

2019

PERFORMANCE EFFECTIVENESS REVIEW

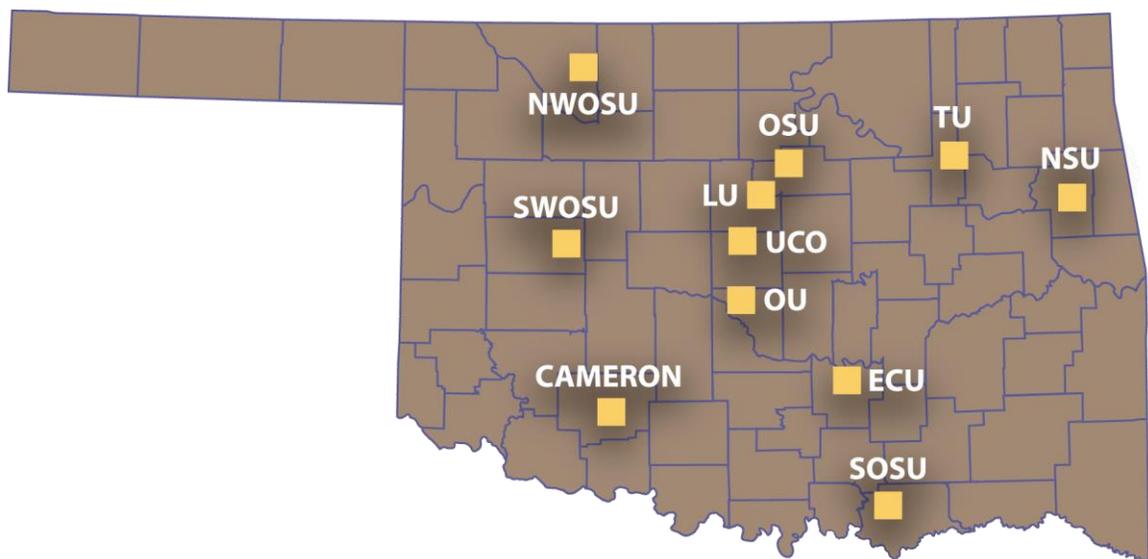
Oklahoma
Louis Stokes Alliance for
Minority Participation
(OK-LSAMP)



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



Oklahoma Alliance Institutions



2019
PERFORMANCE EFFECTIVENESS REVIEW
P.E.R.

Oklahoma

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

Submitted by

Oklahoma State University
Lead Institution

Jason F. Kirksey, Ph.D.
Principal Investigator

Brenda L. Morales, M.S.
Director

Darlene Croci
Grant Coordinator

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The Oklahoma Louis Stokes Alliance is comprised of the following key personnel:

<p>Jason F. Kirksey, Ph.D. jason.kirksey@okstate.edu Principal Investigator Oklahoma State University 408 Whitehurst Hall Stillwater, OK 74078</p>	<p>J. C. Diaz, Ph.D. diaz@utulsa.edu Co-Principal Investigator/Campus Program Manager University of Tulsa 600 South College Tulsa, OK 74104</p>
<p>Brenda L. Morales, M.S. brenda.morales@okstate.edu Director Oklahoma State University 430 Scott Hall Stillwater, OK 74078</p>	<p>Darlene Croci darlene.croci@okstate.edu Grant Coordinator Oklahoma State University 401 Scott Hall Stillwater, OK 74078</p>
<p>Sherri Irvin, Ph.D. sirvin@ou.edu Campus Program Manager University of Oklahoma 660 Parrington Oval, Norman, OK 73019</p>	<p>Karen Williams, Ph.D. kwilliams@ecok.edu Campus Program Manager East Central University Office: 208 Physical & Environmental Science Bldg. ECU Box D-5 1000 East 14th Street Ada, OK 74820</p>
<p>Camille DeYong, Ph.D. camille.deyong@okstate.edu Campus Program Manager Oklahoma State University 215 General Academic Building Stillwater, Oklahoma 74078</p>	<p>Sharon Lewis, Ph.D. salewis@langston.edu Campus Program Manager Langston University PO Box 1500 Langston, OK 73050</p>
<p>Jody Buckholtz, Ph.D. buckholt@nsuok.edu Campus Program Manager Northeastern State University 705 North Grand Avenue Tahlequah, OK 74464</p>	<p>Tim Hubin, Ph.D. tim.hubin@swosu.edu Campus Program Manager Southwestern Oklahoma State University 100 East Campus Drive Weatherford, OK 73096</p>
<p>Timothy Maharry, Ph.D. tjmaharry@nwosu.edu Campus Program Manager Northwestern Oklahoma State University 709 Oklahoma Blvd. Alva, OK 73717</p>	<p>Brad Ludrick, Ph.D. bludrick@se.edu Campus Program Manager Southeastern Oklahoma State University 1405 North 4th Avenue Durant, OK 74701</p>
<p>Mike Husak, Ph.D. michaelh@cameron.edu Campus Program Manager Cameron University 2800 West Gore Avenue Lawton, OK 73505</p>	<p>Gregory Wilson, Ph.D. gwilson@uco.edu Campus Program Manager University of Central Oklahoma Nigh University Center, Room 341 Edmond, OK 73034</p>
<p>Sandra K. Whalen, M.Ed. swhalen@ou.edu Program Evaluator Consortium for Student Retention Data Exchange University of Oklahoma 1400 Asp Avenue Norman, OK 73072</p>	

