

# 2018

## PERFORMANCE EFFECTIVENESS

### REVIEW

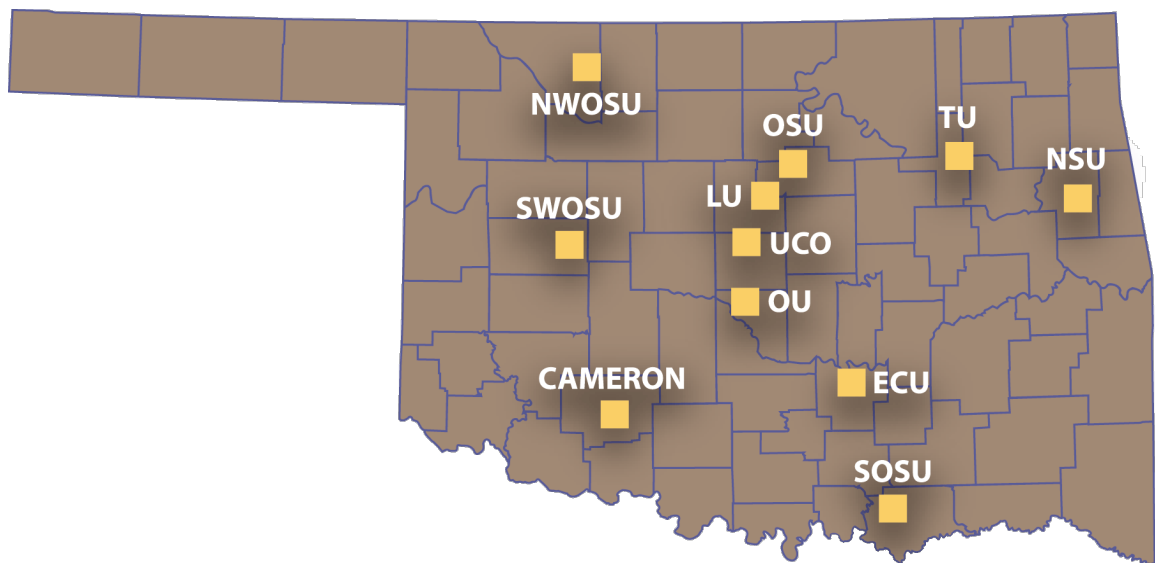
Oklahoma  
Louis Stokes Alliance for  
Minority Participation  
(OK-LSAMP)



Submitted to  
The National Science Foundation  
2415 Eisenhower Avenue  
Alexandria, VA 22314



## Oklahoma Alliance Institutions



2018  
*PERFORMANCE EFFECTIVENESS REVIEW*  
P.E.R.

Oklahoma

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

Submitted by

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## INTRODUCTION

The Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) program, continues to excel in the number of underrepresented minority students (URMs) pursuing degrees in Science, Technology, Engineering, and Mathematics (STEM) and therefore successfully meeting the NSF goal. The OK-LSAMP program concluded *Year four* of the five-year National Science Foundation (NSF) grant (HRD 1408748 –2014-2019). This also concludes 24 years of successful LSAMP activities in Oklahoma.

Throughout the 2017-2018 academic year, the Oklahoma alliance increased the number of scholars by 16% in comparison to the 2016-2017 academic year. Of those 314 scholars, 88 completed Bachelor of Science degrees and 24 of the graduates were admitted to graduate schools for a total of 27% of scholars. During the academic year 151 (48%) of the alliance scholars participated in research activities, and 96 (31%) of the scholars, participated in summer internship experiences at national and international locations.

Forty-one scholars participated in international experiences, a 36% growth from last academic year and over a 400% growth from 2015-2016. Within the 2017-2018 academic year, the Oklahoma scholars participated in international experiences in over 42 different locations.

Dr. Jason F. Kirksey, Vice President for Institutional Diversity continues as Principal Investigator and through his leadership at Oklahoma State University (OSU), the institution received various awards to recognize the institution's efforts in Diversity and Inclusion. OSU received the 2017 American Association for Access, Equity, and Diversity (AAAED) Roosevelt Thomas Champion of Diversity Award. The AAAED is a national, nonprofit organization of equal opportunity, diversity and affirmative action professionals. Oklahoma State University was also recognized for its commitment to diversity and inclusion for the sixth consecutive year with the 2017 Higher Education Excellence in Diversity Champion (HEED Award from Insight Into Diversity). OSU and the ten other colleges and universities were selected as diversity champions. The HEED award was also bestowed for the second year in a row to the University of Oklahoma (OU), which demonstrates the commitment of these two major universities with URM students and scholars. The National Association of Diversity Officers in Higher Education (NADOHE) selected Dr. Kirksey to receive the Frank W. Hale Jr. Distinguished Service Award. This award recognizes individuals who distinguish themselves in higher education with a robust record of consistent service for inclusive excellence exercising innovative and courageous leadership and vision, and exemplifying the philosophy, principles and practices of NADOHE while contributing substantially to diversity and inclusive excellence. (Appendix A)

The University of Oklahoma (OU) enthusiastically continued the recruitment of interested LSAMP scholars for the OK-LSAMP Bridge to the Doctorate (BD) cohort IX. The OU BD cohort will continue to recruit a few more BD fellows as there are eight fellows in the cohort. Oklahoma State University admitted 12 former LSAMP scholars into the BD Cohort VIII program. The fellows continue the successful progress towards completing their graduate degree requirements. The OSU BD cohort has a diverse group of degree fields represented from Mathematics, Veterinary Biomedical Sciences, Integrative Biology, Industrial Engineering, Natural Resource

Ecology and Management, Microbiology, Chemistry and Biosystems & Agricultural Engineering. University of Oklahoma's Bridge to the Doctorate Cohort VI and OSU's Cohort VII fellows continued to make satisfactory progress toward completing graduate degree requirements.

Two OK-LSAMP Scholars, Nathan Richbourg (OU) and Susan Pham (OSU), were awarded the NSF Graduate Research Fellowship Program (GRFP) fellowship in Spring 2018 prior to their first graduate school semester.

The 23<sup>rd</sup> Annual Research Symposium welcomed 178 attendees for a day of workshops, poster and oral presentations, graduate school conversations and guest speakers. Darron Lamkin, founder and president of Class Matters was the keynote speaker. Our scholars presented 44 posters and had 16 oral presentations.

OSU successfully hosted eight OK-LSAMP scholars to their Math camp for undergrads. Dr. William Jaco, Dr. Edward Richmond and Dr. Jay Schweig hosted both LSAMP scholars and Mentors to provide training that will encourage these promising scholars to continue their education and pursue a PhD in mathematics.

Southeastern Oklahoma State University, Southwestern Oklahoma State University and the University of Oklahoma successfully conducted four summer international research collaborations. Through NSF supplemental awards, these alliance campuses were able to provide a total of seven OK-LSAMP scholars with great international research experiences. Scholars spent a minimum of eight weeks conducting research with a collaborating institution abroad.

OK-LSAMP Scholars from across the eleven alliance institutions participated in numerous activities promoting STEM and the OK-LSAMP program. They presented at over 80 state, national, and international conferences, 151 scholars participated in research throughout the academic year, and many participated in summer research projects. Scholars were admitted to prestigious graduate programs such as Harvard University, Johns Hopkins and several scholars received Bridge to the Doctorate funding. OK-LSAMP Scholars continue to be 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 24 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 URM students in STEM fields and increase their matriculation into graduate programs.*

Scholar Demographics

The 11 Oklahoma alliance institutions supported 314 LSAMP scholars in the 2017 - 2018 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 URM students in STEM programs across the alliance (Table 1).

Table 1. Comparison Numbers to Meet Stated Goal

Institution	No. Scholars	
	2016-2017	2017-2018
Cameron	12	16
East Central University	12	17
Langston University	47	44
Northeastern State University	15	13
Northwestern Oklahoma State University	6	6
Oklahoma State University	83	109
Southeastern Oklahoma State University	18	17
Southwestern State University	8	13
University of Central Oklahoma	15	15
University of Oklahoma	40	53
University of Tulsa	14	11
Totals	270	314

Year four of Phase Five continued to show more females than males becoming LSAMP scholars in the Oklahoma alliance.

Table 2. Comparison of Scholars by Gender

Category	Year	
	2016-2017	2017-2018
Male	124	146
Female	146	168
	270	314

Table 3. Comparison of Scholars by Primary Ethnicity

Ethnicity	2016-2017	2017-2018
African American	93	109
Native American	94	111
Hispanic	59	82
Native Hawaiian / Pacific Islander	2	3
Asian American	8	2
First Generation / Caucasian	14	7
Total	270	314

Table 4. Scholars by Discipline and Gender

Degree Program	Male	Females	Totals
Agriculture			
Agriculture	2	2	4
Animal Science	3	2	5
Biological Sciences			
Biochemistry	9	9	18
Biology	23	64	87
Chemistry	11	11	22
Microbiology	8	14	22
Nutritional Science	0	6	6
Zoology	2	8	10
Computer Science	9	7	16
Engineering			
Aerospace	6	2	8
Architecture	1	2	3
Chemical	6	8	14
Civil	1	2	3
Computer Engineering	5	1	6
Electrical	13	0	13
Mechanical	13	11	24
Environmental	0	1	1
Engineering	6	4	10
Technology	4	4	8
Management Information Systems	2	0	2
Mathematics	8	4	12
Natural Resources and Conservation			
Environmental Science	0	1	1
Natural Resources	1	2	3
Fisheries, Wildlife and Conservation	2	0	2
Physics	11	3	14

## On-Site and Community College Recruitment

The recruitment of scholars was evidenced by the 16% growth in scholars within the whole alliance. Campus Program Managers sought top underrepresented students in the STEM fields through their classrooms or through other academic activities. Additional recruitment was also conducted on-site at high school, community college events or regional STEM events. 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. Information tables were set up at science fairs, summer workshops for high school students as well as personal contact with prospective scholars.

The OK-LSAMP scholars are a pertinent part of the alliance's recruitment efforts. Throughout the alliance the current scholars assisted in the efforts as to relate to potential scholars and give their experiences with the program. Scholars were invited by their campus peers to present at campus chapters of American Indian Science and Engineering Society (AISES), Minorities in Agriculture Natural Resources and Related Science (MANRRS), National Society of Black Engineers, Society for the Advancement of Chicanos/Hispanics and Native Americans in the Sciences (SACNAS), Society of Hispanic Professional Engineers (SHPE), amongst others. The LSAMP scholars act as ambassadors for the OK-LSAMP alliance not only during recruitment events but in research events as well.

In an effort to educate more of the local people about the program the OK-LSAMP scholars and staff have also participated in news clips from local TV stations in which they speak about the program or the scholars' current research. OK-LSAMP Director, Brenda L. Morales, appeared in the Tulsa TV show "Temas de Tulsa" (<https://www.youtube.com/watch?v=UNCQyiCQSTM>) a talk show that targets to educate the local Spanish speaking community of Oklahoma.

Examples sites of recruitment participation include, but are not limited to:

- NSF EPSCoR Women in Science Conference
- Dove Science Academy College Fair
- OU TREE Conference
- TU STEM Fair
- Will Rogers STEM Fair
- OSU Research Week
- Promoting Undergraduate Research Conference
- Urban League Diversity Expo
- American Indians in Science and Engineering Society (AISES) Regional Conference
- Proud To Be A Life Scientist" hosted by Life Science Freshman Research Scholars



Alliance schools are actively associated with community and tribal colleges in their region. Campus Program Managers worked 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	

## Alliance Supplementary Activities

The OK-LSAMP alliance institutions participate and collaborate with various summer academies/camps, research and bridge programs. This continued to be a critical part of the alliance experience as it offers a unique opportunity to educate students about the OK-LSAMP program and the benefits of being a STEM major and an LSAMP Scholar. Some of the alliance institutions participated in presentations 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” OK-LSAMP scholars and staff were also invited to be panelist at the 8<sup>th</sup> Annual Promoting Undergraduate Research Conference. The conference, hosted by Oklahoma State Regents for Higher Education, was used to let other students and faculty know about OK-LSAMP and the potential for growth in the state. (Appendix B).

**Oklahoma State University:** As lead institution, OSU continued to participate in several on-campus 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:

*Activate Conference* - is a four-day pre-collegiate leadership conference for incoming Oklahoma State University freshmen aimed at equipping them with the skills and opportunities to be competitive leaders in their residential community at OSU.

*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 and counselors, living in the dorm with program participants and attending daily group activities. In addition, students have the opportunity to live on the Diversity Engineering floor or the Maude’s Squad floor (Women in Engineering) as part of a Living and Learning Community within Residential Life.

*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.

***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.

**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:

***Architecture Summer Academy*** - The Collaborate, Create, Construct Academy offers students a one-week opportunity to explore the disciplines in the University of Oklahoma's College of Architecture. Through incorporating all five disciplines—Architecture, Interior Design, Construction Science, Landscape Architecture and Regional City Planning—the academy will introduce students to an interdisciplinary study.

***Aviation Summer Academy*** - is a residential camp for Oklahoma rising 8<sup>th</sup> graders. The camp uses hands-on activities in aviation to explore astronomy, physics, space, aeronautics and more.

***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.

***Horizons Unlimited*** - is a day camp for academically gifted and talented students exploring STEM fields.

***Mesonet Weather Camp*** is a weeklong residential camp designed to expose students to forecasting and career opportunities with tour of NOAA's Storm Prediction Center and more.

**Alliance Universities and State Collaboration:** 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 Oklahoma students have participated in summer academies since 1990 and a greater percentage of the participants continue on to college in STEM degree programs and earn degrees at higher rate than other students.

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

**East Central University:** (1) Explorations in Computer Science and Robotics (Grades 8-12). (2) You Are What You Eat: Isolation and Analysis of Proteins, Carbohydrates, and Lipids in the Biochemistry Laboratory (Grades 8-9).

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

**Murray State College:** 2017 MSC Summer College STEM Academy (Grades 8-12).

**Northeastern State University:** (1) Get Green for Blue: Outdoor STEM Investigations Connecting Water to You (Grades 8-10). (2) Summer Robotics Academy (Grades 8-11).

**Oklahoma State University:** (1) Camp TURF (Tomorrow's Undergraduates Realizing the Future) (Grades 9-10). (2) It's a Polymer Life: Polymers of Everyday Life Summer Academy (Grades 10-12). (3) Exploring the Benefits of Human-Animal Interaction and Bonding Processes (Grades 9-10).

**Oklahoma State University Institute of Technology:** 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 Central Oklahoma:** (1) CSI Academy (Grades 9-12). (2) Be an Engineer: Change the World (Grades 8-10).

**University of Oklahoma:** (1) Collaborate, Create, Construct! Innovation Shaping the Built Environment (Grades 9-10). (2) Oklahoma Mesonet: Mostly Weather With a Chance of Fun (Grades 9-10). (3) Starship: Exploration (Grade 8).

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

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

**The University of Tulsa:** (1) Summer Engineering Academy at The University of Tulsa (Grades 8-11). (2) Technology Education and Collaborative (TEC) (Grades 8-9)

### Data Collection

Collection of data is a priority for the OK-LSAMP program. All eleven alliance institutions have transitioned to use the online application. The on-line application continued to be updated and revised to insure the most accurate collection of information for each application on each alliance campus. The process is working well for both students and Campus Program Managers alike.

OK-LSAMP program staff continued to use Microsoft Access as a method of record keeping for the scholars. This data is used for any scholar information provided and is the resource used to export data that the evaluator uses for that evaluation period. Data is constantly being updated as the scholars let us know about their research projects, conference attendance or any other relevant updates.

The Alumni Listserv and Database continue to be updated and used to promote LSAMP programs and Scholar accomplishments. OK-LSAMP keeps an open line of communication with alumni to seek resources for the scholars as well as to update the “Link” newsletter. Additionally, alumni are sought out to be guest speakers for scholar meetings and for the Annual OK-LSAMP Research Symposium.

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

OK-LSAMP continued to see the importance of utilizing social media as a means of disseminating information to Scholars. The alliance program staff 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 directing them to opportunities such as: summer internships, research opportunities, international experiences, conferences and scholarships. In addition, the OK-LSAMP Facebook Group, Instagram and Snapchat accounts continued to be used for more direct contact with scholars. All the OK-LSAMP social media sites continued to be used to showcase students’ achievements related to research proposals being accepted for national presentations, being admitted to graduate school, accepting internships, and other highlight or information that might be motivating to 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.*

OK-LSAMP scholars are encouraged and empowered through one on one meetings with Campus Program Managers and Scholar meetings. Resources are provided to motivate scholars personally, academically and professionally. To motivate and encourage the scholars to continue on to graduate school the OK-LSAMP program provided various resources such as graduate school preparation and application process workshops, interaction with matriculated graduate students, BD fellows and GRFP fellows, as well as the research experiences that provide opportunities for peer reviewed journal publishing.

- Twenty-two of the 2017-2018 OK-LSAMP graduates were accepted to graduate schools throughout the nation. Examples include, but are not limited to:

Harvard  
Johns Hopkins  
Pasteur Institute, France  
University of Michigan  
University of California

University of Minnesota  
University of North Texas University  
of Texas  
University of Utah  
Vanderbilt, Nashville TN

- Scholars continued to take advantage of the on-line Graduate Record Examination (GRE) preparation course offered to the alliance scholars through Oklahoma State University-OKC and Canadian Valley Technology Center - Chickasha Campus. 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 provided with information and resources for the GRFP and the LSAMP BD program. This information was provided through informational workshops, panel discussions and workshops at the annual research symposium.
- Scholar meetings throughout the alliance offered a forum for educational speakers and workshops focused on graduate school preparation and career development.
- OK-LSAMP scholars were given support to state, regional, and national conferences to present their research projects.

- During academic year 2017-18, over 80 scholars participated in 172 documented presentations. Examples include, but are not limited to:
  - American Chemical Society National Conference, New Orleans, LA
  - American Indian Science and Engineering Society (AISES) national conference, Denver, CO
  - Annual Biomedical Research Conference for Minority Students, Phoenix, AZ
  - Emory International Research Conference, Atlanta, GA
  - National Conference on Undergraduate Research (NCUR), Edmond, OK
  - OK-LSAMP Annual Research Symposium, Stillwater, OK
  - Oklahoma Research Day at the Capitol, Oklahoma City, OK
  - Oklahoma Research Day, Enid, OK
  - Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference, Salt Lake City, UT
  - Louis Stokes Midwest Center for Excellence, Indianapolis, IN
  - University of Buffalo Undergraduate Conference, Buffalo, NY

### 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 lead 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 preparation courses were offered to all scholars. This online preparation resource was offered through OSU - OKC's or Canadian Valley Technology Center - Chickasha Campus Ed-2-Go series.
- Scholars throughout the alliance are encouraged to apply to a minimum of three graduate schools, with a preference of five applications.
- Scholars throughout the alliance are encouraged to apply to the GRFP during their senior year before graduation as well as graduate schools that offer the BD fellowship. Preparation and information workshops about both fellowships were provided to scholars during the year as well as during the Annual Research Symposium.
- OK-LSAMP scholars are encouraged to participate in any other scientific research program through their institution to provide additional academic/research support.
- Scholar meetings are means for scholars to hear and engage in 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 23<sup>rd</sup> Annual Research Symposium was held September 16, 2017, on the Oklahoma State University, Stillwater campus. The Symposium welcomed 178 attendees for a full day of workshops, posters, oral presentations, and guest speakers (Appendix C).

Mr. Darron Lamkin, founder and president of Class Matters (Oklahoma City, OK) was the keynote speaker for the 23<sup>rd</sup> Annual Research Symposium. Lamkin is a proud OK-LSAMP and BD alumnus that empowers youth through hands-on STEM learning activities and sharing his life lessons. Through the vision of Class Matters “empower our future, one teen at a time”, Darron desires to realize the mission “to develop future engineers, entrepreneurs and leaders who realize their potential and maximize the potential of others”.

In addition to the keynote speakers, Dr. Nadia Hall, Coordinator of Graduate Recruitment and Student Services with the University of Tulsa spoke on successful practices for Graduate School applications.

All attendees were able to listen to the GRFP and BD fellow panelist. This was very enlightening to our scholars as they were able to directly ask GRFP and BD fellows about their experience through the application process as well as through the programs.

Awards were presented to Scholars for first, second, and third place in poster and oral presentations. Winners included:

Table 6. OK-LSAMP Annual Research Symposium Awards

<b>Award and Category</b>	<b>Scholar</b>	<b>Alliance Institution</b>
1st place Life Sciences Poster	Garrett Eakers	University of Oklahoma
2nd place Life Sciences Poster	Jordan (Jay) Moore	Oklahoma State University
3rd place Life Sciences Poster	Jesse Velasco	Southwestern OSU
1st place Non-Life Sciences Poster	Amber Morgan	University of Oklahoma
2nd place Non-Life Sciences Poster	Elisabeth Allbritton	Southwestern OSU
3rd place Non-Life Sciences Poster	Nate Richbourg	University of Oklahoma
1st place Oral	Alicia Aguilar	Oklahoma State University
2nd place Oral	Matthew Maxwell	Southeastern OSU
3rd place Oral	Maranda Clymer	East Central University



Table 7. Annual Research Symposium Attendees by Category

	Attendees	
	22nd Annual	23rd Annual
Undergraduate Students	73	94
Graduate Students	4	12
Faculty	25	35
Staff	6	14
K-12 Students	0	1
Special Guests	19	22
<b>Total</b>	<b>127</b>	<b>178</b>

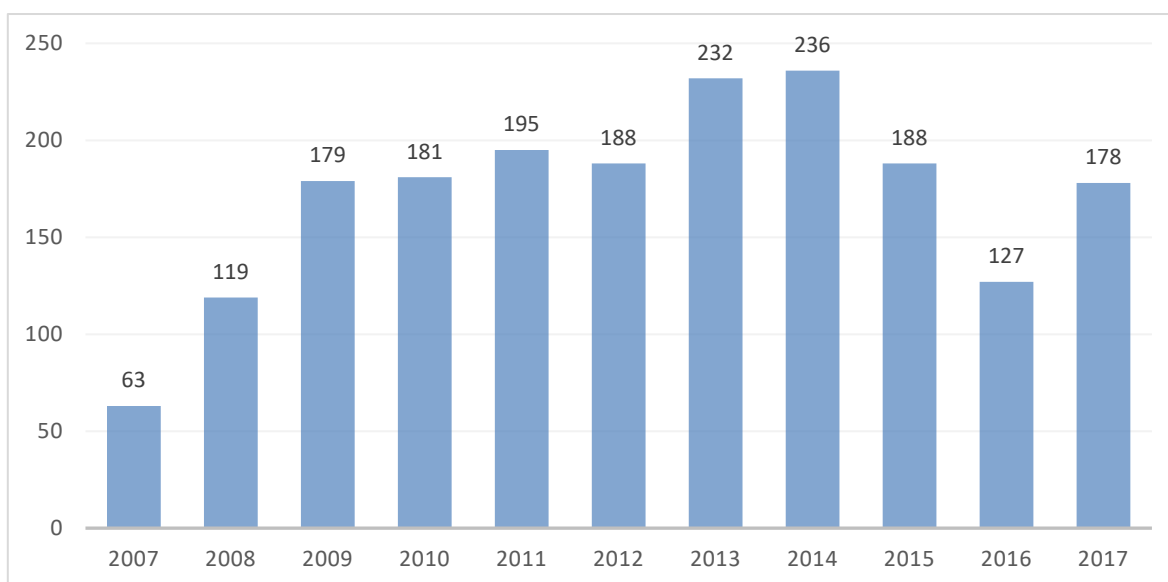


Figure 1. Number of Participants Attending Annual Research Symposium

### Monthly Scholar Meetings

Campus Program Managers are responsible for holding their campus' OK-LSAMP scholar meetings. The meetings are intended to provide support for the scholars through guest speakers. 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. This academic year lab tours were included in an attempt to get students to learn about different areas and potentially collaborate with different research labs.

## Research / Internship Experiences

Scholars are strongly encouraged to apply to at least three summer internships and 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. REU internships provided scholars not only the opportunity to conduct research but were guided through the process of establishing their own research project and what all that might entail.

Table 8. Academic Year Research Experiences

Institution	Summer Internship 2017	Fall Semester 2017	Spring Semester 2018
Cameron University	2	7	6
East Central University	4	11	11
Langston University	16	9	9
Northeastern State Univ.	3	8	7
Northwestern OSU	1	2	2
Oklahoma State Univ.	27	38	23
Southeastern OSU	6	14	15
Southwestern OSU	7	8	8
Univ. of Central OK	3	14	14
University of OK	17	17	21
University of Tulsa	10	10	10
<b>TOTALS</b>	<b>96</b>	<b>138</b>	<b>126</b>

## Internship Partnerships

Scholars are encouraged to apply to a minimum of three 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 that scholars participated in within the 2017-2018 academic year:

***Cerner Corporation***, Kansas City, MO - The Cerner summer internship provides interns the opportunity to become an important part of their organization with opportunities in software engineering, consulting and other roles relevant to health science, information technology, computer science and related majors. Interns have the chance to experience real project work, team-based placements and group collaboration to develop skills that are potent and portable. (<https://careers.cerner.com/>)

**Coral Reef Initiative Program**, Saipan, Northern Mariana Islands - Students participated in projects that help protect and preserve CNMI's coral reef ecosystems and ensure responsible management of these resources. This work is achieved through biological monitoring, habitat restoration, research, enforcement, and education and outreach. (<http://cnmicoralreef.com/>)

**Sea Turtle Conservancy**, Costa Rica – Students participated in STC's fun and educational opportunity which blends research with an exotic location to get you involved in protecting endangered sea turtles. Participants have hands-on experiences that are designed to get students up close and personal with green sea turtles. (<https://conserveturtles.org/>)

**Harvard Medical School**, Boston, MA – BCMP Summer Scholars is a Harvard University summer internship program for motivated undergraduates with a strong interest in pursuing graduate studies focused on molecular mechanisms in biology. The program offers students the opportunity to gain experience in hands-on laboratory research; to interact with faculty, postdoctoral fellows, graduate students, and other summer interns; to attend weekly luncheon/seminar presentations by department members on specific research projects and cutting-edge research tools; and to improve presentation, writing, and communication skills. (<https://www.scholars.hms.harvard.edu/info>)

**NASA - Johnson Space Center**, Houston, TX – The Johnson Space Center's Office of Education provides internship, fellowship and scholarship opportunities to high school, undergraduate and graduate students from across the United States. The internships provide hands-on, mentored experiences aligned with student academic pursuits in science, engineering, communications, education and business majors. Conducted both during the school year and in the summer, these experiences offer students exposure to NASA through professional activities that contribute directly to the execution of NASA's ongoing missions. ([nasa.gov](http://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](http://ni.com))

**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.

**Organization for Tropical Studies**, Costa Rica - undergraduate students are provided with unparalleled access to tropical forest ecosystems, mentoring by experienced tropical ecology researchers, and training in field research methodology. Each student works with an on-station mentor as well as an on-campus mentor from his/her home institution to ensure the integration of

the summer research experience into students' academic careers. NSF LSAMP REU students live at La Selva Research Station or Las Cruces Research Station for their nine-week research experience. Features of this program include 1) research skills in the field, 2) enhancing communication skills through training in scientific writing, oral presentations, science blogging, and videography, and 3) integration of cultural experiences with research development. The program will focus on environmental topics such as biodiversity conservation and agroecology and will offer opportunities to interact with local farmers, smaller field stations, and/or environmental NGOs. (<https://tropicalstudies.org/>)

**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: Indiana University, Kansas State University, University of Kansas, Notre Dame University, New Jersey Institute of Technology, Beijing Center for Physical and Chemical Analysis (BCPCA), University of North Texas, University of California at Los Angeles, Universidad de Puerto Rico at Rio Piedras, Fred Hutchison Cancer Research Center in Seattle WA.

**Sandia National Laboratory**, Albuquerque, NM - Many of our research internships can be experienced through technical institutes that encompass a range of disciplines, including cyber security, energy surety, engineering design, and software development. Each institute provides a team to guide and mentor interns in projects aligned with their major or area of particular technical interest. Professional development and social activities supplement project work to create an even more rewarding experience. Internships provide students (1) opportunities to work on challenging projects at competitive pay, (2) academic credits for some co-op and other internships, (3) research mentoring from top scientists and engineers, (4) training and practical work experience using state-of-the-art equipment and instruments. (<https://www.sandia.gov>)

### 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 2017-2018, 41 scholars participated in international experiences, a 36% growth from last academic year and over a 400% growth from 2015-2016. Within the 2017-2018 academic year, the Oklahoma scholars participated in international experiences in over 42 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 9. Select internship locations outside the continental United States -  
June 2017 - May 2018

Student	Location
Jessica Ames	Exeter, England
Charles Bales	Madrid, Spain
Austin Carriere	Las Cruces, Costa Rica
Dustin Davilla	Hull, England
Jessica Everett	Coleraine, Northern Ireland
Jordan Moore	Utrecht, Netherlands
Lindsay Perez	Beijing, China
Cheyenne Smith	Graz, Austria
Nate Richbourg	Seoul, South Korea
Ayrianna Swanson	Limoges, France
Caleb Gunnar Teague	Istanbul, Turkey

The Oklahoma LSAMP program encouraged alliance faculty mentors to submit supplemental awards for international research for our scholars. During the 2017 summer the OK-LSAMP alliance had a total of four international research sites and sponsored seven LSAMP scholars for an eight week IREU experience. The 2017-2018 IREU sites were Hull, England for Chemistry (Hull, England), Bioengineering and Structural Biology (Exeter, England), Plant Biology (Cambridge, England) and Biological Sciences (Beijing, China).

#### 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 2017 *Diverse Issues in Higher Education* rankings, Oklahoma universities consistently rank in the top for awarding degrees to Native Americans. Six Oklahoma universities in the OK-LSAMP alliance rank in the top 12 institutions for Native Americans completing degree requirements.

Eighty-eight scholars completed Bachelor of Science degrees in the 2017-2018 academic school year. Twenty-four of the Scholars receiving a B.S. degree have been admitted to advanced degree programs at universities across the United States. Twenty-two of the graduating seniors will be continuing their education to pursue a Master of Science or Doctorate of Philosophy (PhD) degree, meaning 27% of our graduating seniors are continuing on to graduate school.

Table 10. Number of Graduates by Institution and Number Attending Graduate School

Alliance Institutions	2016-2017		2016-2017 To		2017-2018		2017-2018 To	
	Male	Female	Male	Female	Male	Female	Male	Female
Cameron University	2	1	0	0	4	2	1	0
East Central University	2	2	0	2	3	2	0	0
Langston University	5	13	1	2	5	6	0	0
Northeastern State University	1	1	0	1	2	2	1	0
Northwestern OSU	0	0	0	0	1	2	0	1
Oklahoma State University	10	10	2	4	16	11	4	4
Southeastern OSU	3	3	1	2	4	0	4	0
Southwestern	1	1	0	0	3	0	2	0
University of Central OK	1	1	0	1	0	0	0	0
University of Oklahoma	6	4	1	1	10	11	2	2
University of Tulsa	2	2	1	2	1	3	0	1
TOTALS	33	38	6	15	49	39	14	8
	71		21		88		22	

- 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-six (26) OK-LSAMP scholars had their research abstracts accepted to present at the 2018 National Conference on Undergraduate Research (NCUR), in Edmond, Oklahoma. The location of the NCUR conference made it very convenient to have a large number of scholars present their research through oral and poster presentations.
- 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 OSU 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 are available to the OK-LSAMP scholars through OSU - OKC's or Canadian Valley Technology Center - Chickasha Campus Ed-2-Go series.
- An annual alliance meeting was held with the Campus Program Managers and the OK-LSAMP program administration at the annual research symposium. In addition to the meeting there is constant communication between the program staff and all other alliance campuses. The meetings are a forum for ongoing communication on overall program operation and specific program implementations on each campus.
- A web page continued 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](http://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 continued to be upgraded and improved. Information included, but is not limited to: major, presentations at workshops/ conferences, internships, GPA, international experiences, organization involvement, degrees awarded and graduate school applications.
- An Alumni database continued to be updated with current information. Information returned by alumni will be used to stay connected and to keep alumni informed of upcoming events as well as to update the “Link”, OK-LSAMP newsletter.

## EVIDENCE OF OUTREACH

OK-LSAMP scholars are provided opportunities to gain knowledge, insight and experiences in their programs of study and research. These experiences provide guidance and networking to help the scholars develop a better idea of what their educational goals or potential research interests might be. Selected opportunities are identified below.

### 8th Annual Promoting Undergraduate Research Conference

Lizzie Lightning (NSU) served as a panelist for the Promoting Undergraduate Research Conference in Oklahoma City on September 29, 2017 in a panel discussion for student research involvement for undergraduate students. Brenda L. Morales (Program Director) served as a panelist for the State Resources Panel. (Appendix D)

### Louis Stokes Midwest Center of Excellence

The Louis Stokes Midwest Center of Excellence (LSMCE) held its fifth annual conference in Indianapolis, IN. Five of our scholars were selected to do poster presentations. Jessica Ames (OU), Marly Fixico-Hardison (OSU), Geir Hareland (OSU), Jordan Moore (OSU) and Jessie Velasco (SWOSU). Darlene Croci and Fara Williams presented a workshop on “Alliance to Alliance: Sharing Best Practices”. Brenda L Morales was a moderator for the Bridge to the Doctorate oral presentations (Appendix E).

