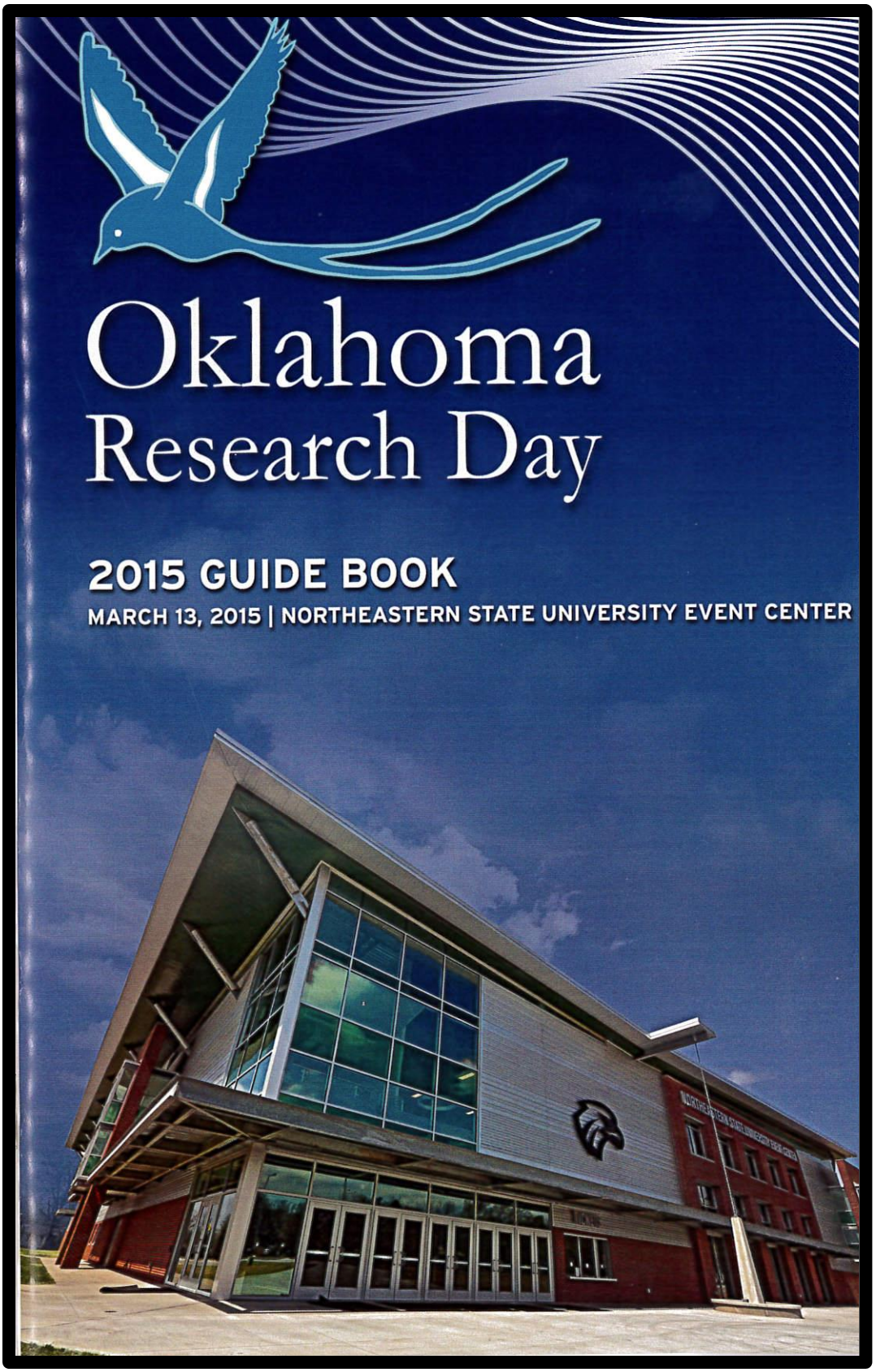
NCUR 2015, Cheney, Washington, Oklahoma Presentations

		Presenter Name	Presentation Title	Presentation Type	Time of Presentation	Location of Presentation
1	1	Matheus Barbosa - OSU OKAMP Scholar	Optimizing Dependency of Inexpensive Pressure Sensors	Poster	Thursday 11-12:20 pm	Tripod 40 Side C
2	2	Evan Flanagan - OSU OKAMP Scholar	The Affects of a Dynamic Fatigue Protocol on the Leg Extensors...	Poster	Thursday 11-12:20 pm	Tripod 30 Side B
3	3	Jacob Yerton - NSU OKAMP Scholar	Dietary Restriction Reduces Cancer in a Drosophila Model	Poster	Thursday 11-12:20 pm	Tripod 25 Side B
4	4	Michael-Joseph Gorbet - SWOSU OKAMP Scholar	New Ethylene Cross-bridged and Side-bridged tetraazamacrocycles featuring...	Poster	Thursday 11-12:20 pm	Tripod 31 Side A
5	5	Tina Nguyen - OU	Self-Sacrifice in Cultures of Honor	Poster	Thursday 11-12:20 pm	Tripod 47 Side A
6	6	Ryan Martinez - TU OKAMP Scholar	Antitumor Activities of Actinomycetes Isolated from Extreme Environments	Poster	Thursday 11-12:20 pm	Tripod 17 Side A
7	7	Brian McKinney - UCO	Allsoun in "The Miller's Tale:" A Fourteenth Century Image of a Third Wave...	Oral	Thursday 11:20-11:40 am	Senior Hall 302
8	8	Seth Hiddink - UCO	All About the 3-Point Kick	Poster	Thursday 12:30-1:50 pm	Tripod 2 Side C
9	9	Jessica Sanders - UCO	A Statistical Analysis of the Last 78 Years of the Heisman Trophy	Poster	Thursday 12:30-1:50 pm	Tripod 34 Side B
10	10	Ariel Webb - UCO	A Statistical Analysis of the Deterioration of Cartridge Cases	Poster	Thursday 12:30-1:50 pm	Tripod 46 Side A
11	11	Wenxi Zeng - UCO	Studying the Impact of Smartphone Sensor Sampling Rates on Battery Power...	Poster	Thursday 12:30-1:50 pm	Tripod 24 Side A
12	12	Jonathan Aston - TU OKAMP Scholar	Designing a More Efficient and Safer Robot to Help Children at the Little Light...	Oral	Thursday 12:30-12:50 pm	Patterson Hall 149
13	13	Jami Mumford - UCO	A Twisted Garden of Eden: Intertextuality in Nathaniel Hawthorne's...	Oral	Thursday 12:50-1:10 pm	Senior Hall 302
14	14	Danielle Stoneberg - UCO	Understanding Global Trends in Methamphetamine Trafficking and Production	Oral	Thursday 12:50-1:10 pm	Patterson Hall 241
15	15	Joseph-Michael Fields - LU OKAMP Scholar	Algae: The Key to Unlocking Multicellularity	Oral	Thursday 1:10-1:30 pm	Comp & Eng 107
16	16	Nicole Davalos - TU OKAMP Scholar	Detection of Plant Viruses Infecting in Field Crops in Oklahoma	Oral	Thursday 1:10-1:30 pm	Comp & Eng 204
17	17	Natalie Santa-Pintar - TU OKAMP Scholar	P27's Role in Cancer Therapy	Oral	Thursday 2:05-2:25 pm	Comp & Eng 231
18	18	Madison Castelli - UCO	Relabeling YAL: Finding the Postmodern Condition in Young Adult Literature	Oral	Thursday 2:05-2:25 pm	Senior Hall 304
19	19	Ana Chicas-Mosier - OSU OKAMP Scholar	Effects of Pollination...Composition on the Mating Success of *Valeriana edulis*	Poster	Thursday 2:05-3:25 pm	Tripod 28 Side A
20	20	Amber Washington - OSU OKAMP Scholar	The Impact of EMAP II on Fas Ligand and CD11c Expression by Dendritic Cells	Poster	Thursday 2:05-3:25 pm	Tripod 17 Side C
21	21	Kellyn Pollard - LU OKAMP Scholar	Bioinformatics of Amyloid Precursor Protein (APP) in Dementia	Poster	Thursday 2:05-3:25 pm	Tripod 35 Side A
22	22	Trokon Johnson - TU OKAMP Scholar	Evaluation of Rail Voltage Variation on Power Efficiency and Operating...	Poster	Thursday 2:05-3:25 pm	Tripod 44 Side B
23	23	Richard Smedley - NSU	Snoopy: Portable Software for Capture-Recapture Surveys	Oral	Thursday 2:25-2:45 pm	Comp & Eng 107
24	24	Lauren Ross - UCO	The Social and Cultural Significance of the Mbala Mask of the Yaka Society	Oral	Thursday 2:25-2:45 pm	Art Bldg 116
25	25	Benjamin Trabing - OU	Lightning Activity in 2014 Atlantic Tropical Cyclones	Oral	Thursday 2:45-3:05 pm	Patterson Hall 347
26	26	Tyler Tennant - OU	The War on Drugs and Power	Oral	Thursday 3:40-4 pm	Senior Hall 221
27	27	Lauren Ross - UCO	The Curiosity Cabinet: A Means of Social and Cultural Control	Oral	Thursday 3:40-4 pm	Art Bldg 116
28	28	Taimoor Khan - NSU	An Amperometric Biosensor for Glucose Determination Using ortho-nitroaniline...	Poster	Thursday 3:40-5:00 pm	Tripod 26 Side B
29	1	Stephanie Wooley - UCO	Thomas Hicks and Secretive Politics in 1861	Oral	Friday 11:20-11:40 am	Patterson Hall 248
30	2	Jami Mumford - UCO	The Answer is Yes: The Complexity of Jewish Identity in Philip Roth's...	Oral	Friday 11:40-12:00 pm	Senior Hall 304
31	3	Adrian Saenz, Tyler Autry, Kevin Vo - OSU OKAMP	Effects of Varying Organic Loadings on Bio-Sand Filter Performance	Poster	Friday 11-12:20 pm	Tripod 12 Side A
32	4	Jordan Hoyt - TU	Fabrication of Dome-shaped 0-3-0 PZT-Epoxy-MWCNT Composite Piezoelectric...	Poster	Friday 11-12:20 pm	Tripod 19 Side C
33	5	Haleigh Larkin - UCO	Lessons Learned: PhotoVoice as a Medium to Enhance Understanding Inequity...	Poster	Friday 11-12:20 pm	Tripod 28 Side B
34	6	Amanda Moore - UCO	From VC to Draft Dodgers: A Vietnam War Teaching and Traveling Trunk	Poster	Friday 11-12:20 pm	Tripod 15 Side A
35	7	Richard Smedley - NSU	Syntactic and Grammatical Structure in the Chatter of the European Starling...	Oral	Friday 12:00-12:20 pm	Patterson Hall 112
36	8	Brooke Romine - OSU OKAMP Scholar	*Chlamydia trachomatis* Manipulates Protein Kinase C During Infection	Poster	Friday 12:30-1:50 pm	Tripod 8 Side C
37	9	Melicent King - UCO	A Novel Google Glass Application to Guide Wheelchair Users in Achieving...	Poster	Friday 12:30-1:50 pm	Tripod 7 Side C
38	10	Ashleigh Veit - UCO	Identity Crises: The Challenge of a Having a Dream	Oral	Friday 12:50-1:10 pm	Senior Hall 302
39	11	Alexandra Raymond - UCO	Harmonies in Fiction and Nonfiction: Analyzing James Baldwin's "Sonny's...	Oral	Friday 1:10-1:30 pm	Senior Hall 302
40	12	Katherine Ross - NSU	Abundance and Activity Patterns of the Margay (Leopardus wiedii) and Ocelot...	Oral	Friday 2:05-2:25 pm	Patterson Hall 112
41	13	Ashlyn Newcomb - OSU AIIP Scholar	Generational Impact of Indian Boarding Schools	Poster	Friday 2:05-3:25 pm	Tripod 1 Side C
42	14	Hannah White - OSU OKAMP Scholar	*Wasmannia auropunctata* Invasion in Primary Forest, and ... Costa Rica	Poster	Friday 2:05-3:25 pm	Tripod 17 Side C
43	15	Azam Habibi - UCO	Accounting Statement Footnotes Contextual Association with Firm Financial...	Poster	Friday 2:05-3:25 pm	Tripod 18 Side C
44	16	Michael Humphries - UCO	Grammar Knowledge and Response to Instructional Methodology in SLP...	Poster	Friday 2:05-3:25 pm	Tripod 18 Side B
45	17	Nela Mrchkovska - UCO	Statistical Methods to Improve Accuracy of Predicting Traffic Fatalities in OK	Poster	Friday 2:05-3:25 pm	Tripod 32 Side B
46	18	Wenxi Zeng - UCO	A Complementary Training Method for Young Children with Sever Motor...	Poster	Friday 2:05-3:25 pm	Tripod 32 Side C
47	19	Elisa Elizondo - OSU OKAMP Scholar	Investigation of Free-ranging Domestic Cat Abundance in Stillwater, OK...	Oral	Friday 2:25-2:45 pm	Patterson Hall 112
48	20	Madison Doughty - UCO	Anti-Feminism in Sir Gawain and the Green Knight	Oral	Friday 2:25-2:45 pm	Senior Hall 304
49	21	Zoe Austin - OSU OKAMP Scholar	Cadmium Affects the Responsiveness of Zebrafish Shoals	Oral	Friday 4:20-4:40 pm	Comp & Eng 231
50	1	Matt Takyi-Micah - OSU OKAMP Scholar	Currents Induced by Cassiopea Jellyfish: Effects of Bell Size...	Poster	Saturday 8:30-9:50 am	Tripod 17 Side B
51	2	Kent Schmiedeberg - UCO	Social Conventions in Brave New World	Oral	Saturday 9:30-9:50 am	Patterson Hall 347
52		JC Diaz - TU OKAMP Coordinator	Sustaining a Multidisciplinary Undergraduate Research Community for Under...	Faculty FAN Session		
		Not Attending the Conference: Morgan James, LU; Mariah Penland, NSU; Tess Botkin, UCO; Rhonda Carson, UCO				

APPENDIX F

OKLAHOMA RESEARCH DAY

Northeastern State University
Tahlequah, OK


Oklahoma
Research Day
2015 GUIDE BOOK
MARCH 13, 2015 | NORTHEASTERN STATE UNIVERSITY EVENT CENTER

Scholars by School Presenting at Oklahoma Research Day

First Name	Last Name	School	Number of Presentations
Karisha	Jackson	CU	3
William	Johnson	CU	3
Alexander	Rivas	CU	1
Dominique	Thomas	CU	1
Laura	Asaro	ECU	2
Linzi	Thompson	ECU	2
Jasmene	Abernathy	LU	1
Lindsay	Davis	LU	1
Eugene	DeLoach	LU	1
Joseph-Michael	Fields	LU	1
Rashad	Hall	LU	3
Morgan	James	LU	1
Mary	Jordan	LU	1
TaJae	Lloyd	LU	1
Kellan	Pollard	LU	1
Tyler	Autry	OSU	1
Blair	Baldridge	OSU	1
Geoffery	Kibble	OSU	1
Brooke	Romine	OSU	4
Brooklin	Ryan	OSU	1
Adrian	Saenz	OSU	1
Kevin	Vo	OSU	1
Gregory	Cook	OSU CHS	1
Rachel	Grider	SE	1
Laci	LeFlore	SE	1
Tyler	Shannon	SE	1
Matt	Maxwell	SE	1
Mike	Morrison	SWOSU	1
Mary	Phillips	SWOSU	1
Ashley	Rodriguez	SWOSU	1
Rhonda	Carson	UCO	4
JeAnna	Redd	UCO	1
Chelsea	Spencer	UCO	2
Jessica	Webb	UCO	2
Totals			50


NORTHEASTERN
STATE UNIVERSITY
Oklahoma
Research Day 2015
OK-LSAMP
EXCELLENCE IN SCHOLARSHIP
DIVERSITY IN DEGREES
JOIN OUR
AT

APPENDIX G

RESEARCH DAY AT THE CAPITOL

Lindsay Davis –
Langston University

Maeghan Murie-Harting –
Oklahoma State University

Laura Asara –
East Central University

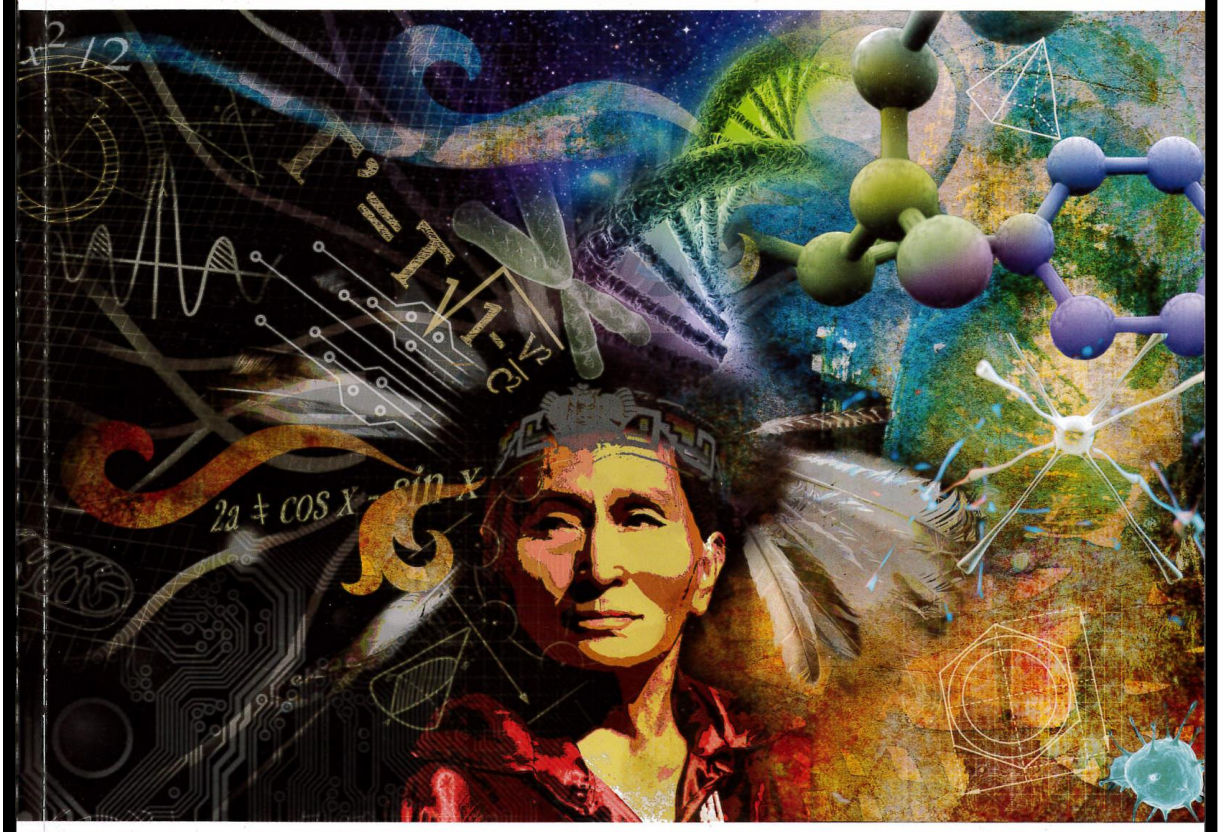
APPENDIX H

SOCIETY FOR THE ADVANCEMENT OF CHICANOS AND NATIVE AMERICANS IN SCIENCE (SACNAS)

Los Angeles, CA

SCHOLARS IN SCIENCE: NATIVE AMERICAN PATH (SSNAP)

2014 SACNAS CONFERENCE PROGRAM



Creativity, Vision, & Drive: Toward Full Representation in STEM

Los Angeles, California

October 16 – 18, 2014

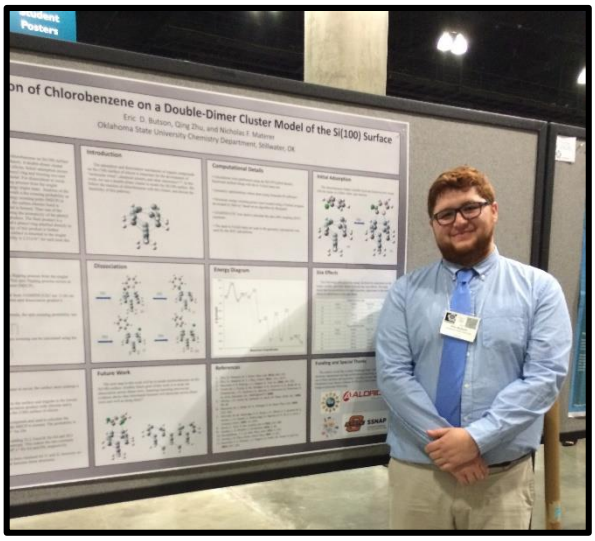
Scholars in Science: Native American Path (SSNAP)

L-R: Shane Morrison, Grant Williams, Amber Anderson

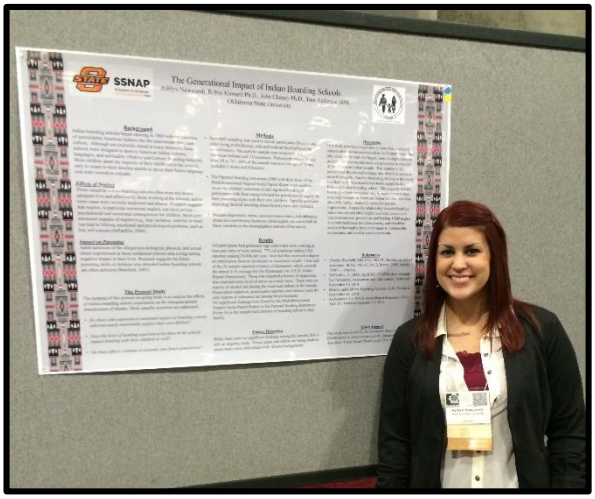
Three OSU students were honored for outstanding research presentations at the 41st Annual Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) convention held in Los Angeles, CA. Twenty-eight students from OSU, Langston and Northeastern State University participated in the Scholars in Science: Native American Path (SSNAP) program for the third year. The SSNAP program is a joint collaboration between OSU, OK-LSAMP and SACNAS.