INTRODUCTION

The Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) program has successfully met the National Science Foundation (NSF) goal by continuing to increase the number of underrepresented minority students (URMs) pursuing degrees in Science, Technology, Engineering, and Mathematics (STEM). The OK-LSAMP program concluded *Year five* of the five-year National Science Foundation (NSF) grant (HRD 1408748 - 2014-2019). This also concludes 25 years of successful LSAMP activities in Oklahoma.

In 2018-2019, the Oklahoma Alliance had 267 Scholars; of those 68 completed Bachelor of Science degrees and 18 of the graduates were admitted to graduate schools for a total of 26% of scholars. During the academic year 69% of the Alliance scholars participated in research activities, and 31% of the scholars participated in summer research or internship experiences at national and international locations. This academic year there were a total of thirty-three scholars participating in 37 international experiences.

Vice President for Institutional Diversity and OK-LSAMP Principal Investigator, Dr. Jason F. Kirksey, continues to provide the leadership and vision at Oklahoma State University (OSU). Through his leadership OSU continues to be recognized for the institution's efforts in Diversity and Inclusion. Oklahoma State University was also recognized for its commitment to diversity and inclusion for the seventh consecutive year with the 2018 Higher Education Excellence in Diversity Champion (HEED Award from Insight Into Diversity). OSU was also designated as a 2018 INSIGHT Into Diversity "Diversity Champion". Dr. Kirksey received the 2018 Distinguished Service Award from the Association of Public Land-grant Universities' (APLU) Commission on Access, Diversity and Excellence (CADE). The APLU CADE Distinguished Service Award is presented to one recipient nationally who has created partnerships, broadened access and opportunity in higher education, and contributed to the achievement of diversity at all levels of an academic community. Oklahoma State University was also honored with the 2018 Innovation + Inclusion Leadership Award from the Society for Diversity. These awards and recognitions demonstrate the commitment to URM students and scholars. (Appendix A)

The University of Oklahoma (OU) enthusiastically continued the recruitment of interested LSAMP scholars and alumni for the OK-LSAMP Bridge to the Doctorate (BD) cohort IX. OSU and OU BD fellows from Cohort VIII and IX continued the successful progress towards completing their graduate degree requirements. The OSU and OU BD cohorts have a diverse group of degree fields represented such as, Mathematics, Veterinary Biomedical Sciences, Integrative Biology, Industrial Engineering, Natural Resource Ecology and Management, Microbiology, Physics, 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, with a few of them passing their qualifying exams and others defending their dissertation.

The 24th Annual OK-LSAMP Research Symposium was a day full of workshops, poster and oral presentations, graduate school conversations and guest speakers. The keynote address was given by Dr. Michael Ceballos, Assistant Professor in Biological Sciences at the University

of Arkansas (Fayetteville, AR). He is a faculty affiliate of the UA Cell and Molecular Biology program as well as the UA Space and Planetary Sciences program. Using his prior experience in neurobiology and virology, Dr. Ceballos currently studies neurotropic dsDNA virus systems and emergent infectious disease dynamics, in humans and other vertebrates (e.g., fish and mice). Dr. Ceballos engaged OK-LSAMP scholars and other attendees by speaking on his experiences and what has made him a successful Scientist. OK-LSAMP welcomed 174 attendees to the symposium highlighting student scholar research with 18 oral presentations and 42 poster presentation.