### National Conference on Undergraduate Research

The National Conference on Undergraduate Research (NCUR) “is dedicated to promoting undergraduate research, scholarship, and creative activity in all fields of study” (NCUR, 2015). It is an annual conference that provides opportunities for the LSAMP scholars to present their research through poster presentations or oral presentations. In 2018, 26 scholars were accepted to present at the NCUR conference. Three scholars from the University of Tulsa, three from Langston University, one from Southwestern Oklahoma State University, seven from University of Oklahoma, two from East Central University, one from Northwestern Oklahoma State University and five from University of Central Oklahoma, one from Northeastern State University, and three from Oklahoma State University. Scholars attending also had opportunities to attend a career/graduate school fair and to discover the culture of the area. The 2018 NCUR conference was a unique experience since it was local. Several of our Native American scholars participated in the opening ceremony in representation of their tribal heritage. In addition to scholars attending the 2018 conference, OK-LSAMP program staff Darlene Croci, Dr. JC Diaz, Dr. Susan Walden, Dr. Michael Faneros and Brenda L. Morales, accompanied the scholars (Appendix F)



## Oklahoma Research Day

Oklahoma Research Day celebrated its 19<sup>th</sup> year as a premier annual event celebrating student and faculty research, creative and scholarly activities. The event has grown in numbers, having over 1,000 registered students, faculty, and guests and featured over 700 unique poster presentations. Oklahoma Research day has contributions from all of Oklahoma’s institutions of higher education, including many collaborative contributions from national and international academic and research institutions.

Northwestern Oklahoma State University in Alva, OK hosted the 2018 Oklahoma Research Day event for the second year. 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 27 Scholars participate in the event. ([oklahomaresearchday.com](http://oklahomaresearchday.com)) (Appendix G)

Table 11. Scholars Participating in Oklahoma Research Day by Institution

School	Scholar
East Central University	Connor Anderson
	Karla Banks
	Matthew Henry
	LaQuan Johnson
Northwestern Oklahoma State University	Willow Gahr
	Alicia Aguilar
	Caleb Alexander
	Marly Fixico-Hardison
	Erin Gallaway
Oklahoma State University	Tiana Sanders
	Erika Costain
	Brianna Cole
	Casey Love
	Matthew Maxwell
	Lindsay Perez
	Wade Peterson
Southwestern Oklahoma State University	Ariisa Mercer
University of Central Oklahoma	Alma Marquez
	Sarah Olson

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

The annual SACNAS conference was held October 19-21, 2017 at the Salt Palace Convention Center, Salt Lake City, Utah. For the sixth year most of our 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. Nine OK-LSAMP scholars were in attendance at the conference (Appendix H).

## Women in Science Conference

Scholars from across the alliance assisted with the Women in Science conference. The 2015 Conference was held in Tulsa, Oklahoma, at the Mabee Center. The event continued to be hosted by Oklahoma EPSCoR with staff, students, and faculty from universities and colleges across Oklahoma assisting with the day's activities. The conference registered 757 K-12 female students and 105 teachers. Additionally, there were over 266 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).

## Wentz Scholar Research Presentations

The Wentz Scholar Research Symposium was held April 20, 2018. Scholar Alicia Aguilar from Oklahoma State University presented at the 2018 Wentz Scholar Research Symposium (Appendix J).

## NSF-LSAMP Supplemental Funding Programs

*OK-LSAMP supplemental funding was requested to enhance scholar opportunities and provide a pathway for graduate school. The individual programs varied in nature of experience and resource opportunities. They were all hosted by collaboration of various institutions, allowing the scholar to travel outside of their home institution to gain valuable experience in their field (Appendix K).*

## NSF-LSAMP Math Summer Bridge Program

OSU successfully hosted 8 OK-LSAMP scholars to their Math camp for undergrads. Dr. Jaco, Dr. Edwards and Dr. Schweig hosted both LSAMP scholars and Mentors to provide training that will encourage these promising scholars to continue their education and pursue a PhD in mathematics. Four of the first participants in the NSF Math Bridge program will be attending graduate school in mathematics in the upcoming Fall semester.

## NSF-LSAMP Internship at the Beijing Center for Physical and Chemical Analysis

Southeastern Oklahoma State University (SEOSU) was awarded an NSF supplemental grant for the 2017 summer. The collaboration between Dr. Wu and Dr. Ludrick in SEOSU with the Beijing Center for Physical and Chemical Analysis allowed scholars Brianna Cole, Erika Costain and Lindsay Perez conduct research abroad.

### NSF-LSAMP Internship Program at University of Cambridge

The University of Oklahoma was awarded a supplemental grant for the 2017 summer with the University of Cambridge, Cambridge UK. Dr. Laura Bartley, professor and faculty mentor from OU led the project, with Dr. Susan Wadlen as PI of the project. OU OK-LSAMP Scholar Daniel Hayden, Plant Biology junior, participated in the 8-week program. The project entitled *Arbuscular Mycorrhiza Colonization Effects on Rice Root Cell Wall Composition* is the project Daniel was able to work in at Cambridge. The Scholar spent eight weeks on the University of Cambridge campus, experiencing research techniques, 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.

### NSF-LSAMP Internship at the Exeter University

The University of Oklahoma was awarded a supplemental grant for the 2017 summer for a scholar to conduct collaborative research at Exeter University, UK. Dr. Christina Bourne, professor and faculty mentor from OU led the project, with Dr. Susan Wadlen as PI of the project. OU OK-LSAMP Scholar Jessica Ames participated in the 8-week program in which she was able to spend eight weeks on the Exeter University campus experiencing research techniques, 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. This international opportunity made such an enormous impact in the scholars' career that she decided to apply to an international PhD program.

### NSF-LSAMP Internship at the University of Hull

Southwestern Oklahoma State University (SWOSU) was awarded a supplemental grant for the 2017 summer with the University of Hull, UK conducting research. The program was continuation of research from summer 2015. OK-LSAMP Scholars Dustin Davila and Brad Burke spent eight weeks in Hull England. This collaboration with the University of Hull allowed the scholars to conduct research with synthesis and invitro assessment of novel CXCR4 chemokine receptor antagonists.

## FACULTY HIGHLIGHTS AND PUBLICATIONS

Campus Program Managers 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 Program Managers

### **Jason F. Kirksey - OSU** - Awards & Recognitions:

Dr. Jason F. Kirksey, Vice President and Chief Diversity Officer was elected on March 9, 2018 to national board of directors for diversity officers.

### **Sharon Lewis - LU** - Awards & Recognitions:

January 2018, Dr. Sharon Lewis was awarded the David and Molly Boren Mentor for her outstanding mentoring of OK-LSAMP scholars. The award, sponsored by the Foundation for Excellence, was presented on the University of Oklahoma campus in Norman Oklahoma.

### **Carl Rutledge - ECU** - Awards & Recognitions:

Dr. Rutledge officially retired at the end of the 2017-2018 academic school year. He served as one of our Co-Principal Investigators for the OK-LSAMP grant as well as an outstanding OK-LSAMP Campus Program Managers for 24 years with great poise and high-esteem. Dr. Rutledge's devotion to the scholars he mentored over the past quarter-century is admirable. Dr. Rutledge will surely be missed by the scholars and the OK-LSAMP program staff.

## 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. Several selected highlights are below.

### **Charles Abramson - OSU** -

#### ***Awards:***

2017 PLOS One Collection (Abramson et al. 2016 selected as one of the top articles on bee research appearing in PLoS-One for 2016. Richardson LA (2017) A Swarm of Bee Research. PLoS Biol 15(1): e2001736. doi:10.1371/journal.pbio.2001736

2017 Awarded the Lawrence L. Boger Endowed Professorship in the School of International Studies at Oklahoma State University (2017 -2020)

2017 Award: Outstanding contributions to international relations Federal Institute of Paribia, Joao Pessoa, Brazil

2018 Oklahoma State University College of Arts and Sciences Faculty Mentor Award

2018 Oklahoma Psychological Society Outstanding Psychology Teacher

Elected to the Colombian Academy of Exact, Physical and Natural Sciences

### **Articles:**

Kieson\*\*, E. & Abramson, C. I. (2017). Equines as tools vs partners: A critical look at the uses and beliefs surrounding horses in equine therapies and argument for mechanical horses. *Journal of Veterinary Science and Animal Husbandry*, 5(1):107. doi: 10.15744/2348-9790.5.107

Dinges\*\*, C. W., Varnon\*\*, C. A., Cota\*\*, L. D., Slykerman\*, S., & Abramson, C. I. (2017). Studies of learned helplessness in honey bees (*Apis mellifera ligustica*) *Journal of Experimental Psychology: Animal Learning and Cognition*, 43,147-158.  
<http://dx.doi.org/10.1037/xan0000133>

Chicas-Mosier\*\*, A. M., Cooper\*, B. A., Martinez\*, A. M., Pérez\*, M., Oskay, D., & Abramson, C. I. (2017). The effects of ingested aqueous aluminum on floral fidelity and foraging strategy in honey bees (*Apis mellifera*). *Ecotoxicology and Environmental Safety*, 143, 80-86.  
<http://dx.doi.org/10.1016/j.ecoenv.2017.05.008>

Roy\*\*, S., Kieson\*\*, E., Abramson, C. I., & Crick, C. (2017). Semantic structure for robotic teaching and learning. *Proceedings of the 26th IEEE International Symposium on Robotics and Human Interactive Communication (RO-MAN)*, 391-396.

Varnon, C., Dinges\*\*, C. W., Black\*\*, T. E., Wells, H., & Abramson, C. I. (*in press*). Failure to Find Ethanol- Induced Find Taste Aversion Learning in Honey Bees (*Apis mellifera* L.). *Alcoholism: Clinical and Experimental Research*.

Black\*\*, T. E., Fofah\*, O., Giray, T., Wells, H., & Abramson, C. I. (*in press*). Influence of environmental experience on aversive conditioning of honey bees (*Apis mellifera* L.). *Apidologie*.

### **Book Chapters:**

Place, A. J., Varnon\*\*, C. A., Craig, D. P. A., & Abramson, C. I. (2017). Exploratory Investigations in Operant Thermoregulation in Western Diamond-backed Rattlesnakes (*Crotalus atrox*). In: M. J. Dreslik, W. K. Hayes, S. J. Beaupre, and S. P. Mackessy (eds), *The Biology of Rattlesnakes II*. ECO Herpetological Publishing and Distribution, Portal, New Mexico (pp. 213-227).

Chicas-Mosier\*\*, A. M., & Abramson, C. I. (2017). Aluminum and its Effects on Conserved Brain Regions and Behavior. In: O.V. Kascheev, I.V. Antonenko, & I.N. Karitsky (eds.) *Psychology in Modern World: Collection of Articles of International Scientific-Practical Conference*. Moscow, Kosygin Russian State University (Technology. Design. Art), (pp. 479-481).

\* Refers to undergraduate co-authors

\*\* Refers to graduate student co-authors

*He Bai - OSU -*

*Awards:*

PI of the NASA EPSCoR project on “Modeling atmospheric turbulence and its impact on small UAS navigation for air traffic management”, 2017-2018, award amount: \$37,000

University PI for the Navy SBIR project on “Human Computer Interfacing for Autonomous Detect and Avoid Systems on Unmanned Aircraft Systems”, 2017-2019, award amount: \$63,000

*Articles:*

*H. Bai* and J. T. Wen. Asymptotic synchronization of phase oscillators using a single input. Accepted by IEEE Transactions on Automatic Control, 2018.

S. Thapa, *H. Bai* and J. Acosta. Force Control in Cooperative Aerial Manipulation. Proceedings of the International Conference on Unmanned Aircraft Systems, Dallas, TX, 2018

S. Thapa, *H. Bai* and J. Acosta. Cooperative Aerial Load Transport with Force Control. Proceedings of the 2018 IFAC Workshop on Networked & Autonomous Air & Space, Santa Fe, NM, 2018

*H. Bai* and C. N. Taylor. Observability driven path planning for relative navigation of unmanned aerial systems. Position, Location and Navigation Symposium (PLANS), 2018 IEEE/ION, 793-800

*H. Bai* and C. N. Taylor. Control-enabled observability and sensitivity functions in visual-inertial odometry. Journal of Intelligent Robotic Systems, 1-13, 2018.

S. Allison, *H. Bai* and B. Jayaramen. Modeling trajectory performance of quadrotors under wind disturbances. In the Proceedings of AIAA Infotech @ Aerospace, AIAA SciTech Forum, 2018.

*H. Bai* and R. Beard. Relative heading estimation and its application in target handoff in GPS-denied environments. IEEE Transaction on Control System Technology, 2017.

*H. Bai* and A. Awan. Observability properties of relative state estimation with bearing-only measurements. Proceedings of the IEEE Conference on Decision and Control, pp. 6448–6453, 2017.

J. George and *H. Bai*. An Output Feedback Approach to Robust Dynamic Average Consensus. Proceedings of the IEEE Conference on Decision and Control, pp. 2306–2311, 2017.

J. Daugherty, *H. Bai* and S. Avadhanam. Orbiting intruder passive ranging for small UAS detect-and-avoid. Proceedings of the IEEE Conference on Control Technology and Applications, pp. 1091-1096, 2017.

**Matthew Cabeen - OSU -**

**Articles:**

Cabeen MT, Losick R. (2018) Single-cell Microfluidic Analysis of *Bacillus subtilis*. *J Vis Exp* 131: e56901. doi:10.3791/56901. [Online](#) at JoVE and [embedded in our News page](#).

Cabeen MT, Russell JR, Paulsson J, Losick R. (2017) Use of a microfluidic platform to uncover basic features of energy and environmental stress responses in individual cells of *Bacillus subtilis*. *PLoS Genet* 13: e1006901. Free full text [here](#).

**Karl David Hambright - OU -**

**Awards:**

Hambright, K.D. Challenging the broadcast allelopathy paradigm in toxigenic microbial eukaryotic ecology; National Science Foundation-IOS; 2 yrs; PI; **\$300,000**.

Hambright, K.D. Genetic analyses in support of ODWC fisheries programs: Largemouth bass microsatellites and golden algae-related fish kills; Oklahoma Department of Wildlife Conservation; 3 years; PI; **\$60,000**.

**Articles:**

Xu, H., D. Zhao, R. Huang, X. Cao, J. Zeng, Z. Yu, K.V. Hooker, K.D. Hambright, and Q. Wu. 2018. Contrasting network features between free-living and particle-attached bacterial communities in Taihu Lake. *Microbial Ecology*. (DOI: 10.1007/s00248-017-1131-7; PMID: 29318328)

Jones, A.C., K.D. Hambright, and D.A. Caron. 2017. Ecological patterns among bacteria and microbial eukaryotes derived from network analyses in a low salinity lake. *Microbial Ecology*. (DOI: 10.1007/s00248-017-1087-7; PMID: 29110066).

Beyer, J.E. and K.D. Hambright. 2017. Maternal effects are no match for stressful conditions: a test of the maternal match hypothesis in a common zooplankton. *Functional Ecology*. 31:1933-1940. (DOI:10.1111/1365-2435.12901).

Zou, Z., J. Dong, M.A. Menargue, X. Xiao, Y. Qin, R.B. Doughty, K.V. Hooker, and K.D. Hambright. 2017. Continued decrease of open surface water body area in Oklahoma during 1984-2015. *Science of the Total Environment* 595:451-460 (DOI:10.1016/j.scitotenv.2017.03.259; PMID: 28395260).

**Syed Hussaini - TU -**

***Awards:***

OCAST Health, “Discovery of indolizidine (–)-237D analogs as selective  $\alpha 6^*$  nicotinic receptor antagonists”.

***Articles:***

“Photo-triggered fluorometric hydrophobic benzyl alcohol for soluble tag-assisted liquid-phase peptide synthesis”, H. Wakamatsu, Y. Okada, M. Sugai, S. R. Hussaini and K. Chiba, *Asian Journal of Organic Chemistry*, 2017, 6, 1584–1588 (doi:10.1002/ajoc.201700401).

“A copper(I)-complexed magnetic nanoparticle catalyst for enaminone synthesis”, L. Mohammadi, A. Zolfigol, M. Ebrahimi, K. P. Roberts, S. Ansari, T. Azadbakht, S. R. Hussaini, *Catalysis Communications*, 2017, 102, 44–47 (<https://doi.org/10.1016/j.catcom.2017.08.022>).

“Copper-catalyzed chemoselective cross-coupling reaction of thioamides and  $\alpha$ -diazocarbonyl compounds: Synthesis of enaminones”, A. Pal, N. D. Koduri, Z. Wang, E. L. Quiroz, A. Chong, M. Vuong, N. Rajagopal, M. Nguyen, K. P. Roberts, S. R. Hussaini, *Tetrahedron Letters*, 2017, 58, (6), 586–589 (<http://dx.doi.org/10.1016/j.tetlet.2017.01.004>).

**Charlie Biles - ECU -**

***Articles:***

Dalmont, Kelsey , Charles L. Biles, Heather Konsure, Sujita Dahal, Tyler Rowsey, Matthew Broge, Shubra Poudyal, Tara Gurung, Sabina Shrestha, Caleb L. Biles, Terry Cluck, Alisha Howard. 2017. Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) inhibit the growth and reproduction of *Chaetomium globosum* and other fungi associated with water damaged buildings. *Mycopathologia*: 182(11), 1025-1036. DOI 10.1007/s11046-017-0188-7.

Bruton, B.D., and Biles, C.L. 2017. Purple Stem/Vine Decline. In: *Compendium of Cucurbit Diseases*, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zitter, eds. American Phytopathological Society, St. Paul, MN. 47-48.

Bruton, B.D., and Biles, C.L. 2017. Charcoal Rot. In: *Compendium of Cucurbit Diseases*, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zitter, eds. American Phytopathological Society, St. Paul, MN. Pages 27-28

Bruton, B.D., and Biles, C.L. 2017. Alternaria Rot. In: *Compendium of Cucurbit Diseases and Pests*, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zitter, eds. American Phytopathological Society, St. Paul, MN. Pages 81 and 88.



Bruton, B.D., and Biles, C.L. 2017. Fusarium Fruit Rot. In: Compendium of Cucurbit Diseases and Pests, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zinter, eds. American Phytopathological Society, St. Paul, MN. Pages 96-99.

Bruton, B.D., and Biles, C.L. 2017. Red Rot. In: Compendium of Cucurbit Diseases and Pests, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zinter, eds. American Phytopathological Society, St. Paul, MN. Page 105.

Bruton, B.D., and Biles, C.L. 2017. Rhizopus Soft Rot. In: Compendium of Cucurbit Diseases and Pests, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zitter, eds. American Phytopathological Society, St. Paul, MN. Pages 105-106.

Bruton, B.D., and Biles, C.L. 2017. Blue Mold. In: Compendium of Cucurbit Diseases and Pests, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zinter, eds. American Phytopathological Society, St. Paul, MN. Pages 93-94.

Bruton, B.D., and Biles, C.L. 2017. Phomopsis Fruit Rot. In: Compendium of Cucurbit Diseases and Pests, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zinter, eds. American Phytopathological Society, St. Paul, MN. Pages 100-102.

Bruton, B.D., and Biles, C.L. 2017. Lasiodiplodia Fruit Rot. In: Compendium of Cucurbit Diseases and Pests, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zitter, eds. American Phytopathological Society, St. Paul, MN. Pages 99-100.

Bruton, B.D., and Biles, C.L. 2017. Southern Blight. In: Compendium of Cucurbit Diseases and Pests, 2<sup>nd</sup> edition. Anthony P. Keinath, William M. Wintermantel, Thomas A. Zitter, eds. American Phytopathological Society, St. Paul, MN. Pages 107-108.

### **Joseph Haley - OSU -**

#### ***Awards:***

College of Arts and Sciences Faculty Council Junior Faculty Award for Scholarly Excellence

#### ***Articles:***

"Search for  $W' \rightarrow tb$  decays in the hadronic final state using pp collisions at  $\sqrt{s}=13$  TeV with the ATLAS detector," M. Aaboud et al. [ATLAS Collaboration], arXiv:1801.07893 [hep-ex], submitted to Phys. Lett. B (2018).

"Search for pair production of heavy vector-like quarks decaying to high- $p_T$  W bosons and b quarks in the lepton-plus-jets final state in pp collisions at  $\sqrt{s} = 13$  TeV with the ATLAS detector," M. Aaboud et al. [ATLAS Collaboration], DOI: 10.1007/JHEP10(2017)141, JHEP **1710**, 141 (2017).

**Brian Elbing - OSU -**

**Articles:**

G Kibble, JD Jacob, BR Elbing, A Alexander, P Ireland & JAB Black (2017) “Aerodynamic investigation of the conformal vortex generator,” *47<sup>th</sup> AIAA Fluid Dynamic Conference*, 2017 AIAA Aviation and Aeronautics Forum and Exposition, FD-01 Boundary Layer Control Session, Denver, CO (June 5-9).

S Mohagheghian & BR Elbing (2018) “Characterization of bubble size distribution within a bubble column,” *Fluids*, 3(1), 13 (doi:10.3390/fluids3010013).

BR Elbing, L Daniel, Y Farsiani & CE Petrin (2018) “Design and validation of a recirculating, high-Reynolds number water tunnel,” *ASME Journal of Fluids Engineering*, 140(8), 081102 (doi:10.1115/1.4039509).

S Mohagheghian, AL Still, BR Elbing & AJ Ghajar (2018) “Study of bubble size, void fraction, and mass transport in a bubble column under high amplitude vibration,” *ChemEngineering*, 2(2), 16 (doi: 10.3390/chemengineering2020016).

**Media Coverage:**

[NPR Radio Interview] Rachel Hubbard & Audie Cornish (host) “New research on sound could make tornado warnings more accurate,” All Things Considered, National Public Radio (NPR), June 12, 2018 (<https://www.npr.org/2018/06/12/619294399/new-research-on-sound-could-make-tornado-warnings-more-accurate>).

[article] Matthew Simon, “A tornado’s secret sounds could reveal where it’ll strike,” *Wired*, May 8, 2018 (<https://www.wired.com/story/a-tornados-secret-sounds/>).

[article] Doyle Rice “Listening to tornadoes could revolutionize how meteorologists forecast these monster storms,” *USA Today*, May 14, 2018 ([www.usatoday.com/story/news/2018/05/14/listening-tornadoes-could-revolutionize-how-meteorologists-forecast-these-storms/607270002/](http://www.usatoday.com/story/news/2018/05/14/listening-tornadoes-could-revolutionize-how-meteorologists-forecast-these-storms/607270002/)).

[article & video] Chris Dolce, “Sounds a storm emits may help detect tornadoes, researchers say,” *Weather Channel*, May 9, 2018 (<https://weather.com/storms/tornado/news/2018-05-09-tornado-development-infrasound-waves>).

[radio] Randy Atkins “Tornado detector,” *National Academy of Engineering (NAE) – Engineering Innovation* on WTOP Radio, May 11, 2018 (<https://www.nae.edu/Activities/Projects/20730/wtop/182542.aspx>)

[article] Katie Langin, “Researchers ‘heard’ a twister 10 minutes before it formed,” *Science Magazine*, May 8, 2018 (<http://www.sciencemag.org/news/2018/05/researchers-heard-twister-10-minutes-it-formed>).

NPR Radio Interview] David Brown, *Texas Standard* from KUT 90.5, May 15, 2018 (<https://soundcloud.com/texas-standard/tornado-sound-detection-05152018>; <http://www.texasstandard.org/stories/tornadoes-emit-mysterious-inaudible-sounds-and-that-could-be-the-trick-to-predicting-storms/>).

[article] Prachi Patel, “Spying on a storm’s infrasonic signals to improve tornado warnings,” *IEEE Spectrum*, May 8, 2018 (<https://spectrum.ieee.org/tech-talk/computing/hardware/spying-on-a-tornados-infrasonic-signals-to-improve-warnings>).

[Australian article] Rick Lovett, “Eavesdropping on a twister,” *Cosmos*, May 8, 2018 (<https://cosmosmagazine.com/climate/eavesdropping-on-a-twister>).

[article] Dana Dovey “Tornadoes make inaudible sounds before they form, detection could help with storm warnings,” *Newsweek*, June 14, 2018 (<http://www.newsweek.com/tornado-prediction-warnings-deaths-storm-detection-977310>).

### **Chung-Hao Lee - OU -**

#### ***Awards:***

OU Nancy L. Mergler Faculty Mentor Award for Undergraduate Research, 2018

OU VPR Faculty Investment Program Award AY2018, 12/2017–11/2018

OU VPR Faculty Investment Program Award AY2017, 05/2017–04/2018

American Heart Association (AHA) Scientist Develop Grant (SDG), 07/2016–06/2020

#### ***Articles:***

Kamensky, D., Xu, F., Lee, C. H., Yan, J., Bazilevs, Y., and Hsu, M. C. “A new contact formulation based on a volumetric potential: Application to isogeometric simulations of atrioventricular valves,” *Computer Methods in Applied Mechanics and Engineering*, 330(1): 522-546, 2018.

Ayoub, S., Lee, C. H., Driesbaugh, K. H., Anselmo, W., Hughes, C. T., Ferrari, G., Gorman, R.C., Gorman, J.H., III, and Sacks, M. S., “Regulation of valve interstitial cell homeostasis by mechanical deformation: Implications for heart valve disease and surgical repair,” *Journal of Royal Society – Interface*, 14(135): 20170580, 2017.

Wang, J., Chowdhury, S., Wu, D., Bohnstedt, B. N., Liu, Y., and Lee, C.-H. “Carbon nanotube enhanced shape memory polymer nanocomposites for development of biomedical devices,” *Journal of Nanomedical Research*, 6(1): 00141, 2017.

Lee, C. H., Zhang, W., Feaver, K., Gorman, R. C., Gorman, III, J. H., and Sacks, M.S., “On the *in vivo* function of the mitral heart valve leaflet: insight into tissue-interstitial cell

biomechanical coupling,” *Biomechanical Modeling and Mechanobiology*, 16(5): 1613-1632, 2017.

Feng, Y., Qiu, S., Xia, X., Ji, S., and Lee, C.H., “A computational study of invariant I5 in a nearly incompressible transversely isotropic model for white matter,” *Journal of Biomechanics*, 57: 146- 151, 2017.

**Tobby L. Nelson - OSU -**

***Articles:***

Adhikari, S.; Hopson, R. A.; Sedai, B. R.; McFarland, F. M.; Guo, S.; Nelson, T. L. Synthesis and Characterization of Eumelanin-Inspired Poly(indolynearylenevinylene)s and Poly(indolynearyleneethynylene)s *Journal of Polymer Science, Part A: Polymer Chemistry* **2017**, 55, 457-463.

Khambhati, D. P.; Sachinithani, K. A. N.; Rheingold, A. L.; Nelson, T. L. Regioselective Copper-Catalyzed Direct Arylation of Benzodithiophene-*S,S*-Tetraoxide *Chemical Communications* **2017**, 53, 5107-5109.

Sachinithani, K. A. N.; Kaneza, N.; Kaudal, R.; Manna, E.; Eastman, M. A.; Sedai, B.; Pan, S.; Shinar, J.; Shinar, R.; Nelson T. L. Synthesis, Characterization, and Electrogenerated Chemiluminescence of Deep Blue Emitting Eumelanin-Inspired Poly(indoylenearylene)s for Polymer Light Emitting Diodes *Journal of Polymer Science, Part A: Polymer Chemistry* **2018**, 56, 125-131.

Ajitha, M. J.; Pary, F.; Nelson, T. L.; Musaev, D. G. Unveiling the Role of Base and Additive in the Ullmann-type of Arene-Aryl C-C Coupling Reaction *ACS Catalysis* **2018**, 8, 4829–4837.

Adhikari, S.; Richter, B.; Mace, Z.; Sciabassi, R. J.; Cheng, B.; Whiting, D. M.; Averick, S.; Nelson, T. L. Novel Organic Conductive Fibers as Non-metallic Electrodes and Neural Interconnects *Industrial & Engineering Chemistry Research* **2018**, 57, 7866-7871.

***Patents:***

T. L.; Nelson, S. Averick, S. Adhikari, Preparation and Characterization of Conductive Organic Threads as Non-metallic Electrodes and Interconnects. U.S. Provisional Application No. 62/557,943.

S. Averick, D. M. Whiting, B. Richter, B. Cheng, T. L. Nelson, Conductive Fiber with Polythiophene Coating. U.S. Provisional Application No. 62/557,947.

**Seok-Jhin Kim - OSU -**

***Awards:***

Resource Recovery from Produced Water using Forward Osmosis  
Frosty Cooling Systems, LLC, May 2018- June 2019, \$10,000

2. Prototype Inorganic Membrane Systems for Treatment of Produced Water  
Technology and Business Development Program, June 2018- June 2019, \$25,000

***Articles:***

H. Lin, S. Dangwal, R. Liu, S.-J. Kim, Y. Li, J. Zhua, Reduced Wrinkling in GO Membrane by Grafting Basal-plane Groups for Improved Gas and Liquid Separations. *J. Membr. Sci.* (in print).

R. Liu, S. Young, S. Dangwal, I. Shaik, E. Echeverria, D. McIlroy, C. Aichele, S.-J. Kim, Boron-introduced MFI-type zeolite-coated mesh for oil-water separation. *Colloids Surf., A*. <https://doi.org/10.1016/j.colsurfa.2018.04.038>

S. Dangwal, R. Liu, S.V. Kirk, S.-J. Kim, Effect of Pressure on Ethane Dehydrogenation in MFI Zeolite Membrane Reactor. *Energy & Fuels*. <https://pubs.acs.org/doi/10.1021/acs.energyfuels.7b03442>

R. Liu, S. Dangwal, I. Shaik, C. Aichele, S.-J. Kim, Hydrophilicity-controlled MFI-type zeolite-coated mesh for oil/water separation, *Sep. Purif. Technol.*, 195 (2018) 163-169.

S. Dangwal, R. Liu, S.-J. Kim, High Temperature Ethane Dehydrogenation in Microporous Zeolite Membrane Reactor: Effect of Operating Conditions, *Chem. Eng. J.* 328 (2017) 862–872.

**Darryl Linde - NSU -**

***Awards:***

Top Ten Riverhawk Award which is given by the Northeastern Student Government Association at Northeastern State University. The Dr. Tiffany Maher Legacy Award are named after a dedicated, hard working professor who sadly passed away in 2013. She was a student advocate first and professor second. She devoted her time and energy to students and left behind a fun-loving, lasting legacy at NSU. A survey was sent out to all students and they were asked to take the time and nominate someone that has impacted them greatly and someone they think deserves this award. There will be one Dr. Tiffany Maher Legacy Award winner and 10 others will receive the Top Ten Riverhawk Recognition Award.

**Karen McBee - OSU -**

***Awards:***

CSBR: Natural History: High-density storage, improved preservation, and digital networking for OSU COV Collection of Fishes, Amphibians, and Reptiles. PI. McBee, K., Co-PIs Echelle, A.A. and Fox, S.F. National Science Foundation. \$422,412, 15 July 2015—30 June 2019.

Camp Gruber Training Center Northern Long-eared Bat Survey, PI. McBee, K. Oklahoma Military Department, Directorate of Facility Management, Environmental Management Branch. \$62,063. September 2015-December 2017.

***Articles:***

Feng, X, Castro, MC, McBee, K and Papeş, M (2017) Hiding in a cool climatic niche in the Tropics? An assessment of the ecological biogeography of the hairy long-nosed armadillo (*Dasypus pilosus*). *Tropical Conservation Sciences*, DOI: 10.1177/1940082917697249 <sup>[1]</sup><sub>[SEP]</sub>

Loveless, A.M. and K. McBee. 2017. *Nyctimene robinsoni* (Chiroptera: Pteropodidae). *Mammalian Species* 49(949):68-75.

**Laura-Isobel McCall - OSU -**

***Articles:***

Siqueira-Neto JL, Debnath A, McCall L-I, Bernatchez JA, Ndao M, Reed S and Rosenthal P, Cysteine Proteases in Protozoan Parasites, *PLoS Neglected Tropical Diseases*, in press

Vrbanac A, Taylor B, Aksenov A, Callewaert C, Debelius J, Gonzalez A, Kosciolk T, McCall L-I, McDonald D, Melnik AV, Morton JT, Navas J, Quinn R, Swafford A, Thompson LR, Tripathi A, Vasquez-Baeza Y, Xu ZZ, Zaneveld J, Zhu Q, Caporaso JG, Dorrestein PC and Knight R (2018), Best practices for analyzing microbiomes, *Nature Reviews Microbiology* 16(7):410-422

Newsom SN, McCall L-I \* (2018), Metabolomics: Eavesdropping on silent conversations between hosts and their unwelcome guests, *PLoS Pathogens* 14 (4):e1006926

McCall L-I \*, Tripathi A, Vargas F, Knight R, Dorrestein PC and Siqueira-Neto JL (2018), Experimental Chagas disease-induced perturbations of the gut microbiome and metabolome, *PLoS Neglected Tropical Diseases* 12 (3):e0006344

McCall L-I \*, Morton JT, Bernatchez JA, Siqueira-Neto JL, Knight R, Dorrestein PC and McKerrow JH (2017), Mass spectrometry-based chemical cartography of a cardiac parasitic infection, *Analytical Chemistry* 89 (19):10414-10421

**Amy McGovern - OU -**

**Articles:**

Lagerquist, Ryan; McGovern, Amy and Smith, Travis. (2017) Machine Learning for Real-Time Prediction of Damaging Straight-Line Convective Wind. *Weather and Forecasting*, 32:6, pages 2175-2193.

Gagne II, David John; McGovern, Amy; Haupt, Sue Ellen; Sobash, Ryan; Williams, John K. and Xue, Ming. (2017) Storm-Based Probabilistic Hail Forecasting with Machine Learning Applied to Convection-Allowing Ensembles. *Weather and Forecasting*, 32, 1819-1840.

McGovern, Amy; Elmore, Kim; Gagne II, David John; Haupt, Sue Ellen; Karstens, Chris; Lagerquist, Ryan; Smith, Travis and J. K. Williams. Using Artificial Intelligence to Improve Real-time Decision Making for High-Impact weather. (2017) *Bulletin of the American Meteorological Society*. Volume 98, Issue 10, pages 2073-2090.

McGovern, Amy; Potvin, Corey and Brown, Rodger A. (2017) Using Large-scale Machine Learning to Improve our Understanding of the Formation of Tornadoes. Invited chapter in *Large-Scale Machine Learning in the Earth Sciences*.