Students traveling to the conference presented research posters, gave oral presentations,

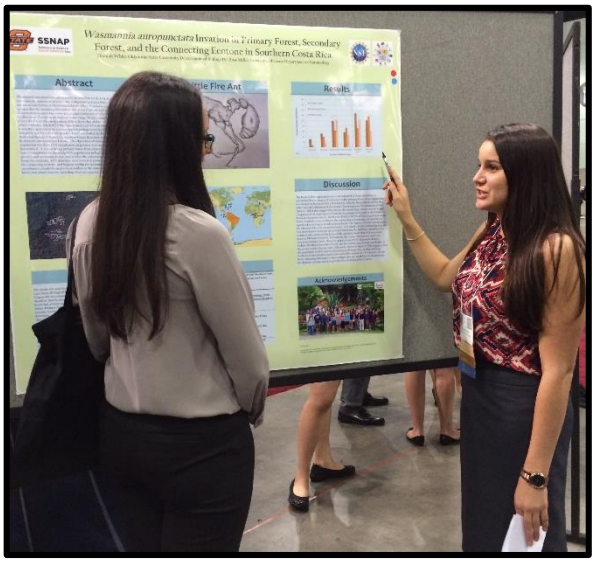
participated in seminars and visited with recruiters from industry and graduate schools.



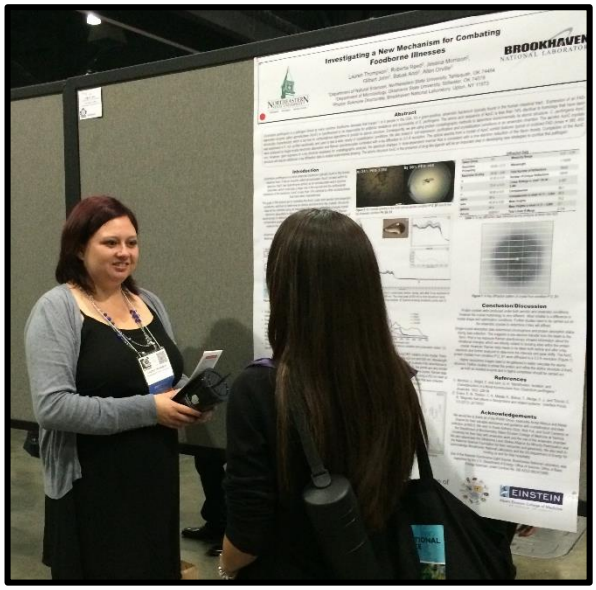
Eric Butson, Chemistry



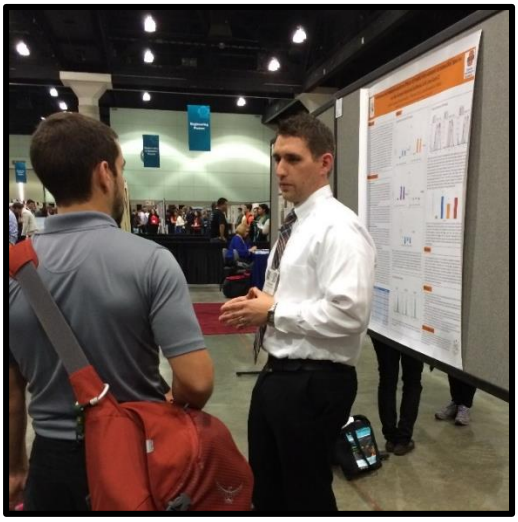
Ashlyn Newcomb, Psychology



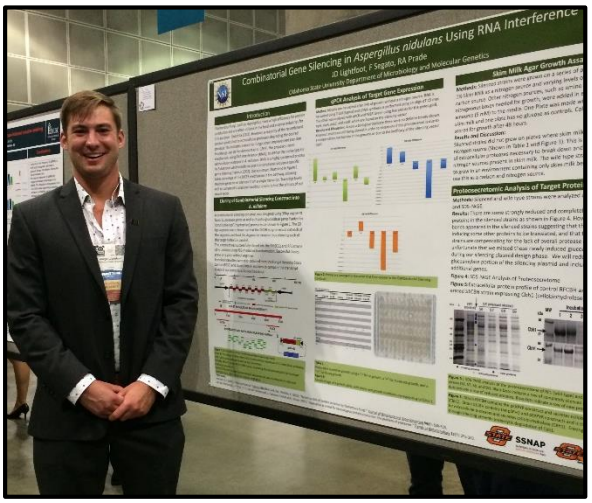
Hannah White, Biology



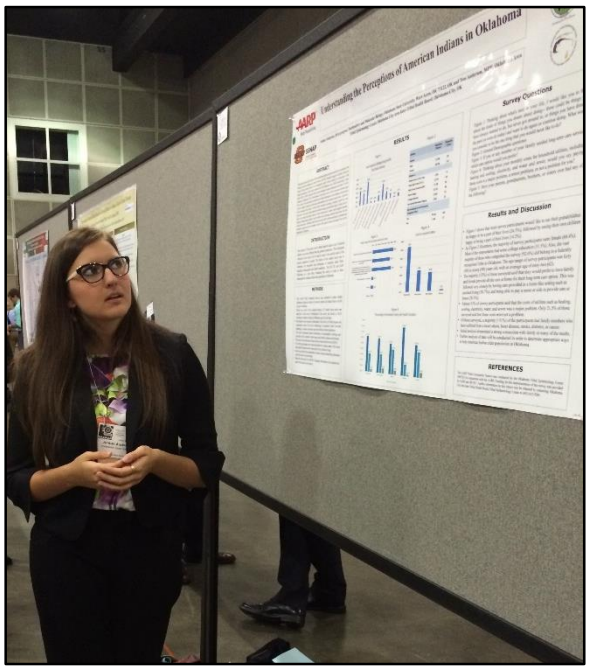
Lauren Thompson, Chemistry



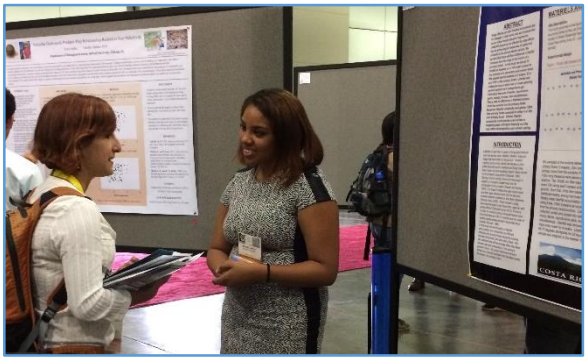
David Supeck, Biomedical Sciences



Jorge Lightfoot, Microbiology



Amber Anderson, Biochemistry



Morgan James, Chemistry

Andres Guerrero Crido, Caroline Vega Re, Geoff Kibble, Jessica Morrison, Shane Morrison, David Supeck

Grant Williams

PRESENTATION WINNERS:

Amber Anderson

Shane Morrison

APPENDIX I

WOMEN IN SCIENCE

Tulsa, OK

MABEE CENTER
Tulsa, Oklahoma

17th Annual Women in Science STEM Conference had to be rescheduled due to severe weather in Oklahoma. Over 600 high school girls and teachers attended the rescheduled conference on October 14, 2014.

OK-LSAMP Scholars served in support roles for the conference and as peer mentors for the high school girls in attendance.

The "Hands-On" exhibits were a highlight of the day's acivities. Exhibitors are on the following page.

2014 WOMEN IN SCIENCE CONFERENCE BOOTHS

BOOTH	ORGANIZATION NAME	TITLE OF BOOTH
1	TU - SUMMER TECHNOLOGY ACADEMIES	RECRUITMENT
2	COLLEGE OF THE MUSCOGEE NATION	A POLLUTION SOLUTION
3	KISS INSTITUTE FOR PRACTICAL ROBOTICS	SMART ROBOTS!
4	NOBLE FOUNDATION	NAILS FOR BREAKFAST
5	DYNAMIC EDUCATION SYSTEMS, INC	RECRUITMENT
6	OKLAHOMA AFTERSCHOOL NETWORK	POPSICLE MAN, LEARNING CENTER OF GRAVITY
7	IOTA SIGMA PI	ISP ASSEMBLING MOLECULES
8	SOUTHERN NAZARENE UNIVERSITY	COLORS IN LIQUID CRYSTALS
9	SOUTHERN NAZARENE UNIVERSITY RECRUITMENT	RECRUITMENT
10	GIRL SCOUTS WESTERN OKLAHOMA	THAUMATROPE, CREATING AN OPTICAL ILLUSION
11	K20 CENTER	EPSCOR GIS CITIZEN SCIENCE
12	SWOSU	SWOSU FOCUS ON STEM
13	SWOSU RECRUITMENT	RECRUITMENT
14	MUSEUM OF OSTEOLOGY	INVESTIGATING FORENSIC OSTEOLOGY & PATHOLOGY
15	OSU AMERICAN CHEMICAL SOCIETY STUDENTS	CHEMICAL REACTIONS FOR YOUR SENSES
16	UCO DEPARTMENT OF CHEMISTRY	RECRUITMENT
17	TULSA ENGINEERING ACADEMY AT MEMORIAL	TEAM EXPLORING WITH SNAP CIRCUITS
18	OSU BIOCHEMISTRY AND MOLECULAR BIOLOGY	EXPLORING THE CHEMISTRY OF LIFE
19	ASSOC. FOR WOMEN GEOSCIENTISTS, B.P.S.G.,OSU	INVESTIGATING THE ROCK CYCLE: FUN WITH CRAYONS
20	CAMERON UNIVERSITY PHYSICAL SCIENCES	SILLY PUTTY/CHEMISTRY; CHROMATOGRAPHY BUTTERFIES
21	CAMERON UNIVERSITY	RECRUITMENT
22	CAMERON UNIVERSITY	MATH PUZZLES AND GAMES
23	ROGERS STATE UNIVERSITY, OFFICE OF ADMISSIONS	RECRUITMENT
24	OSU ZOOLOGY GRADUATE STUDENT SOCIETY	A DAY IN THE LIFE OF A WOMAN ZOOLOGIST
25	OK-LSAMP	RECRUITMENT
26	OU CELLULAR & BEHAVIORAL NEUROBIOLOGY	HANDS-ON BRAIN ACTIVITIES
27	TULSA ALLIANCE FOR ENGINEERING	BERNOULLI AND PINWHEEL POWER!
28	TULSA ALLIANCE FOR ENGINEERING RECRUITMENT	RECRUITMENT
29	TULSA REGIONAL STEM ALLIANCE	SUPERCOMPUTER CHESS
30	TU, TANDY SCHOOL OF COMPUTER SCIENCE	RECRUITMENT
31	OSU CENTER FOR HEALTH SCIENCES	GET YOUR HANDS ON SOME BRAINS-NEUROSCIENTISTS DO!
32	OSU CENTER FOR HEALTH SCIENCES	INVESTIGATING FINGERPRINTS
33	OU - PROSPECTIVE STUDENT SERVICES	RECRUITMENT

34	OSU DEPARTMENT OF STATISTICS	HOW STATISTICS HELP IN OUR DAILY LIFE
35	US NAVY RECRUITING	RECRUITMENT
36	FAA--FEDERAL AVIATION ADMINISTRATION	MIKE MONRONEY AERONAUTIAL CENTER
37	OSU PLANT AND SOIL SCIENCES	SOILS AND THE NATURAL ENVIRONMENT
38	OKLAHOMA CITY UNIVERSITY	SOFTWARE ENGINEERING IN OCU
39	OKLAHOMA CITY UNIVERSITY	RECRUITMENT
40	OU HASKELL & IRENE LEMON CONSTRUCTION SCIENCE	EXPLORING THE BUILDING PROCESS
41	OCCC	RECRUITMENT
42	LANGSTON UNIVERSITY	SELF-WATERING RECYCLED PLANTERS
43	OSU COLLEGE OF OSTEOPATHIC MEDICINE	RECRUITMENT
44	OSU COLLEGE OF OSTEOPATHIC MEDICINE	STUDY HUMAN ANATOMY BY EXAMINING A HUMAN HEART/LUNG
45	UNIVERSITY OF TULSA - CHEMISTRY & BIOCHEMISTRY	RECRUITMENT
46	TULSA COMMUNITY COLLEGE BIOTECHNOLOGY	A CHANCE TO FEED, FUEL, HEAL AND CLEAN THE WORLD!
47	TULSA-NEO SOCIETY OF WOMEN ENGINEERS	VAN DE GRAAFF GENERATOR
48	TULSA-NEO SOCIETY OF WOMEN ENGINEERS	RECRUITMENT
49	UNIVERSITY OF OKLAHOMA COLLEGE OF ENGINEERING	RECRUITMENT
50	ORAL ROBERTS UNIVERSITY ENGINEERING PROGRAM	SPAGHETTI TOWER BUILDING
51	OSU DEPARTMENT OF PSYCHOLOGY	PSYCHOLOGY AS SCIENCE
52	LANGSTON UNIVERSITY	RECRUITMENT
53	UNIVERSITY OF OKLAHOMA MATHEMATICS	RECRUITMENT
54	UNIVERSITY OF OKLAHOMA MATHEMATICS	MATH IS FOR YOU!
55	OSU BIOSYSTEMS & AGRICULTURAL ENGINEERING	ICE CREAM FROM LIQUID NITROGEN
56	TBD	TBD
57 *by 65	OKLAHOMA PHYSTECH	OKLAHOMA PHYSICS TEACHER EDUCATION COALITION
58	OSU INDUSTRIAL ENGINEERING AND MANAGEMENT	DISCOVER IE
59	OSU COLLEGE OF ENGINEERING	RECRUITMENT
60	OSU INSECT ADVENTURE	INSECT ADVENTURE
61	OSU HORTICULTURE & LANDSCAPE ARCHITECTURE	BEANS, BEANS THE MAGICAL FRUIT
62	ROSE STATE COLLEGE	RECRUITMENT
63	TULSA TECH	IMPOSSIBLE DOMINO BRIDGE
64	TULSA TECH	RECRUITMENT
65	OKLAHOMA STATE UNIVERSITY OSUTEACH	RECRUITMENT
66	OSU NASA EDUCATION PROJECTS	TAKE FLIGHT WITH NASA AERONAUTICS
67	MURRAY STATE COLLEGE	DO YOU HAVE AN EYE FOR FORENSICS?
68	MURRAY STATE COLLEGE	RECRUITMENT
69	UNIVERSITY OF OKLAHOMA COLLEGE OF NURSING	RECRUITMENT

APPENDIX J

INDIGENOUS SCHOLAR DEVELOPMENT

Tribal membership, family ties research

Page 2

CPN Health Services adds Mammography Technologist

Page 6

Legislative update: January 2015

Page 9

HOWNIKAN

Kchemkogises / January 2015

People of the Fire

Oklahoma LSAMP Alliance promotes diversity in science, technology, engineering and math

Though generally muddled by talking points from both sides of the political spectrum, the focus on education in the U.S. continues to be both a vital political and economic issue impacting the country's future. In one small corner of that milieu reside individuals like CPN member Kay Porter.

The Bertrand family member has spent the past seven years as program manager for the Oklahoma Louis Stokes Alliance for Minority Participation, or OK-LSAMP, at Oklahoma State University. The program is housed within the Division of Institutional Diversity with Dr. Jason F. Kirksey, Vice President of Diversity serving as the Principal Investigator.

Consisting of eleven partner institutions in the state, OK-LSAMP focuses on developing programs that will increase the participation of students in the science, technology engineering and mathematics fields who are typically underrepresented in these disciplines.

Porter, who holds a BS in Trade and Industrial Education and an MS in Occupational and Adult Education from OSU, spoke with the *Hownikan* about her program's work in the first of this series.

Why is something like LSAMP important in Oklahoma? What populations in this state specifically are being targeted for the program?

"We focus on raising the participation of Native American, African American, Hispanic and Pacific Islander students majoring in STEM programs.

"It is important to increase the diversity of the work force throughout the nation, increase the number of college faculty and recruit talented students from a pool of previously untapped populations. Not enough underrepresented populations have been encouraged to pursue higher education degrees. In short, we need more mentors that students can identify with."

How does the program go about this practically?

"OK-LSAMP helps to close this gap by making students more aware of opportunities in STEM degree programs and the STEM workforce. Students are paired with a faculty mentor, learn to conduct research during the academic year, participate in summer domestic and international internships and prepare for graduate school.

"Students are considered scholars and are offered opportunities to present the research they have conducted at local, state, national and international conferences, usually without any expenses.

"By providing opportunities for students to interact with their peers, the program allows them to see firsthand what others are doing and how they are succeeding. In seeing this, it encourages them along the same pathways."

Are there parts of the program specifically geared towards Native Americans?

"One aspect of the OK-LSAMP program is the Scholars in Science: Native American Path Program, also known as SSNAP. This program, funded in part by the Society for the Advancement of Chicanos and Native Americans in Sciences, has taken 30 Native American students to three national conventions to present research posters and provide opportunities for networking among peers and faculty of like cultures."

How successful has OK-LSAMP been?

"There is a tremendous gap between enrollment and graduation rates among minorities in Oklahoma's colleges and universities. In fact Oklahoma has a lower probability rate of students completing degrees in STEM programs.

"Native Americans are 8.6 percent less likely, while Hispanics and African Americans are 5.3 percent and 14.4 percent (respectively) less likely to complete a STEM degree in four years than white students.

"Overall these underrepresented populations' enrollment in STEM higher education in Oklahoma grew from 1,325 in 1995 to 5,960 in 2013, an increase of 350 percent. This is due in large part to the OK-LSAMP program, which has received funding through the National Science Foundation for the past 20 years. NSF recently awarded Oklahoma $3.4 million to continue the program until 2019."

Have there been Tribal members that have been a part of the program?

"Laura Scott was an LSAMP scholar at OSU, completed her BS degree in 2011 and took a position at the Oklahoma Medical Research Foundation in Oklahoma City. She is leaving in January for Tulane University in New Orleans to start a Ph.D. program in Tropical Medicine and Epidemiology.

"Andrew Mock completed his BS degree from OSU in 2011, and is completing a Ph.D. at the University of Illinois and just received a grant from the National Science Foundation to study in France for a year. Andrew received grant funding that pays for three years of education costs, plus a monthly fellowship stipend, in the U.S. and for one year of study abroad in France.

"Zack Dunn completed BS degree requirements from OU in 2011 and is now working toward his Ph.D. at OU through the OK-LSAMP Bridge to the Doctorate Program.

"Jared Geim graduated from East Central University in 2013, and is now completing Ph.D. requirements at OU through the OK-LSAMP Bridge to the Doctorate Program. The Bridge program is the next phase of the OK-LSAMP program. In it, 12 scholars are selected nationwide to receive a two year stipend to attend graduate school. The Fellow is paid $2,500 a month for 24 months and receives $10,500 annually for two years for cost of education."