OK-LSAMP Scholars from across the eleven alliance institutions participated in numerous activities promoting STEM and the OK-LSAMP program. They presented at over 90 state, national, and international conferences, 183 scholars participated in research throughout the academic year, and many participated in summer research projects. Scholars were admitted to respected graduate programs such as the Harvard University, University of Arizona, Worcester Polytechnic Institute, University of Michigan, and University of Oklahoma. All were provided assistantships and several scholars received Bridge to the Doctorate funding. OK-LSAMP Scholars continue to be sought out by faculty 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 URMs in STEM fields and increase their matriculation into graduate programs.

Scholar Demographics

The 11 Oklahoma alliance institutions supported 267 LSAMP scholars in the 2018 - 2019 academic year. The objective was to increase the number of scholars each year of the project. Objective One has been met and OK-LSAMP continues to work toward increasing URMs in STEM programs across the alliance (Table 1).

Table 1. Comparison Numbers to Meet Stated Goal

Institution	No. Scholars	
	2017-2018	2018-2019
Cameron	16	11
East Central University	17	12
Langston University	44	41
Northeastern State University	13	10
Northwestern Oklahoma State University	6	5
Oklahoma State University	109	104
Southeastern Oklahoma State University	17	14
Southwestern State University	13	12
University of Central Oklahoma	15	12
University of Oklahoma	53	37
University of Tulsa	11	9
Totals	314	267

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

Table 2. Comparison of Scholars by Gender

Category	Year	
	2017-2018	2018-2019
Male	146	112
Female	168	155
	314	267

Table 3. Comparison of Scholars by Primary Ethnicity

Ethnicity	2017-2018	2018-2019
African American	109	102
Native American	111	94
Hispanic	82	69
Native Hawaiian / Pacific Islander	3	1
Asian American	2	0
First Generation / Caucasian	7	1
Total	314	267

Table 4. Scholars by Discipline and Gender

Degree Program	Male	Females	Totals
Agriculture			
Agriculture	1	0	1
Animal Science	2	1	3
Entomology	5	2	7
Biological Sciences			
Biochemistry	9	6	15
Biology	58	16	74
Botany	0	1	1
Chemistry	15	7	22
Microbiology	13	8	21
Nutritional Science	5	0	5
Zoology	3	1	4
Computer Science	10	7	17
Engineering			
Aerospace	2	4	6
Architecture	1	1	2
Biosystems	1	0	1
Chemical	3	4	7
Civil	2	1	3
Computer Engineering	0	4	4
Electrical	0	9	9
Engineering	4	7	11
Mechanical	7	14	21
Technology	1	2	3
Management Information Systems	0	1	1
Mathematics	4	5	9
Natural Resources and Conservation			
Environmental Science	1	0	1
Natural Resources	3	2	5
Physics	1	10	11
Non Eligible Majors*	3	0	3

*Scholars changed into a non-STEM major and therefore ineligible to continue as an OK-LSAMP scholar

On-Site and Community College Recruitment

Campus Program Managers sought top underrepresented students in the STEM fields through their classrooms or through other academic activities as part of their recruitment efforts. Additional recruitment was also conducted on-site at high schools, college fair 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 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.

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
- Will Rogers STEM Fair
- OSU Research Week
- Promoting Undergraduate Research Conference
- Proud To Be A Life Scientist” hosted by Life Science Freshman Research Scholars
- Citizen Potawatomi Nation - Wzhitawen College and Career Fair

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 Northern Oklahoma College	Connors State College Northeastern Oklahoma College

Northwestern Oklahoma State University	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”. (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:

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:

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.

C.L.I.M.B. Summer Academy - The Chemistry Learning Incorporating Mathematics and Biology (CLIMB) Summer Academy incorporates the study of Chemistry, Botany, Mathematics, Medicine, History, Sociology and Native American Studies. Participants study the medically relevant ingredients of Echinacea herbal medicine. Students spend time in a working research laboratory on the OU campus.

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

Mesonet Weather Camp is a week-long 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

The Data Coordinator continued to work closely with the OK-LSAMP grant coordinator and all the Oklahoma Alliance Campus Program Managers. All eleven alliance institutions use the online application for the admissions process into the OK-LSAMP program. 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. Data collected on each of the scholars in Oklahoma was used to complete information requested by NSF and the program evaluator. The information collected includes, but is not limited to: degree program, presentations, awards, research projects, completion of degree, and acceptance into graduate school.