Gagne II, David John; Haupt, Sue Ellen; McGovern, Amy; and Williams, John K. (2017) Evaluation of Statistical Learning Configurations for Gridded Solar Irradiance Forecasting. *Solar Energy*. Volume 150, pages 383-393.

Chilson, Carmen; Avery, Katherine; McGovern, Amy; Bridge, Eli; Sheldon, Daniel and Kelly, Jeffrey (2018) Automated Detection of Bird Roosts using NEXRAD Radar Data and Convolutional Neural Networks. To appear in *Remote Sensing in Ecology and Conservation*.

**Dwight Myers - ECU -**

**Articles:**

Jacobson, Nathan, Ingersoll, Nolan, and Myers, Dwight, Vaporization Coefficients of SiO<sub>2</sub> and MgO, *J. Europ. Ceram. Soc.* 37, 2245-2252, (2017).

Myers, Dwight, Kulis, Michael, Horvath, Joseph, Jacobson, Nathan, and Fox, Dennis, Interactions of Ta<sub>2</sub>O<sub>5</sub> with Water Vapor at Elevated Temperatures, *J. Am. Ceram. Soc.* 100, 2353-2357 (2017).

Jacobson, Nathan S., Kulis, Michael, Radoman-Shaw, Brandon, Harvey, Ralph, Myers, Dwight L., Schaefer, Laura, and Fegley, Jr., Bruce, Thermodynamic Constraints on the Lower Venusian Atmosphere, *ACS Earth and Space Chemistry* 1(7), 422-430, (2017).

Nguyen, Q. N., Bauschlicher, Jr., C. W., Myers, D. L., Jacobson, N. S., and Opila, E. J., Computational and Experimental Study of Thermodynamics of the Reaction of Titania and Water at High Temperatures, *J. Phys. Chem. A* 121(49), 9508-9517 (2017).

Walker, Austin, and Myers, Dwight L., High Temperature Synthesis of Titanite, Abstract published in Proceedings of the Oklahoma Academy of Science, 97,p. 100, (2017).

**Stanley Fox - OSU -**

***Awards:***

Fox, S. F., and E. Cabrera-Guzmán. 2018-1021. Distribution, habitat affiliation, and abundance of the Ringed Salamander in Oklahoma. ODWC State Wildlife Grants, \$137,777.

McBee, K., S. F. Fox, and A. E. Echelle. 2015-2018. CSBR: Natural History: High-density storage, improved preservation, and digital networking for OSU COV Collections of Fishes, Amphibians, and Reptiles. National Science Foundation. \$422,412.

Fox, S. F., J. L. Grindstaff, M. B. Lovern, and R. A. Van Den Bussche. 2013-2018. IOS: The adaptive significance of juvenile coloration: precocial partner preference. National Science Foundation. \$500,000.

***Articles:***

Santoyo-Brito, E., S. Fox, and M. Anderson. 2017. Incubation temperature modifies sex ratio of hatchlings in Collared Lizards, *Crotaphytus collaris*. Journal of Herpetology 51:197-201.

Santoyo-Brito, E., and S. Fox. 2018. Age estimation through skeletochronology and mark-recapture of free-living individuals in a population of a high-elevation, viviparous lizard from Chile, *Liolaemus leopardinus*. Phyllomedusa 17(1): 101-112.

Fox, S. F., E. Santoyo-Brito, and H. Núñez. 2017. LIOLAEMUS NITIDUS (Shining Tree Iguana). OCULAR SINUS BLEEDING. Herpetological Review 48:651.

**Kurt P. Rouser - OSU -**

***Awards:***

Kurt P. Rouser, "Oral Assessments of Student Learning in Undergraduate Aerospace Propulsion and Power Courses," ASME Journal of Engineering for Gas Turbines and Power, Vol. 139, No. 12, p. 124701, December 2017.

**Arvind Santan Krishnan - OSU -**

***Awards:***

Outstanding Faculty Award, College of Engineering, Architecture, and Technology, Oklahoma State University (2017)



### ***Articles:***

Ford MP, Kasoju VT, Gaddam MG and Santhanakrishnan A (2018). Aerodynamic effects of varying membrane area of bristled wings of tiny insects during clap and ing. Submitted.

Gaddam MG, Takyi-Micah M, Mathur N and Santhanakrishnan A (2018). Interaction of Cassiopea feeding and exchange currents with background flows. Submitted.

Samraee M, Schovanec JA, Nelsen NH and Santhanakrishnan A (2018). An in vitro study of diastolic filling in asymmetric left ventricular hypertrophy. Submitted.

Alexander AS and Santhanakrishnan A (2018). Mechanisms of power augmentation in two side-by-side vertical axis wind turbines. Submitted.

Santhanakrishnan A, Jones SK, Dickson WB, Peek M, Kasoju VT, Dickinson MH and Miller LA (2018). Flow structure and force generation on flapping wings at low Reynolds numbers relevant to the flight of tiny insects. *Fluids* 3(3): 45.

Kasoju VT, Terrill CL, Ford MP and Santhanakrishnan A (2018). Leaky flow through simplified physical models of bristled wings of tiny insects during clap and ing. *Fluids* 3(2): 44.

Alexander AS and Santhanakrishnan A (2017). Trapped cylindrical flow with multiple inlets for Savonius vertical axis wind turbines. *ASME Journal of Fluids Engineering* 140(4):044501-044501-7. doi:10.1115/1.4038166.

Strickland C, Miller LA, Santhanakrishnan A, Hamlet C, Battista NA and Pasour V (2017). Three-dimensional low Reynolds number flows near biological filtering and protective layers. *Fluids* 2(4): 62.

### ***Susan Walden - OU -***

#### ***Awards:***

Appointed as an Associate Editor for the journal *Advances in Engineering Education*.

The President of the American Society for Engineering Education (ASEE) appointed Dr. Walden to be the 2018-2019 Vice-Chair (Chair-designate for 2019-2020) of the ASEE Committee on Diversity, Equity, and Inclusion.

Program Chair for the ASEE Committee on Diversity, Equity, and Inclusion at the 2018 Annual Conference of ASEE.

The OU Office of Undergraduate Research received the Chancellor's Spotlight on Excellence in Undergraduate Research Award in September 2017.

### **Articles:**

"Critiquing the 'Underrepresented Minorities' Label," Walden, S.E., Shehab, R.L., Trytten, D.A., & Foor, C.E., *Proceedings of the First Collaborative Network for Engineering and Computing Diversity (CONECD)*, Washington, D.C., April 2018.

"Research-based Recommendations for Creating an Inclusive Culture for Diversity and Equity in Engineering Education," Walden, S.E., Trytten, D.A., & Shehab, R.L., *Proceedings of the 2018 IEEE Global Engineering Education Conference (EDUCON)*, Santa Cruz de Tenerife, Spain, April 2018.

“‘Imaginary Engineering’ or ‘Re-imagined Engineering’” Negotiating Gendered Identities in the Borderland of a College of Engineering,” Foor, C.E. and Walden, S.E.; re-published in *Ethics, Politics, and Whistleblowing in Engineering*, (N. Sakellariou and R. Milleron, Eds.) Boca Raton, FL: CRC Press, 2018.

## 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 participated in national, state, and local conferences, had 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).

### Scholar Highlights

**Alicia Aguilar - OSU** (1) Senior of Significance award, OSU; (2) International experience to India and Srilanka (Dec 2017); (3) Niblack Scholar Sept 2017; presented at the OK-LSAMP research symposium and was awarded 1<sup>st</sup> place in the Oral Presentation Category, 2017; (4) presented at the Oklahoma Research Day 2018.

**Caleb Alexander - OSU** (1) presented research at the BMBGSA-Biochem & Molecular Biology Grad Student Assoc symposium Fall 2017; (2) presented at SACNAS 2017 and received SACNAS travel award; (3) presented at Microbiology symposium April 2018; (4) presented at Oklahoma Research Day 2018; (4) part of the Arts & Sciences Student Council.

**Julian Allen - CU** (1) Presented at the Oklahoma Academy of Science; (2) member of the CU Biology Club; (3) member of the Beta Beta Beta club.

**Juan Alvarado - TU** (1) presented at NCUR April, 2018; (2) member of the Society of Hispanic Professional Engineers (SHPE); (3) participated in TURC/STEM-UP internship.

**Jessica Ames - OU** (1) Presented research at West Coast Biological Sciences Undergrad Research Symposium; (2) conducted research through collaboration between OU and Exeter University; (3) was accepted as a PhD student in Pasteur Institute, France.

**Katherine Avery - OU** (1) article: Chilson, Carmen; Avery, Katherine; McGovern, Amy; Bridge, Eli; Sheldon, Daniel and Kelly, Jeffrey (2018) Automated Detection of Bird Roosts using NEXRAD Radar Data and Convolutional Neural Networks. To appear in Remote Sensing in Ecology and Conservation.

**Alexandra Bejarano - TU** (1) presented research at the National Conference on Undergraduate Research, Edmond, OK; (2) member of the Society of Hispanic Professional Engineers; (3) participated in TURC/STEM-UP internship.

**Jonathan Bernal - OSU** (1) presented research at the SHPE National Conference (2017); (2) attended the SHPE Regional Leadership Development conference March 2018; (3) attended the 2018 National Fire Protection Association June 2018; (4) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK.

**Jailene Canales - UCO** (1) Presented at the 2018 Oklahoma Research Day; (2) received the research assistantship faculty grant at UCO; (3) member of the Hispanic American Student Association; (4) participated in the UCO Miss Latina competition; (5) awarded the President's Honor Roll.

**Mary Catlett - OSU** (1) member of the OSU Math club; (2) member of the OSU Physics Club; (3) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK.

**Maranda Clymer - ECU** (1) presented research at the 105<sup>th</sup> Technical Meeting Oklahoma Academy of Science; (2) was awarded the Undergraduate Oral Presentation award; (3) presented research at the 19<sup>th</sup> Annual TX National McNair Research Conference; (4) member of the McNair Scholars Program; (5) member of the Society of Physics Students; (6) member of the Sigma Pi Sigma Honor Society.

**Taylor Coles - OSU** (1) participated in the Native Explorers program; (2) member of the Native American Student Association; (3) member of the OSU Leadership Program; (4) member of the Alpha Pi Omega Sorority; (5) conducted research with the USDA Animal and Plant Health Inspection Service in Cheyenne Wyoming through University of North Carolina.

**Erika Costain - ECU** (1) conducted research for eight weeks in Beijing, China; (2) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK.

**Celeste Cotton - LU** (1) participated in Kansas State University summer internship (2017); (2) presented research at the National Conference for Undergraduate Research, Edmond, OK.

**Paul Delgado - OU** (1) presented research at the 2017 National SACNAS conference, Salt Lake City, Utah; (2) Founding officer of the OU SACNAS chapter; (3) member of the McNair Scholars Program; (4) was accepted into Johns Hopkins Bloomberg School of Public Health.

**Rainee Deroin** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) at the National Conference for Undergraduate Research, April 2018, Edmond OK; (3) presented research at Oklahoma Clean Lakes & Watershed Association in Stillwater April 2018; (4) member of the McNair Scholars Program.

**Garrett Eakers - OU** (1) presented research at C2C Symposium, summer 2017; (2) participated in international experience in spring 2018; (3) was awarded College of Arts and Sciences Leadership Scholarship; (4) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK.

**Emily Eix - OU** (1) Received Harrison L Chance undergraduate scholarship from department of microbiology; (2) Received award for Broader Impacts at Curiosity to Creativity Symposium; (3) presented research at C2C Symposium, summer 2017.

**Ryan Farney - NSU** (1) presented research at NSU Undergraduate Research Day; (2) presented research at Midwest Fish and Wildlife Conference, Lincoln, NE 2017; (3) was accepted into the NSU Master's in Natural Sciences program.

**Marly Fixico-Hardison - OSU** (1) presented research at the 2017 AISES national conference; (2) presented research at the 2017 LSMCE conference; (3) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK; (4) presented research at the 2018 NCUR conference, Edmond OK; (5) presented research at the 2018 Oklahoma Research Day; (6) president of the Alpha Pi Omega local chapter; (7) AISES Diversity Officer; (8) participated in IAIM NSF REU - Thiland with University of Arkansas.

**Ova Fofah - OSU** (1) publication: Black\*\*, T. E., Fofah\*, O., Giray, T., Wells, H., & Abramson, C. I. (*in press*). Influence of environmental experience on aversive conditioning of honey bees (*Apis mellifera* L.). *Apidologie*. (2) conducted research at Universidad of Puerto Rico (Rio Piedras); (3) conducted research through Agricultural Institute of France, PIRE - INRA, in Avignon, France.

**Willow Gahr - NWOSU** (1) conducted sea turtle research with the Sea Turtle Conservancy in Costa Rica; (2) NWOSU Ranger Women's Cross Country; (3) Assisted with NWOSU Math & Science Academy (Summer 2017); (4) peer tutor w/NWOSU Academic Success Center

**Tabitha Gunnars - OSU** (1) member of the OSU Wildlife Society; (2) member of Hispanic Student Association; (3) presented at the OSU Karen L Smith Undergraduate Research symposium 2017; (4) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK; (5) Awarded Bridge to the Doctorate Fellow at OSU; (6) accepted into Integrative Biology Master of Science program at Oklahoma State University.

**Daniel Hayden - OU** (1) C2C Symposium Summer 2017; (2) McNair Research Conference, Spring 2018, Denton, TX; (3) McNair Heartland Conference; (4) Summer 2017, Cambridge, UK; (5) George and Cleo Lynn Cross Scholarship; (6) Department award for undergraduates (7) Udall Foundation National Scholarship (8) MaGNET award winner for the 2017 Maize Genetics Conference; (9) member of the Sanborn Entomology Club.

**Daniel Henthorn - OSU** (1) presented research at the 2017 National SACNAS Conference, Salt Lake City, Utah; (2) conducted research at the Roy Parker Research Group, Univ of Colorado Boulder; (3) member of the OSU SACNAS chapter; (4) accepted to Harvard University graduate school; (5) awarded the Peirce Fellowship to Harvard, MCO program.

**Jaron Holden - OSU** (1) Psychology Club member; (2) Spanish Club member; (3) member of AfronAm (African American Student Association); (4) Participated in University of North Dakota IREC REU.

**Donnie Jones - SWOSU** (1) National American Chemical Society Spring Meeting, San Diego, California; (2) SWOSU's 24th annual Research and Scholarly Activity Fair; (3) awarded Bridge to the Doctorate fellowship at OU for Chemical Engineering PhD Fall 2018; (4) accepted in to the University of Oklahoma Chemical Engineering PhD program.

**Jasmyn Lee - OSU** (1) member of Inspiring Successful Engineers (ISE) chapter; (2) National Society of Black Engineers national member; (3) member of the Society of Women Engineers; (4) Civil Engineering (Chi Epsilon) honor society officer; (5) American Society of Civil Eng. (ASE-member); (6) president of Hip Hop Crew; (7) member of Dance company of OSU; (8) ResLife Community Mentor; (9) interned with Oklahoma Department of Transportation; (10) awarded Women of OSU philanthropist award 2018.

**Lizzie Lightning - NSU** (1) Interned in the North Carolina State, Dept of Forestry & Environmental Resources; (2) Student Panelist in Oklahoma Promoting Undergraduate Research Conference 2017; (3) presented research at the 2018 NCUR conference, Edmond OK.

**Katelyn Locy - CU** (1) Member of CU Aggie Club; (2) Cameron University Agriculture Program Distinguished Student 2017; (3) DCLC internship; (4) Cameron University's George D. Keathley Department of Military Science presented the General Society of the War of 1812 Award to a second-year cadet who is in good academic standing.

**Casey Love - SEOSU** (1) participated in a 2017 summer corporate internship; received the CIS Philip Farish Study Abroad Scholarship; (2) Chemical Engineering Biotechnology Program of Excellence Scholarship; (3) Chevron-Phillips Scholar-Mentor Award for 2016; (4) presented research at the OU Undergraduate Research Day with an oral presentation.

**Sergio Mares - OSU** (1) presented research at Life Sciences Freshmen Research Scholars Symposium (2018); (2) attended OCRID Research Retreat April 2018; (3) Secretary for the American Medical Student Association; (4) Public Relations for the OSU SACNAS chapter; (5) member of Freshman A&S Student Council; (6) scholar of the Retention Initiative for Student Excellence program; (7) member Delta Nu Alpha (Biochemistry Club); Hispanic Student Association member.

**Matthew Maxwell - SEOSU** (1) received the NSF GRFP Award for 2016; (2) presented at the 2018 Oklahoma Research Day, Enid, OK; (3) Lambda Chapter of Phi Sigma Nu, President; (4) SEOSU Choctaw Nation Chief's Leadership Class; (5) participated a REU internship at UCLA

SPUR-LABS, Los Angeles, CA; (6) accepted in to University of California, San Diego/Salk Institute for Biological Studies.

**Alex Meador - OSU** (1) International experience to Nicaragua with OSU project; (2) awarded Bridge to the Doctorate Fellow at OU; (3) accepted into Biochemistry PhD program at the University of Oklahoma.

**Cayla Moore - LU** (1) presented research at 2018 National Conference for Undergraduate Research, Edmond, OK; (2) presented research at 2017 Annual Biomedical Research Conference for Minority Students (ABRCMS), Phoenix, AZ; (3) participated in the University of North Texas Summer Multicultural Advanced Research Training (UNT-SMART) program.

**Jordan (Jay) Moore - OSU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) conducted research at the Roy Parker Research Group, Univ of Colorado Boulder; (3) presented research at the 5<sup>th</sup> Annual LSMCE Conference, Indianapolis, IN; (4) Study Abroad in Europe - Utrecht University, Netherlands, Spring 2018 semester.

**Myshal Morris - LU** (1) conducted research at through Stanford Summer Research program; (2) participated in international experience to Barbados; (3) presented research at 2017 Annual Biomedical Research Conference for Minority Students (ABRCMS), Phoenix, AZ.

**Sarah Olson - UCO** (1) participated in the 2017 Transformative Learning Conference for Hispanic Success Initiative; (2) presented research at the 2018 NCUR conference, Edmond OK; (3) Housing Activities Council (4) American Chemical Society at UCO; (5) Student Academy of Forensic Science; (6) West Hall Council; (7) Hispanic Success Initiative; (8) Hispanic American Student Association; (9) National Residence Hall Honorary; (10) FCC Amateur Radio License; (11) 2017 ARRL Foundation General Fund Scholarship recipient.

**Patrick Perez - CU** (1) received a NASA Summer Fellowship; (2) accepted in to University of Minnesota graduate program.

**Juan Sergio Piedra - OSU** (1) attended 2017 Society of Hispanic Professional Engineers (SHPE) Conference, Kansas City, MO; (2) member of OSU SHPE chapter; (3) member of OSU Mercury Robotics Team; (4) awarded the Humphreys Travel Grant/Study Abroad Scholarship.

**Paola Ponce-Villalobos - NWOSU** (1) member of Northwestern Red and Black Scroll Honor Society; (2) member of the NWOSU Student Government Association; (3) assisted with NWOSU Math & Science Academy (Summer 2017); (4) peer tutor with NWOSU Academic Success Center.

**Stephanie Prado - OU** (1) presented at national McNair Research Conference; (2) Spring Curiosity to Creativity Symposium; (3) OU Undergraduate Research Conference; (4) heartland McNair Conference; (5) Pi Tau Sigma the International Honor Society for Mechanical Engineers; (6) award for chapter development of the Society of Hispanic Professional Engineers at OU; (7) academic chair officer in the Society of Hispanic Professional Engineers; (8) aerospace and Mechanical Engineering Student Advisory Council Chair.

**Nate Richbourg - OU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) participated in research and study abroad experience in South Korea; (3) founded the OU Rock-Climbing Club; (4) OU-BME Summer Research Fellowship; (5) was awarded the NSF GRFP fellowship; (6) was accepted to graduate program at the University of Texas at Austin.

**Juan Salinas - OSU** (1) Historian of OSU SHPE chapter; member of Engineers without Borders; (2) member of OSU Mercury Robotics Team; (3) Optics & Photonics Technologies NSF REU Program, New Jersey Institute of Technology.

**Daniel Salinas - OSU** (1) ILP Outstanding Mentor Award April, 2018; (2) 1st runner-up Mr. Hispanic Latino; (3) Retention Initiative for Student Excellence (RISE) scholar; (4) member of the Hispanic Student Association; (5) member of OSU SHPE chapter; (6) Sigma Lambda Beta; (7) NSF C-DEBI Global Environmental Microbiology (GEM) Summer Course at University of Southern California, Los Angeles.

**Haifah Sambo - OU** (1) participated in BP internship; (2) awarded the Diversity and Inclusion scholarship.

**Tiana Sanders - OSU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) presented at Society of Integrative and Comparative Biology Conference January 2018, San Francisco, CA; (3) presented at Oklahoma Research Day March 2018 (4) participated in NSF Animal Behavior REU, Indiana University.

**Riley Smith - OSU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) SACNAS, American Medical Student Association (AMSA); (3) Phi Beta Kappa member; (4) Study Abroad Fall at Universidad Peruana de Ciencias Aplicadas; (5) Interned at Johns Hopkins Medical Center, Kennedy Krieger Institute clinical intern/Public health research.

**Jordan Sosa - TU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) presented research at the 2018 NCUR conference, Edmond OK; (3) member of TU SHPE chapter; (4) participated in NSF REU summer internship.

**Colby Starr - OSU** (1) conducted research with Dr. Erica Lutter on the OSU campus during the summer 2017; (2) presented at OSU Research Week; (3) Oklahoma State University Senior of Significance; (4) OSU Outstanding Senior, one of 16 graduating seniors to receive highest distinction for seniors; (5) accepted into University of Oklahoma Medical School.

**Caleb Gunnar Teague - OSU** (1) presented at National AISES conference 2017; (2) interned at Sandia National Lab; (3) member of OSU AISES chapter; (4) member of HKN Eta Kappa Nu electrical engineering honor society; (5) member of Chi Alpha (CA); (6) accepted to OSU graduate program; (7) study abroad to Japan summer 2017.

**Amber Ward - CU** (1) presented at the American Chemical Society, Texas/Oklahoma Regional Undergraduate Symposium, in Lawton, OK; (2) presented at the Conference for Undergraduate Women in Physics at Oregon State University; (3) presented at American Physical Society at the

University of Texas - El Paso; (4) member of CU Physics Club; (5) member of CU Chemistry Club; (6) member of Sigma Pi Sigma (Physics Honor Society).

**Derek Whaler - NSU** (1) NSU American Indian Science and Engineering Society (AISES) President; accepted to the 2018 Bee-INSPIRED (Integrating Service Projects into Research and Design) A USDA/AFRI ELI Funded Summer Undergraduate Research Experience.

**Catherine White - OSU** (1) Member of Presidents Leadership Council, Multicultural Affairs Committee; (2) member of OSU Student Council; (3) Native American Student Association; (4) won title of Ms. OSU Native American; (5) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium; (6) interned at NSF LSAMP REU for U.S. Underrepresented Minority Students Summer Program in Costa Rica, Organization for Tropical Studies.

**Payton Whitehead - SEOSU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium; (2) presented at American Chemical Society national conference 2017; presented at Research Day at the Capitol (2018); (3) member of the Lambda Chapter of Phi Sigma Nu; (4) accepted into the University of North Texas, Graduate chemistry program.

**Marissa Wilson - LU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium; (2) presented research at the 2018 NCUR conference, Edmond OK; (3) member of the Biology Club; (4) participant of the Ambassador Program; (4) Interned at the Langston University NASA program; (5) accepted as an intern for the NASA-Johnson Space Center (summer 2018).

**Travis Young - NSU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium; (2) presented at NSU Undergraduate Research Day; (3) Interned with NSU & traveled to National Institute of Standards and Technology to collect data for a week.

**CheyAnne Youngblood - NSU** (1) presented research at the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium; (2) presented at Autumn Immunology Conference, Chicago, IL. (November 2017); (3) presented at AAI, Austin Texas (May 2018).

### BD Fellow Highlights

The Oklahoma Bridge to the Doctorate program has received funding for nine 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 VIII was awarded August 2016 and began funding participants in spring 2017. Cohort IX was awarded June 2017 and began funding Fall 2017.



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 8 Doctor of Philosophy degrees. Additionally, two fellows expect to complete Doctor of Philosophy degrees in the near future. Four fellows either transferred to another institution or left the program.

Cohort III.

Cohort III has two BD alums that have acquired their Doctorate of Philosophy degrees and seven fellow acquired a Master of Science degree and are currently working in Industry.

Fellows remaining in the program include:

*Scott Fine* – continued to meet Ph.D. degree requirements.

*Jonathan Gonzales* – continued with Ph.D. degree requirements.

*Zach Carpenter* – continued to work toward Ph.D. completion, while working full-time in industry.

Cohort IV. Fellows remaining in the program include:

*Zach Dunn* – successfully completed his Ph.D. graduate degree requirements.

*Ryan Watley* – successfully completed his Ph.D. graduate degree requirements.

Cohort V. Fellows remaining in the program include:

*RaiAnna Paula Arscott Hopson* – successfully completed his Ph.D. graduate degree requirements (July 2017)

*Nicole Bryant Parker* – successfully completed his Ph.D. graduate degree requirements (December 2017)

*Eric Butson* – successfully completed his Ph.D. graduate degree requirements (August 2017)

*Daron “DJ” Lamkin* – (1) continued with Ph.D. program requirements; (2) continued part-time employment with Oklahoma City Public Schools as a STEM Mentor; (3) CEO *Class Matters*, a non-profit organization aimed at increasing STEM among high school students in the Oklahoma City area; (4) was Keynote speaker for the 23<sup>rd</sup> Annual OK-LSAMP Research Symposium.

**David Supeck** – successfully completed his Ph.D. graduate degree requirements (December 2017)

Cohort VI. Fellows remaining in the program include:

**Abigail Ntrelh** – successfully completed his Ph.D. graduate degree requirements 2016

**Allison Quiroga** – (1) continued with Ph.D. requirements in Civil Engineering

**Cortes Williams** – successfully completed his Ph.D. graduate degree requirements 2017

**Sergio Zegarra** – Successfully completed M.S. degree requirements in Mechanical Engineering and continued with Ph.D. requirements.

**Jadith Ziegler** – successfully completed Ph.D. degree requirements 2018

Cohort VII. Fellows remaining in the program include:

**Gregory Cook** – continued to meet program requirements for the Ph.D. in Biomedical Sciences with an emphasis in immunology.

**Joseph Dyer** – continued with Ph.D. program requirements

**Brice Fiddler** – successfully completed Ph.D. degree requirements 2016

**Shelby Fraser** – successfully completed Master of Science degree requirements and is employed in Tulsa Union High school.

**Jorge Lightfoot** – continued to meet program requirements for the Ph.D. in Microbiology

**Danielle Perryman** – successfully completed Master of Science degree requirements for the M.S. in Integrative Biology

**Allison Potts-Sherier** – continued to meet program requirements for the Ph.D.

Cohort VIII.

Cohort VIII was awarded through the National Science Foundation as grant number HRD-1408748 for a two year period. Fall 2017 there were a total of nine BD fellows which continued their progression through their graduate programs.

Fellows in the program include:

***Justin Bowen*** – continued with Master of Science degree requirements in Microbiology

***Ana Chicas-Mosier*** – continued with Ph.D. degree requirements in Integrative Biology

***James Nolan Craun*** – continued with Master of Science degree requirements in Natural Resource Ecology and Management

***Michael Gorbet*** – continued with Master of Science degree requirements in Veterinary Biomedical Sciences

***Kichelle Henderson*** – continued with Master of Science degree requirements in Applied Mathematics

***Adrian A. Saenz*** – continued with Master of Science degree requirements in Biosystems and Agricultural Engineering

***Bailey Bonjour (Whitman)*** – continued with Master of Science degree requirements in Industrial Engineering

***Danielle Wright*** – finished her last spring semester and dropped out of the Chemistry graduate program

#### Cohort IX.

Cohort IX was awarded through the National Science Foundation as grant number HRD - 1702495 for a two year period. Two LSAMP Bridge to the Doctorate Fellowships were awarded for Project Year 1 and six additional fellowships will begin in Fall 2018.

### 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:

***Darlene Croci***, Grant Coordinator: (1) attended the OSU Wentz Research Symposium (2) attended the Oklahoma 7<sup>th</sup> Annual Promoting Undergraduate Research Conference (3) presented at the Will Rogers Elementary STEM Fair (4) attended OSU Research Week Research Symposium (5) attended OSU Staff Development Day seminar (6) attended 6<sup>th</sup> Annual Oklahoma Mentor Day, OU (7) CEAT Summer Bridge co-presenter (8) attended and presented at the EPSCoR Women of Science conference (9) attended the Oklahoma Research Day, Enid

OK; (10) attended National Conference for Undergraduate Research, Edmond, OK; (11) attended and moderated a session at the 2017 NSF Louis Stokes Midwest Center for Excellence (LSMCE) conference, Indianapolis, IN.

**Brenda L. Morales**, Director: (1) Panelist for Oklahoma 7<sup>th</sup> Annual Promoting Undergraduate Research Conference; (2) attended Grant Writing USA seminar, Norman, OK; (3) President, Oklahoma State University Hispanic/Latino Faculty and Staff Association; (4) attended and moderated a session at the 2017 NSF Louis Stokes Midwest Center for Excellence (LSMCE) conference, Indianapolis, IN; (5) attended National SACNAS conference in Salt Lake City, UT; (6) attended Oklahoma Research Day, Enid, Oklahoma; (7) attended the National Conference on Undergraduate Research, Edmond, OK; (8) attended OSU Research Week Research Symposium (9) attended OSU Staff Development Day seminar (10) attended and presented at the EPSCoR Women of Science conference.

## 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

OSU HEED AWARD, NADOHE ARTICLE, OU HEED ARTICLE

Sixth 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.

## Oklahoma State University recognized as a "Diversity Champion" in top tier of national HEED Award winners

Wednesday, August 30, 2017



INSIGHT Into Diversity magazine has recognized Oklahoma State University as one of 11 Diversity Champion colleges and universities in the nation.

The designation "Diversity Champion" is given by the magazine to exemplify an unyielding commitment to diversity and inclusion throughout campus communities, across academic programs, and at the highest administrative levels, according to

Lenore Pearlstein, publisher of INSIGHT Into Diversity magazine.

"Oklahoma State University is a visionary leader among campus communities striving for diversity and inclusion," said Pearlstein. "As a Diversity Champion school, OSU exceeds everyday expectations, often eclipsing even its own goals, and develops successful strategies that serve as models of excellence for other higher education institutions."

OSU and the ten other colleges and universities selected as diversity champions rank in what Pearlstein calls "the top tier" of the magazine's 80 Higher Education Excellence in Diversity (HEED) Award recipients for 2017. This is the sixth consecutive year that OSU has received the HEED Award.

"We have talented leaders focused constantly on progress in diversity and inclusion, and a campus community that is very supportive and inclusive," said OSU President Burns Hargis. "We thank the magazine for this special designation and hope our continued work will inspire others to be welcoming places for all."

More than 70 diversity-related student organizations at OSU empower students to promote their heritage and become leaders. The university also supports K-12 programs that facilitate students' ability to successfully transition to college. Additionally, a capital campaign within the Division of Institutional Diversity has raised \$3.7 million over the past three years, which includes 25 new endowed, privately-funded scholarships, and anticipates an additional 10 in the near future, all focused on promoting a culture of inclusion. In October, the university will host the third OSU Diversity Hall of Fame to recognize individuals who have significantly contributed to the legacy of inclusion and diversity at the institution.

"OSU is honored to again be recognized as a national leader for our commitment to inclusion and diversity," said Dr. Jason F. Kirksey, vice president for the Division of Institutional Diversity and chief diversity officer at OSU. "We are proud of OSU's land-grant heritage and continue working to adhere to our mission of being an open and welcoming university system, focused on facilitating the success of all members of our campus communities. While we have immense work ahead of us, the magnitude of the



*The only national higher education diversity award*

initiatives, programs, and overall efforts from the OSU administration, faculty, staff, and students is phenomenal and exemplifies the institution's commitment to achieving inclusive excellence."

OSU has garnered national attention for its inclusion and diversity efforts by earning several prestigious honors, including the 2016 National Association of Diversity Officers in Higher Education (NADOHE) Institutional Excellence Award, the 2016 Southwest Minority Supplier Development Council Corporation of the Year Award, the 2016 Minority Access, Inc. Institution Committed to Diversity Award, the 2016 Mosaic Five-star Inclusive Workplace Culture Award from the Tulsa Chamber of Commerce's diversity business council, and 2017 Roosevelt Thomas Champion of Diversity Award from the American Association for Access, Equity and Diversity.

Additionally, this past March, Kirksey was recognized with the NADOHE 2017 Dr. Frank W. Hale, Jr. Distinguished Service Award, which is awarded to an individual who is distinguished in higher education, through a robust record of consistent service, for inclusive excellence; exercising innovative and courageous leadership; serving as a visionary in the field; and exemplifying the philosophy, principles, and practices of NADOHE; and contributing substantially to diversity and inclusive excellence in higher education. The University is ranked in the 25th Annual Top 100 Degree Producers edition of *Diverse Issues in Higher Education* for the number of African American, American Indian, Asian American, and Latino graduates across multiple degree fields. Last fall, OSU was honored with the designation of becoming a Purple Heart University.

"We are humbled to be the only university in Oklahoma, as well as among a select few in the nation, to hold the distinction of being recognized as a 2017 Diversity Champion and a six-year recipient of the nationally prestigious HEED Award," Kirksey said.

INSIGHT Into Diversity magazine is the largest and oldest diversity and inclusion publication in higher education today and is known for its annual HEED Award, the only award that recognizes colleges and universities for outstanding diversity and inclusion efforts across their campuses.

Current, archived, and digital issues of INSIGHT Into Diversity magazine are available online at [insightintodiversity.com](http://insightintodiversity.com).