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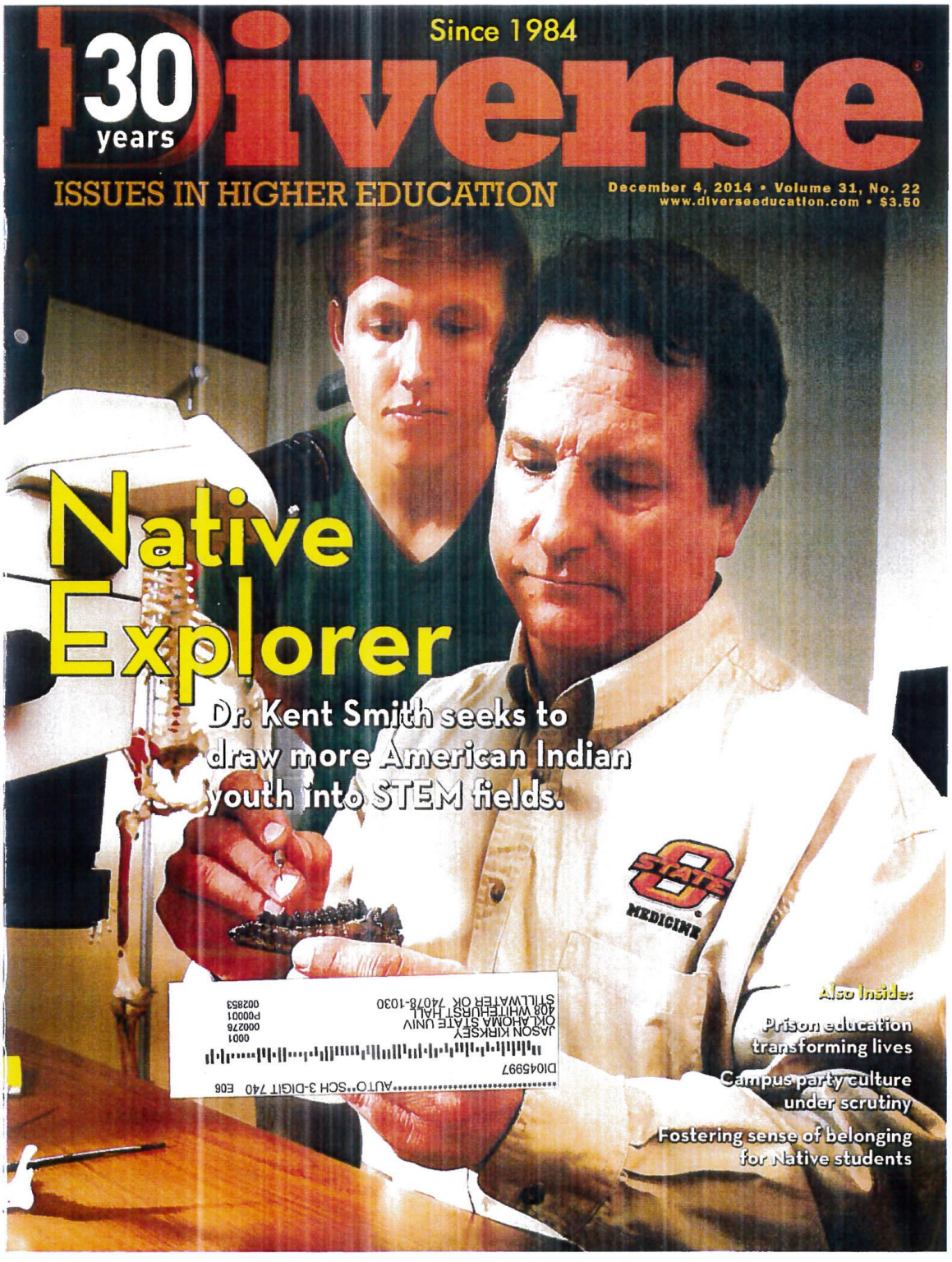
A New Breed of Warriors: Native American Students for Change

Hosted by
The Cheyenne & Arapaho Tribal College
&
Southwestern Oklahoma State University

SWOSU Campus—Weatherford, OK
February 20-22, 2015

Oklahoma Native American Students in Higher Education

O N A S H E 2015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Native Explorer
Dr. Kent Smith seeks to draw more American Indian youth into STEM fields.
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Prison education transforming lives
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Fostering sense of belonging for Native students

NATIVE SON

What do mythological stories from Native American tradition, ancient fossils and STEM mentoring have in common? They can all help propel Native American students to STEM careers, according to Dr. Kent Smith, dean of the recently created Office for the Advancement of American Indians in Medicine and Science at Oklahoma State University's Center for Health Sciences (OHU-CHS) in Tulsa, Oklahoma.

The office, which was formally created in March, is building a series of STEM development programs for the 39 federally recognized tribes of Oklahoma. Smith is the architect behind it, proposing the concept and now helping to get it off the ground by building on programs he has already created and furthering outreach to tribal communities across the state.

Dr. Kent Smith leads the Native Explorers participants this past May.

Oklahoma's population is 9 percent American Indian, but that population is highly underrepresented in the STEM fields.

American Indians from the national high school class of 2010 had a graduation rate of 51 percent — and only a tiny fraction went on to pursue STEM in college. In Oklahoma, the numbers are a little better, though still troubling. Oklahoma's high school class of 2010 graduated 63 percent of American Indian students, according to the National Center for Education Statistics.

"In my opinion, part of the problem for the lack of Natives in these disciplines is [that] there are no mentors," Smith says. Through engaging volunteers and the OHU-CHS community in his outreach efforts to the tribes, Smith hopes to provide mentors for Native students.

The lack of Native American students in STEM fields touches on another issue: Oklahoma has one of the lowest ratios of primary care physicians per 100,000 inhabitants, particularly in rural areas, where many Native people live. If more Native students choose to go into STEM and medical fields, that may help solve that imbalance, particularly if they decide to return to serve their communities postgraduation.

"Dr. Smith has done a phenomenal job working with the primary tribes, as well as the smaller tribes across the state," says Dr. William J. Pettit, interim senior associate dean of academic affairs at the College of Osteopathy at OSU-CHS.

By trade, Smith is a professor of anatomy, a profession he arrived at after first working as a veterinarian. An ornithology class inspired him to pursue a doctorate. "As I continued my career as a master's student and a Ph.D. student, I noticed there were really no other Native Americans in my classes," Smith says. "There were no Native American teachers or research scientists."

Smith's roots are deeply entwined with Oklahoma's tribal history: he is a member of the Comanche Nation, and has Chickasaw and Cherokee heritage. Smith realized he had a calling to give back — not just to the tribal entities that had helped him along the way to becoming a professor, but to all the tribes of Oklahoma.

"But to give back, you need to be successful and meet other people who are willing to support your ideas, financially, and also with other resources," Smith says. "So I kind of knuckled down, got through my Ph.D. program, and was lucky and got a tenure-track position."

Soon thereafter, Smith set to work designing a STEM pipeline that would be attractive to Native Americans.

One of the first programs Smith developed is Native Explorers, which was created in 2010. Native Explorers provides programming for Native Americans of all ages — K-12 students and adults.

"He's quite an educator. The kids love him," says Reggie Whitten, an Oklahoma attorney and co-founder of Native Explorers.

Program participants in the summer science and medicine expedition for students over the age of 18 sign up for a two-week excursion to paleontological dig sites, accompanied by Smith, scientists and volunteers. Activities start out at the OHU-CHS campus, where students meet medical students and physicians.

"The purpose of this two-week excursion is to not only introduce them to these fields and disciplines, but to open networks for them and to possibly inspire them to consider one of these disciplines as a career," Smith says.

At night, the participants build a campfire, around which they share stories, dances and songs from their respective cultures. Smith says he hopes that as students listen to stories and songs that have been in existence for generations upon generations, they will realize that tribes have always sought to explain the natural world around them.

"Native culture is wrapped around natural history," Smith explains.

Some of the tales are inspired by natural phenomena — explaining, for example, how the blue bird got its lovely blue color, or why the coyote is brown. The study of science is motivated by a similar impulse: the innately human impulse to understand and to know.

Smith's work is not prescriptive. Rather, he wants to introduce new possibilities to students.

"At the end of the day, I think we've succeeded if a Native student that didn't have a path goes into college and gets a college degree," Smith says. "They're going to be a better citizen. Even if it's a degree in history or English — they have improved themselves and now they can help to improve others of their tribes."

— Catherine Morris

PHOTO COURTESY OF OKLAHOMA STATE UNIVERSITY

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NEWS RELEASE
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Regents approve creation of OSU Center for Sovereign Nations; appoint director

(STILLWATER, Okla., March 6, 2015) - The OSU/A&M Board of Regents today approved the creation of the Oklahoma State University Center for Sovereign Nation Engagement and Partnerships. The center was made possible because of a generous gift from the Chickasaw Nation. The multidisciplinary center will report to the Office of the Provost and is expected to be a place of connection and relationship building among Sovereign Nation partners, students and faculty.

"As a land-grant institution, Oklahoma State University has an important role to play in creating initiatives to increase engagement and educational opportunities with members of all Sovereign Nations," said OSU Provost and Senior Vice President Dr. Gary Sandefur. "We hope this center will not only strengthen relationships between the university and Sovereign Tribal Nations, but will also increase the number of American Indian graduates from OSU."

OSU already is among the nation's leaders in N.A. graduates.

The center has a three-fold mission:

· Ensure that sovereignty of American Indian Nations is respected and recognized in the creation and implementation of initiatives across the OSU system

· Increase the number of American Indian graduates from OSU

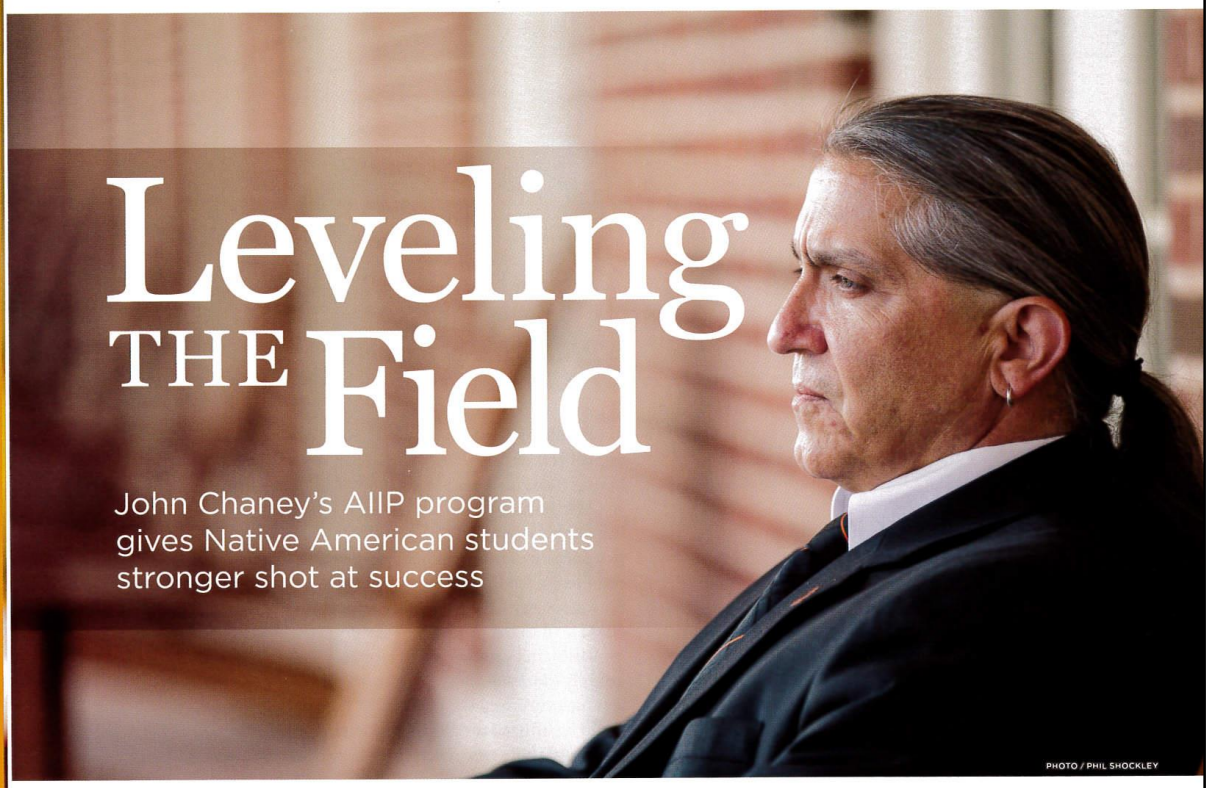
· Increase the number and quality of partnerships between OSU and Sovereign Tribal Nations

In addition to approval of the center, the Board also approved Elizabeth Mee Payne, J.D. to serve as the director. Payne currently teaches American Indian entrepreneurship and serves as the Riata Fellow for American Indian Entrepreneurship. She will leave her position as strategic relationship manager in the Spears School of Business to assume the role as director of the multidisciplinary center.

While the Chickasaw Nation is the first Sovereign Tribal Nation to partner with the university in this endeavor, it is expected additional tribal nations will join as future partners.

CONTACT: Carrie Hulsey-Greene | OSU Communications | 405-744-9081 | carrie.hulsey_greene@okstate.edu

Oklahoma State University is a modern land-grant university that prepares students for success. OSU is America's Brightest Orange. Through leadership and service, OSU is preparing students for a bright future and building a brighter world for all. As Oklahoma's only university with a statewide presence, OSU improves the lives of people in Oklahoma, the nation, and the world through integrated, high-quality teaching, research, and outreach. As America's Healthiest Campus, OSU is committed to the health and well-being of its students, employees and the community. OSU has more than 36,000 students across its five-campus system and more than 25,000 on its combined Stillwater and Tulsa campuses, with students from all 50 states and around 120 nations. Established in 1890, OSU has graduated around 255,000 students to serve the state of Oklahoma, the nation and the world.



Leveling THE Field

John Chaney's AIIP program gives Native American students stronger shot at success

PHOTO / PHIL SHOCKLEY

"It gave me not only an experience of what tribal behavioral health looked like but also provided networking opportunities."

—Tamara Newcomb

"I always knew that I would want to find a way to contribute back to Native people."

In 1997, John Chaney, Regents professor of psychology, launched the American Indians Into Psychology (AIIP) program at Oklahoma State University with the aid of a federal grant. Last fall, the Indian Health Services awarded OSU a $1.2 million grant to continue AIIP for another five years.

The AIIP is a unique opportunity for Native American students interested in psychology careers. It quickly blossomed in the late '90s and has become a well-oiled machine at OSU thanks to a collaborative — and largely volunteer — spirit within the Department of Psychology. The program's success is one reason OSU graduates the most Native American psychology doctoral students in the country.

Of course, its success took more than just financial backing.

"Just throwing money at the problem isn't the answer," Chaney says. "Preparing and giving them the mentoring experience that most students — but especially Indian students — don't have levels the playing field."

The AIIP at OSU works in two way: first, through graduate and undergraduate scholarships, and second, via an intensive summer enrichment program, which draws students from all over the country. Acceptance into the summer program is highly competitive and richly rewarding for those who attend.

"From the very beginning, it was geared toward making you successful," says Evan White, a current OSU graduate student in psychology. White applied for the program his junior year and soon after his acceptance, he received a surprising phone call.

"Preparing and giving them the mentoring experience that most students — but especially Indian students — don't have levels the playing field."

—John Chaney

An undergraduate mentor at OSU reached out to him to make sure he knew what to expect when he arrived.

Such proactive assistance flows from the faculty to the graduate students to the undergraduates. Those who have succeeded in the program often later volunteer their time and expertise to AIIP. Clinical psychology graduate student Victoria O'Keefe, who identifies with both the Cherokee and Seminole tribes, says this across-the-board collaboration makes OSU's program stand out.

"What was unique was I got a lot of information about how to get into graduate school from faculty and current graduate students, and I think getting that feedback definitely helped," O'Keefe says.

The AIIP Summer Enrichment Program is an intensive, five-week primer covering everything a student might need to know about succeeding as a researcher and how to prepare for graduate school. Many are accepted into graduate school at OSU, though that is not a requirement of the summer program nor does participation guarantee a student will be accepted at OSU.

As the program's prestige grows, competition heats up. Nearing its 20th year, the AIIP boasts an impressive list of graduates, including Tamara Newcomb, who serves as director of Behavioral Health Services for the Muscogee (Creek) Nation and on the AIIP advisory board. More than a decade removed from her time in the summer program, Newcomb credits the boot camp-style experience with shaping her path.

"The program helped me understand what I wanted to do," she says. "It gave me not only an experience of what tribal behavioral health looked like but also provided networking opportunities."

Those opportunities include meeting representatives from various tribes around the state, which is an invaluable portion of the program. Other portions include directives on creating a curriculum vitae, guidance in studying for the GRE, teaching how to give a presentation, providing mock interviews and requiring a small research study. Essentially, after spending five weeks in Stillwater, participants in the program are well-groomed for success as researchers and supreme graduate school candidates.

The goal in producing well-trained students is to eventually provide top-notch mental health care to under-served American Indian communities. With that in mind, Chaney requires candidates for the program to show how they have stayed connected with their tribes. O'Keefe, for instance, has been a competitive powwow dancer since she was 5 years old. In fact, she was Head Lady Dancer at OSU's Fall Contest Powwow two years ago.

"It's your identity and your culture," she says. "That was something my parents ingrained in me from a very young age."

By drawing students from all over the country and many different tribes, participants in the AIIP summer program also have a chance to share their experiences and learn about others. White recalls during his turn in the summer program, one student from New Mexico had grown up on a reservation and was able to speak her native language.

"That type of cultural involvement was something we all benefited from," he says.

The AIIP program has taken off at OSU because of interactions like that. Additionally, tremendous support from within the psychology department has greatly enriched the program. Faculty and graduate students volunteer their expertise. In fact, faculty members often ask Chaney about the candidates long before summer begins.

BRIAN PETROTTA

PHOTO PROVIDED

American Indians Into Psychology program director John Chaney (right) and graduate adviser Patricia Alexander (left) with OSU psychology graduate students who have participated in AIIP: (from left) Victoria O'Keefe, Sean Seabridge, Ashley Cole, Kristen Frosio, Ashleigh Coser and Trey Fogleman.

APPENDIX K

CAMPUS COORDINATOR / MENTOR

HIGHLIGHTS

During National Mentor Month, OK-LSAMP staff recognizes all the mentors for the countless hours of time spent with LSAMP Scholars.

Scholars also acknowledged their individual mentors by presenting them with a special acknowledgment.

Dr. Tim Hubin, Campus Coordinator
Southwestern Oklahoma State University

Oklahoma Foundation of Excellence Award

The award is given to 5 Outstanding Oklahoma Teachers. Dr. Hubin was chosen in the regional/community college area. He received his award and $5000 at the 29th Academic Awards Banquet, Tulsa, OK.

Dr. Jason F. Kirksey not only serves as Principal Investigator for OK-LSAMP and the Bridge to the Doctorate programs, he is also an associate professor of political science and Vice President for the Division of Institutional Diversity at Oklahoma State University.

Dr. Jason F. Kirksey, Principal Investigator presented during the 2014 Louis Stokes Midwest Center for Excellence (LSMCE) Conference in Chicago, IL.

2015 National Award Recipients

Following are the recipients of the 2015 National Awards administered by the American Chemical Society. Vignettes of the award recipients appeared in C&EN in early 2015. These recipients were honored at an awards ceremony on Tuesday, March 24, 2015, in conjunction with the 249th ACS national meeting in Denver, CO.

ACS Award for Encouraging Women into Careers in the Chemical Sciences

Sponsored by The Camille and Henry Dreyfus Foundation

E. ANN NALLEY
Cameron University

Award Citation: For her continued persistence and tireless efforts to level the playing field for women in chemistry and inspiring young women to seek careers in chemistry.

FELLOWS IN THE PRESS

Caltech was the setting for the induction ceremony of the 2014 Fellows of the National Academy of Inventors at the NAI's 4th annual conference, held this year on March 19 and 20. U.S. Deputy Commissioner for Patent Operations Andrew Faile provided the keynote address.

Faile and Paul R. Sanberg, president of the NAI, presented the 2014 class of Fellows with a trophy, medal and rosette pin honoring their accomplishments as inventors at a ceremony held Mar. 20, 2015, in the Beckman Auditorium at Caltech. More than 100 of the 170 top scientists and innovation leaders elected as 2014 Fellows were in attendance.

DANIEL RESASCO
University of Oklahoma

Douglas and Hilda Bourne Chair
George Lynn Cross Professor
School of Chemical, Biological and Materials Engineering

HEATHER FAHLENCAMP
Oklahoma State University
Associate Professor
School of Chemical Engineering

Featured on the cover:
OSU IMPACT Magazine

Honored with the Oklahoma Bioscience Association

2015 Researcher of the Year

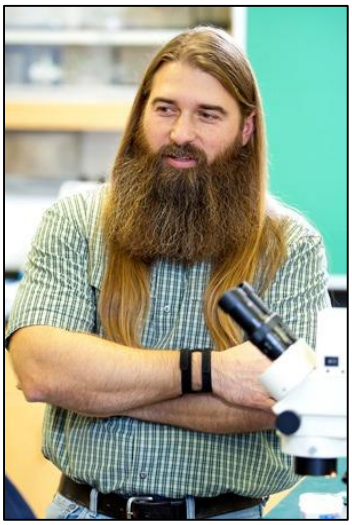
SYED HUSSAINI
University of Tulsa
Assistant Professor
Department of Chemistry and Biochemistry

Teacher of the Year

Dr. Hussaini received the 2014 Teaching Excellence Award in Recognition of Outstanding Achievement in Education. Hussaini teaches organic chemistry and investigates novel methods in organic synthesis. Tau Beta Pi is one of the oldest engineering honor societies and is the only organization that represents the entire engineering profession

CAMERON UNIVERSITY

2015 Faculty Hall of Fame



Michael Husak

Cameron University
Associate Professor
Biological Sciences
OK-LSAMP Campus Coordinator

According to 2013 Cameron graduate Alexandria Lamle, Dr. Michael Husak "truly has a passion for educating which, in my opinion, is far too rare in higher education." Many would agree. Husak has already been awarded teaching accolades, including the Cameron University Foundation's Hackler Award for Teaching Excellence, Cameron's highest faculty honor. He is also the recipient of the Bhattacharya Endowed Lectureship for Excellence in Research Award.