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.

Social Media

OK-LSAMP continued 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 Twitter 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 empowered and encouraged 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 and workshops on various alliance campuses as well as at the Annual OK-LSAMP Research symposium. These programs included, but were not limited to, graduate school preparation, application process, interaction with matriculated graduate students, BD fellows and GRFP fellows, and conversations of research experiences that provide opportunities for peer reviewed journal publishing through their home lab or summer internship.

- Eighteen of the 2018-2019 OK-LSAMP graduates were accepted to graduate schools throughout the nation. Examples include, but are not limited to:

Harvard University
University of Arizona
University of California

University of Michigan
University of Oklahoma
Worcester Polytechnic Institute

- Scholars continued to take advantage of the on-line Graduate Record Examination (GRE) preparation course offered to the alliance scholars through the 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) question types on the verbal reasoning and analytical writing sections, including reading comprehension, text completion, sentence equivalence questions, and both essay tasks; (3) pointers on time management, anxiety relief, scoring, and general standardized test-taking.
- 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.
- Throughout the alliance and the Annual Research Symposium, scholars had an opportunity to attend forums and workshops that focused on graduate school preparation, career development, international research and professionalization.
- OK-LSAMP scholars were given support to state, regional, and national conferences to present their research projects.

- During academic year 2018-19, over 90 scholars participated in oral or poster presentations. Examples include, but are not limited to:
 - American Chemical Society National Conference, Orlando, FL
 - American Indian Science and Engineering Society (AISES) national conference, Oklahoma City, OK
 - Annual Biomedical Research Conference for Minority Students, Indianapolis, IN
 - Emerging Researchers National (ERN), Washington, DC
 - LSAMP National Meeting, Washington, DC
 - National Conference on Undergraduate Research (NCUR), Kennesaw, GA
 - OK-LSAMP Annual Research Symposium, Stillwater, OK
 - Oklahoma Research Day at the Capitol, Oklahoma City, OK
 - Oklahoma Research Day, Weatherford, OK
 - Oklahoma Women Impacting Science and Entrepreneurship (OK-WISE) Conference Oklahoma City, OK
 - Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference, San Antonio, TX

Enhanced Academic Performance

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

- Alliance institutions continue to offer Responsible Conduct in Research (RCR) training for all Scholars. Several institutions offer the program as an on-line, self-paced program, while others offer it as an in-class course.
- GRE preparation courses were offered to all scholars. This online preparation resource was offered through the 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, international experiences, professionalization and summer internships in addition to a variety of other topics relevant to STEM programs.

Annual Research Symposium

The 24th Annual Research Symposium was held November 03, 2018, on the Oklahoma State University, Stillwater campus. OK-LSAMP welcomed 174 attendees for a day of workshops, poster and oral presentations, graduate school conversations, and guest speakers. The Symposium allowed attendees to survey student research with 18 oral presentations and 42 poster presentation. (Appendix C)

The keynote address was given by Dr. Michael Ceballos, Assistant Professor in Biological Sciences at the University of Arkansas (Fayetteville, AR). He is a faculty affiliate of the UA Cell and Molecular Biology program as well as the UA Space and Planetary Sciences program. Using his prior experience in neurobiology and virology, Dr. Ceballos currently studies neurotropic dsDNA virus systems and emergent infectious disease dynamics, in humans and other vertebrates (e.g., fish and mice). Dr. Ceballos engaged OK-LSAMP scholars and other attendees by speaking on his experiences and what has made him a successful Scientist.

In addition to the keynote speakers, Dr. Michael Thompson facilitated a comprehensive GRFP preparation workshop for scholars and faculty interested. This was very enlightening to our scholars as they were able to directly ask questions about the application process. Dr. Nadia Hall, Coordinator of Graduate Recruitment and Student Services with the University of Tulsa spoke on proper etiquette for conferences and business receptions. The symposium also hosted an OK-LSAMP alumni panel to talk about Academia vs. Industry after acquiring a Bachelor's degree in STEM. The OK-LSAMP alumni were Milecia McGregor, OSU undergraduate LSAMP and BD fellow, Guillermo Morales, OU undergraduate LSAMP scholar, Allie Sherier OSU undergraduate LSAMP and BD fellow, and Dr. Jadith Ziegler Cameron University undergraduate LSAMP and BD fellow.