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/ [OSU's Kirksey elected to national board of directors for diversity officers](#)

## OSU's Kirksey elected to national board of directors for diversity officers

Thursday, February 15 2018

Dr. Jason F. Kirksey, vice president for institutional diversity and chief diversity officer at Oklahoma State University, has been elected to a three-year term on the board of directors for the National Association of Diversity Officers in Higher Education (NADOHE), a preeminent voice for diversity officers in the United States.

"Dr. Kirksey's election to the board makes it clear that diversity officers, throughout the country, realize he will be a terrific leader for helping advance diversity and inclusiveness in higher education," said OSU President Burns Hargis. "Jason's ongoing work and achievements have led to significant progress for our university community, and we are excited that he will represent OSU and his peers in this national leadership roll."



Kirksey and the other new and returning members of the NADOHE Board of Directors will be installed during the group's annual membership meeting on March 9 at the Renaissance Hotel in Washington, DC.

"I am humbled and honored to have the opportunity to formally work with chief diversity officers, nationally, in supporting and advancing inclusive excellence in higher education," said Kirksey. "OSU's significant and sustained progress in the realm of diversity and inclusion, throughout President Hargis' tenure, was integral in my election to this prestigious national board of directors. The knowledge and experience gained over the next three years will significantly enhance my ability to enrich OSU's continued commitment to a culture of inclusion."

NADOHE, which recently awarded Kirksey one of its highest honors, has a stated vision to lead higher education toward inclusive excellence through institutional transformation. The organization currently has approximately 300 institutional members and 700 individual members.

## **OU Honored with Second Diversity Award**

*For the second year in a row, the University of Oklahoma is a recipient of the 2017 Higher Education Excellence in Diversity Award.*

NORMAN – For the second year in a row, the University of Oklahoma is a recipient of the 2017 Higher Education Excellence in Diversity Award, the only national award honoring individual colleges or universities for their outstanding commitment to diversity and inclusion across their campuses.

The HEED Award is given by *INSIGHT Into Diversity*, the largest and oldest diversity and inclusion publication in higher education. OU also has been recognized by *INSIGHT Into Diversity* as a “Diversity Champion” and one of only 15 institutions in the nation, public or private, to receive the award.

“The university is especially pleased to receive this award for the second year in a row. This recognition further exemplifies OU as a national role model for creating a welcoming environment for all members of the university family,” said OU President David L. Boren. “The entire university community, students, faculty, staff and alumni have worked hard together to make this recognition possible.”

The Higher Education Excellence in Diversity Award 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. Applications are comprehensive, covering all aspects of campus diversity and inclusion.

To centralize oversight for all diversity programs within the university, including Admissions, OU has established the position of Vice President for the University Community which reports directly to the President. The Office of the University Community is committed to providing an inclusive environment in which diversity is the cornerstone of fostering a climate that is open and welcoming to diverse people, ideas and perspectives; promoting a positive dialogue on the nature of diversity and inclusion; and engaging faculty, staff and students in activities that highlight core values of community outreach, collaboration, integrity, cultural awareness and understanding.

OU requires all incoming students to participate in the Diversity and Inclusivity Experience, a five-hour curriculum-based training. OU Norman campus minority enrollment once again rose in fall 2017, making this year’s freshman class the most diverse in university history. Each OU college has designated faculty or staff who address diversity, community and inclusion initiatives.



APPENDIX B  
OSRHE SUMMER ACADEMIES

# SUMMER ACADEMIES



**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](http://WWW.OKHIGHERED.ORG/SUMMER-ACADEMIES)  
OR CALL 1.800.858.1840.

science • technology • engineering • math

## SUMMER ACADEMIES



**FREE** for students in the 8th-12th grade.

Provides students the opportunity to **explore** an Oklahoma college or university for a unique, hands-on learning experience.

Academies are for **all students!** Just be willing to participate and challenge yourself in a fun and exciting learning environment.

Registration opens March 1 and many camps fill up quickly. **Apply early!**



**For more information:**  
[www.okhighered.org/summer-academies](http://www.okhighered.org/summer-academies)  
1.800.858.1840



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APPENDIX C

23rd ANNUAL OK-LSAMP RESEARCH SYMPOSIUM

Stillwater, OK





Keynote Speaker  
Darron "DJ" Lamkin





## SYMPOSIUM RESEARCH AWARDS

### Non-Life Sciences Poster:

1<sup>st</sup> Place

Amber Morgan, OU

2<sup>nd</sup> Place

Elisabeth Allbritton, SWOSU

3<sup>rd</sup> Place

Nate Richbourg, OU



### Life Sciences Poster:

1<sup>st</sup> Place

Garret Eakers, OU

2<sup>nd</sup> Place

Jay Moore, OSU

3<sup>rd</sup> Place

Jesse Velasco, SWOSU

### Oral Presentations

1<sup>st</sup> Place

Alicia Aguilar, OSU

2<sup>nd</sup> Place

Matthew Maxwell, SEOSU

3<sup>rd</sup> Place

Maranda Clymer, ECU



APPENDIX D

8th ANNUAL PROMOTING UNDERGRADUATE RESEARCH CONFERENCE



OK-LSAMP Co-PI and Campus Program Manager Dr. Susan Walden was Keynote speaker at the 8<sup>th</sup> Annual Promoting Undergraduate Research Conference.

# 8TH ANNUAL PROMOTING UNDERGRADUATE RESEARCH CONFERENCE

**BEST  
PRACTICES  
TESTED  
OVER  
TIME  
FOR ALL  
DISCIPLINES  
AND LEVELS**

## KEYNOTE SPEAKERS



Jenny Shanahan, Ph.D.  
Bridgewater State University



Susan Walden, Ph.D.  
University of Oklahoma

**SEPTEMBER 29, 2017  
8:30 a.m.-4:00 p.m.**

**PRESBYTERIAN HEALTH FOUNDATION EXECUTIVE  
CONFERENCE CENTER**

655 RESEARCH PARKWAY, OKLAHOMA CITY

To register for the conference, visit:

<http://www.okhighered.org/grant-ops/ug-student-research.shtml#2017ugr>

For more information, contact Dr. Linda Mason at [lmason@osrhe.edu](mailto:lmason@osrhe.edu)

## SPONSORED BY



For more information:



OK-LSAMP had several representatives sharing their expertise at the 8<sup>th</sup> Annual Promoting Undergraduate Research Conference. Students Daniel Hayden and Lizzie Lightning were part of the student panel. Dr. Susan Walden was Keynote speaker and OK-LSAMP Director Brenda L. Morales was a panelist.

**The 8th Annual Promoting Undergraduate Research Conference**

**Best Practices Tested Over Time for All Disciplines and Levels**

September 29, 2017

<b>8:30 - 9:00</b>	<b>Welcome &amp; Statewide Updates</b> (Colloquium Room)	
<b>9:00 - 9:45</b>	<b>Session 1: Interdisciplinary Research Practices</b> Moderator: Marc Klippenstine (Colloquium Room) The Pyramid of UGR Research Digital Humanities and UGR for Non-Humanities Majors	Mel Vaughan Katherine Pandora
<b>9:45 - 10:30</b>	<b>Session 2: DaVinci Institute and Strategies to Promote Undergraduate Research</b> Introduction: Coral Rewasiewicz (Colloquium Room) Moderator: Dr. Krista Maxson Michael Thompson James Welch	
<b>10:45 - 12:00</b>	<b>Concurrent Sessions 3 &amp; 4</b> <b>State Resources Panel</b> Moderator: Linda Mason (Colloquium Room) OCAST            Michael Carolina OKINBRE        Mel Vaughan <b>OK LSAMP        Brenda Morales</b> OMRF            Carla Guthridge OK EPSCoR      Jerry Malayer	
	<b>Highlights of Best Practices Across Disciplines and All Levels</b> Moderator: TBD (Symposium Room) First Year Research Experience College / University Libraries as Facilitators Model for a More Effective UGR / Underrepresented Students	Rama Kothapalli Frederic Murray Kanyand Matand
<b>12:15 - 1:00</b>	<b>Lunch and Keynote Speaker</b> (Colloquium Room)	<b>Susan Walden</b>
<b>1:00 - 1:45</b>	<b>Session 5: Research Practices and Tech Transfer</b> Moderator: Dana Jackson-Hardwick (Colloquium Room) INKTANK: Graphic Design and the Community HHMI: Incorporating Flexible & Authentic Research Experiences into Science Curriculum	Amy Johnson Donald French & Janette Steets
<b>1:45 - 2:45</b>	<b>Student Panel</b> Moderator: Sara Barnett (Colloquium Room) Samuel Alvarado, OSU <b>Daniel Hayden, OU</b> Jacob Jones, UCO <b>Lizzie Lightning, NSUOK</b>	
<b>2:45 - 3:30</b>	<b>Keynote Speaker 2</b> (Colloquium Room)	Jenny Shanahan
<b>3:30 - 3:45</b>	<b>Chancellor's Award</b> (Colloquium Room)	
<b>3:45 - 4:00</b>	<b>Evaluation</b> (Colloquium Room)	



OK-LSAMP scholars Daniel Hayden and Lizzie Lightning



APPENDIX E

LOUIS STOKES MIDWEST CENTER OF EXCELLENCE

Indianapolis, IN

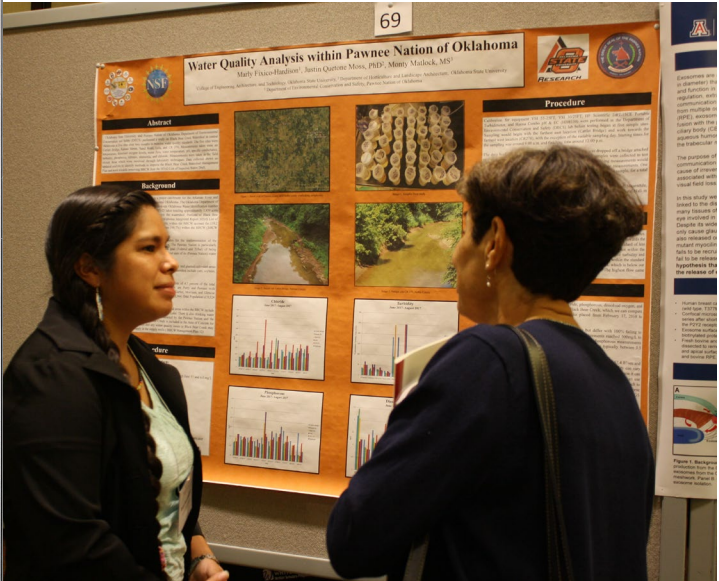


5TH ANNUAL  
**2017 LSMCE**  
**CONFERENCE**  
*Take Action: Reaching Deeper into the Nation's Diverse Pool of STEM Talent*

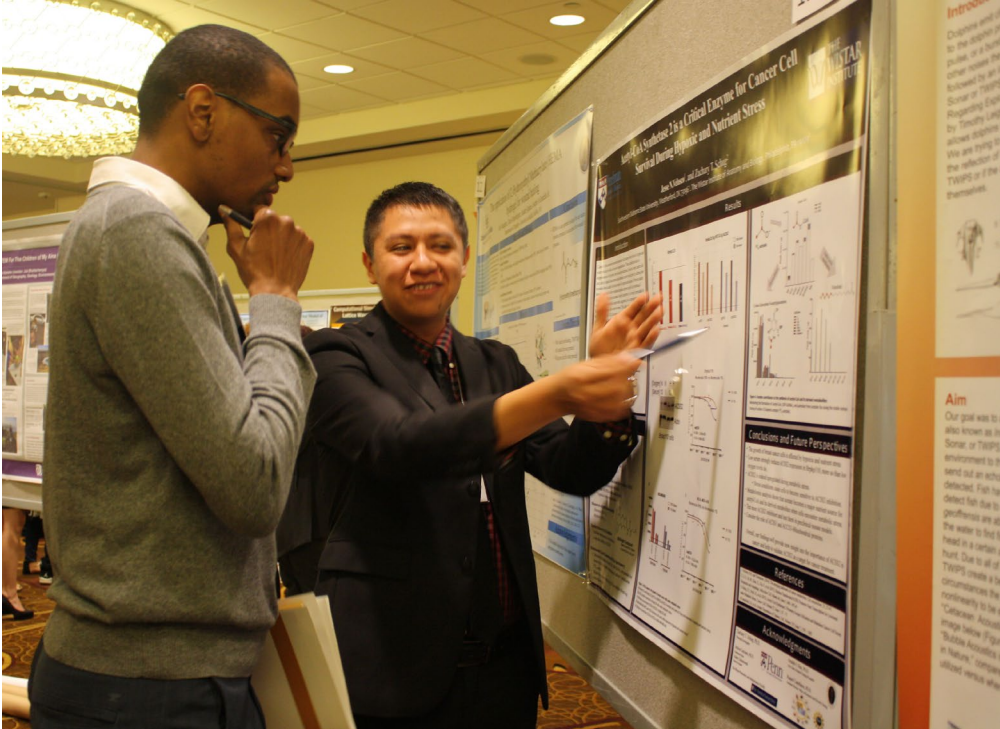
October 6-8, 2017  
 Sheraton Indianapolis Hotel  
 at Keystone Crossing

ismceconference.org



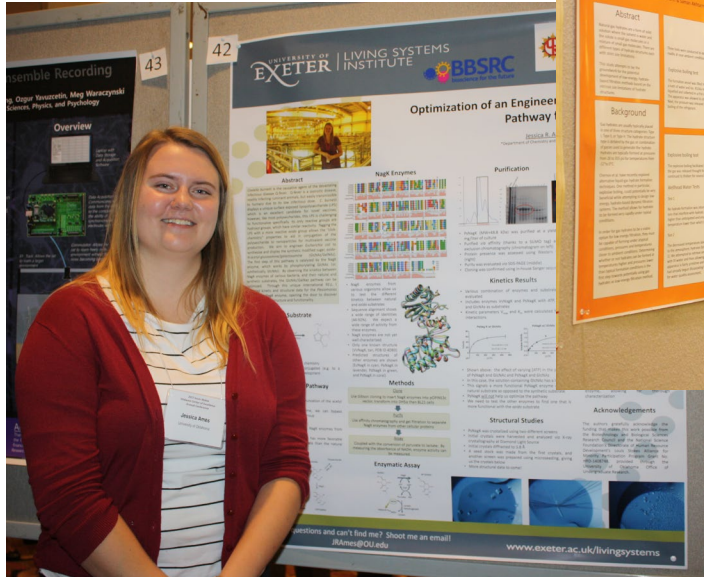


Marly-Fixico Hardison - OSU



Jesse Velasco - SWOSU

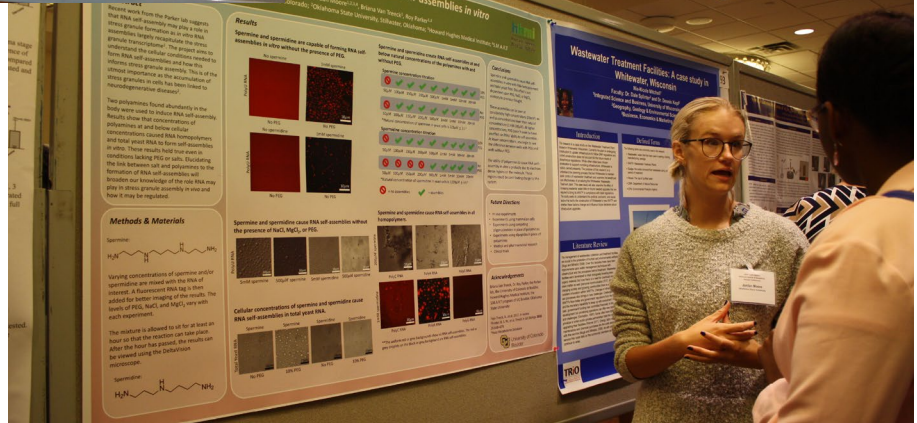




Jessica Ames - OU



Gear Harland - OSU



Jay Moore - OSU



OK-LSAMP  
Scholars and  
Staff with NSF  
LSAMP  
Program  
Director  
Martha James

APPENDIX F

NATIONAL CONFERENCE ON UNDERGRADUATE RESEARCH (NCUR)

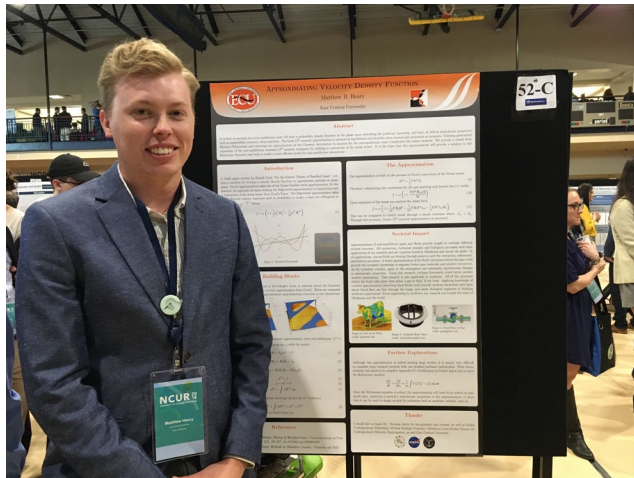
University of Central Oklahoma  
Edmond, OK



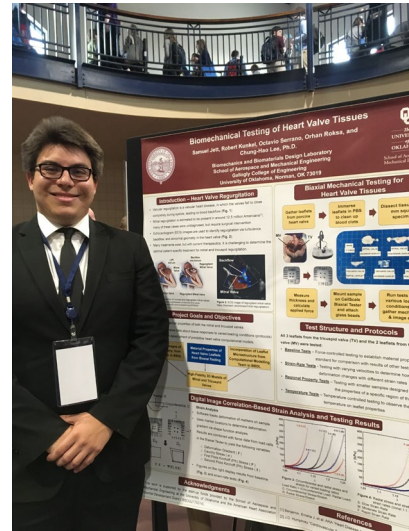
OK-LSAMP scholars, Campus Program Managers and Staff at NCUR



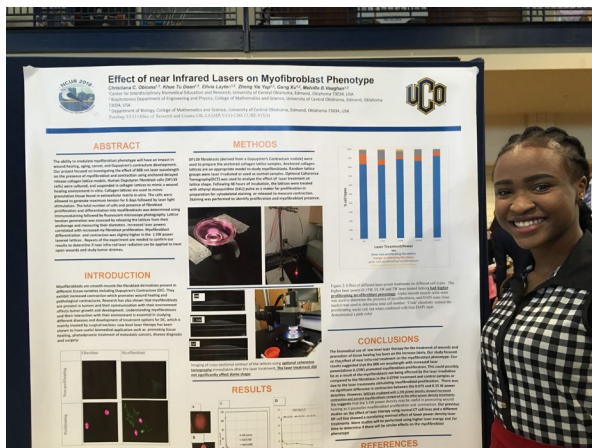




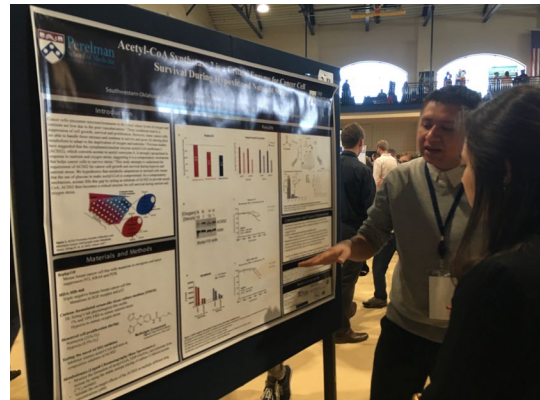
Mathew Henry - ECU



Octavio Serrano - OU



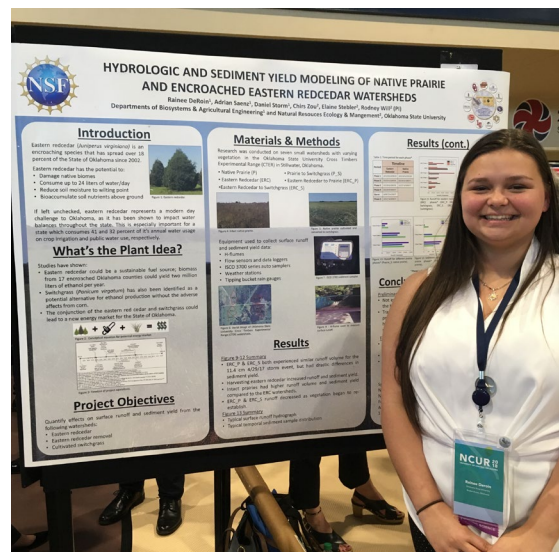
Christiana Obioma - UCO



Jesse Velasco - SWOSU



Alfredo Velasco II - TU

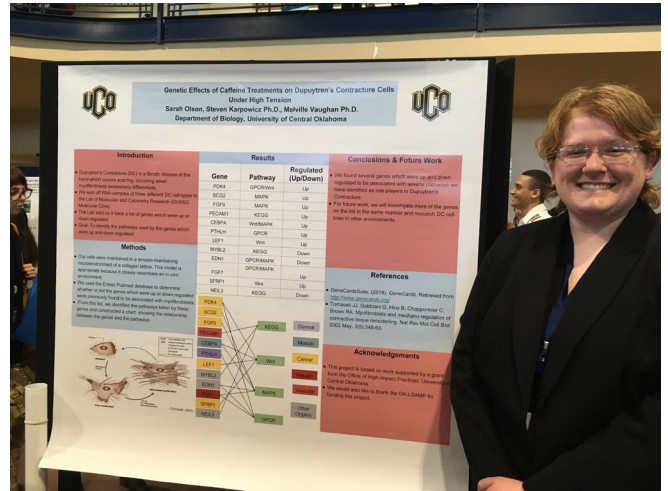


Rainee Deroin - OSU





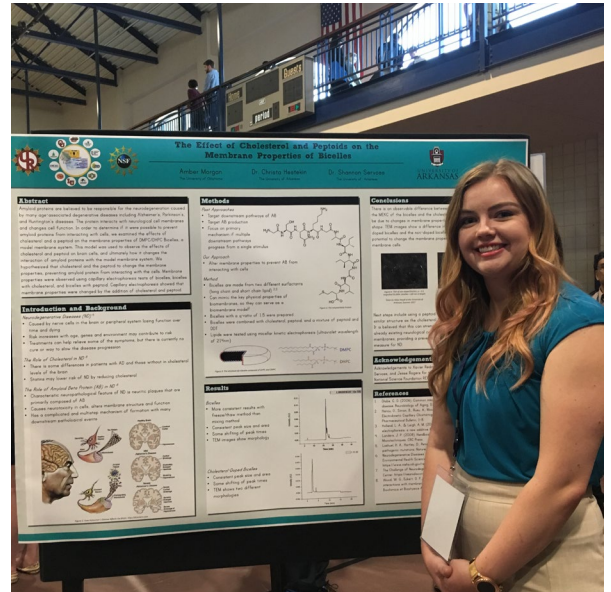
Juan Alvarado - TU



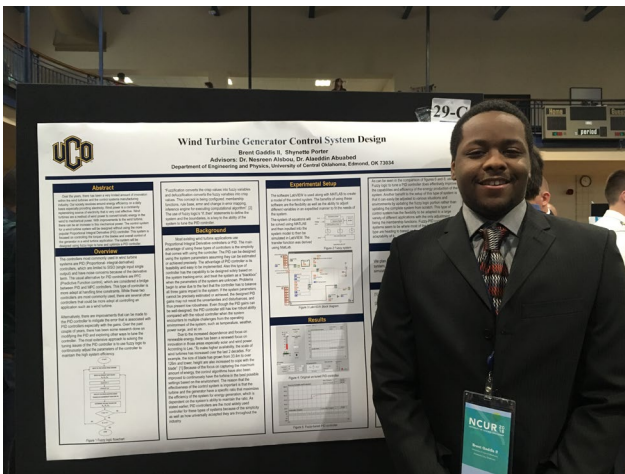
Sarah Olson - UCO



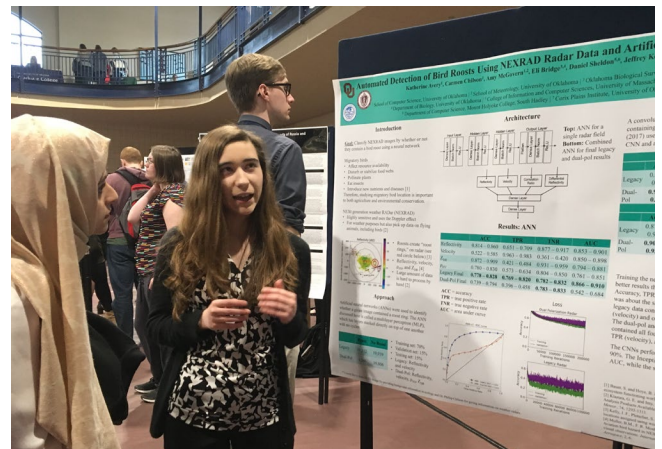
Brittiana McDowell - LU



Amber Morgan - OU

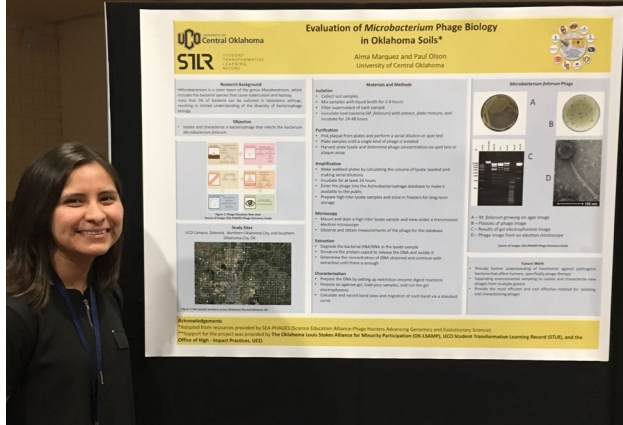


Brent Gaddis II - UCO

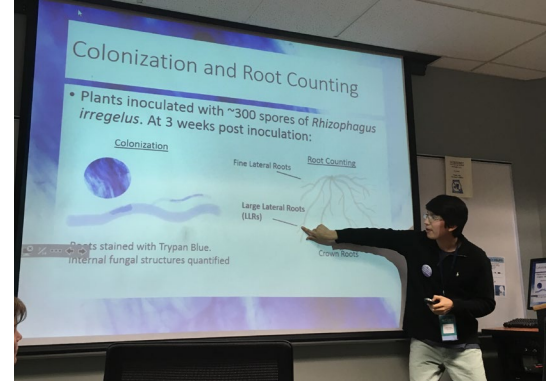


Kaherine Avery -OU

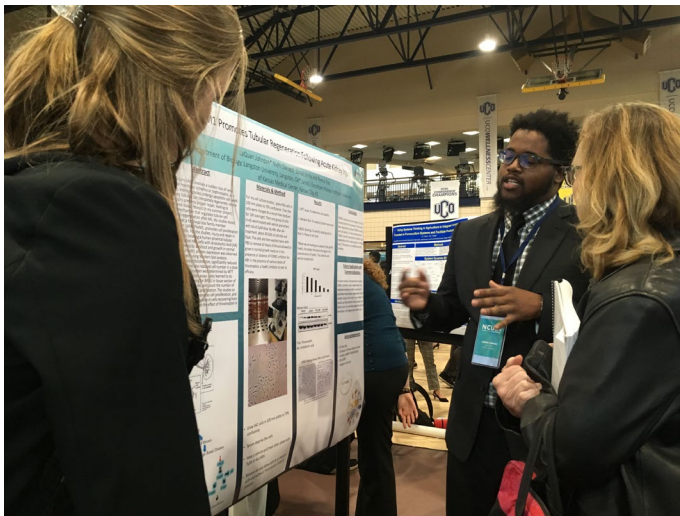




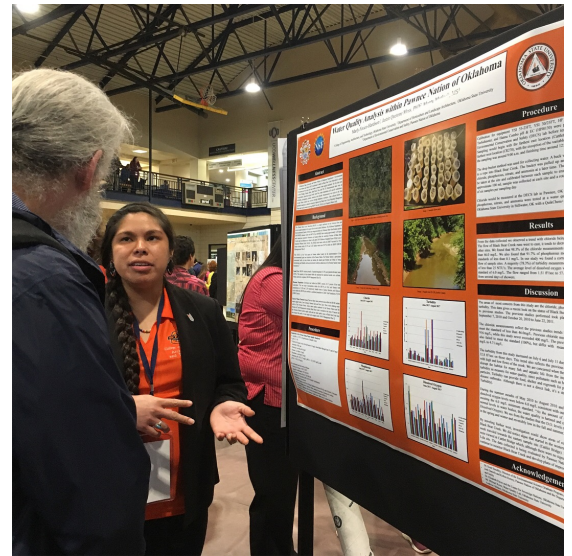
Alma Marquez - UCO



Daniel Hayden - OU



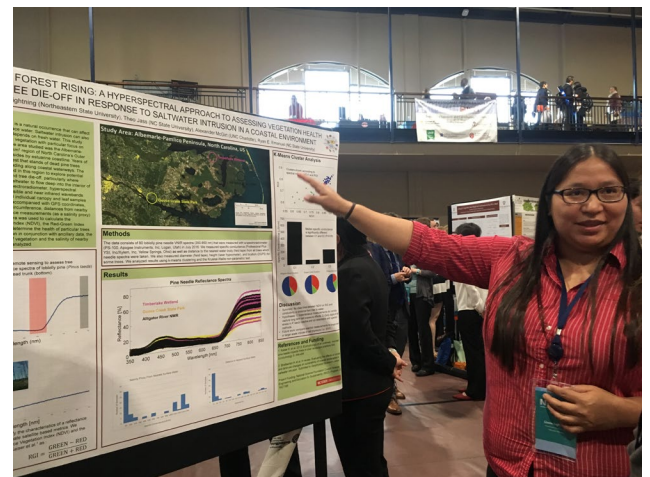
LaQuan Johnson - LU



Marly Fixico-Hardison - OSU

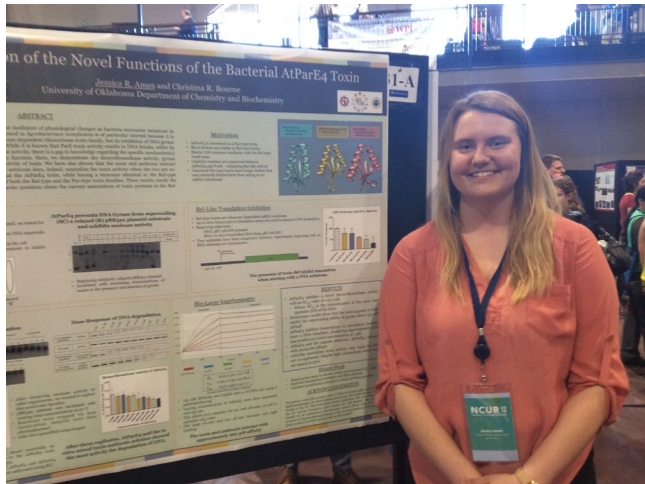


Catherine White - OSU



Lizzie Lightning - NSU





Jessica Ames - OU



Alexandra Bejarano - TU



Various OK-LSAMP Scholars representing their Tribe, in the opening NCUR ceremony



OK-LSAMP Scholars, Marly Fixico-Hardison (OSU) and Lizzy Lightning (NSU), networking at the NCUR conference