In her nomination on behalf of Husak, Lamle notes that he "played a pivotal role in my success." She also cited the level of investment that Husak demonstrates for his students, calling it unrivaled. "Dr.Husak is always pushing students to reach their full potential whether it be in the classroom or with independent research, and I believe that shows when you see what his former students have gone on to accomplish."

Husak himself says, "I feel that I have been fortunate in my 10 years at Cameron University in that I have been allowed to pursue my academic career in a manner that allows me to focus on my students and give back to the professional societies and the community that have contributed so much to me and my life."

APPENDIX L

SCHOLAR AND BD FELLOW

HIGHLIGHTS

OSU student named Udall scholar

Tue, April 07, 2015

Oklahoma State University student **Maeghan Murie** of Cleveland, Okla., has been selected as a Udall scholar, making her the recipient of one of the nation's most prestigious undergraduate awards.

Murie, a junior majoring in chemistry, biochemistry and molecular biology, joins the ranks of 14 former winners from OSU who received the scholarship, which awards up to $5,000 annually to defray the cost of undergraduate education while honoring the legacies of Morris and Steward Udall.

Murie was one of only 50 students selected this year from among 464 applicants nationwide for the scholarship, which is awarded to sophomores and juniors who excel in and plan to pursue careers that impact American Indian self-governance, health care, or the stewardship of public lands and natural resources.

Tim O'Neil, program coordinator of OSU Scholar Development and Undergraduate Research, congratulated Murie for her success in earning the award. "It is a very difficult task for any undergraduate and she did a fantastic job," O'Neil said. Murie's research mentor, Dr. Richard Bunce, is among the professors she credits for getting her involved. "I've seen her research capabilities grow," said Bunce. "Maeghan's driven and wants to present her research and always does a great job of it. She has been an excellent student." Murie's great-grandmother had Alzheimer's disease, and her experience with that neurological illness as well as her familiarity with the limitations at Indian clinics motivated her to apply for the research scholarship. "I want to help address the issues that I believe are restricting the health care system among these clinics," said Murie, adding, "my plans fit well with the intent of the Udall."

Eventually, Murie wants to perform biomedical research to develop treatments for different diseases of the nervous system. "I am just very thankful for this opportunity," she said. "It is very humbling because I know that there are a lot of great students and scholars out there who apply." Marshall Gover, president of the Pawnee Nation, applauded Murie's achievement: "If you're willing to go out and apply yourself and pay the price, you can achieve anything you want, and Maeghan is a good example of that."

TU student, alumni honored with NSF fellowship

March 31, 2015

The University of Tulsa is pleased to announce that five TU alumni and students have been awarded National Science Foundation (NSF) Graduate Research Fellowships for 2015.

Alumni John Eason (BS ’13) and **Thomas Linscott** (BS ’14) as well as TU graduate student Edward Lannon and seniors Caleb Lareau and Mitchell Trafford will receive NSF Graduate Research Fellowships in the amount of $138,000 each to pursue advanced degrees in science, technology, mathematics and engineering next fall. These individuals were selected from about 16,500 NSF applications.

Linscott earned a bachelor’s degree in biology from TU. He currently is studying evolutionary biology at the University of Idaho.

TULSA WORLD
SINCE 1905

TU soccer player Katy Riojas awarded Barry M. Goldwater Scholarship

Posted: Friday, April 3, 2015 12:00 am

By Staff Reports |

Tulsa women’s soccer player **Katy Riojas** has been awarded the Barry M. Goldwater Scholarship.

Riojas, a junior midfielder from Parkville, Missouri, maintains a 4.0 grade point average in mechanical engineering. On the field, she has played in 56 games, earned five starting assignments and tallied two assists.

The Goldwater Scholarship supports exceptional students who intend to pursue research careers in science, mathematics and engineering.

Riojas was selected on the basis of academic merit from a field of more than 1,200 students nominated by the faculties of colleges and universities nationwide. A total of 62 TU students have won Goldwater Scholarships since 1989.

Funding for Goldwater scholarships, which are valued at up to $7,500 a year, begins this fall. Since its first award in 1989, the Barry Goldwater Scholarship and Excellence in Education Foundation has bestowed 7,428 scholarships worth approximately $48 million.

The scholarship is named for former U.S. Senator Barry Goldwater, who spent 30 years in the Senate.

Amber Anderson, Evan Flanagan, and Liz Zehren received Native American stoles during the Native American graduation ceremony at Oklahoma State University.

Milecia Matthews, a Bridge to the Doctorate Fellow and graduate student in the School of Mechanical and Aerospace Engineering at Oklahoma State University, was awarded a Professions Fellowship through the American Association of University Women (AAUW).

East Central Scholar: **Linzi Thompson**

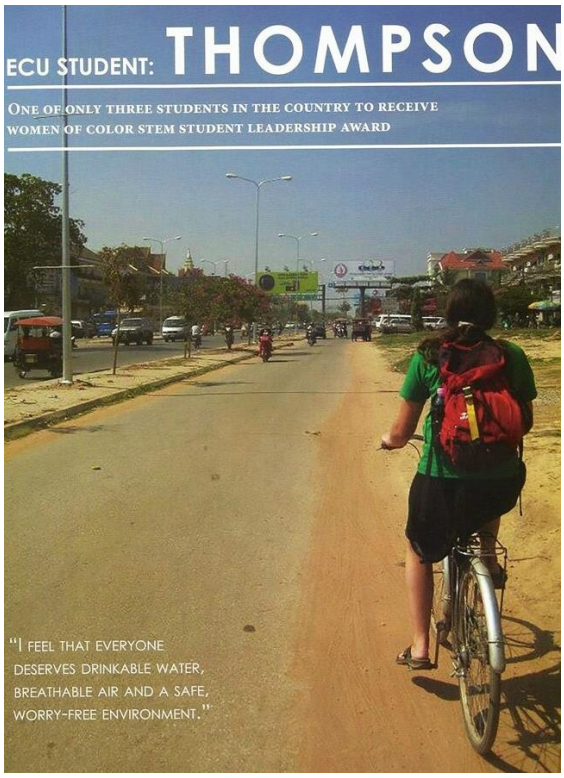
AEHAP
ASSOCIATION OF ENVIRONMENTAL HEALTH ACADEMIC PROGRAMS

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

May 5, 2015

Dear Linzi Thompson,

Congratulations! On behalf of the Association of Environmental Health Academic Programs (AEHAP) and the Centers of Disease Control and Prevention, we are pleased to inform you that your research submission has been accepted for a **platform presentation** at the National Environmental Health Association's Annual Educational Conference & Exhibition (NEHA AEC) held at The Renaissance Orlando at SeaWorld, Orlando, FL from July 12th to July 15th, 2015.



Growing up near the Chickasaw National Park in Sulphur only piqued the interest and love of science for East Central University senior Linzi Thompson.

Thompson spent her summers working in the Chickasaw National Recreation Area, gaining an appreciation for nature and the environment, as well as working with animals.

Her zest has led to pursuing a career in the environmental health science field and recently achieving a prestigious national award.

As a double major in environmental health science and chemistry with a minor in cartography, Thompson was one of only three students from across the United States who was recently selected for a Women of Color STEM (Science, Technology, Engineering and Mathematics) Conference Student Leadership in Research Award in Dallas.

Thompson, who is of Choctaw and Cherokee heritage, knew she was going to be a scientist at a young age, but didn't realize until later what direction she wanted to go in the field.

"It took me a while to figure out what I wanted to do, but I had a great interest in environmental health science and chemistry," she said.

Thompson credits her parents with developing her love of science. Her mother, Lisa, has a degree in civil engineering, and her father, Dennis, has always been involved with the outdoors and wildlife.

Thompson's passion is learning about environmental issues around the world and plans to pursue master and doctorate degrees.

"I would like to work on water problems in other countries and focus on the chemicals which might cause illness in drinking water," said Thompson. "I don't like the fact that people can get life-threatening diseases from drinking the water that we can't survive without.

"I chose to become an environmental health scientist so that I could protect human lives. While nursing and medical students save lives after people have been harmed, I chose to follow a career in environmental health science so that I may find and remove these hazards at their source, thus preventing damages such as illness and cancers from occurring. I feel that everyone deserves drinkable water, breathable air and a safe, worry-free environment."

While traveling to Cambodia and China Thompson enjoys teaching English. As Rotaract president she leads an effort to keep the streets of Ada clean.

Thompson is ECU's OK-LSAMP (Oklahoma Louis Stokes Alliance for Minority Participation) grant recipient for independent research. She is also a NASA National Space Grant College and Fellowship Program recipient.

Through sponsorship with these two programs, Thompson and ECU Professor of Environmental Health Science Dr. Guy Sewell have been involved in a research project titled "Column Study of Bio-electric Remediation of Nitrate and Perchlorate in Groundwater Systems."

This research project was presented at Oklahoma State University's OK-LSAMP Research Day, at the Oklahoma Academy of Science Technical Meeting, and at Research Day at the State Capitol this April 2014. Thompson was nominated for the research day presentation by Dr. Bruce Weems, dean of ECU's College of Health and Sciences.

"This award is a great honor for Linzi and for ECU. Linzi is an excellent student and has a strong commitment to her education and research projects," said Sewell. "She has a keen interest in environmental processes which will serve her as a researcher. She is a pleasure to work with and sets a very high standard for her fellow students."

Thompson has also co-authored an EPA article in the Petroleum Equipment Institute Journal called "Corrosion in USTs: What Causes It and What Can Be Done About It?" (2013, Volume 7, issue 3, third quarter 2013, pages 26-34).

This research was also presented at the National Tanks Conference in Denver in September 2013.

Her past research projects include "Hypoxic Air in Caves of the Arbuckle Mountains of South Central Oklahoma" while working with Stacy Blackwood in November 2012. The project was sponsored by the Arbuckle Karst Conservancy and was presented at the Oklahoma Academy of Science Technical Meeting.

She has also done voluntary research with the Arbuckle Mountains Grotto to study the region's karst aquifer system, the Arbuckle-Simpson Aquifer, and has worked through ECU as an Environmental Research Apprenticeship Program student worker at the EPA's Robert S. Kerr Environmental Research Center in Ada since April 2012.

On ECU's campus, Thompson is current president of the Environmental Health Science Club and Society of Wildlife and Ecological Biologists and is current secretary of the Chemistry Club and president of the Rotaract Club (Collegiate Rotary).

She has also served as an American Red Cross disaster representative for South Central Oklahoma and has completed over 60 volunteer hours with the Rotaract Club since January 2013.

Oklahoma State University Student Researcher Says Cherokee Traditions Propel Her to Study Disease Prevention

Amber Suena Anderson

STILLWATER, OKLAHOMA – Amber Suena Anderson's full name means "golden beyond tomorrow," and the Cherokee Nation citizen takes this meaning to heart.

"I've always felt like with my name, I have a responsibility to take care of those in the generations to come," Anderson said.

It is a philosophy she has refined and solidified during her five years as a biochemistry and molecular biology student in Oklahoma State University's College of Agricultural Sciences and Natural Resources.

The senior from Warr Acres, Oklahoma, said two things have impacted her the most as a student at OSU – undergraduate research and involvement with N.A. communities. She feels the two of these combined have transformed her into the individual she is today

.

Anderson said she is thankful to have found a unique way to weave her culture into her passion for science.

It is a traditional Cherokee belief to keep seven generations, both ahead of you and behind you, in mind for everything you do. She said this belief has encouraged her to serve as a mentor for other N.A. students at OSU through various roles such as Miss American Indian OSU and N.A. Student Association president.

Her platform as the 2012-2013 Miss American Indian OSU was to challenge more N.A. students to become involved in research. "I try to encourage N.A. students, especially in the science, technology, engineering and mathematics fields, to know not only what their potential is, but also the importance of them becoming involved in research and extra -curricular activities that will allow them to achieve things they never imaged they could before," Anderson said.

Her interest in N.A. health sparked as a child because her dad works in the public health field. Anderson, however, said her passion for research did not fully develop until her arrival at OSU. As a Freshman Research Scholar, she was placed in Patricia Canaan's research lab, and after her first semester, she was hooked. Canaan, associate professor of biochemistry and molecular biology, said Anderson's enthusiasm is contagious. "Amber is an excellent role model and ambassador for N.A.s and she has always represented the OSU Department of Biochemistry and Molecular Biology well throughout her multiple events and occasions," Canaan said. "We are excited to see how she succeeds in her future pursuits in public health." Numerous internships and summer research programs landed Anderson at places such as Harvard Medical School in Boston and Brookhaven National Laboratory in New York. But an experience closer to home last summer at the Oklahoma City Area Inter-Tribal Health Board confirmed her career path.

"In this position, I was treated as a young professional in the field as opposed to an intern," Anderson said. "I had the opportunity to help create a prescription drug abuse fact sheet that was distributed throughout the state, so in a sense, I felt like I was making an impact to many tribal communities and generations." During this internship, Anderson became involved in a research project about perceptions of N.A.s.

The study, sponsored by the Oklahoma Area Tribal Epidemiology Center and AARP, included a Tribal Community Survey to better understand the beliefs of American Indians/Alaska Natives living in Oklahoma. Anderson said the assessment provided information on the challenges and priorities in life, monthly expenses and consumer-related issues. "This research is unique because although there has been a lot of N.A. research in the past, there has hardly ever been a focus on the perceptions of N.A.s," Anderson said. "Stepping into the community and being submerged in the culture opened up great opportunities for gathering usable information."

Anderson presented this research at the Society for the Advancement of Chicanos and N.A.s in Science National Conference in Los Angeles last summer. SACNAS was founded more than 40 years ago by career academics and research scientists committed to unifying their voice and offering guidance to Hs, Chicanos and N.A.s in the STEM fields. The national conference is a gathering of nearly 4,000 students and professionals, and includes more than 1,000 poster presentations. Anderson has qualified to attend the conference since 2012. Her final conference as a student, however, will always be the most memorable because she received an outstanding poster presentation award. "This award is the highlight of my research career because I have poured so much of my heart into my research," Anderson said. "It was very rewarding to earn an award the last year I was able to go and to represent my university and academic college on a national platform." She feels her love for the topic felt like more of a conversation with the judges and participants instead of a formal poster presentation. "If you're passionate about something, it is very easy and fun to talk about it," Anderson said. "You long to share your knowledge with others."

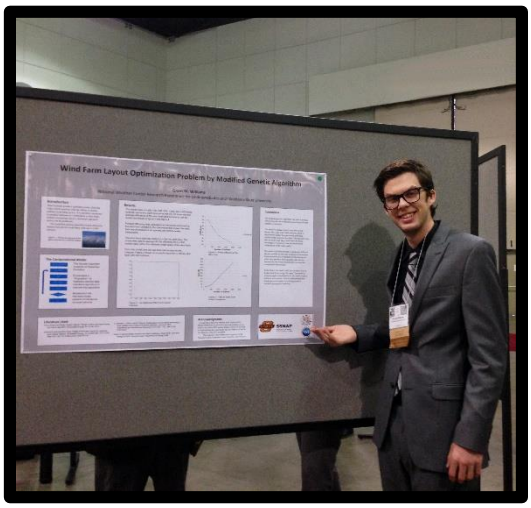
Anderson said being a biochemistry and molecular biology student has often been challenging, but she is thankful she stuck it out. "There were times when it was tempting to give up," she said. "The faculty in my department have all helped me and encouraged me on. I'm really glad I never gave up on my dreams."

John Gustafson, biochemistry and molecular biology department head, said having diverse leaders will be essential for the next generation of students, and he is confident Anderson will fulfill this responsibility. "The diversity in science including women is very scarce, and we must work toward decreasing this lack," he said. "How can we continue enhancing additional students that represent diversity if we do not have these people as role models? This is what makes Amber so unique. She is that role model."

Following graduation this May, Anderson will attend North Dakota State University to pursue a master's degree in public health with an option in American Indian public health. She hopes to then continue her educational journey to earn a Ph.D., while continuing to study infectious diseases. "With these degrees, I will work to improve the health of the Cherokee Nation and other tribal members by focusing on disease prevention and educational programs," Anderson said. "Someday I hope to have my own research lab focusing on just that."

BD Fellow**, Greg Cook**, Biochemistry at the Center for Health Sciences, conducted After School Science programs in the Tulsa Public School System for at-risk youth and their families.

REU Student Grant Williams Wins National Research Competition Awards



Oklahoma State University student Grant Williams received second place for his oral research presentation at the American Meteorological Society's 13th Annual Conference on Artificial Intelligence in Phoenix, Arizona earlier this month. The conference, held January 4-8, brought together computer scientists, climatologists, and meteorologists, with the goal of fostering collaboration between the groups, according to the conference's organizing committee. Williams's presentation outlined his innovative computer algorithm that optimizes the efficiency of land-based wind farms.

Williams, a junior from Tulsa studying physics and mathematics at OSU, is an OK-LSAMP Scholar and a member of the Cherokee Nation.

His research project was developed last summer through the National Science Foundation's Research Experience for Undergraduates (REU) program. The REU program allowed Williams to perform research on the University of Oklahoma campus in Norman.

This is the second award recently won by Williams for his REU research. In October he was one of ten students honored for his oral presentation in environmental science at the Society for the Advancement of Chicanos and Native Americans in Science national conference in Los Angeles.

Williams's faculty and staff mentors on the project were Renee McPherson, Associate Professor of Geography and Environmental Sustainability at the University of Oklahoma, and April Taylor, Sustainability Scientist for the Chickasaw Nation.

Williams says that the REU experience and the support of his mentors have helped him decide to pursue becoming a research scientist.

"The REU has really been opening doors for me and helping my chances of getting into a good grad school," said Williams.

The Oklahoma Experimental Program to Stimulate Competitive Research (EPSCoR) provided funding for Williams's participation in the NSF REU program. Daphne LaDue of the OU Center for Analysis and Prediction of Storms was the project coordinator.

BD Fellow, **Liz Zehren**, met Jim Morris during his presentation on the OSU campus. Liz is a huge baseball fan and has watched the movie based on his life several times.

Middle: **Darron "DJ" Lamkin**, *Class Matters, Inc.- Northeast Academy of Engineering*

BOARD ACTION

Oklahoma City Public Schools | Board of Education Newsletter

The Board of Education recognized the outstanding talent and leadership that is contained within the Oklahoma City Public Schools Career Academies Advisory Boards. The following members of the community were nominated by academy coordinators and were selected to receive the prestigious **2015 Advisory Board Champion Award** for exercising extraordinary leadership in ensuring all academy students have the opportunity to participate in work-based learning activities designed to prepare them for college and career success.

Rocky, a therapy dog, owned and trained by BD Fellow, Allison Sherrier, is sponsored by the Division of Institutional Diversity.

Expanding Capabilities

PHOTOGRAPHY / PHIL SHOCKLEY / UNIVERSITY MARKETING

New equipment gives students experience in digital fabrication

AT OKLAHOMA STATE UNIVERSITY, the School of Architecture established a new digital fabrication lab in the DONALD W. REYNOLDS ARCHITECTURE BUILDING last year, using a one-time allocation of student technology fee funds. This new hands-on digital fabrication equipment, consisting of 4-by-8 foot three-axis CNC MACHINES (COMPUTER NUMERICAL CONTROL), automated milling devices that make industrial components without direct human assistance, three 3-D printers, and a large-bed laser cutter, has been helping the school expand its digital design and fabrication capabilities.

"The digital fabrication tools were used by architecture students at the third-year level where they are introduced to building information modeling (BIM) as part of one of their required computer courses, ARCH 3262, an advanced computer class in conjunction with the third-year design studio work, which was coordinated with professor PAOLO SANZA," says AWILDA RODRIGUEZ, assistant professor at the School of Architecture.

The students became familiar with tools such as the CNC and the 3-D printer for digital fabrication prototypes through digital procedures and took on responsibility for the critical aspects of design.

Working on the physical model allowed the students to quickly grasp a sense of scale while they could explore all possible changes equally quickly in the virtual environment.

CONTINUES

LSAMP Scholar and Architecture major, Cameron Patterson

One of the successful projects created in the fabrication lab in the ARCH 3262 course was Museo Nazionale D'Arte Romana in Rome, created by CLARISSA HOSKISON, MICHAEL MUELLER AND DREW PHILIPS. The equipment helped them create a quality design, Rodriguez says.

With students getting the opportunity to build like professionals in the field, the School of Architecture received great feedback from students who are interested in more hands-on experience with design.

The new technology provides better opportunities and education for students, making it easier to move design ideas past the drawing and modeling phase and into full-scale mock-ups of products and architectural proposals.

"There's always a learning curve to new technology, but the new equipment works really well. Our shop manager, DAVID HORTON, has been instrumental in compressing the learning curve and helping me and others take full advantage of the technology in our classes and research projects," says NATHAN RICHARDSON, assistant professor in the School of Architecture.