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

Award and Category	Scholar	Alliance Institution
1st place Life Sciences Poster	Myshal Morris	Langston University
2nd place Life Sciences Poster	Sierra Posey	Oklahoma State University
3rd place Life Sciences Poster	Emily Eix	University of Oklahoma
1st place Non-Life Sciences Poster	Rosa Lopez	University of Oklahoma
2nd place Non-Life Sciences Poster	Joseph Wagner	University of Central Oklahoma
3rd place Non-Life Sciences Poster	Christen Parmley	Oklahoma State University
1st place Oral	Karina Flores	University of Oklahoma
2nd place Oral	Charles Bales	University of Tulsa
3rd place Oral	Cayla Moore	Langston University

Table 7. Annual Research Symposium Attendees by Category

	Attendees	
	23rd Annual	24th Annual
Undergraduate Students	94	97
Graduate Students	12	17
Faculty	35	39
Staff	14	13
Guests	23	8
Total	178	174

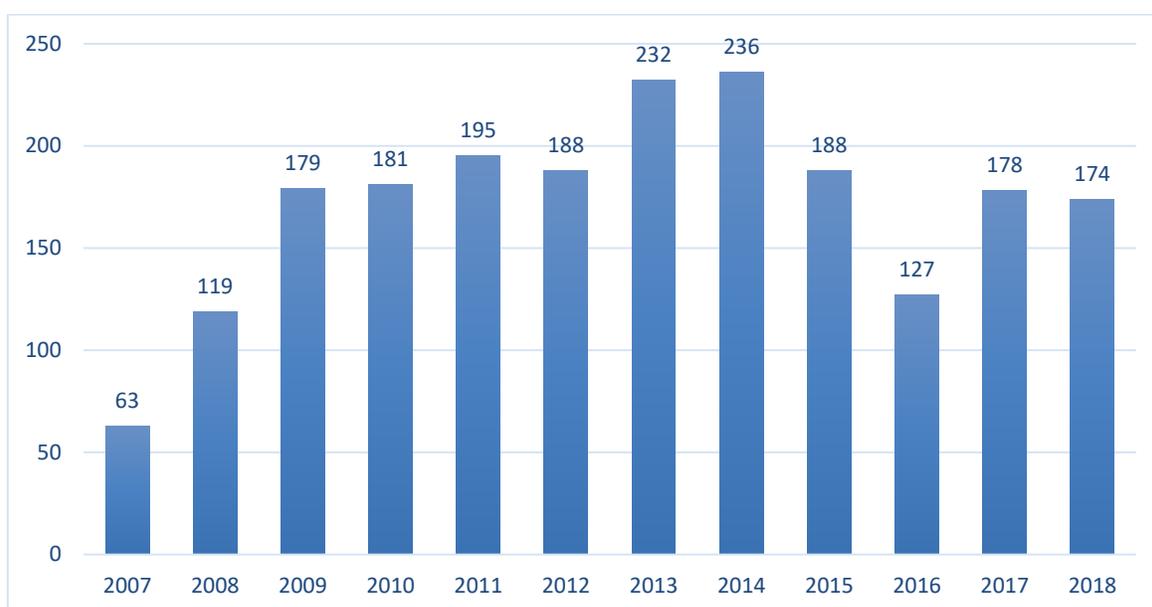


Figure 1. Number of Participants Attending Annual Research Symposium

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 2018	Fall Semester 2018	Spring Semester 2019
Cameron University	2	7	8
East Central University	3	7	6
Langston University	13	17	15
Northeastern State Univ.	5	6	5
Northwestern OSU	0	0	0
Oklahoma State Univ.	28	25	15
Southeastern OSU	4	9	9
Southwestern OSU	5	10	10
Univ. of Central OK	3	8	11
University of OK	15	0	0
University of Tulsa	6	7	8
TOTALS	84	96	87

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 2018-2019 academic year:

Harvard University, Boston, MA – BCMP Summer Scholars is an internship 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>)

Lawrence Berkeley National Laboratory, Berkeley, CA - The Lawrence Berkeley National Laboratory is a US Department of Energy Science Laboratory campus, operated by the University of California. Our site encompasses over 150 acres and 100 buildings of cutting-edge science, in the wildland-urban interface zone adjacent to the Berkeley and Oakland hills, in the East Bay region of the San Francisco Bay Area. We are active participants in the Hills Emergency Forum (HEF), an East-Bay coalition chartered after the Oakland Hills Fire of 1991. Along with the HEF, active Wildland fire mitigation efforts are continuous and ongoing in our region.