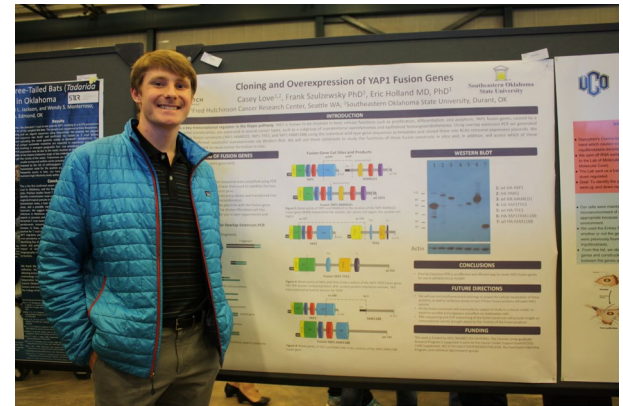
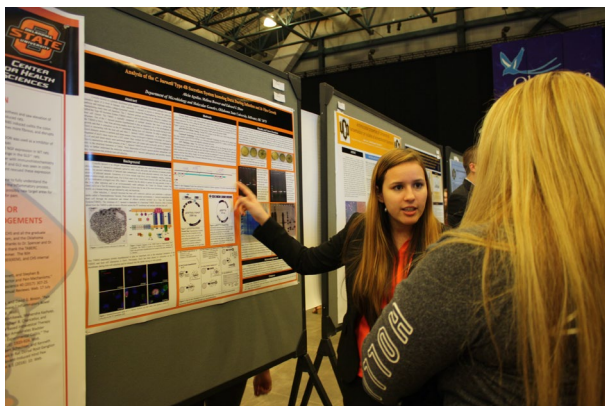
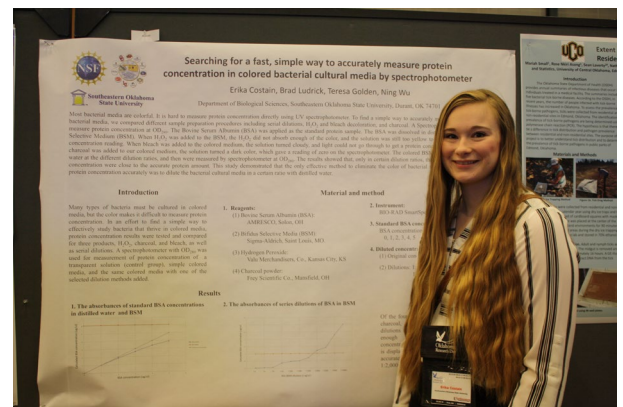
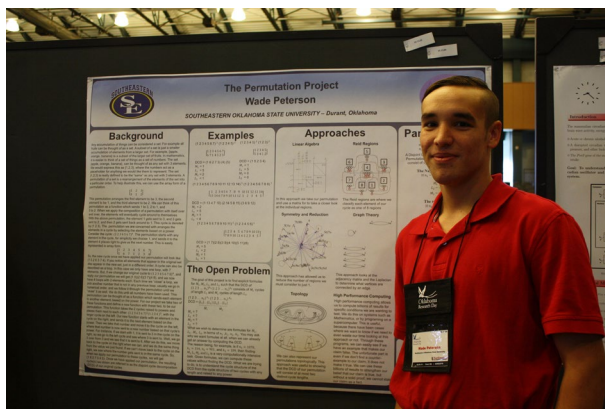
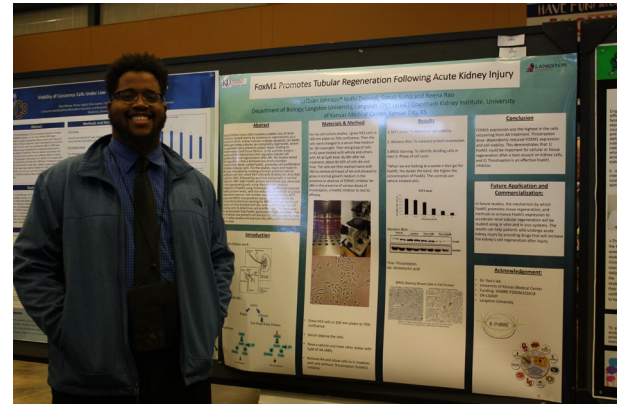
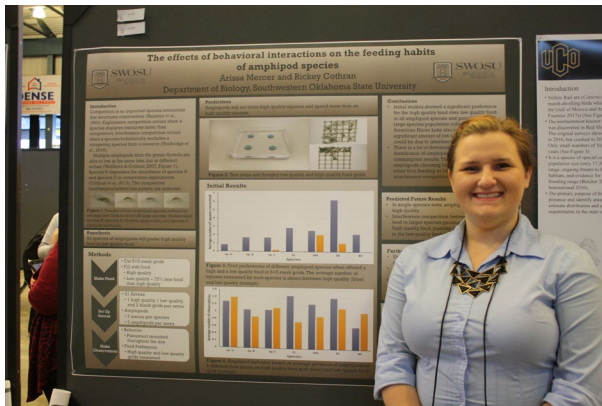
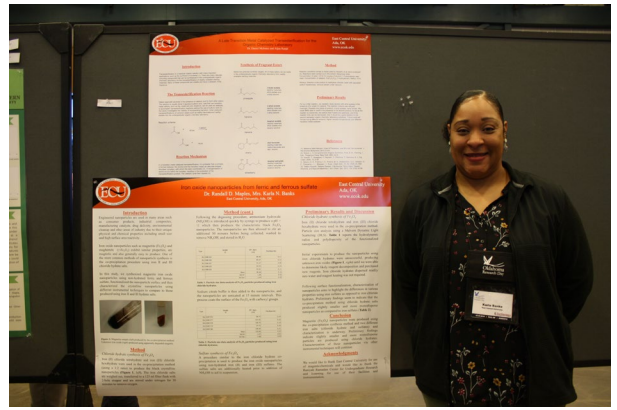
APPENDIX G

OKLAHOMA RESEARCH DAY

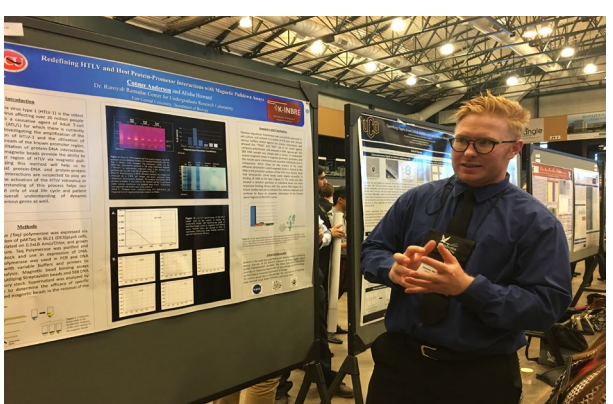
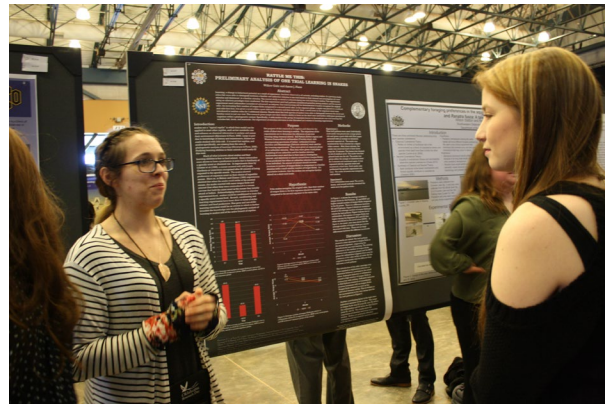
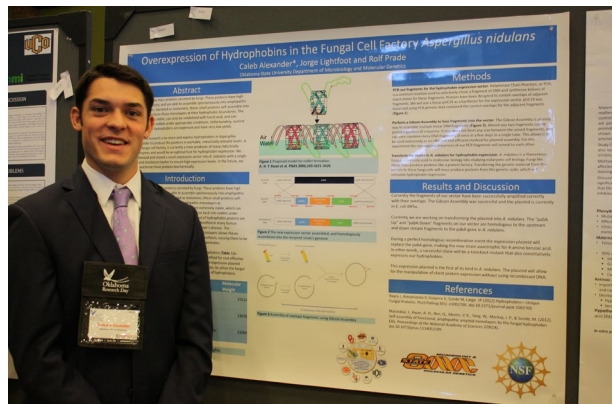
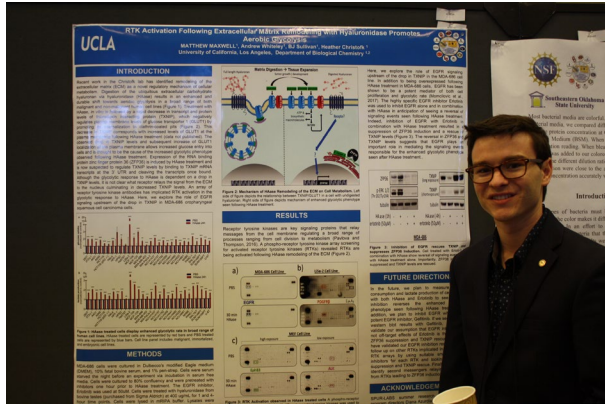
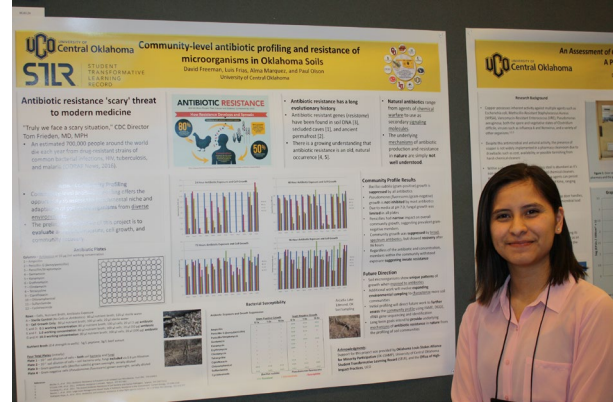
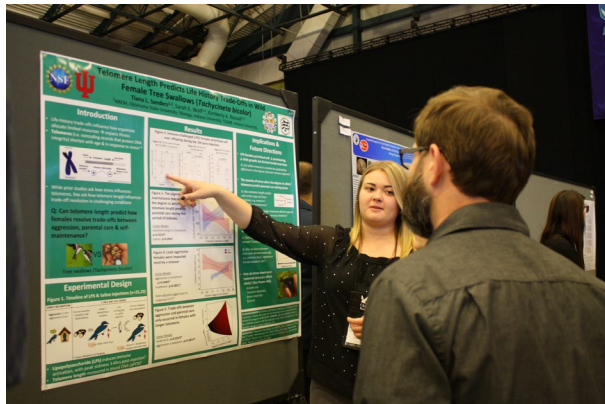
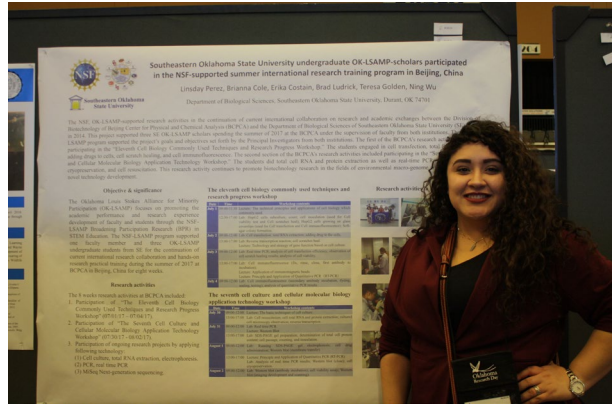
Northwestern Oklahoma State University  
Enid, OK



OK-LSAMP Scholars presenting their respective research at Oklahoma Research Day, Enid Oklahoma.











OK-LSAMP campus representatives, scholars and mentors.  
Top to bottom: OSU OK-LSAMP, Langston University OK-LSAMP, SEOSU OK-LSAMP.



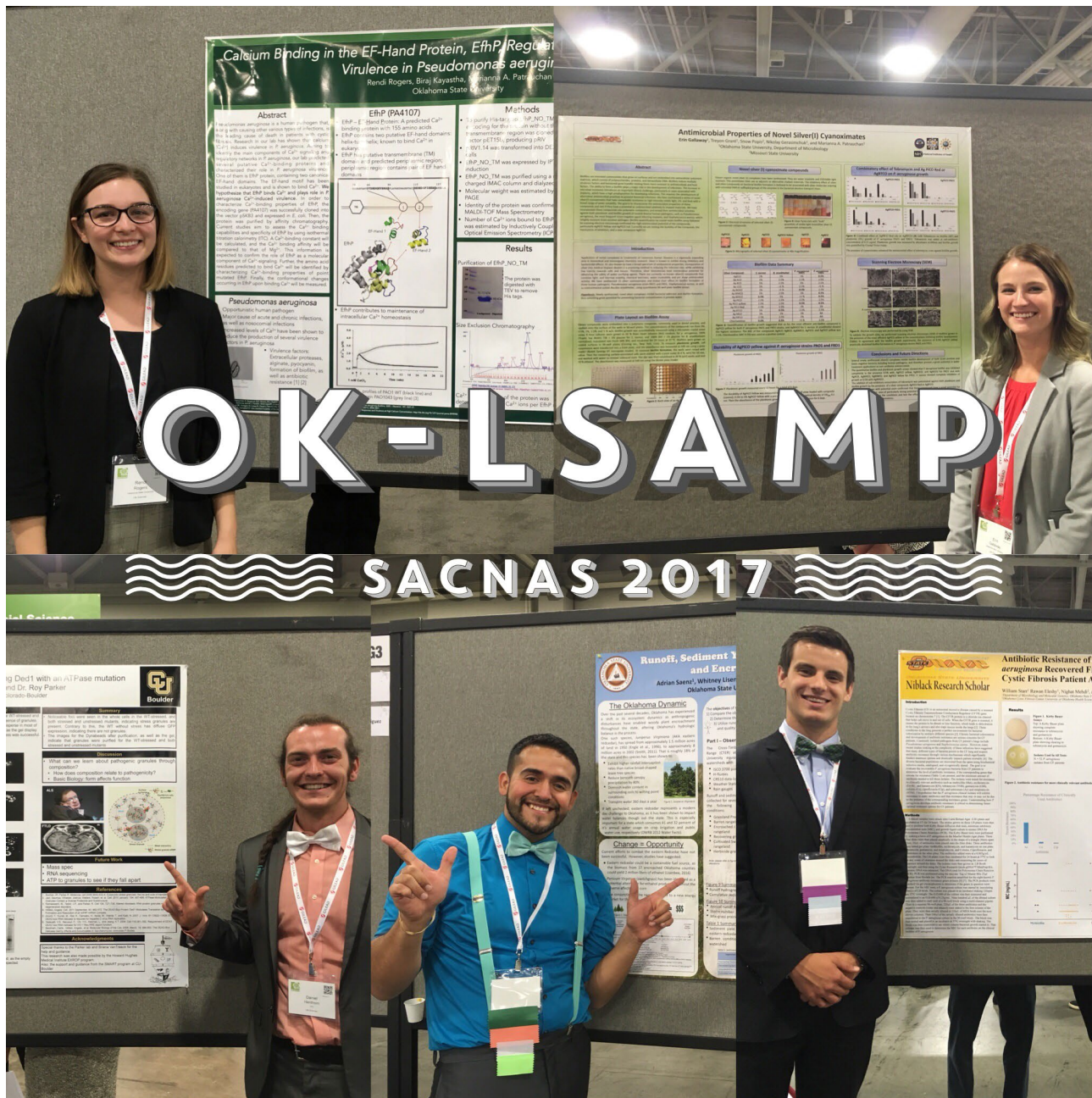


APPENDIX H

NATIONAL CONFERENCE:  
SOCIETY FOR THE ADVANCEMENT OF CHICANOS AND NATIVES IN THE SCIENCES  
(SACNAS)

Salt Lake City, UT

OK-LSAMP Scholars presenting their research through poster presentations at SACNAS national conference. Rendi Rogers (top left), Erin Gallaway (top right), Daniel Henthorn (bottom left), Adrian Saenz, BD Fellow (bottom center), William Colby Starr (bottom right)







OK-LSAMP Scholars at SACNAS national conference.



APPENDIX I

WOMEN IN SCIENCE CONFERENCE

Tulsa, OK



Look what time it is!



2017  
OKLAHOMA NSF EPSCoR  
WOMEN IN SCIENCE CONFERENCE

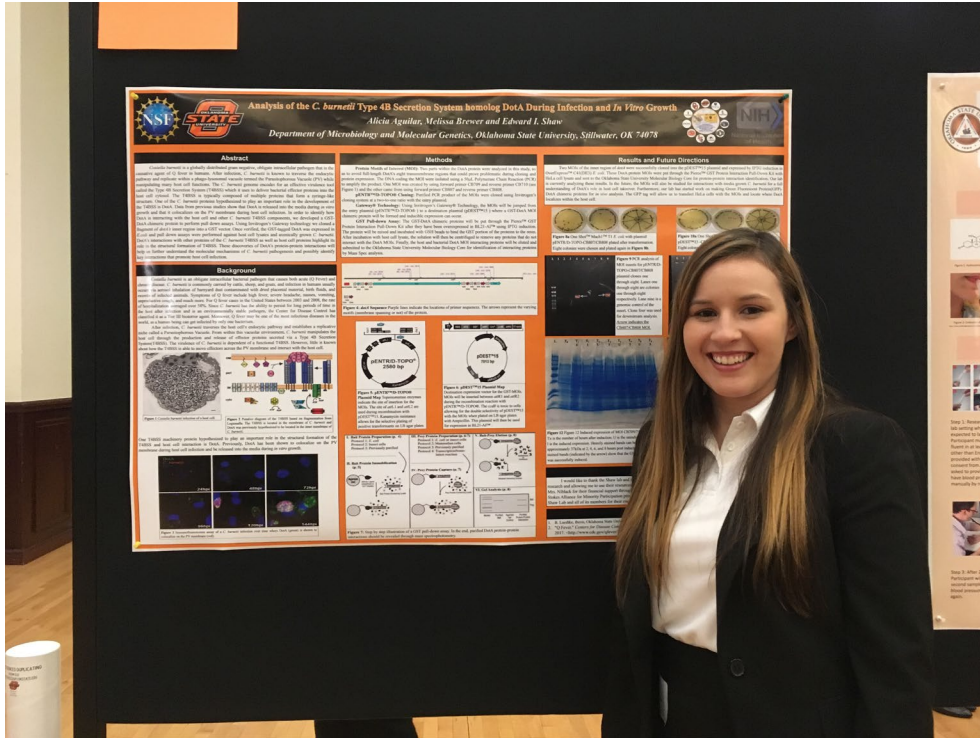
TUESDAY, OCTOBER 17, 2017 \* MABEE CENTER \* TULSA, OK



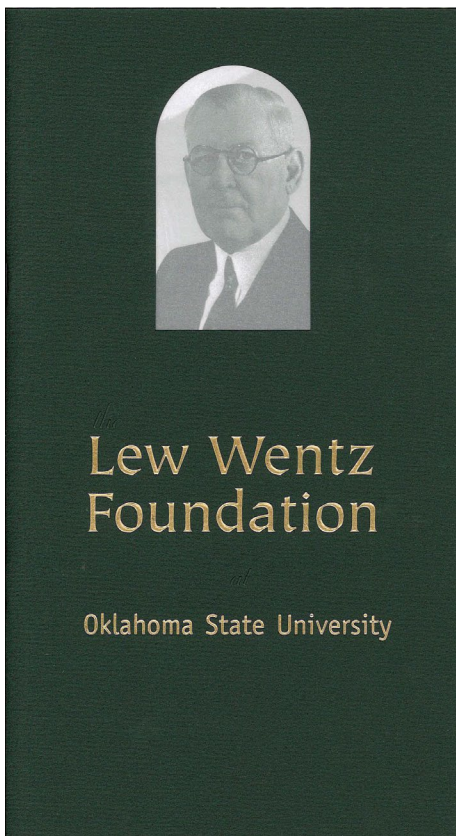
APPENDIX J

WENTZ SCHOLAR RESEARCH PRESENTATIONS

Stillwater, OK



Scholar Alicia Aguilar - OSU

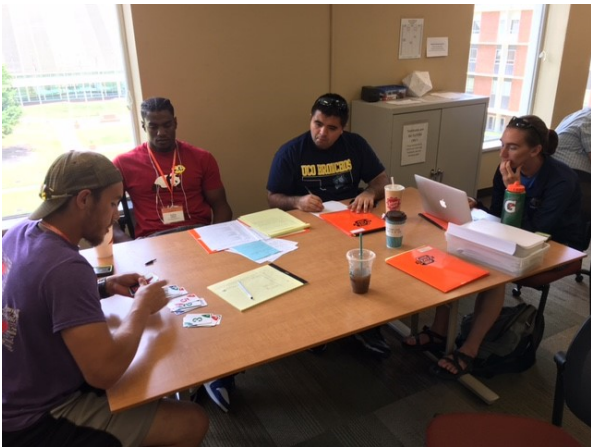


APPENDIX K

NSF SUPPLEMENTAL FUNDING SCHOLAR PROGRAMS



OK-LSAMP Summer Math Bridge Program



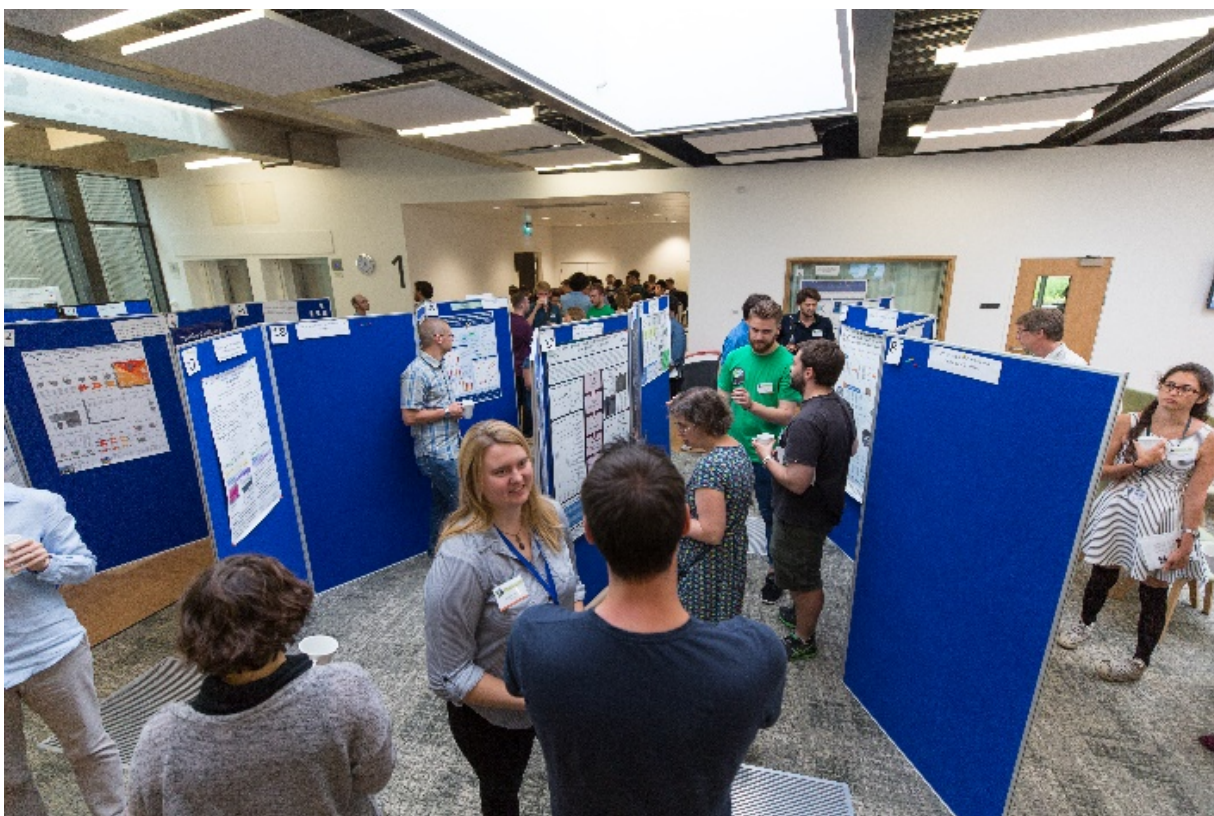


NSF-LSAMP Internship Program at Beijing Center for Physical and Chemical Analysis





NSF-LSAMP Internship Program at Exeter University



APPENDIX L

FACULTY HIGHLIGHTS





OK-LSAMP Campus Program Manager and mentor Dr. Sharon Lewis being recognized as an exemplary Oklahoma Mentor 2018



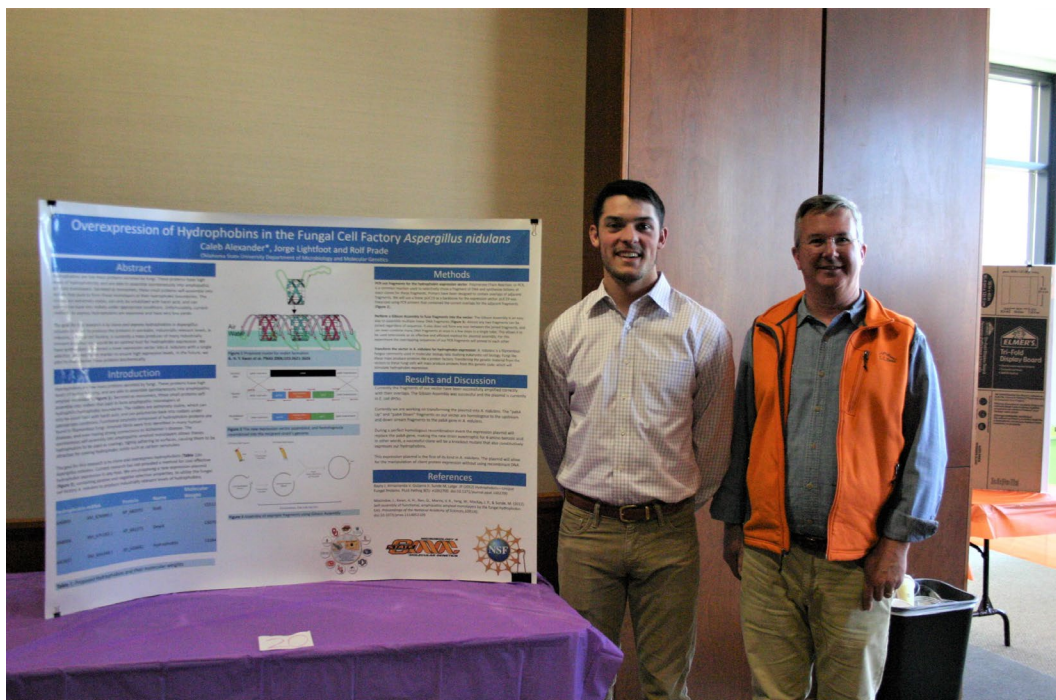
APPENDIX M

SCHOLAR AND BD FELLOW HIGHLIGHTS





From left to right: Erin Gallaway, Rendi Rogers, Sergio Mares, Jorge Lightfoot (BD fellow), Justin Bowen (BD fellow).

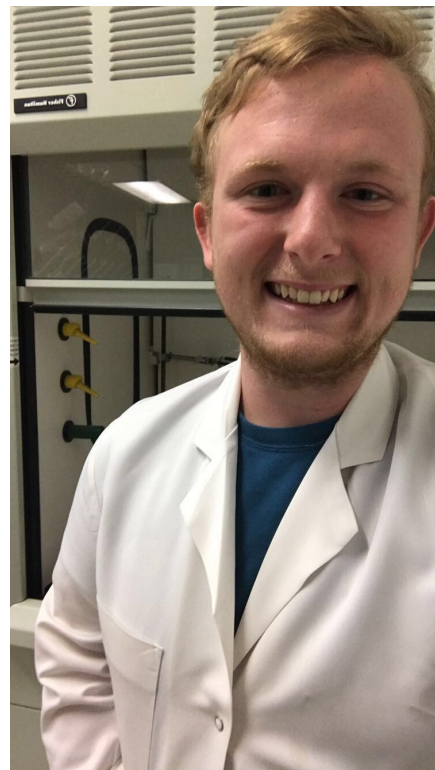


Caleb Alexander presenting research at the Microbiology symposium. 1<sup>st</sup> place poster presentation.

Marly Fixico-Hardison presents research poster at National AISES conference - Denver Colorado sept 21-23, 2017



Scholars Sergio Piedra, Victor Franco and Jonathan Bernal at a tour of Boeing.

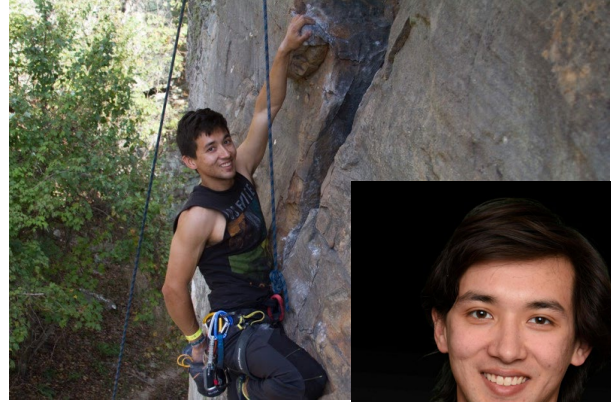


Dustin Cochran OSU Scholar internship

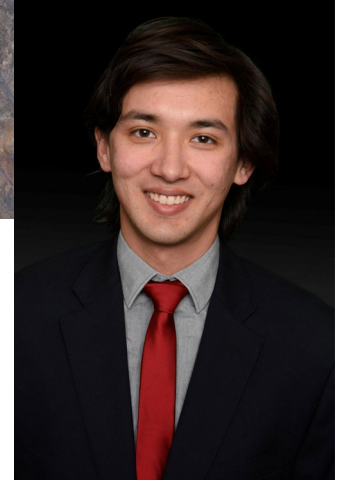




Elizabeth Apala - ECU receiving Outstanding Undergraduate Paper in Physical Sciences award



Nate Richbourg - OU GRFP recipient & founder of OU Rock-climbing club



Jonathan Bernal - OSU Scholarship recipient for Society of Fire Protection Engineers



University of Oklahoma OK-LSAMP Scholars



OK-LSAMP Scholar graduates



Alicia Aguilar - OSU



B.S. Biological Sciences

Jesse Velasco - SWOSU



Paul Delgado - OU

Ambar Morgan - OU



Matthew Maxwell - SEOSU



---

*Sandra Whalen  
OK-LSAMP Evaluator*

*Becca Castleberry  
Project Assistant*

*University of Oklahoma  
Center for Institutional Data  
Exchange and Analysis*

# Oklahoma Louis Stokes Alliance for Minority Participation

Annual Evaluation Report

Summer 2017 through Spring 2018

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## Introduction

Oklahoma was awarded funding from the National Science Foundation for a five-year continuation of the Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) program. Oklahoma State University serves as the lead institution for the alliance of 11 universities within the state, and the funding cycle covers FY2014-2019. This evaluation includes results from the fourth year of the five-year phase (Summer 2017 through Spring 2018).

This phase of funding represents Oklahoma's 24th year of participation in the national LSAMP efforts to increase participation and graduation among underrepresented minority (URM) students in STEM disciplines (Science, Technology, Engineering, and Mathematics). For the purposes of the OK-LSAMP program and this evaluation, underrepresented minority students include Black or African American, Hispanic/Latino, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander undergraduates.

## Purpose of the Evaluation

The OK-LSAMP program has specific goals and objectives that serve as the framework for their activities and efforts throughout the year. The Center for Institutional Data Exchange and Analysis (C-IDEA) at the University of Oklahoma has prepared this annual report to assess the progress of the program toward meeting its goals and objectives. This formative evaluation is an important component of the program as it offers timely feedback about program progress toward meeting its goals, which then allows time for future adjustments to activities, processes, and procedures if needed. The annual report provides information on the activities and accomplishments of OK-LSAMP scholars participating in the program and offers insights into areas of success, as well as others that may need to be improved.

## Evaluation Process

This evaluation includes both quantitative and qualitative components using three key sources of data. The results are described in four sections of the report.

- **Section 1:** Data on the activities and accomplishments of students participating in the program were provided by OK-LSAMP Director, Brenda Morales, and Grant Coordinator, Darlene Croci. It includes data provided by each of the 11 Alliance institutions and offers insights into the progress of the OK-LSAMP scholars.
- **Section 2:** The Center for Institutional Data Exchange and Analysis prepared a Qualtrics survey that was emailed to OK-LSAMP scholars using a list provided by the OK-LSAMP program office. This section includes both quantitative and qualitative results of the survey.
- **Section 3:** National STEM data were provided by the Consortium for Student Retention Data Exchange (CSRDE) at the Center for Institutional Data Exchange and Analysis
- **Section 4:** Overall Report Summary

## Section 1: OK-LSAMP Results Based on Data from Program Office

### Introduction

The primary goal for this five-year phase of the OK-LSAMP program is as follows:

*to recruit and retain an additional 50 percent underrepresented minority students in undergraduate STEM fields over the life of the project.*

This goal refers to all STEM students in higher education in Oklahoma; however, increased participation of students in the OK-LSAMP program results in more STEM students statewide, thus helping to meet this overall goal. This report addresses the progress of OK-LSAMP students specifically.

Three objectives have been identified by the program to help reach its goal of increasing STEM participation of underrepresented minority students by 50 percent.

- *Objective 1: To recruit, retain, and graduate 50% more URMs in STEM fields and increase their matriculation into graduate programs.*
- *Objective 2: To provide the support students require, academically and professionally, to ensure they build the connections, skills, and motivation to excel.*
- *Objective 3: To expand and facilitate opportunities for international research experiences and engagement so at least 25% of Alliance Scholars gain international experience.*

The Alliance experienced success in previous years in obtaining its goals of graduating URM STEM students who are prepared to enter graduate studies or industry. This current five-year phase is dedicated to continuing these achievements.

This section of the evaluation uses data on alliance scholars as provided by the OK-LSAMP program office. We address the primary goal of the program as well as the three objectives. To determine whether or not the goal of 50 percent increase was met, we used the total number of OK-LSAMP graduates during the previous five-year funding period (2009-2013) as our baseline. During that time, 197 OK-LSAMP scholars completed their bachelor's degrees.

In order to meet the 50 percent goal over the five-year period, the program must graduate a total of 296 students. To help meet this goal, the Alliance institutions should strive to graduate at least 10 percent of the total needed each year during the five-year period. If approximately 60 students graduate per year—with a total of 296 or more graduating by the final year of the five-year period—the Alliance will have met its goal.

This is the fourth year of the five-year project, and the Alliance should have graduated at least another 60 students during this evaluation period, for a total of 240 graduates over the past four years.

## Participants

The Alliance is dedicated to providing academic, personal, and professional support for its students to help them excel in STEM fields. This report examines the ability of the Alliance to achieve its goals during the period of Summer 2017 through Spring 2018. As previously noted, the program is specifically focused on recruiting underrepresented minority (URM) students: Black or African American, Hispanic/Latino, American Indian or Alaska Native, and Native Hawaiian or Other Pacific Islander undergraduates. A few students of other race/ethnicities have continued participation from past years, but are no longer being accepted into the program.

The breakdown by race/ethnicity and class standing of students who participated during this period is shown Table 1.

Table 1: *Class Standing and Ethnicity – Summer 2017 through Spring 2018*

<b>Standing</b>	<b>URM</b>	<b>Other</b>	<b>Total</b>
<b>Freshman</b>	24	0	24
<b>Sophomore</b>	42	0	42
<b>Junior</b>	69	0	69
<b>Senior</b>	170	9	179
<b>TOTAL</b>	<b>305</b>	<b>9</b>	<b>314</b>

In the program year under review, the Alliance supported 314 students: 179 seniors, 69 juniors, 42 sophomores, and 24 freshmen. This represents a 16.7% increase in the total number of participants this year compared with last year when there were 269 scholars. Of the 314 participants this year, 97.1% (305 out of 314) were underrepresented minority students. Table 2 displays participating students by class standing and institution.