Richardson is a part of an ongoing collaboration with the School of Entrepreneurship in the Spears School of Business and DR. CRAIG WATTERS, director of the Riata Center. In their course, they have been dealing with the issue of housing in very poor townships in South Africa, and it has expanded to the students' research, design and building prototypes. The new equipment allows them to fabricate physical studies from their digital drawings by cutting or scoring a range of materials such as paper, plywood and aluminum.

The students from this elective Entrepreneurship and Architecture course were successful with their projects, and their intent to create housing solutions for many places of need, including Africa, was worth it.

"The School of Entrepreneurship brought a delegation of entrepreneurs from Africa, and while they were here this spring, they toured our exhibition and the prototypes we created," says Richardson. Entrepreneurs suggested that these proposals could actually work well throughout Africa, and these facts led to the construction of at least two of the prototypes on campus for longer-term testing in the outdoor environment and possibly deploying them abroad in the future. The construction is going to happen this summer and hopefully help with the deployment in the next few years.

The new hands-on equipment has been a success not only for professors, who appreciate the new tools helping with preparing students for their future career, but also for the students, who welcome new learning technologies that gives them more experiences, a better understanding of equipment used in the real world, and higher chance to succeed in careers.

"It has infused our school with a new sense of possibility and enhanced our relationships with those outside of our discipline. It has fostered collaboration and been enjoyable," adds Richardson.

APPENDIX M

SCHOLAR AND BD FELLOW

PUBLICATIONS

MEGAN AYALA & ASHLIE WALKER - SWOSU

5. 1, 7-Dimethyl-1,4,7,10-tetraazacyclododecane complexes of Mn, Fe, Co, Ni, Cu, and Zn: Synthesis and characterization

By: Ayala, Megan A.; Walker, Ashlie; Hubin, Timothy J.

Source: Abstracts of Papers, 249th ACS National Meeting & Exposition, Denver, CO, United States, March 22-26, 2015, Pages: CHED-842, Conference; Meeting Abstract; Computer Optical Disk, 2015, CODEN: 69TQWW

Company/Organization: Department of Chemistry, Southwestern Oklahoma State University, Weatherford, OK, USA

Accession Number: 2015:473104, CAPLUS

Publisher: American Chemical Society, Washington, D. C

Language: English

Abstract

Tetraazamacrocycles have continued to accelerate in their importance as transition metal ligands for applications as diverse as catalysis, medical imaging, and environmental remediation in part due to their ability to make stable complexes with these metal ions. One important class of tetraazamacrocycles developed over the past two decades has been the ethylene cross-bridged tetraazamacrocycles, which form particularly stable transition metal complexes because of the rigidification of the bicyclic structure produced when bound to the metal ion. Once formed, loss of the ligand from the complex requires some flexibility for a nitrogen donor to dissoc. from the metal ion, which is more difficult once the macrocycle is rigidified by the short ethylene cross-bridge. However, recent publications have hinted that simple alkylation of two non-adjacent nitrogens of a tetraazamacrocycle may yield similar results in terms of geometric control and kinetic stability as cross-bridging. In order to test this idea, and to provide "control" ligands for direct comparison between cross-bridged tetraazamacrocycles and their unbridged analogs, we have prepd. the known unbridged ligand 1, 7-dimethyl-1,4,7,10-tetraazacyclododecane and its Mn, Fe, Co, Ni, Cu, and Zn complexes for comparison to previously published ethylene cross-bridged analog 4,10-dimethyl-1,4,7,10-tetraazabicyclo[5.5.2]tetradecane complexes with the same metal ions. The synthesis and characterization of these complexes and comparisons to their cross-bridged analogs will be presented.

DUSTIN DAVILLA - SWOSU

4. Transition metal complex dual CXCR4/CCR5 antagonists

By: Davilla, Dustin J.; Schols, Dominique; Archibald, Steve J.; Hubin, Timothy J.

Source: Abstracts of Papers, 249th ACS National Meeting & Exposition, Denver, CO, United States, March 22-26, 2015, Pages: CHED-960, Conference; Meeting Abstract; Computer Optical Disk, 2015, CODEN: 69TQWW

Company/Organization: Chemistry, Southwestern Oklahoma State University, Weatherford, OK, USA

Accession Number: 2015:473222, CAPLUS

Publisher: American Chemical Society, Washington, D. C

Language: English

Abstract

Chemokine receptors, together with their specific natural ligands, play a role in a no. of disease states. We propose to systematically synthesize and evaluate potential CXCR4/CCR5 dual antagonists based on our published potent transition metal complex CXCR4 antagonists and the only known dual CXCR4/CCR5 antagonist (whose potency is not desirably high against either receptor). Upon synthesis and chem. characterization, and with the help of collaborators, we will evaluate the antagonism of both CXCR4 and CCR5 in cell lines previously developed for such studies-with the results of these screens feeding back into the iterative re-design of addnl. dual antagonist complexes. Synthetic routes were developed extending side- and cross-bridged ligand syntheses to include dichloropyridine moieties to impart CCR5 activity on tetraazamacrocycles. Cu^{2+}, Ni^{2+}, Co^{2+}, and Zn^{2+}, complexes were synthesized. Electrospray mass spectra, UV-Visible spectra, cyclic voltammograms, and ^{1}H and ^{13}C NMR spectra were collected to characterize the complexes. The ligand synthesis of the dichloropyridine contg. ligands is more synthetically challenging than our typical Et cross-bridged ligands. However, single-macrocycle and bis-macrocycle ligands have been made. Complexation with the desired metal ions proceeded as expected. Characterization of the metal complexes is ongoing. While CXCR4/CCR5 dual antagonist tetraazamacrocycles are challenging to produce, once synthesized, metal ion complexation proceeds smoothly following known procedures. The resulting complexes will inform our understanding of the requirements for producing efficient CXCR4/CCR5 dual receptor antagonists.

DUSTIN DAVILLA -- SWOSU

4. Transition metal complex dual CXCR4/CCR5 antagonists

By: Davilla, Dustin J.; Schols, Dominique; Archibald, Steve J.; Hubin, Timothy J.

Source: Abstracts of Papers, 249th ACS National Meeting & Exposition, Denver, CO, United States, March 22-26, 2015, Pages: CHED-960, Conference; Meeting Abstract; Computer Optical Disk, 2015, CODEN: 69TQWW

Company/Organization: Chemistry, Southwestern Oklahoma State University, Weatherford, OK, USA

Accession Number: 2015:473222, CAPLUS

Publisher: American Chemical Society, Washington, D. C

Language: English

Abstract

Chemokine receptors, together with their specific natural ligands, play a role in a no. of disease states. We propose to systematically synthesize and evaluate potential CXCR4/CCR5 dual antagonists based on our published potent transition metal complex CXCR4 antagonists and the only known dual CXCR4/CCR5 antagonist (whose potency is not desirably high against either receptor). Upon synthesis and chem. characterization, and with the help of collaborators, we will evaluate the antagonism of both CXCR4 and CCR5 in cell lines previously developed for such studies-with the results of these screens feeding back into the iterative re-design of addnl. dual antagonist complexes. Synthetic routes were developed extending side- and cross-bridged ligand syntheses to include dichloropyridine moieties to impart CCR5 activity on tetraazamacrocycles. Cu^{2+}, Ni^{2+}, Co^{2+}, and Zn^{2+}, complexes were synthesized. Electrospray mass spectra, UV-Visible spectra, cyclic voltammograms, and ^{1}H and ^{13}C NMR spectra were collected to characterize the complexes. The ligand synthesis of the dichloropyridine contg. ligands is more synthetically challenging than our typical Et cross-bridged ligands. However, single-macrocycle and bis-macrocycle ligands have been made. Complexation with the desired metal ions proceeded as expected. Characterization of the metal complexes is ongoing. While CXCR4/CCR5 dual antagonist tetraazamacrocycles are challenging to produce, once synthesized, metal ion complexation proceeds smoothly following known procedures. The resulting complexes will inform our understanding of the requirements for producing efficient CXCR4/CCR5 dual receptor antagonists.

LANGSTON UNIVERSITY SCHOLARS

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GLOBAL JOURNAL
OF SCIENCE FRONTIER RESEARCH

Asphalt Chemistry

Sharon A. Lewis α, Terry Phillips σ, Kayla Love ρ, Martell McKinney ω, Quintessa Jackson ¥, Denzel Pugh §,Evann Comeaux χ, Lindsay Davis ν, Megan Bowlin ɵ, Rajah Singh ζ, Phoebe Carter £, Nichole Newman €,LeMarcus Lott ₣, Ryan Johnson ₴, Brittany Vann ¢& Mehari Future ¢

Abstract- The students were taught to generate oil (binder) from recycled asphalt pavement (aggregate) using a BuchiRotavapor R-15 for submission for elemental analysis (C, N, H,O) and engineering rheology testing and microbial growth. We obtained 18 samples from Oklahoma Department of Transportation divisions and two construction companies to compare the physical and chemical properties of these samples.

Subject: comparison of various samples of recycled asphalt pavement.

I. Introduction

We collected eighteen samples from 5 Oklahoma Department of Transportation divisions and 2 construction companies. The objective of this research was to generate the oil (binder) from recycled asphalt pavements (aggregate) samples using the BuchiRotavapor R15. We were able to determine the age of the sample by observing the physical properties of the sample. We sent the samples to Galbraith Laboratory for carbon, nitrogen, hydrogen, and oxygen elemental analysis. They learned to independently use the Rotavapor and the Humboldt to process samples from the beginning to final product of generating binder. I learned the protocol from mixing samples to recovering binder.

II. Problem Statement

Recycled Asphalt Pavement (RAP) contains valuable binder and therefore, RAP should be used with new millings on surface roads and not just to patch up holes. Today the oil being produced from refineries is not as rich and of as good of quality as the oil produced twenty years ago or the roads being laid down these days would not have potholes and cracks so soon. Roads in the United States disintegrate over a shorter period due to increasing traffic. So a focus in today's society is repairing and replacing these roads which cost a significant amount of money. The government is taking available funds and stretching them to meet our restoration needs. Recycled asphalt pavement can save money for the government, create additional business opportunities from research, save energy, and conserve diminishing resources of aggregate. Over the past decades RAP usage has increased. It is the most recycled material in the US. It has been proven that mixtures with RAP can perform as well as mixtures made with virgin binder. Increasing the usage of RAP in new mixtures can reduce the amount of new material being added.

III. Background

Once all of the binder is removed from RAP, engineers are then able to perform rheology testing. Rotational Viscosity test, Performance Grading test to include the following: Dynamic Shear Rheometer, Rotational Thin Film Oven, Pressure Aging Vessel, and Bending Beam Rheometer. You can analyze binder properties from Mechanical Empirical Pavement Design Procedures (MEPDP). Once all the binder is removed from the RAP, the original aggregate remains for sieve analysis of extracted aggregate, specific gravity of fine and coarse aggregates, Los Angeles Abrasion test, Micro Deval Abrasion test and sand equivalent.

IV. Protocol

It is the American Association of State Highway and Transportation Officials (AASHTO) designation: T164-08, test method B. Crush RAP to generate a weight of 300 grams and put in a 1000 ml beaker. Add Trichloroethylene (TCE) to reach the 900 ml beaker level, actually 750 ml TCE. Saturate RAP with TCE by stirring with a spatula. Allow RAP to soak in the TCE for an hour while stirring randomly. To filter the fines such as small aggregate, use the Humboldt Reflux Extractor H-149S. We used 2 sieves with appropriately wetted filter paper and set inside of the Humboldt. Connect two radiator hoses to the lid on Humboldt. One end of the lid had a hose connected to a water source. The other end of the lid had a hose connected to allow flow of water into the trough. Heat the hot plate to 120oC. Pour RAP/TCE into the top funnel. Turn on water. Continue filtration until all the binder collects into the bottom of the Humboldt.
the aggregate and fines collected into the top two sieve.

Author *Chemistry Department, Langston University, Langston, Oklahoma 73050. e-mail: salewis@langston.edu*

NICOLE PARKER – OSU

Plant Physiology®

Natural Variation in Sensitivity to a Loss of Chloroplast Translation in Arabidopsis[1]

1. Nicole Parker[2], Yixing Wang[2] and David Meinke[*]

Author Affiliations: *Department of Botany, Oklahoma State University, Stillwater, Oklahoma 74078*.
Published online before print October 2014, doi: http://dx.doi.org/10.1104/pp.114.249052 *Plant Physiology December 2014 vol. 166 no. 4 2013-2027*

Abstract

Mutations that eliminate chloroplast translation in Arabidopsis (*Arabidopsis thaliana*) result in embryo lethality. The stage of embryo arrest, however, can be influenced by genetic background. To identify genes responsible for improved growth in the absence of chloroplast translation, we examined seedling responses of different Arabidopsis accessions on spectinomycin, an inhibitor of chloroplast translation, and crossed the most tolerant accessions with embryo-defective mutants disrupted in chloroplast ribosomal proteins generated in a sensitive background. The results indicate that tolerance is mediated by *ACC2*, a duplicated nuclear gene that targets homomeric acetyl-coenzyme A carboxylase to plastids, where the multidomain protein can participate in fatty acid biosynthesis. In the presence of functional *ACC2*, tolerance is enhanced by a second locus that maps to chromosome 5 and heightened by additional genetic modifiers present in the most tolerant accessions. Notably, some of the most sensitive accessions contain nonsense mutations in *ACC2*, including the "Nossen" line used to generate several of the mutants studied here. Functional ACC2 protein is therefore not required for survival in natural environments, where heteromeric acetyl-coenzyme A carboxylase encoded in part by the chloroplast genome can function instead. This work highlights an interesting example of a tandem gene duplication in Arabidopsis, helps to explain the range of embryo phenotypes found in Arabidopsis mutants disrupted in essential chloroplast functions, addresses the nature of essential proteins encoded by the chloroplast genome, and underscores the value of using natural variation to study the relationship between chloroplast translation, plant metabolism, protein import, and plant development.

- Received August 21, 2014.
- Accepted October 20, 2014.
- Published October 21, 2014.

JARED GIEM -- OU

Articles in Press

Comparison of doses received by the hippocampus in patients treated with single isocenter– *vs* multiple isocenter–based stereotactic radiation therapy to the brain for multiple brain metastases

Ozer Algan, M.D., Jared Giem, B.S., Julie Young, C.M.D., Imad Ali, Ph.D., Salahuddin Ahmad, Ph.D., Sabbir Hossain, Ph.D.
Department of Radiation Oncology, Stephenson Cancer Center, University of Oklahoma Health Sciences Center, Oklahoma City, OK
Received: October 30, 2014; Accepted: April 1, 2015; Published Online: May 08, 2015
Publication stage: In Press Corrected Proof
DOI: http://dx.doi.org/10.1016/j.meddos.2015.04.001

Abstract

To investigate the doses received by the hippocampus and normal brain tissue during a course of stereotactic radiation therapy using a single isocenter (SI)–based or multiple isocenter (MI)–based treatment planning in patients with less than 4 brain metastases. In total, 10 patients with magnetic resonance imaging (MRI) demonstrating 2-3 brain metastases were included in this retrospective study, and 2 sets of stereotactic intensity-modulated radiation therapy (IMRT) treatment plans (SI *vs* MI) were generated. The hippocampus was contoured on SPGR sequences, and doses received by the hippocampus and the brain were calculated and compared between the 2 treatment techniques. A total of 23 lesions in 10 patients were evaluated. The median tumor volume, the right hippocampus volume, and the left hippocampus volume were 3.15, 3.24, and 2.63 mL, respectively. In comparing the 2 treatment plans, there was no difference in the planning target volume (PTV) coverage except in the tail for the dose-volume histogram (DVH) curve. The only statistically significant dosimetric parameter was the V_{100}. All of the other measured dosimetric parameters including the V_{95}, V_{99}, and D_{100} were not significantly different between the 2 treatment planning techniques. None of the dosimetric parameters evaluated for the hippocampus revealed any statistically significant difference between the MI and SI plans. The total brain doses were slightly higher in the SI plans, especially in the lower dose region, although this difference was not statistically different. The use of SI-based treatment plan resulted in a 35% reduction in beam-on time. The use of SI treatments for patients with up to 3 brain metastases produces similar PTV coverage and similar normal tissue doses to the hippocampus and the brain when compared with MI plans. SI treatment planning should be considered in patients with multiple brain metastases undergoing stereotactic treatment.

JACOB HENDERSON – OU

Shell, C.; Henderson, J.; Verra, H.; Dyer, J., "Implementation of a Wireless Battery Management System (WBMS)," Instrumentation and Measurement Technology Conference (I2MTC), 2015 IEEE International, May 2015.

Verra, H.; Henderson, J.; Dyer, J.; Jiang, J.N., "Impact of Improved Measurements on Performance of a Smart Thermal Energy System," Instrumentation & Measurement Magazine, IEEE, vol.18, no.1, pp.25, 33, February 2015.

Verra, H.; Henderson, J.; Dyer, J.; Jiang, J.N., "Implementation of Electrode Boilers for Load-Frequency Control of Utility Grids," Proc. 47th Frontiers of Power Conf., OSU, OK, Oct 2014.

TIM HUBIN - SWOSU

2. Synthesis, structural studies, and oxidation catalysis of the late first row transition metal complexes of a 2-pyridylmethyl pendant armed ethylene cross-bridged cyclam

By: Hubin, Timothy J.; Jones, Donald G.; Shircliff, Anthony D.; Yin, Guochuan; Prior, Timothy J.

Source: Abstracts of Papers, 249th ACS National Meeting & Exposition, Denver, CO, United States, March 22-26, 2015, Pages: INOR-1015, Conference; Meeting Abstract; Computer Optical Disk, 2015, CODEN: 69TQWW

Company/Organization: Chemistry, Southwestern Oklahoma State University, Weatherford, OK, USA, 73096-7202

Accession Number: 2015:477523, CAPLUS

Publisher: American Chemical Society, Washington, D. C

Language: English

Abstract

The first 2-pyridylmethyl pendant armed ethylene cross-bridged cyclam ligand has been synthesized and successfully complexed to Mn^{2+}, Fe^{2+}, Co^{2+}, Ni^{2+}, Cu^{2+}, and Zn^{2+} cations. X-ray crystal structures were obtained for all six complexes and demonstrate pentadentate binding of the ligand with the requisite cis-V configuration of the cross-bridged cyclam ring in all cases, leaving a potential labile binding site cis to the pyridine donor for interaction of the complex with oxidants and/or substrates. The electronic properties of the complexes were evaluated using solid state magnetic moment detn. and acetonitrile soln. electronic spectroscopy, which both agree with the crystal structure detn. of high spin divalent metal complexes in all cases. Cyclic voltammetry in acetonitrile revealed reversible redox processes in all but the Ni^{2+} complex, suggesting catalytic reactivity involving electron transfer processes are possible for complexes of this ligand. Screening for oxidn. catalysis using hydrogen peroxide as the terminal oxidant for the most biol. relevant Mn^{2+}, Fe^{2+}, and Cu^{2+} complexes identified the Mn^{2+} and Fe^{2+} complexes as potential oxidn. catalysts worthy of continued development.

BILL JONES -- OSU

Journal of Plant Nutrition and Soil Science

Relationship between Mean Square Errors and Wheat Grain Yields in Two Long-term Nutrient Management Experiments

Melissa Golden, Bruno Figueiredo, Mariana Ramos Del Corso, Nicole Remondet, Mame Diatite-Koumba, Shawntel Ervin, Daniel Alidekki, Jagmandeep Dhillon, Ethan Driver, Bill Jones, James Lasquites, Samuel Zoca, Bill Raun

Abstract

Rationale: Grain yield data collected from long-term experiments conducted on the same plots are often combined over years. The impact of the environment on treatment response from year to year is thus ignored.

Objective: The objectives of this work were to determine the relationship between mean square errors (MSE) and grain yield level, and to determine the frequency/rarity for combining year to year data.

Methods: Grain yield MSE's were calculated by-year from two long-term winter wheat experiments (Experiment 222 and Experiment 502). Both trials employ a randomized complete block experimental design with 13 and 14 treatments, respectively. Experiment 222 (1969 to 2014) and Experiment 502 (1971-2014) have been continuously planted to winter wheat (Triticum aestivum L), and both annually receive an array of different nitrogen (N), phosphorus (P) and potassium (K) fertilizer rates. Mean square error terms were computed once sums of squares for replication and treatment (fixed effects) were removed from the analysis of variance model. Relationships between average wheat grain yields, coefficients of variation (CV) and MSE were evaluated over 46 and 44 years for experiments 222 and 502, respectively.
Results: As grain yields increased, MSE's increased for both Experiments 222 and 502. More importantly was noting the extreme variability in MSE's between years that would prevent combining data from consecutive years. F-statistics (large MSE/small MSE, 40dfn, 40dfd, alpha=0.05) computed from two and three consecutive years were consistently more than the minimum F-value required to legitimately combine sites. In other words, sites were consistently different for any two or three year periods. Finding no relationship between year and MSE suggests that homogeneity of treatment response with time, would not be expected.
Conclusion: Data analysis reported here, including 90 site years, shows that combining any two or three consecutive year-periods is not advisable, rather, individual years should be analyzed and reported on independently.