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)

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)

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.

OneOK, Tulsa, OK – ONEOK, Inc. is a diversified Fortune 500 corporation based in Tulsa, Oklahoma. ONEOK was founded in 1906 as Oklahoma Natural Gas Company, but It changed its corporate name to ONEOK in December 1980. It also owns major natural gas liquids systems due to the 2005 acquisition of Koch Industries natural gas businesses. RESPONSIBILITIES Internships will include real-world projects that are designed to have a meaningful impact on the business. Interns will have the opportunity to be involved in a variety of projects and work alongside experienced professionals at our ONEOK Corporate Headquarters in Tulsa, Oklahoma. Project assignments will vary based on current business needs and critical skills.

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>)

Sea Turtle Conservancy - 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/>)

Yale University - Each summer the Yale SURF Program brings a group of qualified undergraduates to Yale for eight weeks. The experience is meant to familiarize students with the kind of work they can expect to do in graduate school, provide them with insight into the many steps involved in building a career based on Ph.D. level training, as well as foster a sense of confidence regarding their own abilities and potential. Students are immersed in an academic, professional setting involving a working relationship with a faculty mentor, a post-doctoral associate, and/or an advanced graduate student, a program of individual research, and participation in a series of program workshops and panel discussions. The focus of the program is primarily on research and on the methods of professional research. Students in the natural sciences learn advanced laboratory methods and conduct Ph.D. level research in state-of-the-art laboratory facilities. Students in the humanities and social sciences work closely with mentors and have at their disposal the considerable archival resources found in the Yale University libraries. Emphasis is also placed on the presentation of research findings to colleagues. All students develop a proposal, give a final presentation to their peers, submit a written final paper, and attend the Leadership Alliance National Symposium to present their research at the meeting.

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 2018-2019, 33 scholars participated in international experiences. 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 international experiences: scholars and locations throughout 2018 - 2019

Student	Location
Elisabeth Allbritton	France and Belgium
Aaron Austin	Paris, France
Charles Bales	Madrid, Spain
Austin Carriere	Las Cruces, Costa Rica
Rainee DeRoin	Oldenburg, Germany
Marly Fixico-Hardison	Thailand
Theresa Hinkle	France and Belgium
Javier Lopez	Barcelona, Spain
Ty Montgomery	Italy & Switzerland
Cheyenne Smith	Graz, Austria
Ayrianna Swanson	Taiwan

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 2018 *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.

Sixty-eight scholars completed Bachelor of Science degrees in the 2018-2019 academic school year. Eighteen of the graduating seniors will be continuing their education to pursue a Master of Science or Doctorate of Philosophy (PhD) degree, meaning 26% of our graduating seniors are continuing on to graduate school.

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

	2017-2018		2017-2018 To		2018-2019		2018-2019 To	
	Graduates		Grad School		Graduates		Grad School	
Alliance Institutions	Male	Female	Male	Female	Male	Female	Male	Female
Cameron University	4	2	1	0	1	2	1	0
East Central University	3	2	0	0	2	4	2	1
Langston University	5	6	0	0	1	10	0	1
Northeastern State University	2	2	1	0	2	1	1	1
Northwestern OSU	1	2	0	1	0	1	0	0
Oklahoma State University	16	11	4	4	16	11	3	1
Southeastern OSU	4	0	4	0	0	1	0	1
Southwestern	3	0	2	0	0	3	0	1
University of Central OK	0	0	0	0	0	2	0	0
University of Oklahoma	10	11	2	2	1	5	1	1
University of Tulsa	1	3	0	1	5	0	3	0
TOTALS	49	39	14	8	28	40	11	7
	88		22		68		18	

- 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.
- 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 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.
- 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.