Although the majority of students in the program are juniors or seniors, the Alliance also supports freshmen and sophomores in an effort to encourage these students to move forward with a STEM degree. Unless otherwise noted, the data in this report includes all students participating in the OK-LSAMP program during the specified period (Summer 2017, Fall 2017, and Spring 2018), regardless of classification or race/ethnicity.

Table 2: *Participants by Partner Institution – Summer 2017 through Spring 2018*

Institution	Freshman	Sophomore	Junior	Senior	Total URM	Total Non-URM	% Non-URM	Total Scholars
CU	0	0	4	11	15	0	0.0%	15
ECU	1	2	3	11	15	2	11.8%	17
LU	4	5	9	26	44	0	0.0%	44
NEOSU	0	0	3	10	13	0	0.0%	13
NWOSU	0	0	3	3	4	2	33.3%	6
OSU	14	15	23	58	109	1	0.9%	110
OU	2	6	10	35	49	4	7.5%	53
SEOSU	1	7	4	5	17	0	0.0%	17
SWOSU	0	3	2	8	13	0	0.0%	13
TU	0	2	3	6	11	0	0.0%	11
UCO	2	2	5	6	15	0	0.0%	15
<b>TOTAL</b>	<b>24</b>	<b>42</b>	<b>69</b>	<b>179</b>	<b>305</b>	<b>9</b>		<b>314</b>
<b>Percentage of Total Scholars</b>	<b>7.6%</b>	<b>13.4%</b>	<b>22.0%</b>	<b>57.0%</b>	<b>97.1%</b>	<b>2.9%</b>		<b>100%</b>

### Alliance Wide Goal and Objectives

The primary goal of the OK-LSAMP program is to recruit and retain an additional 50 percent underrepresented minority students in undergraduate STEM fields over the life of the project. They hope to attain this goal by meeting three objectives.

- Objective 1: To recruit, retain, and graduate 50% more URMs in STEM fields and increase their matriculation into graduate programs.
- Objective 2: To provide the support students require, academically and professionally, to ensure they build the connections, skills, and motivation to excel.
- Objective 3: To expand and facilitate opportunities for international research experiences and engagement so at least 25% of Alliance Scholars gain international experience.

In order to maximize the success of students through their undergraduate degree, and to help ensure their success in applying to graduate school, the Alliance determined that it would strive to assist students in a number of ways, including the following:

- Provide STEM faculty mentors
- Require minimum cumulative GPA of 3.0 for participation
- Offer regular group meetings at Alliance institutions
- Encourage summer internships
- Provide online GRE prep course, help with applying to graduate programs, and require



scholars to submit a minimum of three graduate school applications

- Host annual Research Symposium and encourage participation in other professional meetings
- Offer financial assistance, workshops, and assistance in obtaining international internships

## Results – Graduates

From Summer 2017 through Spring 2018, a total of 87 OK-LSAMP scholars graduated with STEM degrees. The Alliance surpassed its goal of having 60 students during this evaluation period achieve a bachelor’s degree in a STEM field. Figure 1 shows the cumulative results of the past four years of graduates compared to the goal of 60 graduates per year. The Alliance is currently on target to exceed its goal.

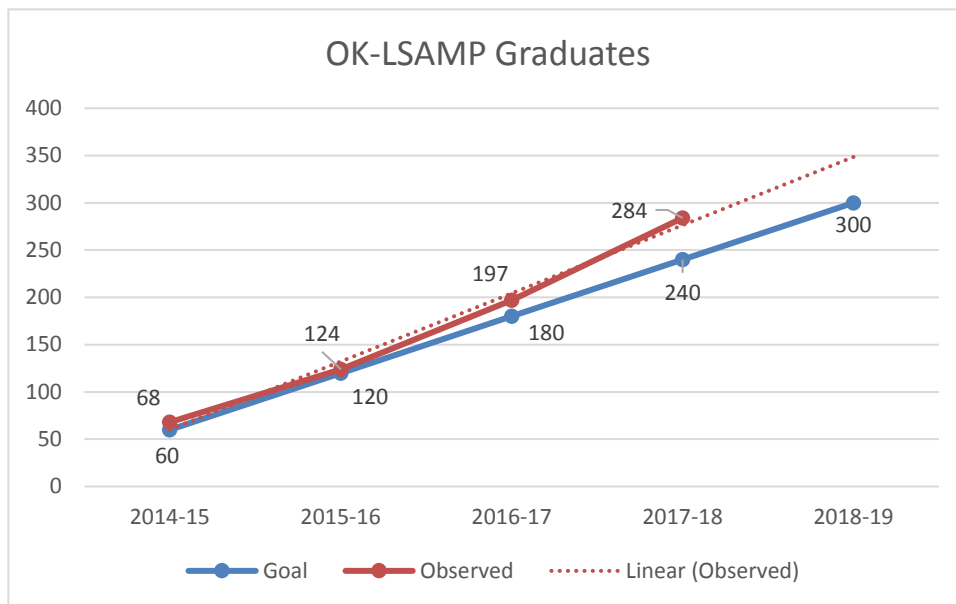


Figure 1: Graduation Counts – Goal vs Observed

The OK-LSAMP graduates accomplished the following during the 2017-2018 review period:

- 48.6% of the OK-LSAMP seniors (87 out of 179) graduated during this period with the majority of the remaining seniors continuing in the program
- 90.8% of the graduates (79 out of 87) were URM students
- 29.9% of the graduates (26 of 87) took the GRE
- 26.4% of the graduates (23 of 87) were accepted into graduate school
- 91.3% of the graduates (21 of 23) who were accepted into graduate school were URM scholars
- 78.2% of the graduates (68 of 87) had a GPA of 3.0 or higher

- 46.0% of the graduates (40 of 87) had at least one summer internship while participating in the program
- 27.6% of the graduates (24 of 87) had at least two summer internships while participating in the program

Of the 24 students who had at least two summer internships while in the program, 16 scholars had two, six scholars had three, and two scholars had four internships.

More OK-LSAMP scholars graduated this year (87) compared to last year (70), and more students were accepted into graduate school this year (23) compared to last year (18). Based on the GPAs and number of scholars who participated in research and internships, there were many graduates who had the potential to move on to graduate work, but either elected not to do so or were not accepted into graduate programs. Of the 64 students who were not accepted into graduate school—or did not apply—46 (71.9%) had a GPA of 3.0 or greater, 28 (43.8%) had participated in research opportunities, and 30 (46.9%) participated in at least one summer internship while in the OK-LSAMP program. Seventeen of these 64 students (26.6%) took advantage of both research and internships while they were OK-LSAMP scholars. Of these 17 students, only four of them (23.5%) applied to graduate school based on the data received from the Alliance institutions that were used for this evaluation, and none of the three were accepted.

## Results – All Scholars

Research is a significant component of the OK-LSAMP program that provides an opportunity to develop research skills and build relationships with faculty members. The OK-LSAMP program office regularly sends emails to scholars on the list serve informing them of research opportunities and summer internships. OK-LSAMP participants are encouraged to apply to graduate school and are offered support during the process.

There were 314 scholars in the program from Summer 2017 through Spring 2018. Below are the results of the Alliance-wide efforts in providing opportunities for the participants to be successful in their graduate school applications.

- 12.5% of the junior and senior scholars (31 of 248) took the GRE or other graduate school entrance exam
- 50.2% of the Fall 2017 students (124 of 247) participated in research that semester
- 43.3% of the Spring 2018 students (125 of 289) participated in research that semester
- 44.4% of students (84 of 189) who were in the program prior to Fall 2017 participated in a Summer 2017 internship
- Of the 216 students who participated in Spring 2018 and had not left the program as of Summer 2018, 58 (26.9%) were scheduled for Summer 2018 internships.
- 33.2% of students (82 of 247) who were in the program in Fall 2017 attended the OK-LSAMP Research Symposium

In addition to the above data, we looked at how the program is meeting OK-LSAMP Objective 3, which focuses on expanding opportunities for international research so that 25% of the scholars will gain international experience. Based on the data received by the program office, 13.1% (41 of 314) of the scholars who participated during this evaluation period have international experience, which includes study abroad, international internships, international research, and international conference presentations. If students are unable to go abroad, this objective may also be met if scholars participate in an internationally focused research internship. There may be additional students who fall into this category who were not included in the data received by the Alliance institutions. Although the program did not attain the 25% goal, the number of students with international experience increased as compared to last year, when only 33 scholars had this experience.

Summaries on how each individual Alliance partner contributed to the OK-LSAMP goals can be found in Appendix 1.

## Section 2: OK-LSAMP Online Student Survey

The Center for Institutional Data Exchange and Analysis at the University of Oklahoma created an online survey using Qualtrics and sent an email invitation to two different groups of OK-LSAMP scholars with a link to the same survey. We obtained the email addresses from Darlene Croci in the OK-LSAMP program office. The addresses contained the names from their list serve, which included scholars currently in the program, and some former students who expressed a desire to remain on the list serve. The list included 312 email addresses. If the answer was no, their survey ended and they were unable to participate. No respondents fell into this category.

The OK-LSAMP program office sent each student an email notification about the survey beforehand. The evaluator also informed the Campus Program Managers about the survey and asked them to encourage their students to participate. The invitations were emailed to scholars a few days after the last day of Spring 2018 final exams on their campus. Students at six of the 11 alliance institutions received the email on May 7, 2018 and scholars from five institutions received their invitation to participate on May 14, 2018. Each group of students were sent two follow-up emails before the survey closed on June 1, 2018.

Most of the questions in the survey were related to OK-LSAMP Objective 2, which is to provide the support students require, academically and professionally, to ensure they build the connections, skills, and motivation to excel.

Since the survey was targeted to students currently participating in the OK-LSAMP program, the first question on the survey asked if the respondent was a participant in the program during Summer 2017 through Spring 2018. Fifty-seven students responded to the survey. Six of these students did not complete the survey, so their responses are not included in these results. Three of the emails containing the survey invitation were undeliverable, so those emails have not been considered in the response rate. The response rate of useable data from the survey was 17% (51 out of 309).

At least one student from eight of the eleven alliance institutions responded to the survey. The largest response to the survey (33.3%) came from the University of Oklahoma, which has the second largest representation of OK-LSAMP scholars in the program. The second largest number of students participating in the survey were from Oklahoma State University with 31.4% of their scholars responding. Oklahoma State University has the largest representation of OK-LSAMP scholars in the program.

Table 3 provides the number of students who responded from each institution. It also includes data showing the percentage representation of each institution within the program, as well as the survey participation. Figure 2 includes a map displaying the responses per institution.

Table 3: Institutional Affiliation of Survey Respondents

Institution	Total OK-LSAMP Scholars	% of Total OK-LSAMP Scholars	# of Survey Respondents	% of Scholars who Responded to Survey	% of Total Scholars who Responded to Survey
CU	15	4.8%	4	26.7%	7.8%
ECU	17	5.4%	0	0.0%	0.0%
LU	44	14.0%	2	4.5%	3.9%
NEOSU	13	4.1%	1	7.7%	1.9%
NWOSU	6	1.9%	2	33.3%	3.9%
OSU	110	35.0%	16	14.5%	31.4%
OU	53	16.9%	17	32.1%	33.3%
SEOSU	17	5.4%	0	0.0%	0.0%
SWOSU	13	4.1%	0	0.0%	0.0%
TU	11	3.5%	3	27.3%	5.9%
UCO	15	4.8%	6	40.0%	11.8%
<b>Grand Total</b>	<b>314</b>	<b>100.0%</b>	<b>51</b>		<b>100.0%</b>

Sum of percentages may not be 100.0% due to rounding.

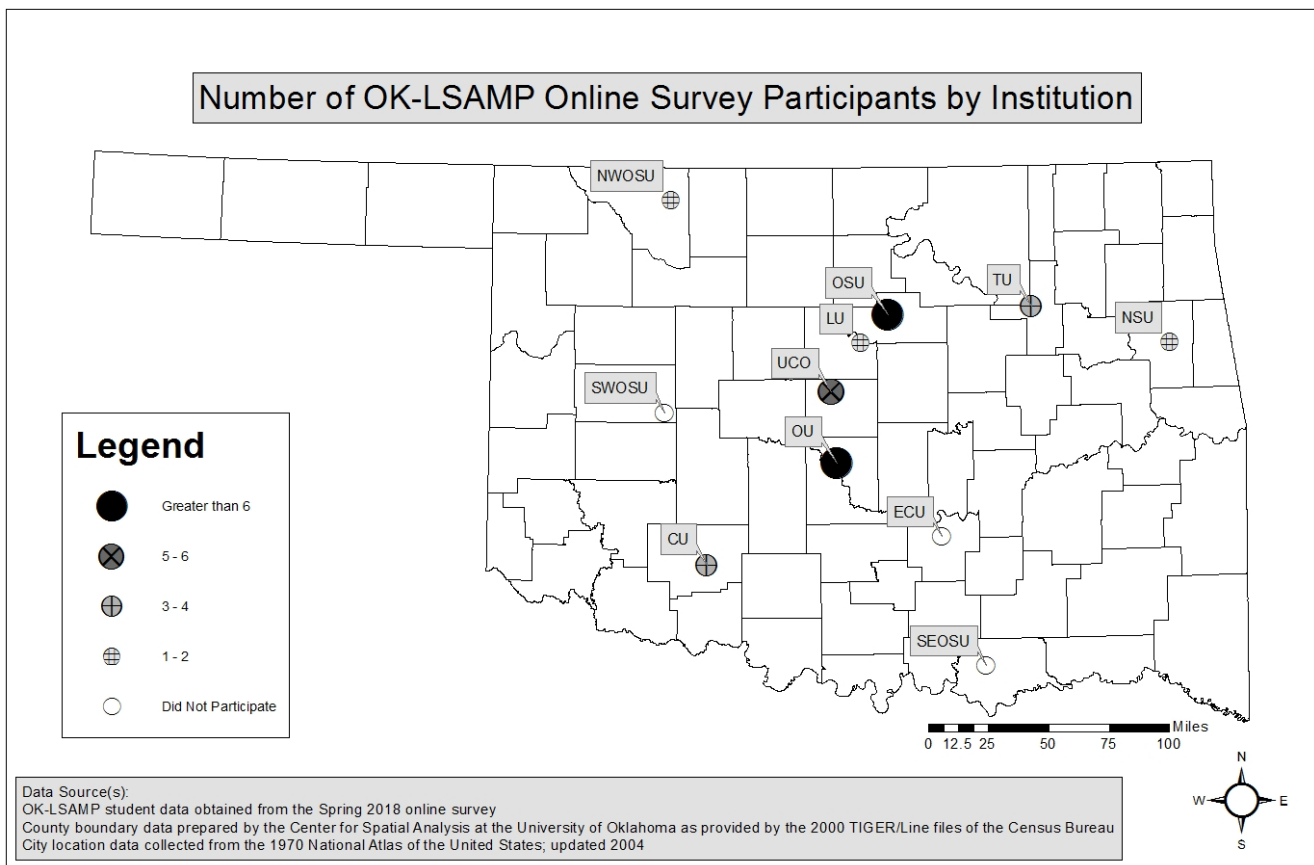


Figure 2: Map of Survey Respondents by Institution

Students were asked when they first began participating in the OK-LSAMP program. Almost half (41.2%, 21 out of 51) began before Summer 2017. The majority (82.4%, 42 out of 51) were attending their original institution of entry. Nine students reported transferring from the following institutions: New Mexico Tech, Oklahoma City Community College (2 students), Oklahoma State University, Oklahoma Wesleyan University, Rose-Hulman Institute of Technology, Spelman College, Tulsa Community College, and the University of Maryland.

Recruitment is essential to the growth of the OK-LSAMP program. The top sources reported for learning about the OK-LSAMP program included professors, current OK-LSAMP participants, and campus recruitment events. Other sources included friends and family, the OK-LSAMP website, and social media. Students were allowed to choose more than one response if applicable.

## **Survey Results**

The OK-LSAMP program has several strategies in place to help ensure that objectives are met and the scholars receive the support needed to be successful. The questions on the survey were related to the scholars' experiences with the following aspects of the program: 1) meetings, 2) mentor support, 3) progress reports, 4) the Fall 2017 OK-LSAMP Research Symposium and other professional meetings, 5) summer internships, 6) graduate school preparation, and 7) interest in future workshops. Below are the findings, grouped by category.

### *Regular Meetings*

OK-LSAMP scholars are required to attend meetings with program staff at least twice per semester, and encouraged to participate in additional meetings as well. These meetings are organized by each Alliance institution's OK-LSAMP Campus Program Manager. Topics in these meetings typically include time management, presentation ideas, graduate school preparation tips, and other matters related to helping the students succeed in their STEM studies. Guest speakers are also a common feature of these meetings.

Of the 51 students who answered the question on the survey related to attendance at Fall 2017 and Spring 2018 meetings, 47.1% (24 students) attended at least two meetings in Fall 2017 and 72.5% (37 students) attended at least two meetings in Spring 2018. In Fall 2017, 39.2% of students (20 out of 51) attended at least five meetings and 43.1% of students (22 out of 51) attended at least five meetings in Spring 2018.

Students were asked about the helpfulness of the group meetings. The survey used smiley face graphics, and responses were coded from 1 to 5 with 5 being the most helpful. Seven students (13.7%) did not attend meetings in Fall 2017 or Spring 2018. Figure 3 shows the scholars' responses to how helpful they felt the meetings were for them. Only the 44 students who attended at least one meeting in Fall 2017 or Spring 2018 were included in Figure 3. Overall, most respondents found the group meetings to be helpful.

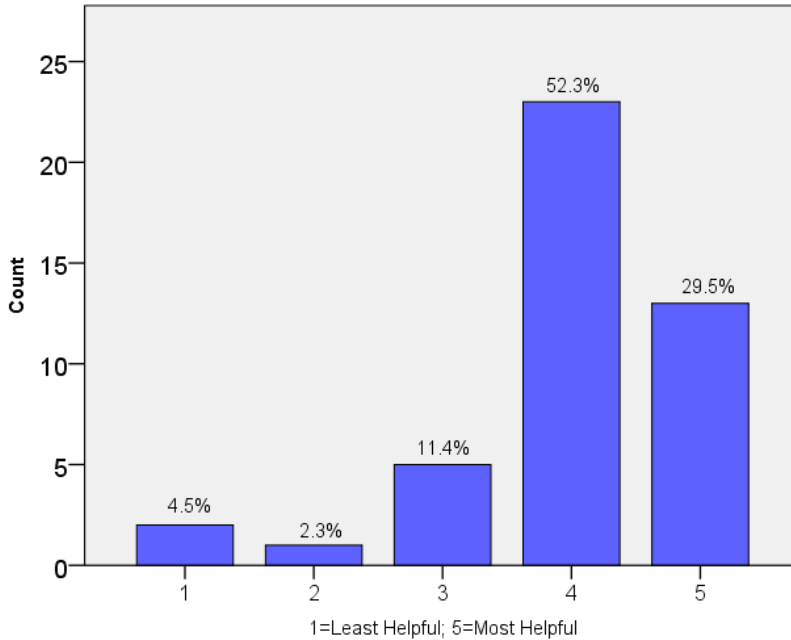


Figure 3: Helpfulness of Meetings

#### *Mentor Support*

One important component of support is providing mentoring for the students. Faculty mentors are key in helping OK-LSAMP students succeed. They work with the students on research projects, encourage them to participate in summer internships, and help them with graduate school decisions.

Of the 51 students who responded to the question pertaining to mentors, 78.4% of the respondents (40 students) indicated that they had a mentor. In Fall 2017, 90% (36 out of 40) of students attended at least one meeting with their mentor and 57.5% (23 out of 40) met with their mentor at least five times. In the Spring 2018 semester, 97.5% (39 out of 40) met with their mentor at least once, and 52.5% (21 out of 40) met with their mentor at least five times.

In addition to questioning the students about how often they met with their mentors, we also asked the scholars to rate their mentors on how helpful they were, based on an A-F scale. Out of 40 students who had a mentor and responded to this question, 92.5% (37 out of 40) gave their mentors an “A” rating, and 7.5% (3 out of 40) gave their mentors a “B” rating. There were no responses below a “B” rating. Student responses to this question can be seen in Figure 4.



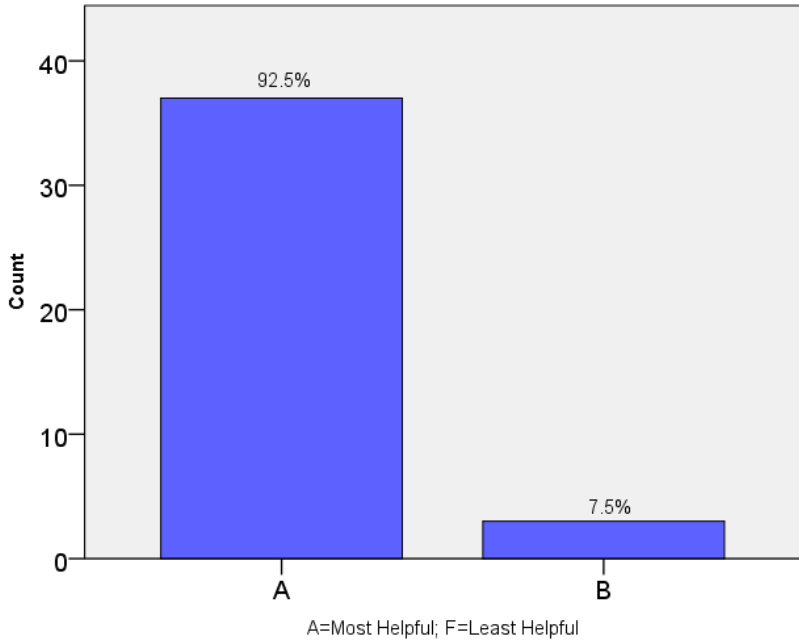


Figure 4: Helpfulness of Mentors

The results from the online survey were combined with the data we received from the OK-LSAMP program office to see if we could determine how students with a mentor compared to those without one. The data show that considerably more students have a GPA of 3.0 or greater, apply to graduate school, and conduct research if they have a mentor. Seventy-eight percent of students with a GPA of 3.0 or greater had a mentor, 80% of students who applied to graduate school had a mentor, and 87.2% of students who participated in research worked with a mentor. Tables 4-6 show the results.

Appendix 3 provides students’ comments related to experiences with their mentors, including how they were helpful and how they could improve.

Table 4: More Students have GPA  $\geq 3.0$  with Mentor Support

			GPA $\geq 3.0$		Total
			No	Yes	
Do you have an OK-LSAMP mentor?	No	Count	1	10	11
		% within GPA	16.7%	22.2%	21.6%
	Yes	Count	5	35	40
		% within GPA	83.3%	77.8%	78.4%
Total	Count	6	45	51	
	% within GPA	100.0%	100.0%	100.0%	

Table 5: *More Students who Applied to Graduate School had Mentor Support*

			Have you applied to any graduate schools?		Total
			No	Yes	
Do you have an OK-LSAMP mentor?	No	Count	0	2	2
		% within GradApply	0.0%	20.0%	9.5%
	Yes	Count	11	8	19
		% within GradApply	100.0%	80.0%	90.5%
Total		Count	11	10	21
		% within Have you applied to any graduate schools?	100.0%	100.0%	100.0%

Only Juniors and Seniors (21 students) responded indicating they had applied to graduate school.

Table 6: *More Students Conduct Research with Mentor Support*

			Research		Total
			No	Yes	
Do you have an OK-LSAMP mentor?	No	Count	6	5	11
		% within Research	50.0%	12.8%	21.6%
	Yes	Count	6	34	40
		% within Research	50.0%	87.2%	78.4%
Total		Count	12	39	51
		% within Research	100.0%	100.0%	100.0%

### *Progress Reports*

OK-LSAMP scholars are required to submit progress reports to their OK-LSAMP mentors at each Affiliate campus each semester that they participate in the program. In Fall 2017 and Spring 2018, 27 out of 40 (67.5%) students who had mentors were required to submit a progress report.

### *Research Symposium and Other Professional Meetings*

Participation in professional meetings is another way that the OK-LSAMP program supports its scholars. Students receive financial support for travel to present at conferences, which offers them experience in a professional setting and opportunities for networking with other STEM students.

The OK-LSAMP Research Symposium is a full-day, statewide symposium held each fall to provide an opportunity for scholars to participate in a professional meeting. Students who have conducted research are required to present either an oral or poster presentation highlighting their research. Scholars may also serve as moderators or volunteers at the event. Attendance at the symposium is required for all scholars, regardless of whether they are presenting. In 2017, 39.2% (20 out of 51) of the students who responded to this question attended the OK-LSAMP Research Symposium in Fall 2017. Of those 20, 15 students (75.0%) presented at the symposium. The reasons

the 31 students gave for not attending included: not being in the program at the time (16 students), schedule conflict (7 students), did not know about it (5 students), no research to present (1 student), overslept (1 student), and graduated in Spring 2018 (1 student).

Of the 51 students who responded concerning participation in other professional meetings, 31 (60.8%) reported attending other professional meetings during Summer 2017, Fall 2017, or Spring 2018. Of those 31 students, 18 (58.1%) reported receiving financial assistance to attend the other professional meetings, and 21 students (67.7%) presented at the other professional meetings. Of the 21 students that presented at other professional meetings, the average number of presentations was three.

*Internship Participation*

Another aspect of the OK-LSAMP program that prepares students for future graduate school or industry employment is the opportunity to participate in summer internships. The program requires students to apply for a minimum of five summer internships annually.

When asked about their internship experiences, 88.2% of the respondents reported being encouraged to participate in summer internships. When asked how they found out about these opportunities, the majority reported that they received this information from a mentor or their Campus Program Manager or the OK-LSAMP program office emails. Sources of information listed in the “Other” category included campus tours and career fairs. Students were allowed to choose more than one response if applicable. The results are seen in Figure 5.

Of the 51 respondents, 29 (56.9%) reported participating in an internship in 2017 or planned to participate in an internship in 2018. Of those students who were juniors or seniors (37 out of 51), 56.8% (21 students) participated in an internship in 2017 or planned to do an internship in 2018, as indicated in Table 7.

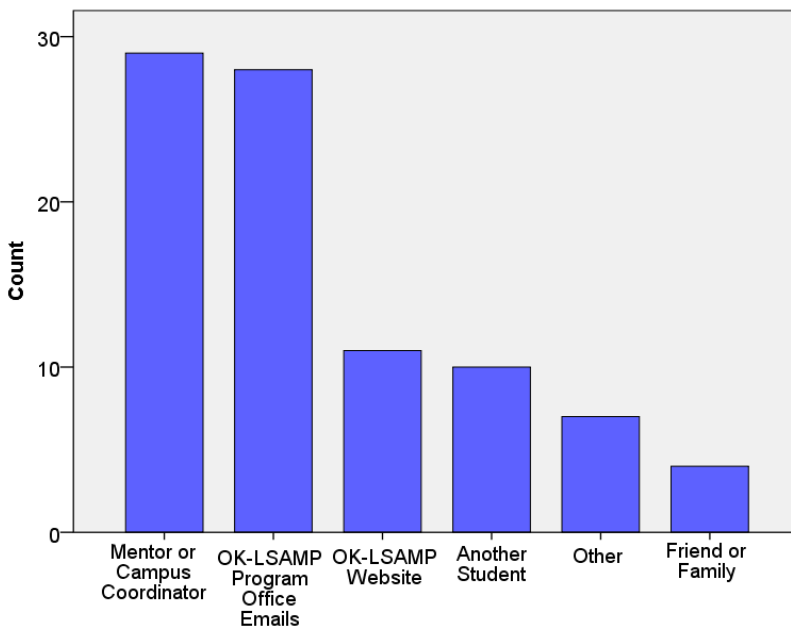


Figure 5: Sources for Learning about Internship Opportunities

Table 7: Junior/Senior Summer Internship Crosstabulation

			Did you participate in an internship in Summer 2017, or planning to do an internship this summer?		Total
			No	Yes	
Classification	Junior	Count	6	13	19
		% of Total	16.2%	35.1%	51.4%
	Senior	Count	10	8	18
		% of Total	27.0%	21.6%	48.6%
Total		Count	16	21	37
		% of Total	43.2%	56.8%	100.0%

### Graduate School Preparation

Preparing OK-LSAMP scholars for graduate school is a crucial component of Objective 1: *To recruit, retain, and graduate 50% more URMs in STEM fields and increase their matriculation into graduate programs.* If scholars indicated on the survey that they were either a junior or senior, we asked them a few questions related to the GRE. Of those who responded, 83.8% (31 out of 37) reported that they were encouraged to take the GRE, 51.4% (19 out of 37) received help from the OK-LSAMP program in preparing for the GRE, and 27.0% (10 out of 37) of the scholars had already taken the GRE at the time of the survey.

Some examples of how students indicated that the program was helpful with graduate school preparation include funding, test prep, and study materials. Appendix 4 provides a full account of student responses to the survey question.

### Workshop Interest

The OK-LSAMP program is committed to conducting a Ph.D. Camp that would offer complete training on how to successfully prepare for and apply to graduate programs, and a day-long workshop each semester on international travel to provide guidance with passport and visa information, travel rules, regulations, and expectations. Students who responded to questions related to these topics reported interest in participating in these opportunities.

Of the 51 students who responded to the question concerning their interest in participating in a two-day Ph.D. camp, 98.0% (50 students) reported that they would be interested in attending. Students were also asked if they were interested in participating in an international travel workshop. Of the 51 students who responded to this question, 78.4% (40 students) indicated they were interested in attending the travel workshop. Student responses are seen in Tables 8 and 9.

Table 8: Interest in Participating in a Two-day Ph.D. Camp

Yes	30
Maybe	20
No	1

Table 9: Interest in Participating in an International Travel Workshop

Yes	25
Maybe	15
No	11

*Overall Satisfaction*

The scholars were asked to evaluate their experiences with the OK-LSAMP program in six specific areas, each of which are important components of the program. The score ranking was from 1 to 5 (1=Poor and 5=Excellent). In all six areas, the “Excellent” ranking was reported by the highest number of students followed by the “Good” ranking. There were no “Poor” ratings.

Figure 6 provides the counts of responses in each category and Appendix 5 offers student responses to the question “What can be improved” in reference to the six areas listed in this figure.

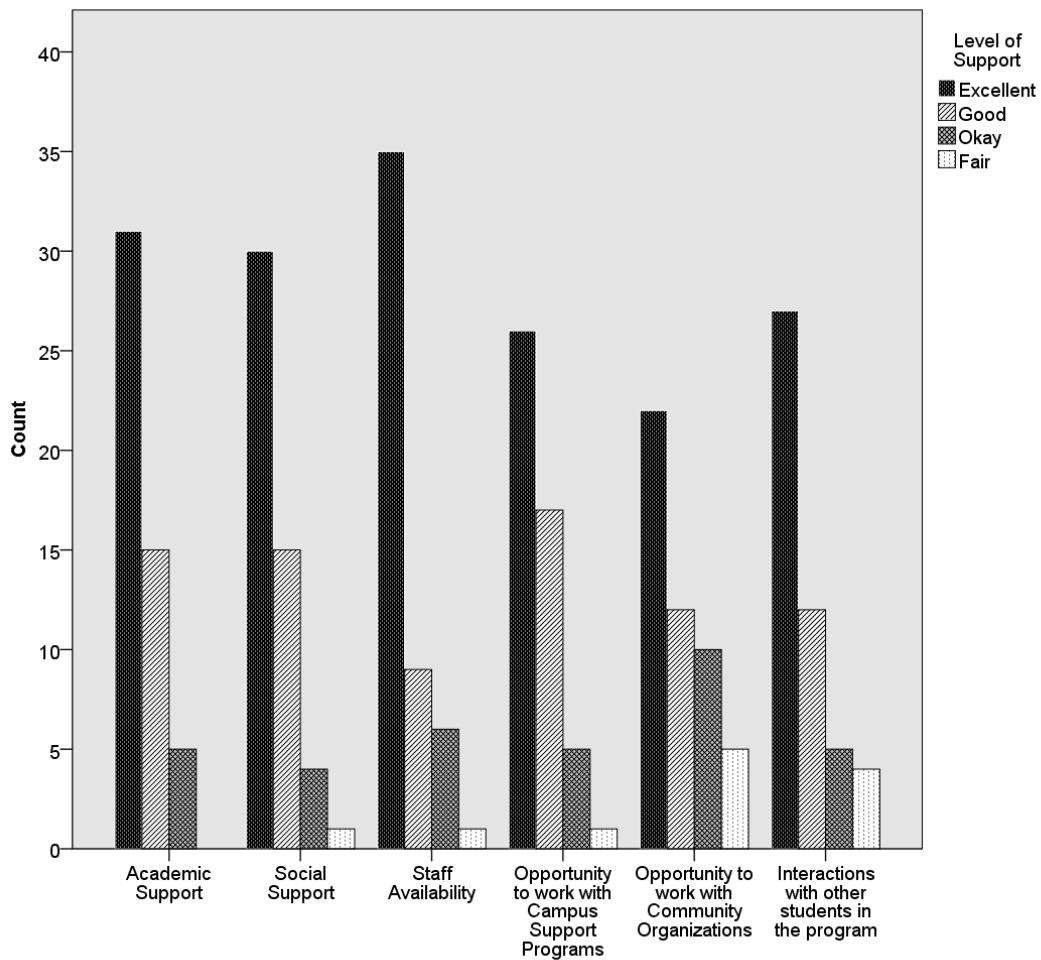


Figure 6: Number of Student Responses for OK-LSAMP Experiences



In addition to the specific areas noted above, the students rated their overall satisfaction with all areas of the OK-LSAMP program on a scale of 1 to 5, with 5 being the most satisfied. The majority of scholars (39 out of 51 students, or 76.5%) gave a score of 5. There were no ratings of 1. Students were also asked to rate how the OK-LSAMP program has helped their academic career from 1 to 5, with 5 being the most helpful. Again, the majority of respondents (32 out of 51 students, or 62.7%) gave a score of 5, and there were no ratings of 1.

See Figures 7 and 8 for the responses. Appendix 6 offers student responses to strengths and weaknesses of the program, and overall satisfaction.