GEOFF KIBBLE – OSU

31st Space Symposium, Technical Track, Colorado Springs, Colorado, United States of America
Presented on April 13-14, 2015

MARTIAN GREENHOUSE DESIGN FOR THE NASA EXPLORATION HABITAT PROGRAM

Geoff Kibble* and Jamey Jacob†
Oklahoma State University, Geoffrey.Kibble@okstate.edu

ABSTRACT

Long duration, manned space missions to Mars create many technical challenges and logistics of sustainability present some of the most significant questions. Mars' pattern of orbit brings it closest to Earth once every two years, and this is the optimal time to send payload on the two to three hundred day journey. Because of the lengthy gap between optimal launching times, designs for terrestrial missions to Mars must provide storage capable of holding two years' worth of supplies or include the ability for self-sustainment. Regular frequent shipping is implausible for replenishing supplies on Mars; even the amount of fuel required to send this large payload during the optimal time poses a problem. This cost alone raises questions about the feasibility of such missions. In order to successfully place a station on the Martian surface, the mission design must include a means for producing food, thereby creating some degree of self-sustainability. Fresh grown foods are essential for long-term sustainability, without which manned missions to Mars will continue to be limited in scope. Oklahoma State University is investigating various methods for producing food on the Martian surface as part of the 2015 eXploration Habitat (X-Hab) Academic Innovation Challenge sponsored by NASA and the National Space Grant Foundation. Previous OSU X-Hab missions developed Earth analogs for Martian transit and surface habitation, and the greenhouse complements the mission analogs. Our team is analyzing possible designs in search of the most feasible and useful concepts and will produce a full-scale model to prove their viability. The present design incorporates a solid central structure that is integrated with inflatable growing modules to maximize the plant growth footprint while reducing total mass and packed volume. In the current approach, deployment and structural design are driven by plant growth requirements and minimal crew interaction.

INTRODUCTION

NASA continues to study Mars and has successfully carried out multiple satellite, lander, and rover missions to the *orange* planet, which have resulted in numerous findings pertaining to Martian atmosphere density and composition data[1], evidence to suggest the presence of ancient aqueous environments on the surface[2], and the presence of organic compounds[3]. However, each new discovery made on Mars, usually brings forth more questions and uncertainty, as with the recently discovered increased levels of methane, which suggests that methane is currently being produced from a still unknown source[4]. In order to solve mysteries such as these, new technologies are needed on the planet's surface, which requires space exploration entities to devote decades of time and billions[5] of dollars toward developing specialized payloads.

Time is one of the major factors hindering space exploration. Space rated systems required to successfully complete these missions must go through specialized development, often using technologies at low readiness levels. Small-quantity manufacturing of unique parts and scientific cargo takes much longer than traditional mass production. All mission hardware undergoes rigorous certification testing to insure high probability of mission success. Then, the system must be transported to Mars, and economical interplanetary travel always costs in time what it saves in money. In fact, in many cases "...missions take years to develop and by the time they launch, their technology is already outdated".[6]

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Tetrahedron Letters 55 (2014) 6776–6778

Contents lists available at ScienceDirect

Tetrahedron Letters

journal homepage: www.elsevier.com/locate/tetlet

Efficient synthesis of 1,3,4-oxadiazoles promoted by NH_4Cl

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ARTICLE INFO

Article history:
Received 16 September 2014
Revised 2 October 2014
Accepted 6 October 2014
Available online 22 October 2014

Keywords:
1,3,4-Oxadiazole
Ammonium chloride
Heterocycle synthesis
Bioisostere

ABSTRACT

An efficient and inexpensive approach to the synthesis of 2-substituted and 2,5-disubstituted 1,3,4-oxadiazoles from arylhydrazides and orthoesters is reported using catalytic NH_4Cl. The conditions are mild, and thus, compatible with a variety of functional groups. The optimized reaction is performed using 30 mol % of NH_4Cl in 100% EtOH and is generally complete within 1 h for non-aromatic orthoesters and 2–10 h for aromatic orthoesters. The reaction permits both electron-releasing and electron-withdrawing groups on the arylhydrazide substrate. Most products are formed in high yields and require only minimal purification. Compared with earlier reports, the current reactions proceed in shorter time and require less of the orthoester.

The 1,3,4-oxadiazole scaffold has attracted considerable attention in the field of medicinal chemistry.[1] This interest stems from its wide range of biological activities including anticancer,[2] antifungal,[3,4] antibacterial,[5] antimicrobial,[6,7] anti-inflammatory,[8,9] anticonvulsant,[10,11] analgesic,[12] and as inhibitors of HIV integrase[13] and angiogenesis.[14] Many commercial drugs, such as the antihypertensives tiodiazosin[15] and nesapidil,[16] the antibiotic furamizole,[17] the HIV-integrase inhibitor raltegravir,[13] and the anticancer agent zibotentan,[2] contain the 1,3,4-oxadiazole nucleus (Fig. 1). In drug research, the oxadiazole moiety can serve as a bioisostere for carboxylic acids, esters, and amides.[18–22] These rings are also important structural components of agrochemicals such as herbicides,[23] pesticides,[24] and plant growth regulators.[25–27] Beyond their medicinal and agricultural uses, oxadiazoles find application in the field of organoelectronics due to their electron transporting properties.[28–31]

Due to the broad commercial potential of 1,3,4-oxadiazoles, numerous methods for their synthesis have been developed over the years. Most approaches are either multi-step or involve the cyclization of hydrazides using harsh conditions such as phosphorus oxychloride, thionyl chloride, sulfuric acid, zirconium(IV) chloride, XtalFluor-E®, Burgess reagent, Deoxo-Fluor®, acid chlorides, Nafion® NR50, or acetic acid, under reflux or microwave heating.[32] Due to the caustic nature of these reagents, sensitive functional groups are often incompatible with these earlier methods. To address this problem, we have developed a mild protocol, which involves the formation of 1,3,4-oxadiazoles from arylhydrazides and orthoesters promoted by catalytic NH_4Cl.

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http://dx.doi.org/10.1016/j.tetlet.2014.10.028
0040-4039/

In recent years, we have found that NH_4Cl is a highly efficient and mild catalyst for the synthesis of benzo-fused heterocycles such as benzimidazoles, benzoxazoles, and benzothiazoles,[33] and also for the preparation of α-aminonitriles using a variant of the Strecker synthesis.[34] To extend the scope of this catalyst, optimization studies were performed for the current reaction using benzhydrazide (1.0 equiv) and triethyl orthoformate (1.1 equiv). The optimized transformation occurred using 30 mol % of NH_4Cl in refluxing ethanol, which afforded a 96% yield of the corresponding oxadiazole in less than 1 h. Lower catalyst loadings gave slow and often incomplete reaction, while more catalyst gave no additional rate enhancement. The use of absolute EtOH proved essential to achieve maximum conversion for these reactions. Attempts to use other solvents (THF, dichloroethane, CH_3OH, dioxane, CH_3CN, benzene, 10:1 EtOH/H_2O or 1:1 EtOH/H_2O) either produced lower yields or required longer reaction times (Fig. 2). The current procedure represents a considerable improvement over a previously published uncatalyzed route that required 18 h and a five-fold excess of the orthoester.[35]

The scope of this reaction was studied by refluxing a series of arylhydrazides with various triethyl orthoesters in EtOH using 30 mol % of NH_4Cl. Our results are summarized in Table 1. The mild reaction conditions offered a wide range of functional group tolerance on the arylhydrazide including methyl, methoxy, chloro, bromo, and nitro. In most cases, the yields were high, and the products were formed cleanly. Solid products were isolated directly from the reaction mixture and did not require further purification. Oils required purification by elution through a short column of silica gel. The reaction was successful with both electron-releasing and electron-withdrawing substituents on the arylhydrazide reactant. The yield of oxadiazole was only decreased when an

Green Chemistry

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Cite this: *Green Chem.*, 2015, **17**, 2495

Efficient syntheses of substituted (±)-3-oxoisoindoline-1-carbonitriles and carboxamides using OSU-6†

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Received 19th December 2014,
Accepted 4th February 2015

DOI: 10.1039/c4gc02486a

www.rsc.org/greenchem

An efficient synthesis of 3-oxoisoindolines is described from 2-carboxybenzaldehyde, TMSCN and benzylic or aliphatic amines using a Strecker approach with OSU-6 as the catalyst. The reaction can be tuned to generate two different products: a substituted (±)-3-oxoisoindoline-1-carbonitrile at 23 °C or the corresponding C1 primary amide at 78 °C. Aromatic amines divert from this reactivity to give isobenzofuranone derivatives. The formation of primary amides in these Strecker cyclizations has not been previously reported. The OSU-6 catalyst is a newly developed MCM-41 type hexagonal mesoporous silica with high Lewis acid strength and robust character, which facilitates recycling.

Introduction

Isoindolinones are recognized as valuable building blocks for various drug intermediates and natural products.[1–3] These systems are extensively used in pharmaceuticals for the treatment of hypertension,[4] inflammation,[5] psychosis,[6,7] pain,[8] anxiety,[9] cancer,[10,11] bacterial infections[12] and ulcers.[13] They are also found in powerful inhibitors of tumor necrosis factor production.[14] The commercial drug indoprofen, which was used as an anti-inflammatory agent in the 1970s, contains an isoindolinone ring in its core structure.[15,16] Apart from their bioactivity, these heterocycles also find utility as molecular switches due to their electrochemical properties.[17] Despite their potential medicinal and electrochemical applications, relatively few approaches exist for the preparation of isoindolinone rings and these generally require multistep syntheses or expensive metal catalysts.

In recent years, multicomponent reactions have emerged as powerful tools in the field of organic syntheses. This is due to their ability to generate diverse and complex targets in fewer steps from readily available starting materials.[18] Multicomponent reactions have unique advantages due to operational simplicity, green protocols and low cost.

The Strecker reaction is regarded as one of the first multicomponent reaction and has been widely employed in the synthesis amino acids and α-aminonitriles.[19,20] Although Strecker reactions generate specific targets, the presence of neighbouring reactive sites can lead to intramolecular reactions that form nitrogen heterocycles. In this project, we have taken advantage of the neighbouring functionality in 2-carboxybenzaldehyde and extended this multicomponent reaction to the synthesis of 3-oxoisoindoline derivatives.

Earlier work has applied the Strecker protocol to the preparation of isoindolinones rings, but with only modest success. The Opatz group was the first to employ this approach by reacting 2-carboxybenzaldehyde with methylamine hydrochloride and potassium cyanide in methanol containing acetic acid.[21] The single example reported produced (±)-2-methyl-3-oxoisoindoline-1-carbonitrile in moderate yield along with several by-products that made product isolation difficult. Recently, Hu and co-workers reported a similar route using trimethylsilyl cyanide (TMSCN) as the cyanide source in refluxing ethanol with sulfamic acid as the catalyst.[22] Though this procedure afforded acceptable yields, limitations were encountered with respect to the amine reactants allowed in the cyclization.

Over the years, our research group has been involved in synthesizing heterocycles using environmentally benign approaches. Among these targets, benzoxazoles, benzothiazoles, benzimidazoles[23] and oxadiazoles[24] have been prepared using ammonium chloride as the catalyst. The current study has successfully developed a green approach to the formation of (±)-3-oxoisoindoline-1-carbonitriles using OSU-6, and reports a novel cyanide to amide conversion. The method has been further extended to 2-acetylbenzoic acid, which cyclizes with comparable efficiency.

OSU-6, an MCM-41 type hexagonal mesoporous silica developed at Oklahoma State University by AlOthman and

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†Electronic supplementary information (ESI) available. See DOI: 10.1039/c4gc02486a

frontiers in MICROBIOLOGY

REVIEW ARTICLE
published: 24 February 2015
doi: 10.3389/fmicb.2015.00100

Mechanism of coupling drug transport reactions located in two different membranes

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Gram- negative bacteria utilize a diverse array of multidrug transporters to pump toxic compounds out of the cell. Some transporters, together with periplasmic membrane fusion proteins (MFPs) and outer membrane channels, assemble trans-envelope complexes that expel multiple antibiotics across outer membranes of Gram-negative bacteria and into the external medium. Others further potentiate this efflux by pumping drugs across the inner membrane into the periplasm. Together these transporters create a powerful network of efflux that protects bacteria against a broad range of antimicrobial agents. This review is focused on the mechanism of coupling transport reactions located in two different membranes of Gram-negative bacteria. Using a combination of biochemical, genetic and biophysical approaches we have reconstructed the sequence of events leading to the assembly of trans-envelope drug efflux complexes and characterized the roles of periplasmic and outer membrane proteins in this process. Our recent data suggest a critical step in the activation of intermembrane efflux pumps, which is controlled by MFPs. We propose that the reaction cycles of transporters are tightly coupled to the assembly of the trans-envelope complexes. Transporters and MFPs exist in the inner membrane as dormant complexes. The activation of complexes is triggered by MFP binding to the outer membrane channel, which leads to a conformational change in the membrane proximal domain of MFP needed for stimulation of transporters. The activated MFP-transporter complex engages the outer membrane channel to expel substrates across the outer membrane. The recruitment of the channel is likely triggered by binding of effectors (substrates) to MFP or MFP-transporter complexes. This model together with recent structural and functional advances in the field of drug efflux provides a fairly detailed understanding of the mechanism of drug efflux across the two membranes.

Keywords: Gram-negative bacteria, antibiotic resistance, drug efflux, periplasmic membrane fusion proteins

TRANSPORTERS

Multidrug resistance or polyspecific transporters (MDRs) are present in all living systems. However, they are particularly abundant and diverse in bacteria and comprise 2–7% of the total bacterial protein content (Saier and Paulsen, 2001). Such putative MDRs are identified based on sequence similarity with experimentally confirmed transporters able to handle multiple substrates. Most of these substrates are hydrophobic or amphipathic molecules often containing weakly basic moieties. Other substrates are organic cations with a permanent charge distributed over a large hydrophobic surface (Hall et al., 1998; Zgurskaya and Nikaido, 2000b).

Functional studies and subsequent phylogenetic analysis demonstrated that bacterial MDR transporters can be organized into several evolutionary distinct protein families that significantly differ in bioenergetics, structure and transport mechanism (Saier and Paulsen, 2001). Most of MDRs are found in three large and diverse superfamilies: ABC (ATP-binding Cassette) (Higgins and Linton, 2004), MF (Major Facilitator) (Saier et al., 1999) and RND (Resistance-Nodulation-Cell Division) (Tseng et al., 1999). In addition, some MDRs form a core of smaller superfamilies: SMR (Small Multidrug Resistance) family [now part of the DMT (Drug/metabolite Transporter) superfamily] (Chung and Saier, 2001) and MATE (Multidrug and Toxic Extrusion) family [recently joined the MOP (Multidrug/Oligosaccharidyl-lipid/Polysaccharide) superfamily] (Hvorup et al., 2003). Just recently, a new family of transporters involved in efflux of cyclohexidine has been identified in *Acinetobacter* spp. (Hassan et al., 2013).

ABC MDRs (as all other members of this superfamily) are primary active transporters which couple substrate translocation with binding and hydrolysis of ATP. MDRs in all the other superfamilies are secondary transporters which utilize electrochemical gradients of ions (most frequently protons but sometimes sodium) to transport their diverse substrates. Both primary and secondary transporters are ubiquitous in bacteria, however their relative presence seems to correlate with energy generation: fermentative bacteria tend to rely more on the primary transporters while genomes of aerobic bacteria contain somewhat more secondary transporters (Paulsen et al., 1998, 2000).

frontiers in MICROBIOLOGY

REVIEW ARTICLE
published: 16 September 2011
doi: 10.3389/fmicb.2011.00189

Mechanism and function of the outer membrane channel TolC in multidrug resistance and physiology of enterobacteria

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Edited by:
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TolC is an archetypal member of the outer membrane efflux protein (OEP) family. These proteins are involved in export of small molecules and toxins across the outer membrane of Gram-negative bacteria. Genomes of some bacteria such as *Pseudomonas* species contain multiple copies of OEPs. In contrast, enterobacteria contain a single *tolC* gene, the product of which functions with multiple transporters. Inactivation of *tolC* has a major impact on enterobacterial physiology and virulence. Recent studies suggest that the role of TolC in physiology of enterobacteria is very broad and affects almost all aspects of cell adaptation to adverse environments. We review the current state of understanding TolC structure and present an integrated view of TolC function in enterobacteria. We propose that seemingly unrelated phenotypes of *tolC* mutants are linked together by a single most common condition – an oxidative damage to membranes.

Keywords: multidrug efflux, outer membrane permeability, acid tolerance, enterobacterial virulence, oxidative stress

DIVERSITY AND DISTRIBUTION OF TolC-LIKE CHANNELS IN GRAM-NEGATIVE BACTERIA

The important role of TolC in the structure and function of the outer membrane of *E. coli* is known for at least 30 years (Morona and Reeves, 1981, 1982; Morona et al., 1983). The early observations that *tolC* mutants are tolerant to colicin E1 and at the same time hypersensitive to certain dyes, drugs and detergents led to the conclusion that these mutants have alterations in the cell membrane. Later studies established that TolC and its homologs in other Gram-negative bacteria enable transport of various toxic molecules across the outer membrane (Benz et al., 1993; Fralick, 1996).

TolC belongs to the outer membrane efflux proteins (OEP) family (or "Outer Membrane Factor" family), members of which function in conjunction with three types of transport systems: ATP-binding cassette (ABC)-type, resistance nodulation division (RND)-type, and major facilitator superfamily (MF-type; Paulsen et al., 1997). The association between transporters and OEPs is mediated by periplasmic proteins named membrane fusion proteins (MFPs; Dinh et al., 1994; Zgurskaya et al., 2009). A structural model depicting a proposed arrangement of OEPs with the inner membrane permeases and periplasmic MFPs using the example of AcrAB–TolC is shown on **Figure 1**. The characteristic feature of this model is that TolC and other OEPs span the outer membrane and protrude deep into the periplasm.

Sequence analyses of OEPs showed that they are highly divergent with only two subtle common motifs (Johnson and Church, 1999). These motifs belong to the structural signature of OEPs – their coiled-coil regions (**Figure 2**; Koronakis et al., 2000). The characterized OEPs cluster into three clades corresponding to their broadly defined efflux functions: (i) the multidrug efflux, where the best characterized representative is *Pseudomonas aeruginosa* OprM, (ii) the cation efflux with *E. coli* CusC as a typical representative, and (iii) the protein export (type I secretion system) represented by *E. coli* TolC (Hatfaludi et al., 2008). Perhaps as a result of such functional specialization, genomes of Gram-negative bacteria usually contain several OEP genes.

Four OEPs were identified in *E. coli* genome: *tolC*, *yjcP* (*mdtP*), *yohG* (*mdtQ*), and *ylcB* (*cusC*; Sulavik et al., 2001). Inactivation of *tolC* leads to significant increase in susceptibility to multiple anti-bacterial agents suggesting that TolC is the major conduit for multidrug efflux across the outer membrane of *E. coli* (Fralick and Burns-Keliher, 1994; Sulavik et al., 2001). In addition, *tolC* is required for export of plasmid-encoded and chromosomal toxins such as hemolysin, colicin V, and microcins (Wandersman and Delepelaire, 1990; Hwang et al., 1997; Delgado et al., 1999). Deletions of *yjcP* and *yohG* did not affect the intrinsic levels of antibiotic resistance but cells lacking these genes were slightly more susceptible to puromycin, an antibiotic inhibiting protein translation (Sulavik et al., 2001). CusC is produced in a single operon with *cusBA* genes and is implicated in resistance against Cu(I)/Ag(I) ions generated under anaerobic conditions (Franke et al., 2003).

In comparison, *P. aeruginosa* (Pae) genome contains 18 OEPs (Jo et al., 2003). Phylogenetic analyses revealed that these OEPs could be subdivided into two subfamilies: the OprM subfamily comprising 11 highly homologous channels involved in multidrug efflux and the more divergent AprF protein export subfamily, which also includes OpmH and OpmM. The type I secretion protein AprF and OpmH are the most closely related to *E. coli* TolC. However, it is the OprM channel, which is constitutively expressed and confers the intrinsic resistance of *P. aeruginosa* to a wide

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Stress-Strain Behavior of Cement-Improved Clays

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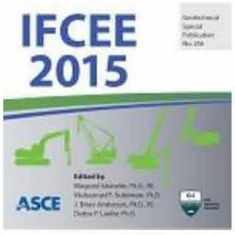

IFCEE 2015
Editors: Magued Iskander, Ph.D., P.E.; Muhannad T. Suleiman, Ph.D.; J. Brian Anderson, Ph.D., P.E.; & Debra F. Laefer, Ph.D.
Publication Data: ISBN (PDF): 978-0-7844-7908-7
Publisher: American Society of Civil Engineers
Copyright Year: 2015

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Chemical improvement techniques are used to increase strength and decrease deformability of soils. Addition of cement slurry changes the engineering properties of soft clays. In this paper, laboratory test results of an unimproved soft clay are compared with those of cement-improved samples. Laboratory testing of these specimens included one-dimensional consolidation testing and undrained triaxial compression, extension, and cyclic loading tests. Results of the laboratory testing show a change in the stress-strain behavior of the material due to the influence of the cementitious bonds formed during the improvement process. An indication of the strength of these bonds was estimated by determining an "apparent pre-consolidation pressure," via the Casagrande method from the one-dimensional consolidation test results, and an artificial stress history was observed. Due to the range of triaxial confining stresses used in this study, all of the laboratory-improved soil triaxial test results exhibited behavior similar to those of heavily over consolidated clays including high initial strength and dilation behavior.

Permalink: http://dx.doi.org/10.1061/9780784479087.216

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ASHLIE WALKER -- SWOSU

3. Student explains international undergraduate research and cultural experiences

By: Walker, Ashlie; Royal, Guy; Hubin, Timothy J.; Duran, Randy

Source: Abstracts of Papers, 249th ACS National Meeting & Exposition, Denver, CO, United States, March 22-26, 2015, Pages: INOR-514, Conference; Meeting Abstract; Computer Optical Disk, 2015, CODEN: 69TQWW

Company/Organization: Chemistry, Southwestern Oklahoma State University, Weatherford, OK, USA, 73096-3656

Accession Number: 2015:477022, CAPLUS

Publisher: American Chemical Society, Washington, D. C

Language: English

Abstract

A Louis Stokes Alliance for Minority Participation (LSAMP-NSF) undergraduate student discusses how her undergraduate studies in Weatherford, Oklahoma progressed to a NSF funded international Research Experience for Undergradutes (REU) in Grenoble, France. The focus will be how to become a successful undergraduate researcher, get involved with the LSAMP program, apply for international REU's, and what it is like to do research and the cultural experiences the students will have. This presentation will give a personal account of how to approach a successful undergraduate chem. career and inspire others to take advantage of international opportunities in undergraduate chem. research.

APPENDIX N

BRIDGE TO THE DOCTORATE

FELLOWS

		Last Name	First Name	Ethnicity	Discipline
COHORT 7 – OKLAHOMA STATE UNIVERSITY					
M.S./5-2015	Industry	Baldridge	Blair	A.A.	Engineering
M.S./12-2014	Industry	Burgess	Brandon	N.A.	Plant & Soil Sciences
Continuing	Continuing with Ph.D.	Dyer	Joseph	N.A.	Natural Resources
Continuing		Fiddler	Brice	N.A.	Engineering
Continuing		Frazier	Shelby	N.A.	Zoology
Continuing	Continuing with Ph.D.	Gregory	Cook	A.A.	Biomedical Sciences
No degree	Left program	Hall	Jeremy	A.A.	Engineering
Continuing		Lightfoot	Jorge	H	Zoology
Continuing		Matthews	Melicia	A.A.	Engineering
Continuing		Potts-Sherier	Allison	N.A.	Forensics
Continuing	Continuing with Ph.D.	Sunny	Evans	N.A.	Entomology
M.S. /7-2015	Univ of TX-SA-Dosimetry Ph.D.	Zehren	Liz	N.A.	Medical Physics
COHORT 6 – THE UNIVERSITY OF OKLAHOMA					
M.S./6-2015	Continuing with Ph.D.	Dixon	Daniel	A.A.	Chemical Engineering
Continuing		Bruxvoort	Christina	H	Biochemistry--HSC
M.S./5-2015	Continuing with Ph.D.	Giem	Jared	N.A.	Radiological Sciences--HSC
M.S./6-2015	Industry	Hardisty	Josh	P.I.	Geophysics
No degree	Left program	Lazu	Luis	H	Mathematics
Continuing		Love	Kayla	A.A.	Biochemistry
Continuing		Moreno	Alex	H	Electrical Engineering
M.S./5-2014	Continuing with Ph.D.	Ntreh	Abigail	A.A.	Biochemistry
M.S./5-2014	Continuing with Ph.D.	Quiroga	Allison	H	Civil Engineering
Continuing		Williams	Cortez	H	Bioengineering
Continuing		Danatto	Roberto	A.A.	Electrical & Computer
Continuing	Continuing with Ph.D.	Ziegler	Jadith	N.A.	Microbiology--HSC
Continuing		Zegarra	Sergio	H	Mechanical Engineering
COHORT 5 – OKLAHOMA STATE UNIVERSITY					
Continuing	Continuing with Ph.D.	Arscott	RaiAnna	A.A.	Chemistry
Continuing	Continuing with Ph.D.	Bryant	Nicole	N.A.	Botany
Continuing	Continuing with Ph.D.	Butson	Eric	N.A.	Chemistry
M.S./5-2014	Industry	King	Jamere	A.A.	Engineering

M.S.-5-2012	Continuing with Ph.D.	Lamkin	Darren	A.A.	Engineering
M.S./5-2014	Continuing with Ph.D.	McLoud	Josh	N.A.	Botany
M.S./12- 2013	Public School Teacher	Parkhurst	Molly	C.-F.G.	Botany
Transferred	Cornell Ph.D.	Rice	Marissa	A.A.	Zoology
M.S./7-2015	Industry	Ross	Joseph	N.A.	Physics
Continuing	D.O. program /OSUCHS	Supeck	David	N.A.	Biochemistry
M.S./5-2014	Industry	Tehrani	Ana	H	Statistics
M.S./5- 2014	Industry	Williams	CJ	A.A.	Engineering
Continuing	Continuing with Ph.D.	Jones	Bill	N.A.	Plant & Soil

COHORT 4 – THE UNIVERSITY OF OKLAHOMA

Left program No degree	Left Program No degree	Aguayo	Chris	H	Aerospace Engineering
M.S./8-2012	Industry	Atkinson	Brittanie	A.A.	Biochemistry-Gpibs
Continuing		Dunn	Zack	N.A.	Electrical Engineering
Continuing		Franklin	Mario	A.A.	Industrial Engineering
M.S./12-2012	Industry	Herrera	Juan	H	Electrical Engineering
M.S./12/2012	KSU-Ph.D.	Jordan	Lorne	A.A.	Biochemistry
M.S./5-2012	Industry	Jordan	Ryan	N.A.	Geology
Continuing		Kimmel	Jason	C.-F.G.	Electrical Engineering
Continuing	Continuing with P.A. program	Liles	Meghan	N.A.	Biochemistry-Gpibs
M.S./8-2011	Industry	Mace	Chris	N.A.	Geology
Transferred Non-STEM	Transferred Non-STEM	McAndrews	Chrystle	N.A.	Botany Microbiology
M.S./5-2012	Industry	Ong	Shawna	P.I.	Electrical Engineering
Continuing		Watley	Ryan	A.A.	Chemistry

COHORT 3 – OKLAHOMA STATE UNIVERSITY

M.S./5-2012	Teacher	Benjamin	Marcus	A.A.	Chemistry
continuing	Continuing with M.D.	Blocker	Tomica	A.A.	Zoology
continuing		Carpenter	Zachary	N.A.	Electrical & Computer Engr
Continuing		Fine	Scott	N.A.	Plant & Soil Science
M.S./12-2011	Industry	Gonzales	Erik	H	Physics
Continuing	Continuing with Ph.D.	Gonzales	Jonathan	H	Electrical & Computer Engr.
M.S./5-2011	Industry	Hough	Matthew	N.A.	Plant & Soil Science
M.S./12-2011	Industry	Hughes	Shawna	A.A.	Food Sciences
M.S. /12-2010	Industry	Ngo	Minh	Asian/First Gen	Forensics
Left program No degree	Left Program No degree	Osei	Richard	A.A.	Computer Science
M.S./12-2013	Teacher	Parkhurst	Molly	Cauc-First Gen	Botany

Ph.D. /July 2015	Ph.D.2015	Pinkerman	Cody	N.A.	Aerospace & Mechanical Engineering
M.S./5-2010	Industry	Yarholar	Doug	N.A.	Civil Engineering

COHORT 2 – THE UNIVERSITY OF OKLAHOMA

M.S./5-2009	Industry	De la Cruz	Felix	H	Mechanical Engineering
Ph.D.- 2011	**Professor**	**Harris**	**Steven**	**A.A.**	**Chemistry**
M.S./5-2008	Ph.D. Continuing	Harvey	Desmond	A.A.	Industrial Engineering
M.S./2011	Ph.D.	Henderson	Jacob	N.A.	Electrical Engineering
Ph.D.- 2011	**Professor**	**Hughes**	**Quintin**	**A.A.**	**Industrial Engineering**
M.S./12-2009	Industry	James	Kevin	A.A.	Electrical Engineering
M.S./5-2009	Industry	McCarroll	Shawn	N.A.	Computer Science
Left program	Left program				
No degree	No degree	McCutchen	Marshall	N.A.	Physics
M.S./5-2008	Industry	Osisanya	Israel	A.A.	Chemical Engineering
Transferred	Transferred	Rowland	Marquita	A.A.	Biology
M.S./5-2008	Industry	Vazquez	William	H	Mathematics
Left program	Left program				
No degree	No degree	Wallace	T'Aire	A.A.	Microbiology

COHORT 1 – OKLAHOMA STATE UNIVERSITY

M.S./5-2008	Industry	Barrett	Dominic	N.A.	Natural Resource Ecology
Ph.D. /5-2007	**Industry**	**Cowan**	**Brett**	**N.A.**	**Civil Engineering**
Ph.D./8-2015	**Tribal Council Woman**	**Cowan Watts**	**Cara**	**N.A.**	**Biosystems Engineering**
M.S./7-2007	Industry	Heppler	Marty	N.A.	Entomology
Ph.D. /5-2012	Researcher	**Manjarrez**	**Jacob**	**H**	**Biochemistry**
M.S./7-2009	Industry	Patton	Thomas	N.A.	Mechanical Engineering
Ph.D./5 -2011	**Professor**	**Peal**	**Lila**	**A.A.**	**Biochemistry**
Left program	Left Program				
No degree	No degree	Rush	Loretta	N.A.	Plant Pathology
M.S./5-2009	Industry	Sherman	Adrienne	A.A.	Environmental Science
M.S./5-2008	Industry	Singleton	Nicole	A.A.	Toxicology-Veterinary Biomedical Sciences
Ph.D/5.-2011	**Researcher/ Professor**	**Wilkins**	**Brek**	**N.A.**	**Biomedical Sciences**
PharmD-2014	**Industry**	**Wright**	**Cristee**	**A.A.**	**Microbiology**

OKLAHOMA STATE UNIVERSITY

Bridge to the Doctorate Program

Update - August 2014

Jason F. Kirksey, PhD
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405-744-6710
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Oklahoma State University (OSU), founded in 1890, is a comprehensive land-grant institution that provides exceptional academic experiences, scholarly research and other creative activities that advance fundamental knowledge. With its main campus in Stillwater, OSU is Oklahoma's only university with a statewide presence. Total system-wide enrollment from all five campuses is approximately 32,500. The institution is a state leader in research, with a focus on sensors and sensor technology, information technology, Homeland Security issues, biotechnology and nanotechnology. More than 170 graduate programs and options are offered, including 110 at the master's level and 60 at the doctoral level.

Allison Sherier
BS Institution: Oklahoma State University
Major: Forensic Sciences

Blair Baldridge
BS Institution: Oklahoma State University
Major: Electrical & Computer Engineering

Brandon Burgess
BS Institution: Oklahoma State University
Major: Plant & Soil Sciences

Brice Fiddler
BS Institution: Oklahoma State University
Major: Civil Engineering

Greg Cook
BS Institution: Cameron University
Major: Biomedical Sciences

Jeremy Hall
BS Institution: Oklahoma State University
Major: Electrical & Computer Engineering

Jorge Lightfoot
BS Institution: University of Illinois
Major: Biology

Joseph Dyer
BS Institution: Southeastern Oklahoma State University
Major: Natural Resources and Ecology Management

Liz Zehren
BS Institution: East Central University
Major: Medical Physics

Milecia Matthews
BS Institution: Oklahoma State University
Major: Mechanical Engineering

Shelby Fraser
BS Institution: Southeastern Oklahoma State University
Major: Natural Resources and Ecology Management

Sunny Evans
BS Institution: Oklahoma State University
Major: Entomology

THE UNIVERSITY OF OKLAHOMA

Bridge to the Doctorate Program

Susan Walden PhD
Cohort VI Co– PI
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405-325-7407

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PI/ Program Director
Associate VP Institutional Diversity
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405-744-6710

Susy Calonkey, Campus Coordinator
405-325-1069

Created by the Oklahoma Territorial Legislature in 1890, the University of Oklahoma is a doctoral degree-granting research university serving the educational, cultural, economic, and health-care needs of the state, region, and nation. The Norman campus serves as home to all of the university's academic programs except health-related fields. Both the Norman and Health Sciences Center colleges offer programs at the Schusterman Center, the site of OU-Tulsa. The OU Health Sciences Center, which is located in Oklahoma City, is one of only four comprehensive academic health centers in the nation with seven professional colleges. The University of Oklahoma enrolls more than 30,000 students, has more than 2,400 full-time faculty members, and has 20 colleges offering 158 majors at the baccalaureate level, 167 majors at the masters level, 81 majors at the doctoral/professional level, and 24 graduate certificates.

Christina Bruxvoort
BS Institution: University Central Oklahoma
Major: Biochemistry

Daniel Dixon
BS Institution: Oklahoma State University
Major: Chemical Engineering

Jared Giem
BS Institution: East Central University
Major: Medical Physics

Josh Hardisty
BS Institution: University of Oklahoma
Major: Geophysics

Kayla Love
BS Institution: Langston University
Major: Biochemistry

Alex Moreno
BS Institution: University of Oklahoma
Major: Electrical Engineering

Abigail Ntreh
BS Institution: Southwestern Oklahoma State University
Major: Biochemistry

Allison Quiroga
BS Institution: University of Oklahoma
Major: Civil Engineering

Cortes Williams
BS Institution: University of Oklahoma
Major: Bioengineering

Robert Donatto
BS Institution: University of South Florida
Major: Electrical & Computer Engineering

Jadith Ziegler
BS Institution: Cameron University
Major: Microbiology

Sergio Zagarra Cabelo
BS Institution: University of Oklahoma
Major: Mechanical Engineering

APPENDIX O

FORMER SCHOLAR HIGHLIGHTS

BRETT WALKER

Electroninks & Autodesk Join Forces

OSU alumnus named to Forbes' "30 Under 30" manufacturing list

An Oklahoma State University alumnus has been recognized by Forbes magazine as an innovator and entrepreneur under the age of 30 who is "making a difference in our world."

Forbes named S. Brett Walker, cofounder and CEO of Electroninks, to its **"30 Under 30"** list in the industry and manufacturing category. Walker's company developed electricity conductive ink used in consumer electronics and used in Circuit Scribe, a pen Walker and colleagues invented that allows users to draw functioning electrical circuits by doodling on paper. Walker joined 30 other young entrepreneurs who are, as described by the magazine, "disruptors and innovators" modernizing the way things are made in a greener, tech-savvy world.

Walker, 29, graduated with a bachelor's degree with honors in mechanical engineering from OSU in 2004. The Edmond native went straight into a materials science engineering PhD program at the University of Illinois at Urbana-Champaign where he partnered with fellow graduate students and faculty in 2013 to launch Electroninks to make and market conductive inks for printed electronics.

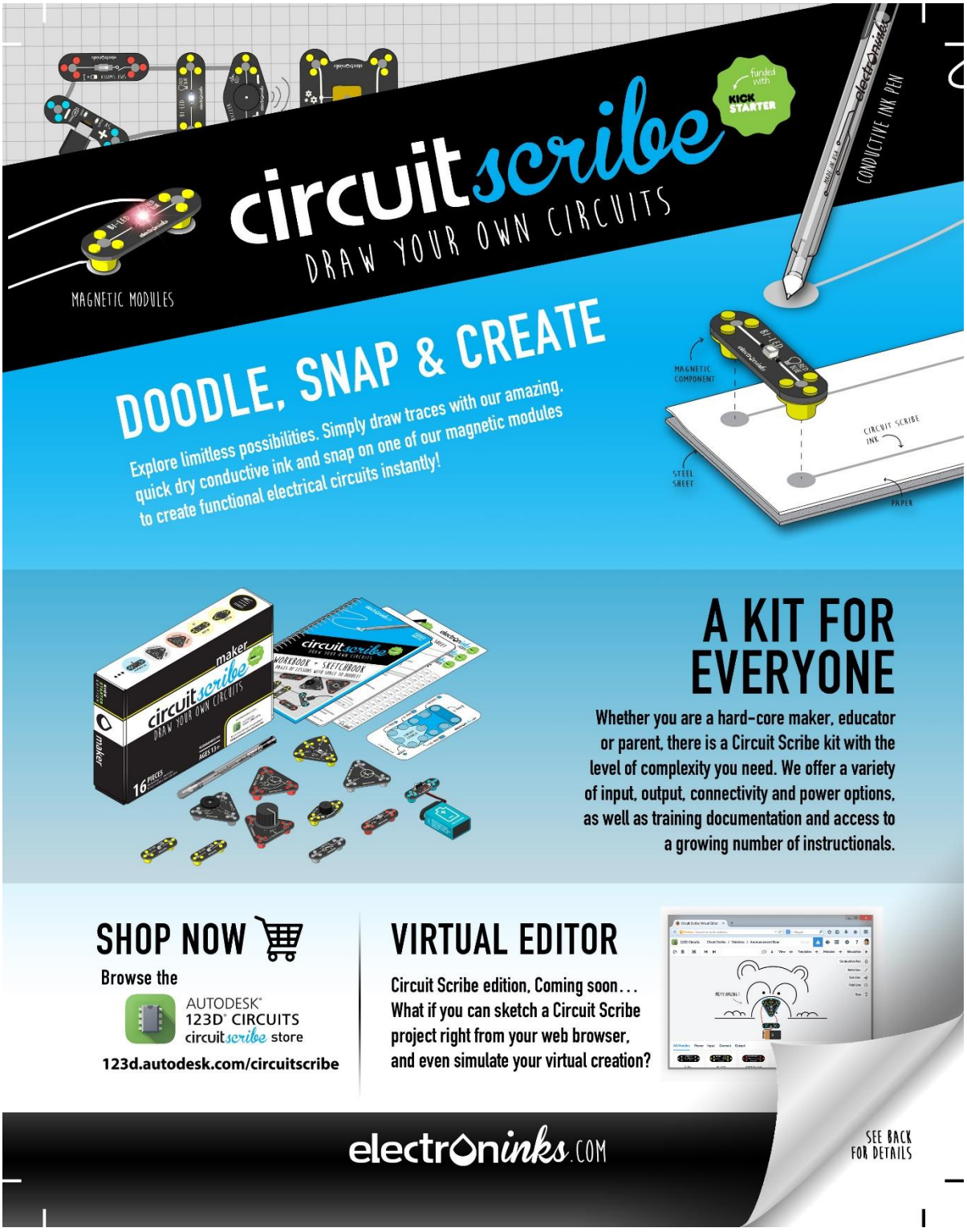
Walker said the company successfully sells their inks to a number of large electronics makers, but the group also had an idea for a consumer product that became Circuit Scribe, the pen that uses conductive inks to literally draw circuits. Walker launched the pen with a $675,000 Kickstarter campaign that attracted more than 12,000 backers. To date, the company has sold 30,000 Circuit Scribe pens that exploded in popularity with science teachers using it to demonstrate how circuitry works and others who design electronics by simply drawing on paper.

"We wanted to develop a way to brand ourselves and show what we do in a very approachable, affordable way that anyone could understand versus saying we do conductive inks for various consumer electronics manufacturers," Walker said. While at OSU, Walker became a student scholar with the Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP), which supports under-represented students majoring in science, technology, engineering and mathematics (STEM) at 11 state universities and colleges. As an OK-LSAMP scholar, Walker said being exposed to research as an undergraduate opened up a world of opportunities. "OK-LSAMP introduces students to undergraduate research very early, which is invaluable if you want to continue your education as a graduate student," Walker said. "Having actual hands-on experience in the lab doing experiments is absolutely necessary to move forward in STEM fields." Last fall Walker delivered the keynote address at the 20th annual OK-LSAMP research symposium on the OSU campus. He told the young scholars that they are on the right path to realize rewarding STEM careers. "I told them that if they continue with their educations they will have to turn down offers when it comes to job success," Walker said.

Walker said his company, which recently moved its headquarters to Austin, Texas, now also has offices and development facilities in Boston and Phoenix. He said he always believed the venture would be successful, but never expected how quickly it would take off. "I didn't expect the level of response we've received."

See the Forbes "30 Under 30" manufacturing list at http://www.forbes.com/30under30/#/manufacturing-industry. For information about Walker's company visit www.electroninks.com. To learn more about opportunities in STEM fields for under-represented populations, visit www.ok-lsamp.okstate.edu.

OSU alumnus named to Forbes' "30 Under 30"



University of Kansas Medical Center

KU School of Medicine–Wichita

Medical student has a 'Barack Chalk' experience

February 18, 2015 By Brian Whepley

Former LSAMP Scholar from Langston University and Bridge to the Doctorate Fellow from Oklahoma State University.