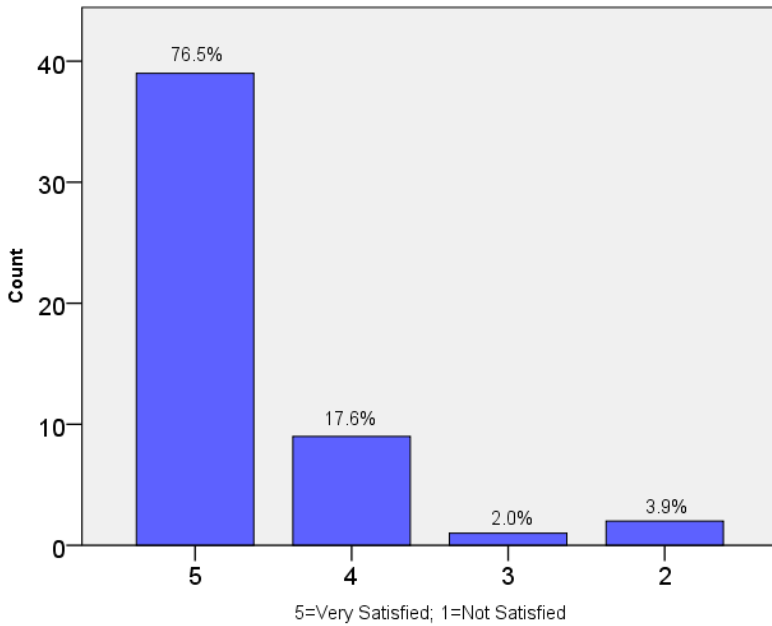


Figure 7: Overall Satisfaction with the OK-LSAMP Program

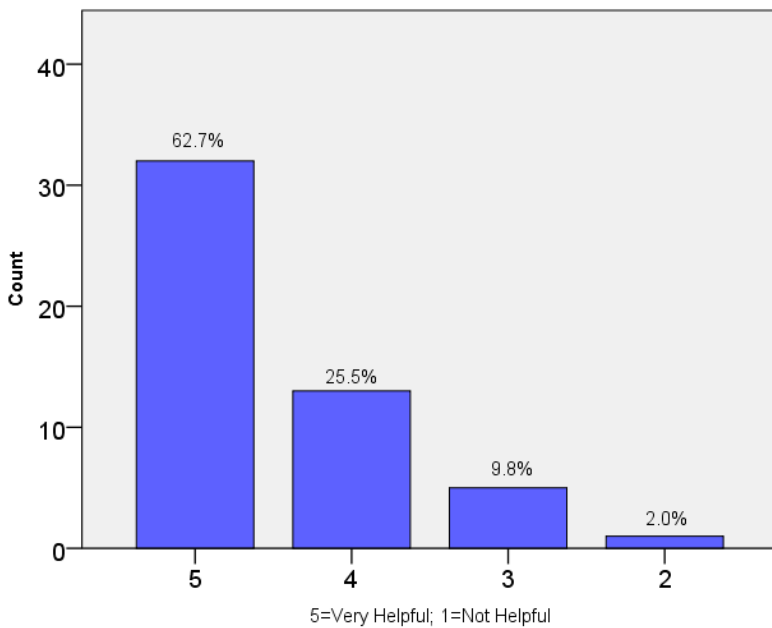


Figure 8: Helpfulness of OK-LSAMP Program on Academic Career

## Discussion and Recommendations

The results of our online survey indicate that the majority of the OK-LSAMP scholars feel supported by the program and are being helped in their academic careers.

### *Regular Meetings*

Forty-seven percent of the survey respondents indicated they participated in at least two meetings during the Fall 2017 semester, with 72.5% reporting that they attended at least two meetings for the Spring 2018 semester. Based on the scholars' responses, 39.2% of students attended at least five meetings during the Fall 2017 semester and participation increased to 43.1% for the 2018 Spring semester. The evaluators do not have data concerning how many of these required meetings were held at each Affiliate institution.

In addition to simply attending the meetings, the students indicated that the meetings were helpful for them. Based on the open-ended questions related to the meetings (see Appendix 2), the students valued meeting and interacting with new people, receiving information about conferences and other opportunities, and learning about available resources. There were very few responses indicating that there were no meetings offered. Of the students who gave reasons for not attending the meetings, most reported that they were not in the program at the time, or that they had a schedule conflict.

### *Mentor Support*

More than three quarters (78.4%) of the students stated they had a mentor. Ninety percent of the students indicated that they met with their mentor at least once during Fall 2017, and 97.5% did so in Spring 2018. Of these students, 57.5% (Fall 2017) and 52.5% (Spring 2018) met with their mentor five times or more. The majority of scholars who had a mentor reported that these faculty members were helpful. They mentioned receiving help with, and constructive feedback on, research projects, advice about graduate school, and information about internship opportunities. When asked how their mentors could improve, most scholars reported that they were great and no changes were needed; a few students mentioned the desire for their mentor to be more available. Based on the positive results seen by scholars with mentors, as discussed earlier in this section, the evaluator recommends that Campus Program Managers work to provide mentors for more students. Appendix 3 provides students' comments pertaining to experiences with their mentors.

### *Progress Reports*

Although scholars were required to submit progress reports, 32.5% were not asked for a report in both Fall 2017 and Spring 2018. Regular progress reports are an important and required part of the OK-LSAMP program to help ensure that students are successfully moving forward in their STEM degree programs. The evaluator recommends that the Affiliate institutions obtain progress reports, preferably written, from students each semester in an effort to regularly assess their progress toward their degrees.

### *Research Symposium and Other Professional Meetings*

Thirty-one students reported attending professional meetings other than the OK-LSAMP Research Symposium, and 67.7% of those participants indicated that they presented at other meetings. The average number of presentations given was three. This is a positive indicator of the success of the OK-LSAMP program in encouraging its students to do research and present in preparation for graduate

study. Thirty-nine percent who responded to the question about the Research Symposium attended the fall OK-LSAMP Research Symposium. The results of this response are noticeably higher than those from the data we received from the program office, which indicated that 33.2% of students who were in the program during Fall 2017 attended the Symposium. This is a requirement of all OK-LSAMP scholars, not just those presenting research. We understand that there will always be schedule conflicts; however, several of the scholars who participated in the survey were not aware of the Symposium. Given that fewer than half of the scholars attended the OK-LSAMP Symposium, we suggest that Alliance institutions continue to encourage them to attend and present, not only at the Symposium, but also at other conferences.

### *Internship Participation*

The students overwhelmingly indicated that they were encouraged to participate in summer internships (88.2%). More than half (56.8%) of the juniors and seniors who participated in the survey reported doing internships in Summer 2017 or were planning to do an internship during Summer 2018. These results are very encouraging and show the importance that the OK-LSAMP program is placing on these internships. Although the evaluator does not have data concerning whether or not the students applied for the required minimum of five internships, it seems clear that this aspect of the program is successful based on the results of the student survey.

### *Graduate School Preparation*

Scholars are required to submit a minimum of three graduate program applications, according to the project plan. Of the 37 juniors and seniors who responded to the survey, ten students (27.0%) had applied to at least one graduate school, and five students (13.5%) had applied to at least three graduate schools. In addition to graduate school applications, students were encouraged to take the GRE. Of the juniors and seniors, 83.8% (31 out of 37 students) reported that they had been encouraged to take the GRE, and 51.4% (19 out of 37 students) had received help in the process. However, only 27.0% (10 out of 37 students) had taken the GRE at the time of this survey (May 2018). The evaluator recommends continued encouragement, GRE preparation, and financial support to the OK-LSAMP scholars to help increase the number of these students who attend graduate school.

### *Workshop Interest*

International experiences are a focus during this funding period, but only 13.1% of all scholars included in this report have international experience. Since 78.4% of students who responded to the survey indicated that they were (or might be) interested in attending a workshop assisting them with passports, travel, insurance, and other topics related to international internships, the evaluator again recommends that the OK-LSAMP program pursue this activity. It could be accomplished collectively as an Alliance, or individual institutions could include workshops addressing these issues.

Of the survey respondents, 98.0% percent were interested (or might be interested) in participating in a Ph.D. camp related to graduate school assistance. The evaluator recommends again this year that the OK-LSAMP program move forward with this event. An Alliance-wide camp could help increase the number of scholars who apply for and ultimately attend graduate school.

### *Overall Satisfaction*

The overall response from the scholars showed that the OK-LSAMP program is succeeding in supporting its students in many areas: academic support, social support, staff availability, graduate school preparation, internships, working with campus support programs, working with community organizations, interacting with other students in the program, and more. These are all crucial components that can help lead to successful graduation of the scholars, and eventual graduate school attendance. The students are pleased with their mentors, feel supported by the program, attend meetings for support and guidance, and are doing research and presentations. Appendix 6 lists open-ended responses from scholars relating to overall success of the program.

### **Limitations of Online Student Survey**

One student survey was conducted this year immediately following the conclusion of the Spring 2018 semester. The response rate was 17% compared to 27% last year. Although more participation is always preferable, this response rate was adequate. The students who participated in the survey were representative of the OK-LSAMP population this year from their respective Alliance institutions. However, students from three institutions did not respond to the online survey so these results do not include feedback from students at these universities.

There are drawbacks to conducting only one survey in the Spring semester. First, students who left the program after the Fall semester—whether they graduated, transferred, or were no longer eligible—may have been removed from the list serve by the time we sent the survey in May 2018 and, therefore, would not have received our email with an opportunity to participate.

Secondly, the survey asked the scholars to respond to their experiences in both the Fall 2017 and Spring 2018 semesters in the program. Students who responded concerning their participation during the Fall 2017 semester may not have remembered the details accurately.

Finally, we sent the survey email after the semester had ended and some students may not have checked their email account once they left for the summer. We will consider conducting the survey in early April next year in hopes that more scholars respond.

### Section 3: The National STEM Retention and Graduation Data

In August 2018, the Consortium for Student Retention Data Exchange (CSRDE) finalized the data processing for the annual national STEM retention study, *2017-18 CSRDE STEM Retention Report*. The CSRDE is coordinated by the Center for Institutional Data Exchange and Analysis at the University of Oklahoma. This report is based on survey data collected from 186 colleges and universities. In past years, data for each of the Oklahoma public institutions were provided for the annual STEM report by the Oklahoma State Regents for Higher Education. The Regents did not submit the data for this reporting period; however, data for Oklahoma State University (OSU) and The University of Oklahoma (OU) were submitted directly from the institutions and are included in the national report.

The survey data were collected on first-time, full-time, baccalaureate degree-seeking freshman cohorts of 2007 through 2016 who indicated intent to major in a STEM field. The Classification of Instructional Programs (CIP) codes used to identify the majors were selected in cooperation with the National Science Foundation when this survey was developed in the late 1990s, and have been updated periodically over the past two decades.

In capturing the retention and graduation rates of these STEM students, we used the following approach. First, we collected the retention and graduation rates of these STEM cohorts in any major at their institution. If students initially indicated an interest in majoring in a STEM discipline, but later changed their major to a non-STEM field, they were included in this section of the survey, along with those students who remained in a STEM major. Next, the survey captured the rates at which the cohorts continued and graduated within STEM fields at their institution. This dual tracking allows us to see within a campus the migration of STEM majors out of STEM fields and into other majors. It also allows us to see the general departure rate of students.

The CSRDE also publishes an annual national retention report that provides data on all first-time, full-time, baccalaureate degree-seeking students, regardless of major. The following summary provides the status of STEM retention and graduation data as well as retention and graduation data of all first-time students at the 186 institutions observed in the 2017-18 CSRDE retention reports, regardless of major. These reports include data from Oklahoma State University and The University of Oklahoma.

#### Graduation Rates

In the following discussion, three types of graduation rates are provided for the Total cohorts and the underrepresented minority (URM) cohorts:

- **All Majors:** All Majors identifies the percent of first-time, full-time students who began and graduated within six years in **all majors** at their institution.
- **Any Major:** Any Major identifies the percent of students who began as freshman STEM majors and graduated within six years in **any major** at their institution.
- **STEM Major:** STEM Major identifies the percent of students who began as freshman STEM majors (the same cohort of students as the Any Major category) and graduated within six years **specifically within a STEM field** at their institution.

In Table 10, the six-year graduation rates are provided for the 2011 cohorts of all students in the national study, as well as OU and OSU. The data for URM students are shown as well. In the CSRDE STEM report, underrepresented minority students include Black or African American, Hispanic/Latino, and American Indian or Alaska Native students.

Table 10: *Six-year Graduation Rates – 2011 Total and URM Cohorts*

<b>Category</b>	<b>Total</b>	<b>URM</b>
All Majors		
<b>National</b>	<b>63.0%</b>	<b>51.4%</b>
OU	67.3%	57.6%
OSU	62.8%	49.7%
Any Major		
<b>National</b>	<b>65.9%</b>	<b>51.8%</b>
OU	65.9%	57.2%
OSU	65.6%	57.4%
STEM Major		
<b>National</b>	<b>48.0%</b>	<b>32.5%</b>
OU	43.7%	33.2%
OSU	47.5%	37.6%

As seen in Table 10, the overall graduation rates for all students—both the Total and URM cohorts—who began college with an intent to graduate in a STEM major (Any Major category) were higher than those who began college in any major (All Majors category).

To better understand how the two Oklahoma institutions are doing compared to similar institutions nationally, Table 11 provides data based on institutional selectivity. The table shows the six-year graduation rates for the following 2011 URM cohorts by selectivity: 1) students in all majors, 2) students who begin as a STEM major and graduate within any major at the institution, and 3) students who begin as a STEM major and graduate within STEM majors. Selectivity as defined in the CSRDE research is a categorization of institutions based on the average ACT or SAT admission test scores of incoming students. OU and OSU are included in the Highly Selective category.

- *Highly Selective institutions:*  
ACT scores above 24.0 or SAT scores above 1100
- *Selective institutions:*  
ACT scores from 22.5-24.0 or SAT scores from 1045-1100
- *Moderately Selective institutions:*  
ACT scores from 21.0-22.4 or SAT scores from 990-1044
- *Less Selective institutions:*  
ACT scores below 21.0 or SAT scores below 990



Table 11: Six-year Graduation Rates by Selectivity – 2011 URM Cohort

Category	Highly Selective	Selective	Moderately Selective	Less Selective	All URM
All Majors					
<b>National</b>	<b>65.2%</b>	<b>47.6%</b>	<b>44.5%</b>	<b>40.1%</b>	<b>51.4%</b>
OU	57.6%				
OSU	49.7%				
Any Major					
<b>National</b>	<b>64.4%</b>	<b>42.4%</b>	<b>44.1%</b>	<b>35.8%</b>	<b>51.8%</b>
OU	57.2%				
OSU	57.4%				
STEM Major					
<b>National</b>	<b>42.8%</b>	<b>27.9%</b>	<b>24.5%</b>	<b>19.1%</b>	<b>32.5%</b>
OU	33.2%				
OSU	37.6%				

Table 11 indicates that the graduation rates for underrepresented minority students are positively related to the selectivity of the institution for the cohort in all three categories, with one exception. Students attending Moderately Selective institutions graduated at a higher rate than those at Selective institutions in one of the three categories (Any Major category). We also see that more than half (51.8%) of URM students who began as a STEM major graduated within any major in their institutions, STEM or non-STEM.

The University of Oklahoma’s six-year graduation rates are above the average for all URM students in all three of the categories, whereas Oklahoma State University’s six-year graduation rates are above the average of all URM students in two of the three categories (Any Major and STEM Major). However, when compared to other institutions within the Highly Selective group, the graduation rates of both OU and OSU’s URM students are below the national average in all three categories (All Majors, Any Major, and STEM Major).

Table 12 provides the six-year graduation rates for all majors, within any major, and within STEM majors for the Total 2011 cohort by selectivity.

Table 12: Six-year Graduation Rates by Selectivity – 2011 Total Cohort

Category	Highly Selective	Selective	Moderately Selective	Less Selective	Total
All Majors					
<b>National</b>	<b>73.3%</b>	<b>55.7%</b>	<b>51.5%</b>	<b>46.0%</b>	<b>63.0%</b>
OU	67.3%				
OSU	62.8%				
Any Major					
<b>National</b>	<b>74.1%</b>	<b>55.2%</b>	<b>52.6%</b>	<b>42.7%</b>	<b>65.9%</b>
OU	65.9%				
OSU	65.6%				
STEM Major					
<b>National</b>	<b>55.9%</b>	<b>39.1%</b>	<b>34.4%</b>	<b>24.9%</b>	<b>48.0%</b>
OU	43.7%				
OSU	47.5%				

In Figures 9-11, the national data for the 2011 URM cohort and the Total cohort are provided for comparison, based on the percentages listed in Tables 11 and 12. Figure 9 shows the graduation rates for all students, regardless of their major when they began college. Figure 10 shows the data for students who began as a STEM major at the institution and graduated in any major at the institution. Figure 11 provides the rates for students who began as a STEM major at the institution and graduated within a STEM discipline.

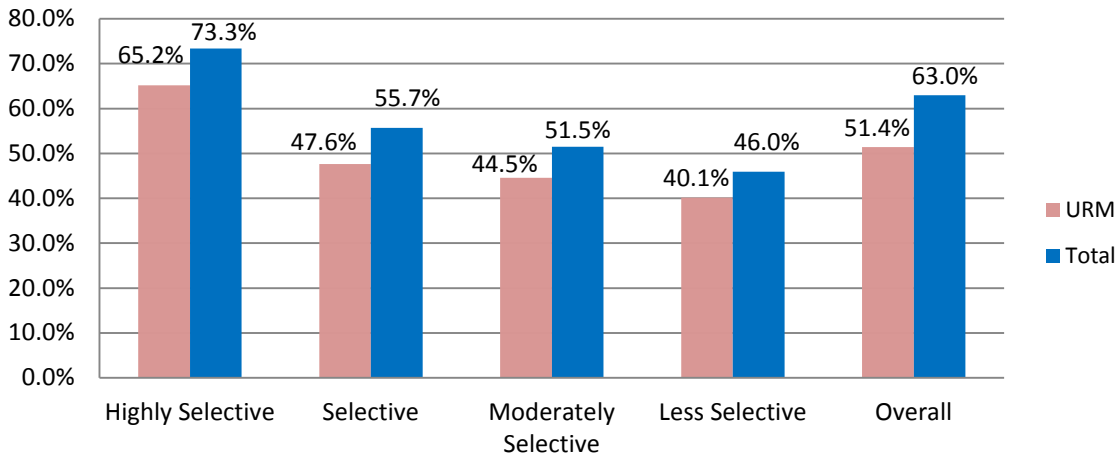


Figure 9: Six-year Graduation Rates for 2011 Total and URM Cohorts by Selectivity – All Majors

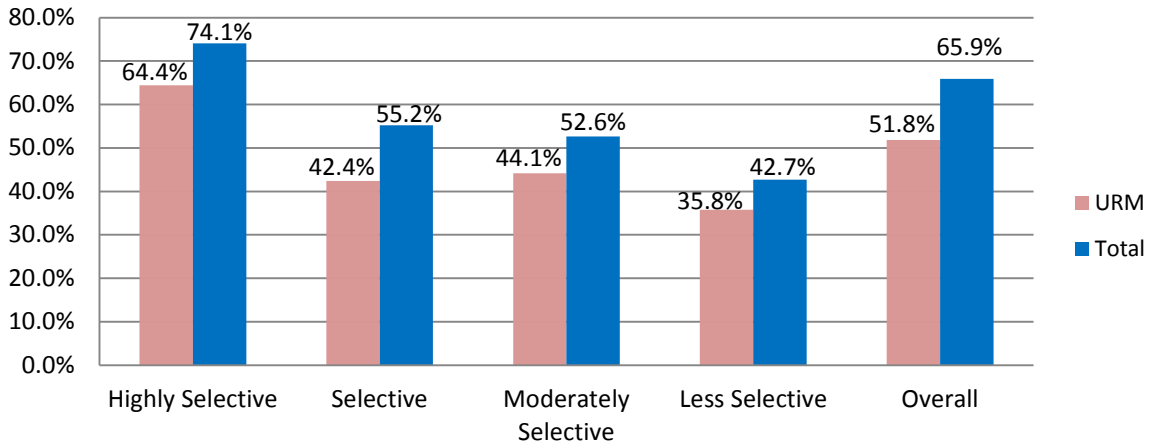


Figure 10: Six-year Graduation Rates for 2011 Total and URM Cohorts by Selectivity – Any Major

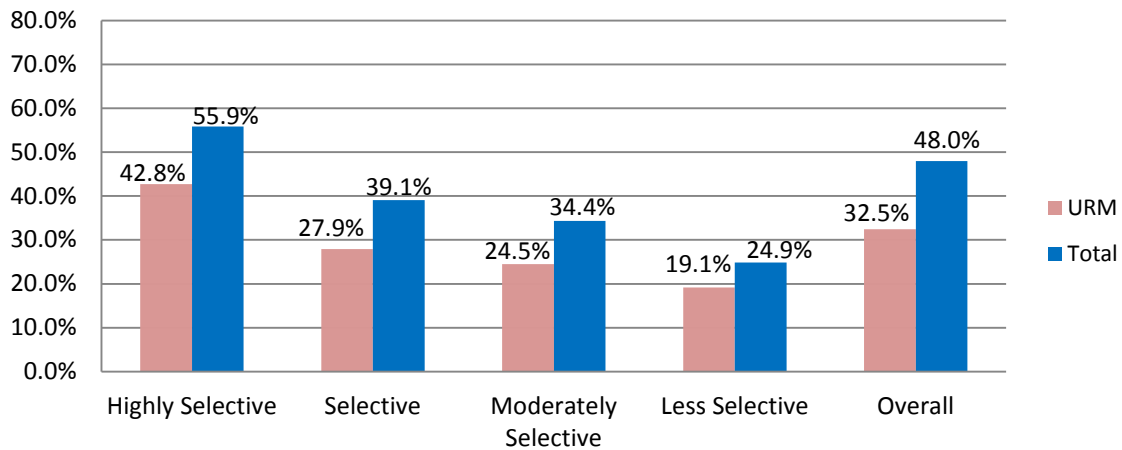


Figure 11: Six-year Graduation Rates for 2011 Total and URM Cohorts by Selectivity – STEM Major

As seen in Tables 11 and 12 and Figures 9-11, the graduation rates of the Total cohort of students decrease as the selectivity of the institution decreases. However, URM students in Moderately Selective institutions graduate at a higher rate than the URM students at Selective institutions in the Any Major category. The gap between the graduation rates for URM students and the Total cohort of students is considerable in all institutions, but the difference is smaller within the Less Selective institutions.

## Retention Rates

Retention is defined as the rate at which the first-time, full-time fall cohort of students return to the institution the following fall. The first year is a critical period in the success of students, and typically this is the point at which departures occur most frequently at many institutions across the country.

In the following discussion using the CSRDE national STEM data, as with the graduation tables, there are three types of retention rates provided for the Total cohorts and the URM cohorts:

- **All Majors** – All Majors identifies the percent of first-time students who began in all majors and continued to the second academic year at their institution.
- **Any Major** - Any Major identifies the percent of students who began as freshman STEM majors and continued to the second academic year in **any major** at their institution.
- **STEM Major** - STEM Major identifies the percent of students who began as freshman STEM majors (the same cohort of students as the Any Major category) and remained **specifically within a STEM field** at their institution as they moved into their second academic year.

In Table 13, the first-year retention rates are provided for the 2016 cohorts of all students in the national study as well as for OU and OSU. The data for underrepresented minority students is shown as well.

As with the graduation rates, in order to gain a better understanding of how the two Oklahoma institutions are doing compared to similar institutions nationally, Table 14 provides the retention data based on institutional selectivity. The table shows the first-year retention rates for all majors, within any major, and within STEM majors for 2016 URM cohorts by selectivity.

Table 14 indicates that the retention rates for underrepresented minority students are generally positively related to the selectivity of the institution for all cohorts of students, with the exception of the Selective institutions. The retention rates for URM students is lower in Selective institutions than Moderately Selective institutions in two of the three categories (Any Major and STEM Major).

The University of Oklahoma's first-year retention rates are above the average for URM students within the highly selective group and compared to all URM students, except for those students in the STEM Major category (students who began as a STEM major and remained in a STEM discipline). Oklahoma State University's first-year retention rates are below the average for all URM students and those within the highly selective group in all three categories. However, their underrepresented minority students in the STEM Major category continue to the second year at almost the same rate as all URM students in the CSRDE study.

Table 13: *First-year Retention Rates – 2016 Total and URM Cohorts*

<b>Category</b>	<b>Total</b>	<b>URM</b>
All Majors		
<b>National</b>	<b>83.6%</b>	<b>79.4%</b>
OU	92.1%	91.1%
OSU	81.2%	78.0%
Any Major		
<b>National</b>	<b>86.2%</b>	<b>81.8%</b>
OU	93.6%	94.2%
OSU	83.2%	76.9%
STEM Major		
<b>National</b>	<b>74.1%</b>	<b>68.1%</b>
OU	71.2%	64.3%
OSU	74.6%	68.0%

Table 14: *First-year Retention Rates by Selectivity – 2016 URM Cohort*

<b>Category</b>	<b>Highly Selective</b>	<b>Selective</b>	<b>Moderately Selective</b>	<b>Less Selective</b>	<b>All URM</b>
All Majors					
<b>National</b>	<b>86.0%</b>	<b>75.8%</b>	<b>75.0%</b>	<b>75.1%</b>	<b>79.4%</b>
OU	91.1%				
OSU	78.0%				
Any Major					
<b>National</b>	<b>87.0%</b>	<b>75.6%</b>	<b>78.0%</b>	<b>75.9%</b>	<b>81.8%</b>
OU	94.2%				
OSU	76.9%				
STEM Major					
<b>National</b>	<b>72.8%</b>	<b>58.8%</b>	<b>64.8%</b>	<b>64.9%</b>	<b>68.1%</b>
OU	64.3%				
OSU	68.0%				

Table 15 provides the first-year retention rates of the Total 2016 cohort by selectivity for the national data as well as the two Oklahoma institutions that participated in the study.

Table 15: *First-year Retention Rates by Selectivity – 2016 Total Cohort*

<b>Category</b>	<b>Highly Selective</b>	<b>Selective</b>	<b>Moderately Selective</b>	<b>Less Selective</b>	<b>Total</b>
All Majors					
<b>National</b>	<b>88.9%</b>	<b>79.0%</b>	<b>76.6%</b>	<b>75.7%</b>	<b>83.6%</b>
OU	92.1%				
OSU	81.2%				
Any Major					
<b>National</b>	<b>90.2%</b>	<b>80.2%</b>	<b>78.8%</b>	<b>76.6%</b>	<b>86.2%</b>
OU	93.6%				
OSU	83.2%				
STEM Major					
<b>National</b>	<b>78.6%</b>	<b>64.8%</b>	<b>66.5%</b>	<b>65.5%</b>	<b>74.1%</b>
OU	71.2%				
OSU	74.6%				

Tables 13-15 show that, overall, both URM students and the Total cohort of students who started as a STEM major (Any Major category) are more likely to continue their education to the second year as compared to those students who start in any major (All Majors category) at the institution, regardless of selectivity. The retention rates of URM students are below the average rate among all races, ranging from 4.2 to 6.0 percentage points lower. However, the gap between the URM students and the total cohort of students is much smaller for the first-year retention rate than it is for the six-year graduation rate (see Tables 10-12 and Tables 13-15). The gap between graduation rates of URM students and all students ranges from 11.6-15.5 percentage points, indicating that more URM students are leaving the STEM disciplines after their second year and before they graduate than the Total cohort of students.

In Figures 12-14, the national data for the 2016 URM cohort and the Total cohort are provided for comparison, based on the percentages listed in Tables 14 and 15 above. Figure 12 provides the first-year retention rates for all students, regardless of their major when they began college. Figure 13 shows the data for students who began as a STEM major at the institution and returned for their second year in any major at the institution. Figure 14 provides the rates for students who began as a STEM major at the institution and continued to their second year within a STEM discipline.



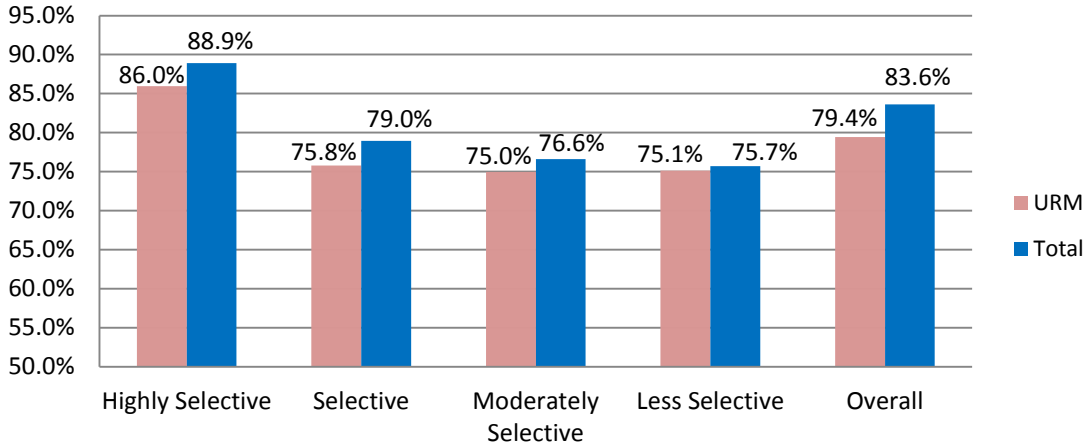


Figure 12: First-Year Retention Rates for 2016 Total and URM Cohorts by Selectivity – All Majors

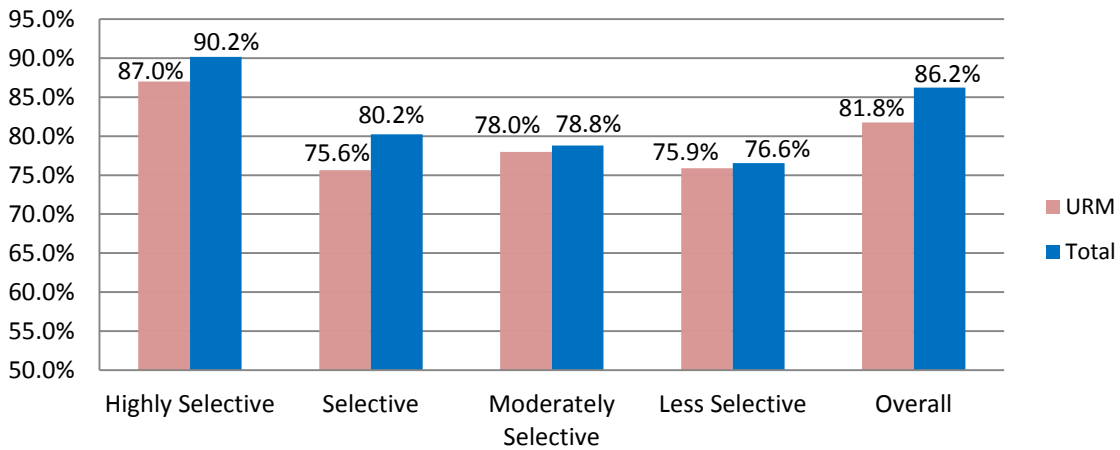


Figure 13: First-Year Retention Rates for 2016 Total and URM Cohorts by Selectivity – Any Major

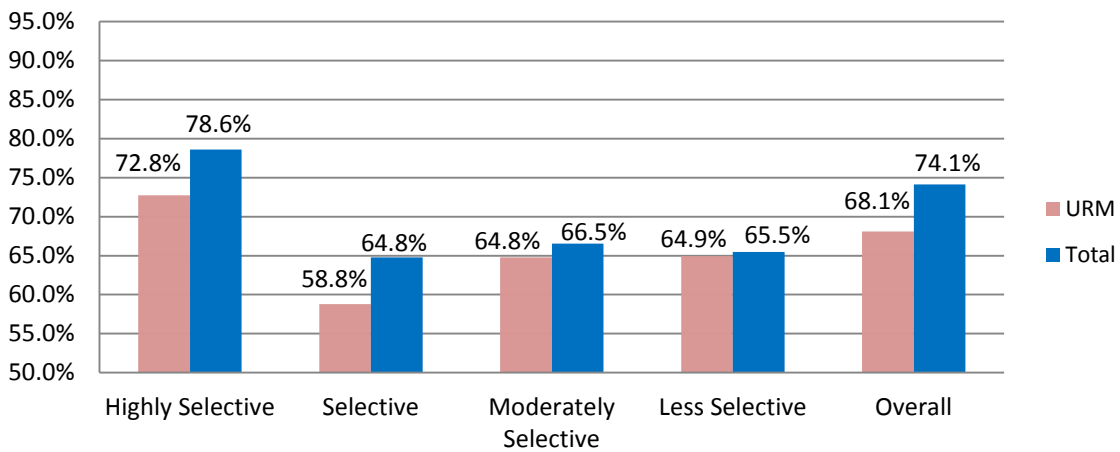


Figure 14: First-Year Retention Rates for 2016 Total and URM Cohorts by Selectivity – STEM Major

## Summary

Providing a comparison between the retention rates of the national freshman cohorts and the retention of students in the OK-LSAMP program is difficult due to the focus on upperclassmen in this project. However, we can look at the retention of OK-LSAMP scholars within the evaluation period covered in this report. Of the 247 students who participated in Fall 2017, 15 students (6.1%) graduated and five did not return. Nearly 92.0% (227 out of 247) continued to Spring 2017.

A total of 289 students participated in Spring 2018, which included the new students who began the program that semester. Of those 289 scholars, 68 graduated, and only eight were known to have left the program. As of the time data was received for this report, 73.7% of the Spring 2018 students (213 out of 289) were still in the program. When the students (213) who were scheduled to continue in the OK-LSAMP program are combined with the students who graduated (68), we see that the persistence rate for the scholars from Spring 2018 to Fall 2018 would be 97.2% (281 out of 289). Table 16 shows the retention and graduation data for OK-LSAMP scholars during the Fall 2017 and Spring 2018 semesters.