TOMICA BLOCKER

Tomica Blocker, second-year medical student, wasn't having the best of days when she finally arrived at KU School of Medicine-Wichita on Jan. 21. Her car was in the shop, she missed a bus connection, and finally decided to walk to campus from the downtown transit center lugging two laptops. Karen Drake, assistant director of student affairs, soon turned Blocker's day around when she asked, "Do you want to see President Obama speak tomorrow in Lawrence?" "Heck, yeah," replied Blocker. "That changed my whole day. I was on cloud nine."

Blocker and fourth-year medical student Armando Villanueva, along with students from other KU campuses, attended the president's Jan. 22 speech at Anschutz Sports Pavilion. The stop was one of several the president made the week following his State of the Union speech. Blocker got up at 3:15 a.m. to reach Lawrence at the requested time, four hours ahead of Obama's speech, to be cleared by security. Her family had ideas of what Blocker could discuss with the president if she had the opportunity. "My dad wanted me to talk to him about the cost of prescriptions. My mom just wanted me to tell him hi and that she loved him." She didn't get close enough for a chat, but she and the other students were close to him, standing on a stage behind the president. Sharing a stage with Obama, who was under the scrutiny of thousands of people and a media contingent, was a bit strange. "Everyone in the crowd was just looking at us. It was disconcerting initially. I was thinking, 'I could be on TV, and I hope I'm not fidgeting.'"

Obama's speech about the middle class and economics resonated with her, particularly the topic of child care. "I was impressed that he started off with that, that he wants to have the provision of child care, that he considers it a family problem. I know a lot of families that have struggled with that." She was drawn to Obama's personality as well. "You see him on TV and he's so charismatic. That's amplified in person - he's so down to earth. His charisma was evident.""This is at the very top of my experiences," Blocker said. "It was a major thing, as an American and young person, but as a black American, it was amazing."

DANIEL WILSON

His playable story app, "*Mayday! Deep Space*," is available in the App Store.

David Supeck, former Scholar and BD Fellow was featured in the SACNAS Annual Report.

Mentoring

Science Scholars: The Native American Path (SSNAP)

"SSNAP IS VERY EFFECTIVE BECAUSE IT PAIRS UP STUDENTS BASED ON YEAR. SO FOR ME, AS A FOURTH-YEAR GRADUATE STUDENT, SSNAP IS ABOUT REACHING OUT AND GIVING BACK TO UNDERGRADUATE STUDENTS—GUIDING THEM AND TEACHING THEM WHAT I LEARNED."

—David Supeck (Cherokee), PhD student, Oklahoma State University–Center for Health Sciences

Oklahoma State University graduate student David Supeck first learned about internship opportunities with the National Institutes of Health (NIH) at 2012 SACNAS when he attended the conference with his SSNAP cohort. "The NIH has an outstanding reputation and does world-class science," Supeck said. He knew that it was extremely competitive to get accepted as an NIH intern and that's where the mentoring component of SSNAP was essential. "SSNAP gave me a lot of support during the application process, from mentoring to writing to tips you need to follow." David was accepted as an NIH Intramural Research Training Award Fellow for summer 2013 in the lab of Dr. Brian Kelsall at the National Institute of Allergy and Infectious Diseases. "It was the perfect fit," Supeck says, "and I felt like I was prepared, which gave me even more confidence. The experience at NIH was truly remarkable and very inspiring."

Photo courtesy of Oklahoma State University Center for Health Sciences

Dr. Gilbert John, Mentor, with OSU Student in lab was featured in SACNAS Annual Report

THEN: SACNAS founding member Dr. Vernon Avila *(far right)* works with students in his lab at San Diego State University in the late '70s.

NOW: Graduate student Cynthia Oronoa *(Mississippi Band of Choctaw)* works in the lab with SSNAP mentor Dr. Gilbert John *(Navajo)* at Oklahoma State University.

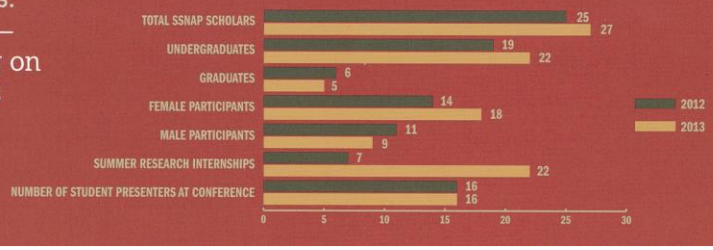
FAR LEFT: Graduate student David Supeck *(Cherokee)* in the lab at Oklahoma State University.

Since the award was established by the White House in 1995, 17 SACNAS members and SACNAS itself have won the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM).

This accomplishment is testament to the strong tradition of mentoring that has coursed through SACNAS since its founding.

The latest iteration of SACNAS mentoring is the development of Science Scholars: The Native American Path (SSNAP), a year-round effort to facilitate continual mentorship, workshops, networks, and support that fully engages American Indian undergraduate and graduate students in science. In its second year of programming at the pilot institution, Oklahoma State University, students are mentored to prepare an effective abstract, develop professional networks among peers and mentors, apply to and succeed in research programs, and receive support to attend the SACNAS National Conference.

Analysis: SSNAP—building on success



Get Involved

Annabel Ortiz
Program Manager,
SACNAS Departme
of American India
Affairs

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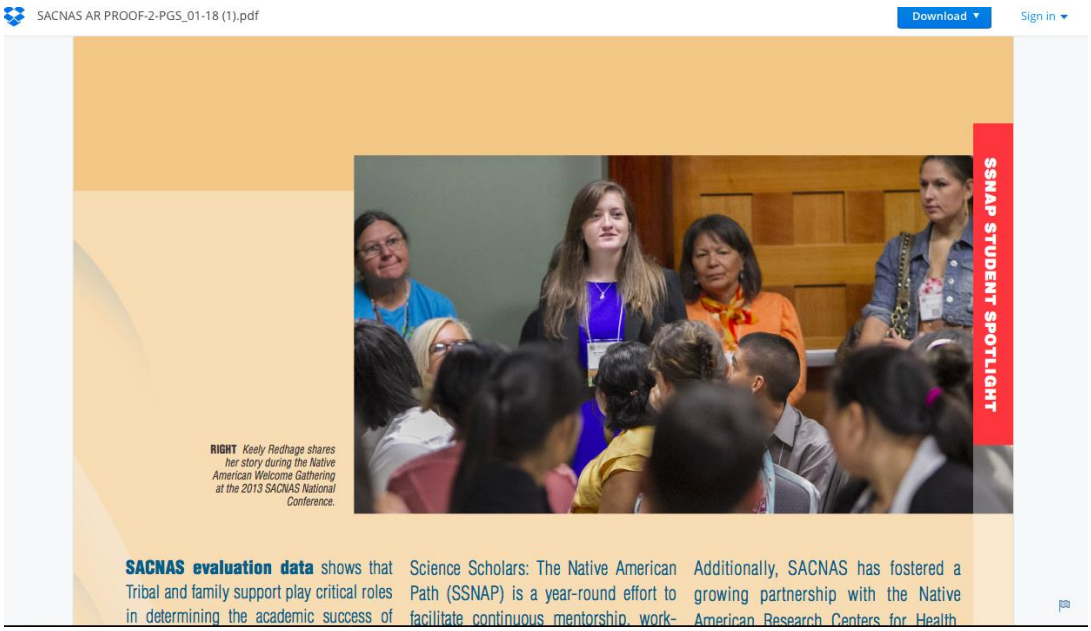
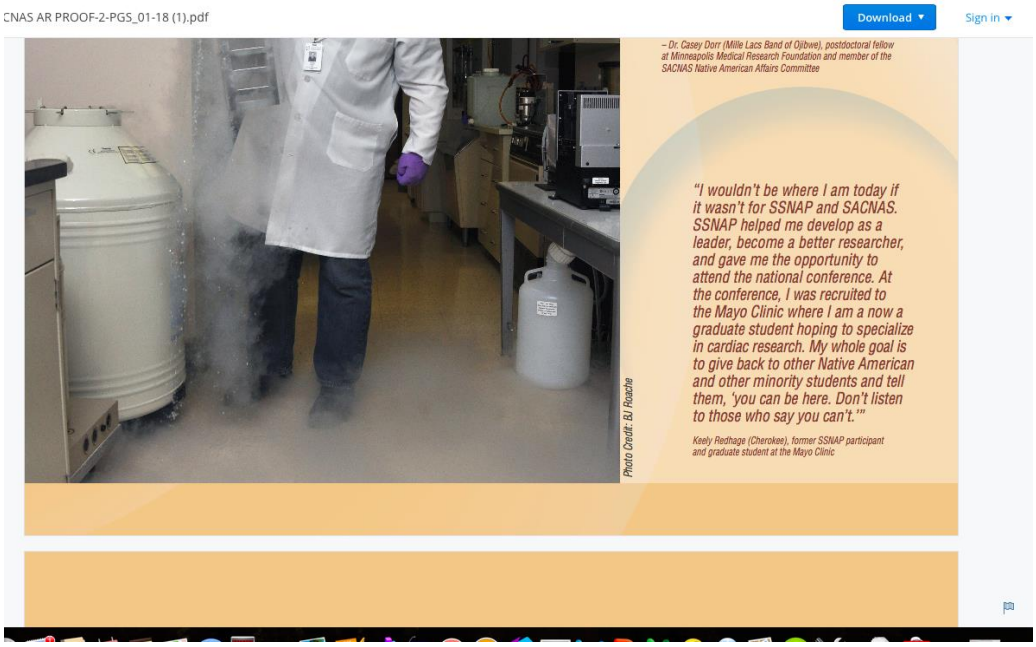
Keely Redhage, former OSU Scholar and current graduate student at the Mayo Clinic was featured in the SACNAS Annual Report.





APPENDIX P

SCHOLARS BY INSTITUTION

Institution of Bachelors	Last Name	First Name
Cameron University	Del Olmo	Loriana
Cameron University	Gesell	Jessica
Cameron University	Merriefield	Melissa
Cameron University	Ruiz Castillo	Natalie
Cameron University	Krause	Elizabeth
Cameron University	Matthews	Roosevelt
Cameron University	Rivas	Alaxander
Cameron University	Whitlow	John
Cameron University	Johnson	William
East Central University	Hyden	Michelle
East Central University	Lloyd	Casey
East Central University	Asaro	Laura
East Central University	Apala	Alexandria
East Central University	Apala	Elizabeth
East Central University	Bohan	Shundin
East Central University	Chapman	Tanya
East Central University	Deatherage	Luvey
East Central University	Thompson	Linzi
East Central University	Rodriguez	Landon
East Central University	Dale	John
East Central University	Razo	Nikolas
East Central University	Frederickson	Michael
East Central University	Tillar	Chase
East Central University	Postoak	Brandon
East Central University	Phan	Thong
Langston University	Bowman	Deborah
Langston University	Comeaux	Evann
Langston University	Davis	Lindsay
Langston University	Dismuke	Taylor
Langston University	German	Amber
Langston University	Jordan	Mary
Langston University	Ross	Jodeci
Langston University	Pollard	Kellyn
Langston University	DeLoach	Eugene
Langston University	Johnson	Ryan
Langston University	McKinney	Martel
Langston University	Pugh	Denzel
Langston University	Adekunle	Alex
Langston University	Pawnee	Candice
Langston University	Rand	Tiease
Langston University	Hill	Katerias
Langston University	Vann	Britani
Langston University	Houston	Gabriel

Langston University	Flenory	Kwanshae
Langston University	Newman	Nicole
Langston University	Abernathy	Jasmene
Langston University	Fields	Beautiful
Langston University	Hunter	Leslie
Langston University	Mason	Alexus
Langston University	Williams	Gabrielle
Langston University	Wright	Danielle
Langston University	James	Morgan
Langston University	Bakine	Mira
Langston University	Fields	Joseph
Langston University	Hall	Rashad
Langston University	Lindsay	Kameron
Langston University	Lott	LeMarcus
Langston University	Simon	Nicholas
Langston University	Jimenez	Richard
Langston University	Givens	Morgan
Langston University	Lloyd	TaJae'
Northeastern State University	Mera	Alejandra
Northeastern State University	Moore	John
Northeastern State University	Langston	Luther
Northeastern State University	Littlefield	Tyler
Northeastern State University	Lowe-Thompson	Lauren
Northeastern State University	Young	Travis
Northeastern State University	Waite	Joshua
Northeastern State University	Yerton	Jacob
Northwestern OSU	Gahr	Willow
Northwestern OSU	Manning	Aaron
Northwestern OSU	McCartney	Scotty
Northwestern OSU	Pannell	Dalton
Oklahoma State University	Chavez	Mykle
Oklahoma State University	Ryan	Brooklin
Oklahoma State University	De La Cruz	Raymundo
Oklahoma State University	Alexander	Diamond
Oklahoma State University	Alexander	Lauren
Oklahoma State University	Daffer	Mersades “Sadie”
Oklahoma State University	Jackson	DeYawna
Oklahoma State University	Washington	Amber
Oklahoma State University	Woodard	LaTasha
Oklahoma State University	Chicas-Mosier	Ana
Oklahoma State University	Elizondo	Elisa
Oklahoma State University	Scofield	Amanda
Oklahoma State University	Vega Recalde	Carolina

Oklahoma State University	Anderson	Amber
Oklahoma State University	Berger	Lindsey
Oklahoma State University	Reed	Roberta
Oklahoma State University	Austin	Zoe
Oklahoma State University	Autry	Tyler
Oklahoma State University	Figuerido	Darren
Oklahoma State University	Robles	Julio
Oklahoma State University	Etier	Zachary
Oklahoma State University	Flanagan	Evan
Oklahoma State University	Graham	Benjamin
Oklahoma State University	Hardison	Alexander
Oklahoma State University	Kibble	Geoffrey
Oklahoma State University	McGowen	Eric
Oklahoma State University	Melko	Nicholas
Oklahoma State University	Smith	Isaac
Oklahoma State University	Williams	Gary
Oklahoma State University	Edwards	Horacio
Oklahoma State University	Ellis	Sage
Oklahoma State University	Garcia	Roberto
Oklahoma State University	Douglas	Amber
Oklahoma State University	Davison	Maci
Oklahoma State University	Nichols	Tyler
Oklahoma State University	White	Hannah
Oklahoma State University	Smith	Faith
Oklahoma State University	Daggy	Nataly
Oklahoma State University	Milteer	Leah
Oklahoma State University	Secondi	Attika
Oklahoma State University	Adamson	Camille
Oklahoma State University	Clark	Reina
Oklahoma State University	Commey	Marissa
Oklahoma State University	Gray	Shanice
Oklahoma State University	Mack	Emaun
Oklahoma State University	Thompson	Lauren
Oklahoma State University	Woody	Ashane
Oklahoma State University	Pham	Susan
Oklahoma State University	Aguilar	Alicia
Oklahoma State University	Barboza-Pacheco	Suzi
Oklahoma State University	Catlin	Jessica
Oklahoma State University	Farias	Leslie
Oklahoma State University	Gunnars	Tabitha
Oklahoma State University	Lopez	Alexandra
Oklahoma State University	Lopez	Michelle
Oklahoma State University	Mercado	Elisa
Oklahoma State University	Saravia	Katherine
Oklahoma State University	Crawford	River
Oklahoma State University	DeShazo	Kylie

Oklahoma State University	Fields	Arella
Oklahoma State University	Hefley	Carol
Oklahoma State University	Ichord	Marla
Oklahoma State University	Moore	Gretchan
Oklahoma State University	Murie-Harting	Maeghan
Oklahoma State University	Only A Chief	Autumn
Oklahoma State University	Osborne	Taylor
Oklahoma State University	Romine	Brooke
Oklahoma State University	Schwartz	Katherine “Katie”
Oklahoma State University	Shettles	Hazelynn
Oklahoma State University	Smith	Sydni
Oklahoma State University	Ware	Taliyah
Oklahoma State University	Whitaker	Katelyn
Oklahoma State University	Akinwale	Mayowa
Oklahoma State University	Brown	Joseph
Oklahoma State University	Brown	Trenton
Oklahoma State University	Ekeh-Chiadi	Victor
Oklahoma State University	Glynn	Derrian
Oklahoma State University	Golphin	Jalen
Oklahoma State University	Hill	Isiah
Oklahoma State University	Holland	Mykale-Jamal
Oklahoma State University	James	Stephen
Oklahoma State University	King Jr.	Troy
Oklahoma State University	Lightner	William
Oklahoma State University	McAlester	Quentin
Oklahoma State University	Redmond	Jaron
Oklahoma State University	Takyi-Micah	Matthew
Oklahoma State University	Williams	Johnny
Oklahoma State University	Birdi	Harwinder
Oklahoma State University	Chidurala	Rahul
Oklahoma State University	Vo	Kevin
Oklahoma State University	Barbosa	Asaph Matheus
Oklahoma State University	Cortina	Uriel
Oklahoma State University	Guerro Criado	Andres
Oklahoma State University	Means	Nicolas
Oklahoma State University	Palacios	Brent
Oklahoma State University	Patterson	Cameron
Oklahoma State University	Perez	Julio
Oklahoma State University	Saenz	Adrian
Oklahoma State University	Sanchez-Vasquez	Eulojio
Oklahoma State University	Viveros	Edgar
Oklahoma State University	Batschelett	Garrett
Oklahoma State University	Fleming	Jordan
Oklahoma State University	Henthorn	Daniel
Oklahoma State University	Schapansky	Chazz
Oklahoma State University	Williams	Grant

Oklahoma State University	Ridge	Zachary “Zach”
Southeastern OSU	Evans	Jaclyn
Southeastern OSU	Guadian-Ibarra	Roberto
Southeastern OSU	Bryant	Kayle
Southeastern OSU	Shannon	Tyler
Southeastern OSU	Eaves	Sarrysa
Southeastern OSU	Grider	Rachel
Southeastern OSU	Joines	Allison
Southeastern OSU	LeFlore	Laci
Southeastern OSU	Joines	Peyton
Southeastern OSU	Long	Bobby
Southeastern OSU	Maxwell	Matthew
Southwestern OSU	Ayala	Megan
Southwestern OSU	Walker	Ashlie
Southwestern OSU	Phillips	Mary
Southwestern OSU	Abame	Alfa
Southwestern OSU	Davilla	Dustin
Southwestern OSU	Allen	Michael
Southwestern OSU	Burke	Bradley
Southwestern OSU	Gorbet	Michael-Joseph
Southwestern OSU	Jones	Donnie
Univ. of Central Oklahoma	Mashburn	McKayla
Univ. of Central Oklahoma	Snow	William
Univ. of Central Oklahoma	Moore	Essance
Univ. of Central Oklahoma	Eisemann	Amanda
Univ. of Central Oklahoma	Martinez	Janelle
Univ. of Central Oklahoma	Carson	Sharonda
Univ. of Central Oklahoma	Spencer	Chelsea
Univ. of Central Oklahoma	Vallejos - Elliott	Yoslin
Univ. of Central Oklahoma	Webb	Jessica
Univ. of Central Oklahoma	Dimanche	Rebecca
Univ. of Central Oklahoma	Satchell	Angeline
Univ. of Central Oklahoma	Figueroa	Luis
Univ. of Central Oklahoma	Anderson	Cory
Univ. of Central Oklahoma	Ware	Orgel
University of Oklahoma	Berrios	Gabriela
University of Oklahoma	Brumble	Tayler
University of Oklahoma	Babb	Jael
University of Oklahoma	George	Peter
University of Oklahoma	Guerra	Alexander
University of Oklahoma	Ifabiyi	Kayode
University of Oklahoma	Blair	Tanner

University of Oklahoma	Hunt	Seamus
University of Oklahoma	Simmons	Aaron
University of Oklahoma	Coleman	Raina
University of Oklahoma	Taylor	Ciore
University of Oklahoma	Cooper	Bree
University of Oklahoma	Redshirt	Raquel
University of Oklahoma	Foster	Kylie
University of Oklahoma	Funderburg	Rebecca
University of Oklahoma	Whorton	Sharon
University of Oklahoma	Brown	Kandro
University of Oklahoma	Calhoun	Skylar
University of Oklahoma	Le	Uytran
University of Oklahoma	Brigueda	Ramiro
University of Oklahoma	Burrus	Austin
University of Oklahoma	Ashley	Tyler
University of Oklahoma	Mussett	Zach
University of Oklahoma	Mayen	Pablo
University of Tulsa	Page	Catherine
University of Tulsa	Suddath	Shannon
University of Tulsa	Johnson	Trokon
University of Tulsa	Flonard	Michaela
University of Tulsa	Davalos	Nicole
University of Tulsa	Perez Errasquin	Melida
University of Tulsa	Riojas	Katherine
University of Tulsa	Santa-Pinter	Natalie
University of Tulsa	Presley	Jamie
University of Tulsa	Secrist	Kathryn
University of Tulsa	Thomas	Jauwan
University of Tulsa	Aston	Jonathan
University of Tulsa	Martinez	Ryan
University of Tulsa	Dilligard	Bryan
University of Tulsa	Kelley	Armand