These rates are a strong indication that the OK-LSAMP program is succeeding in helping its students continue and graduate with STEM degrees. The support the OK-LSAMP program provides these students is proven to be effective.

Table 16: *OK-LSAMP Graduation and Retention Data, 2017-2018*

	Total Participating OK-LSAMP Scholars		Graduates at End of Semester		Known Departures at End of Semester		Returning Following Semester (Spring 2018 Known; Fall 2018 Anticipated)		Graduates and Continuing Students	
	Count	%	Count	%	Count	%	Count	%	Count	%
<b>Fall 2017</b>	247	100.0	15	6.1	5	2.0	227	91.9	242	98.0
<b>Spring 2018</b>	289	100.0	68	23.5	8	2.8	213	73.7	281	97.2

## **Section 4: Overall Report Summary**

Over the course of the project, the OK-LSAMP institutions have attempted to support their underrepresented minority students as they move through their academic undergraduate careers as STEM majors. More students participated this year compared to last year (314 vs 269). Review of the participation data from the OK-LSAMP Alliance coordinators shows that if students are in the program as upperclassmen, they most likely will graduate in a STEM discipline. This evaluation shows that 48.6% of the seniors (87 of 179) graduated during the evaluation period, and 79 of these graduates were URM students (90.8%). The Alliance exceeded its goal to graduate at least 60 OK-LSAMP scholars during this evaluation period. With the increased number of participants, the number of STEM graduates should continue to rise.

The seniors who did not graduate during the 2017-2018 project year appear to be on track for graduation and graduate-school readiness as well. Of the 91 seniors who participated in the program in Spring 2018 but did not graduate, 73.6% (67 of 91) had a GPA of 3.0 or greater, and 57.1% (52 of 91) had participated in at least one summer internship. Only three were known to have left the program as of the end of the Spring 2018 semester, while 88 scholars (96.7%) were expected to continue in the program and pursue their STEM degree in Fall 2018; 87 of these scholars are URM students. Given these numbers and the potential addition of new seniors joining the program during the Summer 2018 through Spring 2019 period, the OK-LSAMP Alliance is on target to continue increasing its graduates in STEM majors.

Based on the results of our online student survey conducted in May 2018, the scholars are pleased with their experiences in the program. They rated their mentoring experiences very high, they feel that the group meetings they are attending are helpful in their STEM studies, they are participating in summer internships, are attending and presenting at professional meetings and conferences, and are being encouraged to take the GRE and apply to graduate school. The following section outlines several recommendations for continued success of the program.

## **Recommendations for Continued Success in the OK-LSAMP Program**

### **1. Host a half- or full-day workshop for increasing international experience**

One of the objectives of the OK-LSAMP program is to expand opportunities for scholars so at least 25% gain international experience. During the first two years of the funding period, only 4% of scholars each year had international experience. Last year, the participation increased to 12%. During this evaluation period, based on the data the evaluator received from the OK-LSAMP program office, 13.1% of the current scholars (41 out of 314) have had international experience. The Alliance continues to improve this percentage; however, to meet this objective, many more scholars will need to take advantage of international opportunities.

The majority of students who responded to our online surveys for the past four years have expressed an interest in an international workshop (78.4% conveyed interest this year). We recommend again this year that the program office consider hosting a workshop to help scholars learn more about these opportunities to increase interest in participating. A half or full day set aside to focus solely on this topic should help increase the number of scholars participating in international internships, thus helping the Alliance to meet its goal of 25%.

## **2. Host a Ph.D. camp to help with the graduate school process**

Nearly all students who responded to our online surveys for the past four years have indicated an interest in attending a Ph.D. camp (98.0% of this year's respondents expressed interest). Based on their comments about topics that are helpful in group meetings at their institutions and their suggestions for improvement (see Appendix 2), a camp—or retreat—focused on graduate school preparation should be well-received. This gathering would also fulfill the desire of the students to get to know scholars from their own institution as well as the other Alliance institutions, a sentiment that has been expressed in each of the past four student surveys.

At the 2017 Research Symposium, the OK-LSAMP program office scheduled a one-hour workshop titled “How to Get Into Grad School”. This was a great time in which to offer help to the scholars who attended. In addition to continuing this opportunity, we recommend hosting a Ph.D. camp to provide more dedicated time for guidance in the graduate school process. This activity was included in the Alliance proposal and one that we again suggest the Alliance pursue.

## **3. Increase research opportunities for scholars**

Data from the OK-LSAMP program office indicate that 53.1% of the seniors (95 of 179 identified during this evaluation period participated in research during at least one semester, and 68.4% of these (65 of 95) participated in both semesters. Students doing research during this period attended conferences at a higher rate than those who did not conduct research. The numbers are similar for juniors: 44.9% (31 of 69) participated in research at some point during this evaluation period.

Nearly half of the juniors and seniors during the evaluation period did not work on research (122 of 248). Since participation in research typically results in better participation at conferences, increasing the research opportunities for the OK-LSAMP scholars should help provide more opportunities for conference participation, which could eventually lead more students to graduate school to further their research and studies.

## **4. Provide more opportunities for students to interact**

Scholars who responded to the past three online student surveys have commented that they would like more opportunities to get together with other OK-LSAMP scholars, both on their campus and across the Alliance. Students who completed this year's survey expressed the same desire. Their comments indicate that they want to get to know their peers in the program better, and some have suggested that students get involved in organizing meetings and social gatherings to help build this community of scholars (see Appendices 2-6).

We suggest that the Alliance institutions continue to hold meetings on their campuses, as scholars find the meetings to be helpful in general. Although one-on-one meetings with their mentors may be preferred for receiving updates from students on their research, gathering as a group several times each semester has overwhelmingly been a positive experience for the students. Therefore, we suggest that the Alliance schedule at least one event each semester for all OK-LSAMP scholars. The Research Symposium is one opportunity for scholars to gather during the fall; adding a spring

opportunity would help fulfill the students' desire to engage with other scholars. This could be accomplished by hosting a combined workshop on international research and/or a Ph.D. camp. This event could include time for socializing while also providing valuable information to the scholars.

## **5. More communication and guidance for students**

Based on the responses in the scholar survey, a number of students asked for more informational emails as well as guidance about the program, especially for new participants. Several scholars commented about their OK-LSAMP campus being disorganized, and one student suggested providing participants with a booklet containing details such as expectations, requirements, how to start research, explaining REUs (Research Experiences for Undergraduates), etc. For Alliance institutions that are not holding regular meetings, sending consistent communication to their scholars, and providing them with needed guidance, we recommend this.

## **6. Continue to require students to apply using the online application process**

The list serve from the OK-LSAMP program office that was used to send the survey invitation contained 312 names, while there were a total of 314 eligible OK-LSAMP scholars this year. It is possible that some of the 312 students on the list serve were no longer eligible for the program, but this has increased noticeably from last year's list serve which contained 206 out of 269 total participants. This shows the online application system has effectively increased the percentage of OK-LSAMP scholars who are on the list serve.

Continuing to require the students to apply online will help ensure that the OK-LSAMP office has their information early in the process so they can include them in correspondence throughout the year. In past years, some scholars commented about the lack of communication about upcoming events, and this year's survey contained similar comments. It was not clear whether they referred to communication from the Alliance program office or from their institution. However, by using the online application process, students are added to the list serve and should receive the emails from the Alliance program office. This communication could increase the number of scholars who apply for and participate in internships and other opportunities. It also allows those students to participate in our online survey, which provides us with a larger, more representative number of respondents with which to evaluate the program.

## **Appendix 1: Institution-Specific Details**

Below is a summary of activities for each of the OK-LSAMP institutions. For each institution the numbers of participants are identified as well as a few data points related to scholar support. These data are based on data from the OK-LSAMP program office. Not included in this report is a list of the titles of the papers, presentations, and research projects that the participants completed. This data is available from the Alliance Office at Oklahoma State University.

### **Cameron University**

#### **Participants**

- 15 students were included in this evaluation
- 4 students were juniors and 11 were seniors
- 15 of 15 scholars (100%) were URM students

#### **Support**

- 12 of the 15 students included in this evaluation (80.0%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 2 of the 9 students (22.2%) who were in the program through Summer 2017 participated in an internship that summer
- 1 of 6 graduates (16.7%) participated in at least one summer internship while in the program. This graduate participated in two internships while in the program.

#### **Graduate School Preparation**

- 6 of 10 students (60.0%) who participated in Fall 2017 conducted research
- 6 of 12 students (50.0%) who participated in Spring 2018 conducted research
- 5 of 6 graduates (83.3%) had a minimum GPA of 3.0
- 1 of 15 juniors and seniors (6.7%) took the GRE
- 2 of 15 juniors and seniors (13.3%) completed at least one graduate school application. No students completed three or more applications.

#### **Results**

- 6 of 11 seniors (54.5%) graduated
- 6 of 6 graduates (100.0%) were URM students
- 1 of 2 graduates (50.0%) who applied to graduate school were accepted



## **East Central University**

### **Participants**

- 17 students were included in this evaluation
- 1 student was a freshman, 2 students were sophomores, 3 were juniors, and 11 were seniors
- 15 of 17 scholars (88.2%) were URM students

### **Support**

- 15 of the 17 students included in this evaluation (88.2%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 2 of the 5 students (40.0%) who were in the program through Summer 2017 participated in an internship that summer
- 3 of 5 graduates (60.0%) participated in at least one summer internship while in the program

### **Graduate School Preparation**

- 8 of 12 students (66.7%) who participated in Fall 2017 conducted research
- 11 of 15 students (73.3%) who participated in Spring 2018 conducted research
- 3 of 5 graduates (60.0%) had a minimum GPA of 3.0
- 1 of 14 juniors and seniors (7.1%) took the GRE
- 2 of 14 juniors and seniors (14.3%) completed at least one graduate school application. No students completed three or more applications.

### **Results**

- 5 of 11 seniors (45.5%) graduated
- 3 of 5 graduates (60.0%) were URM students
- 0 of 1 graduate (0.0%) who applied to graduate school were accepted

# Langston University

## Participants

- 44 students were included in this evaluation
- 4 students were freshmen, 5 were sophomores, 9 were juniors and 26 were seniors
- 44 of 44 scholars (100.0%) were URM students

## Support

- 30 of the 44 students included in this evaluation (68.2%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 13 of the 26 students (50.0%) who were in the program through Summer 2017 participated in an internship that summer
- 4 of 11 graduates (36.4%) participated in at least one summer internship while in the program. Two of the graduates participated in two or more while in the program.

## Graduate School Preparation

- 5 of 26 students (19.2%) who participated in Fall 2017 conducted research
- 9 of 43 students (20.9%) who participated in Spring 2018 conducted research
- 8 of 11 graduates (72.7%) had a minimum GPA of 3.0
- 5 of 35 juniors and seniors (14.3%) took the GRE
- 3 of 35 juniors and seniors (8.6%) completed at least one graduate school application. No students completed three or more applications.

## Results

- 11 of 26 seniors (42.3%) graduated
- 11 of 11 graduates (100.0%) were URM students
- 0 of 3 graduates (0.0%) who applied to graduate school were accepted

# **Northeastern State University**

## **Participants**

- 13 students were included in this evaluation
- 3 students were juniors and 10 were seniors
- 13 of 13 scholars (100.0%) were URM students

## **Support**

- 8 of the 13 students included in this evaluation (61.5%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 3 of the 12 students (25.0%) who were in the program through Summer 2017 participated in an internship that summer
- 1 of 4 graduates (25.0%) participated in at least one summer internship while in the program.

## **Graduate School Preparation**

- 8 of 13 students (61.5%) who participated in Fall 2017 conducted research
- 6 of 10 students (60.0%) who participated in Spring 2018 conducted research
- 2 of 4 graduates (50.0%) had a minimum GPA of 3.0
- 1 of 13 juniors and seniors (7.7%) took the GRE
- 3 of 13 juniors and seniors (23.1%) completed at least one graduate school application. One student completed three or more applications.

## **Results**

- 4 of 10 seniors (40.0%) graduated
- 4 of 4 graduates (100%) were URM students
- 2 of 3 graduates (66.7%) who applied to graduate school were accepted

# Northwestern Oklahoma State University

## Participants

- 6 students were included in this evaluation
- 3 students were juniors and 3 were seniors
- 4 of 6 scholars (66.7%) were URM students

## Support

- 5 of the 6 students included in this evaluation (83.3%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 1 of the 4 students (25.0%) who were in the program through Summer 2017 participated in an internship that summer
- 1 of 3 graduates (33.3%) participated in at least one summer internship while in the program.

## Graduate School Preparation

- 2 of 5 students (40.0%) who participated in Fall 2017 conducted research
- 2 of 5 students (40.0%) who participated in Spring 2018 conducted research
- 1 of 6 juniors and seniors (16.7%) took the GRE
- 1 of 6 juniors and seniors (16.7%) completed at least one graduate school application. No students completed three or more applications.

## Results

- 3 of 3 seniors (100.0%) graduated
- 1 of 3 graduates (33.3%) was a URM student
- 1 of 1 graduate (100.0%) who applied to graduate school was accepted

# Oklahoma State University

## Participants

- 110 students were included in this evaluation
- 14 students were freshmen, 15 were sophomores, 23 were juniors and 58 were seniors
- 109 of 110 scholars (99.1%) were URM students

## Support

- 61 of the 110 students included in this evaluation (55.5%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 22 of the 63 students (34.9%) who were in the program through Summer 2017 participated in an internship that summer
- 13 of 27 graduates (48.1%) participated in at least one summer internship while in the program. Nine of the graduates participated in two or more while in the program.

## Graduate School Preparation

- 38 of 96 students (39.6%) who participated in Fall 2017 conducted research
- 23 of 96 students (24.0%) who participated in Spring 2018 conducted research
- 19 of 27 graduates (70.4%) had a minimum GPA of 3.0
- 9 of 81 juniors and seniors (11.1%) took the GRE
- 10 of 81 juniors and seniors (12.3%) completed at least one graduate school application. Six students completed three or more applications.

## Results

- 27 of 58 seniors (46.6%) graduated
- 26 of 27 graduates (96.3%) were URM students
- 8 of 10 graduates (80.0%) who applied to graduate school were accepted

# **Southeastern Oklahoma State University**

## **Participants**

- 17 students were included in this evaluation
- 1 student was a freshman, 7 were sophomores, 4 were juniors and 5 were seniors
- 17 of 17 scholars (100.0%) were URM students

## **Support**

- 14 of the 17 students included in this evaluation (82.4%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 6 of the 11 students (54.5%) who were in the program through Summer 2017 participated in an internship that summer
- 2 of 4 graduates (50.0%) participated in at least one summer internship while in the program. One graduate participated in three internships while in the program.

## **Graduate School Preparation**

- 12 of 15 students (80.0%) who participated in Fall 2017 conducted research
- 15 of 17 students (88.2%) who participated in Spring 2018 conducted research
- 4 of 4 graduates (100.0%) had a minimum GPA of 3.0
- 4 of 9 juniors and seniors (44.4%) took the GRE
- 4 of 9 juniors and seniors (44.4%) completed at least one graduate school application. No students completed three or more applications.

## **Results**

- 4 of 5 seniors (80.0%) graduated
- 4 of 4 graduates (100.0%) were URM students
- 4 of 4 graduates (100.0%) who applied to graduate school were accepted



# Southwestern Oklahoma State University

## Participants

- 13 students were included in this evaluation
- 3 students were sophomores, 2 were juniors and 8 were seniors
- 13 of 13 scholars (100.0%) were URM students

## Support

- 8 of the 13 students included in this evaluation (61.5%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 7 of the 7 students (100.0%) who were in the program through Summer 2017 participated in an internship that summer
- 3 of 3 graduates (100.0%) participated in at least one summer internship while in the program. All three of the graduates participated in two or more while in the program.

## Graduate School Preparation

- 8 of 8 students (100.0%) who participated in Fall 2017 conducted research
- 8 of 13 students (61.5%) who participated in Spring 2018 conducted research
- 3 of 3 graduates (100.0%) had a minimum GPA of 3.0
- 2 of 10 juniors and seniors (20.0%) took the GRE
- 2 of 10 juniors and seniors (20.0%) completed at least one graduate school application. One student completed three or more applications.

## Results

- 3 of 8 seniors (37.5%) graduated
- 3 of 3 graduates (100.0%) were URM students
- 2 of 2 graduates (100.0%) who applied to graduate school were accepted

# University of Central Oklahoma

## Participants

- 15 students were included in this evaluation
- 2 students were freshmen, 2 were sophomores, 5 were juniors and 6 were seniors
- 15 of 15 scholars (100.0%) were URM students

## Support

- 14 of the 15 students included in this evaluation (93.3%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 3 of the 9 students (33.3%) who were in the program through Summer 2017 participated in an internship that summer
- 0 of 0 graduates (0.0%) participated in at least one summer internship while in the program.

## Graduate School Preparation

- 11 of 12 students (91.7%) who participated in Fall 2017 conducted research
- 14 of 15 students (93.3%) who participated in Spring 2018 conducted research
- 0 of 0 graduates (0.0%) had a minimum GPA of 3.0
- 1 of 11 juniors and seniors (9.1%) took the GRE
- 2 of 11 juniors and seniors (18.2%) completed at least one graduate school application. No students completed three or more applications.

## Results

- 0 of 6 seniors (0.0%) graduated
- 0 of 0 graduates (0.0%) were URM students
- 0 of 0 graduates (0.0%) who applied to graduate school were accepted

# University of Oklahoma

## Participants

- 53 students were included in this evaluation
- 2 students were freshmen, 6 were sophomores, 10 were juniors and 35 were seniors
- 49 of 53 scholars (92.5%) were URM students

## Support

- 27 of the 53 students included in this evaluation (50.9%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 15 of the 30 students (50.0%) who were in the program through Summer 2017 participated in an internship that summer
- 8 of 20 graduates (40.0%) participated in at least one summer internship while in the program. Three of the graduates participated in two or more while in the program.

## Graduate School Preparation

- 16 of 40 students (40.0%) who participated in Fall 2017 conducted research
- 21 of 52 students (40.4%) who participated in Spring 2018 conducted research
- 18 of 20 graduates (90.0%) had a minimum GPA of 3.0
- 4 of 45 juniors and seniors (8.9%) took the GRE
- 7 of 45 juniors and seniors (15.6%) completed at least one graduate school application. Four students completed three or more applications.

## Results

- 20 of 35 seniors (57.1%) graduated
- 17 of 20 graduates (85.0%) were URM students
- 3 of 6 graduates (50.0%) that applied to graduate school were accepted

## **University of Tulsa**

### **Participants**

- 11 students were included in this evaluation
- 2 students were sophomores, 3 were juniors and 6 were seniors
- 11 of the 11 scholars (100.0%) were URM students

### **Support**

- 10 of the 11 students included in this evaluation (90.9%) received funding during Summer 2017, Fall 2017, and/or Spring 2018
- 10 of the 10 students (100.0%) who were in the program through Summer 2017 participated in an internship that summer
- 4 of the 4 graduates (100.0%) participated in at least one summer internship while in the program. Three of the graduates participated in two or more while in the program.

### **Graduate School Preparation**

- 10 of 10 students (100.0%) who participated in Fall 2017 conducted research
- 10 of 11 students (90.9%) who participated in Spring 2018 conducted research
- 3 of 4 graduates (75.0%) had a minimum GPA of 3.0
- 2 of 9 juniors and seniors (22.2%) took the GRE
- 0 of 9 juniors and seniors (0.0%) completed at least one graduate school application. No students completed three or more applications.

### **Results**

- 4 of 6 seniors (66.7%) graduated
- 4 of 4 graduates (100.0%) were URM students
- 0 graduates applied to graduate school; however data reported shows one student was accepted

Appendices 2-6 include student responses to the online survey. Responses have not been edited.

## **Appendix 2: Scholar Responses about Group Meetings**

### **How were the meetings helpful?**

*A meeting on scientific communication (how to write, resources available, what should be included in different presentations/papers, etc.)*

*Different resources*

*Discovering new opportunities*

*Discussing opportunities, time to meet new people*

*Ethical training, available resources, and game nights*

*Getting information about conferences and opportunities to engage in research and getting to interact with other students interested in similar things.*

*Getting to interact and bounce ideas off one another*

*Getting to practice presenting in front of a crowd.*

*Going over events*

*Grad school help*

*Hearing other research*

*How to do presentations and layouts at conferences and what people expect.*

*Information*

*Interacting with other students and learning about opportunities*

*Learning about available resources and opportunities for OKLSAMP students at OSU*

*Learning about scholarships and mental health were definitely helpful*

*Meeting with other students and sharing experiences*

*Meetings about scholarships and fellowships*

*Meetings were more helpful if they provided a lot of new information.*

*N/a*

*N/A*

*Offered twice a month*

*Taking about different grants for research*

*Talking about upcoming opportunities and walking through websites for applications on a projector.*

*The few meetings I went to were over writing papers, so that was extremely helpful.*

*The meetings where we talk about our research and internships.*

*The panel for various research opportunity was good.*

*The videos that were shown were kind of helpful but overall I felt like I was wasting my time. I absolutely love learning about being a better student and undergrad researcher but the meeting didn't really care for that.*

*The workshop on writing.*

*Three-minute presentation*

### **What would you change about the meetings to make them more helpful in the future?**

*Faster introduction of names to minimize down time*

*Having hands on activities especially for short speakers*

*Having the students lead the meetings by communicating through group messages about what all is happening at the meeting.*

*I would like to see more in depth about what graduate school will be like, and exactly what steps we will need to take to get there.*

*I would split up students randomly each time during a social so we can get to know each other. Also for the meeting to be more helpful and catered to prep for research material, grad school, publications, etc.*

*More discussion opportunities*

*More gre prep or other testing prep*

*More information about the 'how to' process of applying to grad school, professional schools, etc*

*More interactive activities.*

*More meetings*

*More Q and A*

*More time to meet people*

*N/a*

*N/a*

*N/A*

*Not necessary*

*Shorten time for people to introduce themselves. It takes up a lot of time.*



*Shorter meetings.*

*Snacks?*

*Trying to set up more group meetings.*

*Workshop on how to find mentors.*

*Yes*

## **Appendix 3: Mentor Support**

### **How did your mentor help you?**

*Always had a solution, encouraging, insightful and helpful*

*By introducing me to the LSAMP opportunity*

*Communication*

*Discussing what was going on during the semester for up coming activities.*

*[Mentor's Name] always had constructive criticisms for my work. This made it so I could always improve my work and hone my skills*

*[Mentor's Name] has always been there to support me in any way she can, from research to attending presentations that I have participated in*

*Finding opportunities in the community*

*Gave me direction*

*Giving me opportunities to do research on my own without hand holding.*

*Guidance, Educating, and Advice*

*Guided research and poster presentation*

*He did help me, however i felt inadequate for some of the projects.*

*He gave me constant help and guidance.*

*He guided me in understanding the next steps for my research. Anytime I had a question he answered it. He always checked my abstracts, presentations, and the research paper. He always gives me feedback to improve. Always very kind and supportive in all my academic endeavors.*

*He was always available for questions and helped me conduct my experiments. He also taught me all the skills I needed for research.*

*He was always quick to answer emails and keeping me updated on information*

*He wrote recommendation letters and made sure I knew information about conference and internship opportunities.*

*Help me with graduate school decisions and route to take*

*Helped discuss how to proceed with research*

*Helped me get everything I needed organized and submitted to ultimately be awarded a fellowship.*

*I did research with him, so that was helpful in regard to moving forward in research.*

*I have learned so much about research and the biology department at UCO. She got me involved with tri beta national biology honor society. She is always in the lab helping and answering my questions. And this summer we are working hard to try to get published.*

*My mentor encouraged me to do my best and encouraged me to apply for opportunities even when I didn't believe in myself.*

*My mentor for LSAMP is my research PI and she is great. She really cares that I understand what she is doing in the lab and has helped me feel motivated.*

*My mentor has helped to develop me as a scientist through improving my critical thinking, problem solving, and communication skills.*

*My mentor was my advisor. He helped me understand the path of grad school after graduation.*

*Provided me with necessary resources*

*She gave me information about graduate school and other opportunities that I didn't know before. She also helped me to find a better research placement.*

*She provided a lot of information about opportunities that I would not have known about otherwise (e.g. GRE prep courses).*

*She was always available and if she was unable to help with a question, she directed me to the correct person/department*

*Support and guidance*

*Told me about master's programs and before summer 2017 helped me to apply to REU's*

*Very good advice and direction*

*Was very supportive.*

### **How could your mentor improve?**

*Better communication - for about two months, I had difficulty getting him to respond to me.*

*Communication*

*[Mentor's Name] is awesome. No improvement needed*

*[Mentor's Name] has many students under his wing, as a result, he can be a little short with us because of the complicated schedule he has.*

*Everything is good*

*Getting our fellow students to have a group discussion.*

*Having shorter concise meetings.*

*He's good, I need to develop more my technical skills*

*I think it would be awesome to have a mentor closer to my age that could help influence my work. That's something we need to incorporate at my school aside from it just being our advisor.*

*If possible, not to overstress.*

*Just continue being encouraging and kind. It's very helpful*

*More commitment. He is very busy on other projects.*

*N/a*

*N/a*

*N/A*

*N/A. He is a fantastic individual*

*No way. She is the best ever!*

*Not at all*

*Not much.*

*Not necessary*

*Nothing to improve*

*Reply for often.*

*She doesn't need to improve anything.*

*They are excellent at their jobs and don't need improvement*

## **Appendix 4: Graduate School Preparation**

### **How did the program help with GRE preparation?**

*She told me about study guides and financial assistance*

*A book*

*Financial assistance and the option for study programs*

*Funding and practice test book.*

*GRE prep code*

*Gre prep course*

*GRE preparation class*

*I got a license for a GRE prep course.*

*Information about the GRE*

*Information on how to get financial assistance when I do take the GRE*

*License to a GRE prep*

*Magoosh prep course account and creating ETS GRE account to find a test date.*

*Online course*

*Prep course*

*There is a prep course and financial aid is available to take the exam*

## Appendix 5: Support in Six Areas

### **What can be improved in the areas of academic and social support, staff availability, opportunities to work with campus support programs and community organizations, and interactions with other students in the program?**

*At my school in particular, I would like to see better organized meetings. I would like to take time in the beginning of the semester to get to know the new students by having an ice breaker. I believe there could be more of a presence of the program on campus as well.*

*Better help with matching students to research mentors*

*Communicating with other scholars*

*I'm not sure in this aspect, I think it fell more on me.*

*Interactions with the students.*

*It is awesome!*

*It seems like the current staff is stretched a bit too thin. They do an excellent job, but any resources that could help them would be greatly appreciated.*

*Letting more people know about this*

*Maybe, Have more gathering of the different schools.*

*Meetings should be shorter and more frequent*

*More diversity in majors. There are a lot of biology and chemistry majors.*

*More social activities!*

*More student interactions.*

*N/A*

*Setting up team meetings over the year and motivating other students to join.*

*[Campus Program Manager Name] does a terrific job with the program*

*There is no individuality within the program. I feel like I count more as a body rather than a student.*

*The meetings aren't structured well to were all the students can actually get to know each other. We are just there sitting and it's hard for some people to take initiative to get to know each other.*

## **Appendix 6: Program Strengths, Weaknesses, Recommended Changes, and Final Comments**

### **What are the strengths of the OK-LSAMP program?**

*Community and the resources available*

*Community, Relationships, and Opportunity*

*[LSAMP Program Office Staff Member Name] and [LSAMP Program Office Staff Member Name] are very accessible.*

*Faculty*

*Good networks and resources available*

*Great resources for getting involved with research*

*Guidance in pursuing graduate degree, opportunities to present research, guidance in research work, and financial support*

*Helping students financially and with advice from their advisors anything related towards an academic level.*

*I really enjoyed taking part in the conferences and being able to receive feedback on my presentations. I believe I have a good grasp of grad school because of the OK-LSAMP program and plan to continue education once I get a few years of work experience.*

*I think that it can teach critical ways of thinking while in a stem field.*

*I think the overall goal is amazing and the efforts put into it by the team are great.*

*Inclusion of the minority classes and the support given to pursue their research*

*Internship opportunities, preparation for the GRE, information on graduate school and how to apply for schools and scholarships, conference opportunities*

*It gets you in the door for new opportunities like REUs and undergrad research.*

*Lots of funding to do research and further my education.*

*Making students aware of opportunities that are available to them and encouraging them to pursue them.*

*Many opportunities for independent research*

*Provide academic and financial support to continue research on campus*

*Provides many opportunities for professional, educational and personal development*

*Provides research and internship opportunities, financial assistance, and peer support*

*Provides students an opportunity to do research and helps pay for tuition*



*Really good at connecting students to research opportunities, really good for providing a solid base for students interested in research of any major*

*Research opportunities*

*Structure gearship and facilitators*

*Such a fantastic community of people always willing to help you succeed*

*The financial aid.*

*The internship opportunity emails*

*The mentorship and group meetings are very informative and helpful. I am extremely grateful for them!*

*They provide a lot of useful information.*

*Wanting to help everyone with their dream and push them to do more*

### **What are the weaknesses of the OK-LSAMP program?**

*A bit of disjointedness*

*Could use more interconnection opportunities between other schools. Although, conferences do provide a good job of that given the correct circumstances.*

*Getting started was slightly complicated due to unclear instruction with applications*

*I definitely think that LSAMP could broaden its horizons as to what it encourages its students to do as far as graduate school is concerned. While I understand that the program is focused towards research, and encourages students to obtain M.S. and Ph.D. degrees in STEM fields, I think it could incorporate other research based graduate programs as well. For example, almost every minority group associated with LSAMP has a massive shortage of physicians and veterinarians associated with that minority, with even fewer minority students entering M.D./Ph.D. or D.O./Ph.D. programs. To prove just how poor the diversity is in the medical fields, I encourage you to follow this link:*

*<https://www.aamc.org/download/321498/data/factstablea18.pdf>. It is the number of medical school applicants and matriculants in the U.S. for last year. Only 100 Native American students, and 4,300 African Americans applied nationwide to medical school. Compared to 10,500 Asian applicants, and 24,000 Caucasian applicants. Only 42 Native students and 1500 African Americans were admitted, compared to 10,500 Caucasian, and 4,500 Asian applicants. Encouraging students to pursue dual degrees such as D.V.M./Ph.D., D.O./Ph.D. or M.D./Ph.D. could allow their passions for research to flourish, as well as helping to alleviate the massive shortage of medical professionals in our nation, and the lack of diversity within the field.*

*I did not find out about it until late in my senior year of college.*

*I didnt notice any*

*I'm not sure what schools would consider me and I'm just not how to tell which ones I should apply for.*

*If you aren't able to make it to the meetings because of scheduling conflicts, the program doesn't benefit you very much.*

*If you have a niche major it can be hard to find a mentor that have the same research mentors as your self.*

*It's not that organized.*

*N/a*

*N/a*

*N/A*

*None*

*None*

*Not forming group meetings to discuss any future events for this program.*

*Not much information is sent to me about other benefits from the program.*

*Punctuality*

*Restricted to just your campus*

*Starting some meetings late. (it's a nitpick)*

*There really aren't any*

*There's super poor communication between the person in charge of LSAMP and the students. Its almost like we are encouraged to apply to the program but once we get it, that's where it stops. They don't actively help you look for a mentor. They leave it up to the student which is why a lot of students are not getting the most of LSAMP. There's not a introduction packet where it highlights all the details, expectations, or requirements during the semester. It is so unorganized.*

*Weak comunicacion for meetings*

**If you could make changes to the OK-LSAMP program, what would those changes be?**

*Growing it because it's a great program*

*Have more regularly scheduled meetings with dates set ahead of time.*

*I would encourage the directors to begin to talk about dual degree programs more, as well as bring in physician or veterinary scientists as guest speakers for the program's group meetings. They could explain how they incorporate research into healthcare, and the value of beginning a dual degree scientist.*

*I would like to see other scholars come to our school meetings to share their stories of how engaging in the resources provided by OK-LSAMP paved their path for success!*

*I wouldn't change anything*

*Make a booklet highlighting all expectations, rules, requirements, semester milestones, stipend information (the point system), explain what REU's are, where to find them, how to start research-contacting a faculty member, signing the mentor agreement sheet, enrolling in research experience course, etc. All of these things the program has failed to explain as new member of the program.*

*More available meeting times/days*

*More informational emails*

*More interaction between all campuses*

*More mentoors*

*More workshops for students and help preparing for the GRE.*

*N/a*

*N/a*

*N/A*

*None*

*None*

*Promote the program better. I think very few people who are eligible know about it.*

*Setting up more group meetings, encouraging more students to sign up, and preparing more events around campus to spread the word about this program.*

*The only issue I had was a scheduling conflict with the meeting and one of my classes and I was unable to attend some meetings*

### **Any other final comments?**

*Great program, but it's not always as helpful for students who are already internships/research opportunities. There are points given for obtaining, but not for maintaining...*

*I appreciate all the help this program has offered. It is an awesome program*

*I'm honored to have been part of the OK-LSAMP program and look forward to continuing graduate school in the near future and having a presence at other OK-LSAMP events.*

*Its been a great year!*

*N/A*

*No*

*None*

*Thank you for allowing me to be a part of OK-LSAMP*

*The program has helped me get my foot into the door for research but I wish I had more support from the staff. I was lucky to have a great mentor but LSAMP didn't help me look for a mentor, I looked on my own. As a first generation student, it's hard to find these opportunities but joining one that doesn't have such great support for its students makes it hard to advance.*

*This program helped me from the moment I signed up and was accepted, towards the final week I finally graduated. I appreciate everyone who was there for me in this program.*

*YOU GUYS ARE AMAZING!!!*