Emerging Researchers National Conference in STEM

The Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Mathematics (STEM) is hosted by the American Association for the Advancement of Science (AAAS), Diversity, Equity, and Inclusion (DEI) Programs and the National Science Foundation (NSF) Division of Human Resource Development (HRD), within the Directorate for Education and Human Resources (EHR). The conference is aimed at college and university undergraduate and graduate students who participate in programs funded by the NSF HRD Unit, including underrepresented minorities and persons with disabilities. OK-LSAMP had a BD fellow and one OK-LSAMP undergraduate scholar present in their research. (Appendix D)

LSAMP/BD National Meeting

The national NSF Directors hosted a LSAMP meeting to gather all the LSAMP principal investigators, directors and staff. The meeting also hosted a Bridge to the Doctorate Poster presentation opportunity in which three of the current OK-LSAMP Cohort 8 BD Fellows presented their research. (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 2019, eight scholars were accepted to present at the NCUR conference. Four scholars from the University of Tulsa, one from University of Central Oklahoma, 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 2019 NCUR conference facilitated a networking opportunity for our scholar from different alliance campuses. (Appendix F)

Oklahoma Research Day

Oklahoma Research Day celebrated its 20th 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.

Southwestern Oklahoma State University in Weatherford, OK hosted the 2019 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 26 Scholars participate in the event. (oklahomaresearchday.com) (Appendix G)

Table 11. Scholars Participating in Oklahoma Research Day by Institution

School	Scholar
Cameron University	Theresa Hinkle Restituto Paris
East Central University	Lizbeth Robles Fernando Salazar-Salas
Langston University	Stacii Cross Cecilia Kinlow Celois Moore Myshal Morris Kyra Murray
Oklahoma State University	Thesea McCarrell
Southeastern Oklahoma State University	Morgan Blake Alexis Burgess Hadley Clower Caitlin Cosby Rylee Dunlap Tayler Hedgecock Abigail Phillips Alexis Spence
Southwestern Oklahoma State University	Elisabeth Allbritton Angelica Manning Abner Nimsey Tanner Tadlock
University of Central Oklahoma	Alma Marquez Carina Gutierrez Joseph Wagner Amber Young

Research Day at the Capitol - Oklahoma

The 2019 Research Day at the Capitol was held on Tuesday, March 26, at the State Capitol of Oklahoma. The event was established over 20 years ago to showcase the outstanding undergraduate research being conducted at Oklahoma’s colleges and universities in the areas of science (including social science), technology, engineering, and mathematics. Students are nominated by their institutions' leadership to participate in the prestigious event, which is sponsored by the Oklahoma State Regents for Higher Education, Oklahoma Established Program to Stimulate Competitive Research (OK EPSCoR), and the National Science Foundation.

Nominated students present their research to State Legislators and the public in the State Capitol's fourth floor rotunda during the legislative session. In addition, students' posters and oral presentations are competitively judged by an independent panel; winners are announced at the conclusion of Research Day, during an awards ceremony at the Capitol. (Appendix H)

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

The annual SACNAS conference was held October 11-13, 2018 at the Henry B. Gonzalez Convention Center, San Antonio, Texas. The OK-LSAMP Scholars were able to attend the conference and participate in activities; i.e., poster presentations, career fair, Native American PowWow, and the Hispanic Pachanga dance. Eight OK-LSAMP scholars were in attendance at the conference. (Appendix I)

Women in Science Conference

Scholars from across the alliance assisted with the Women in Science conference. The 2015 Conference was held in Oklahoma City, Oklahoma, at the Science Museum. 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. There were State wide 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 and BD fellows facilitated "hands-on" activities by allowing the students to handle bugs, view a human brain, and make paper airplanes learning more about aerodynamics and flight.

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. (Appendix J)

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

Articles:

Black**, T. E., Fofah*, O., Giray, T., Wells, H., & Abramson, C. I. (2018). Influence of environmental experience on aversive conditioning of honey bees (*Apis mellifera* L.). *Apidologie*.

* Refers to undergraduate co-authors

** Refers to graduate student co-authors

Austin Buchanan - OSU

Awards:

A. Buchanan (PI). Imposing connectivity constraints in large-scale network problems. National Science Foundation (CMMI-1662757). \$258,586, 06/15/2017--05/31/2020.

B. Balasundaram (PI), A. Buchanan (coPI), and S. Heragu (coPI). Optimization-Based Aggregate Master Planning Tools for Bay Valley Foods, LLC, Bay Valley Foods, LLC. \$250,599, 10/1/2017–1/31/2020.

Articles:

H. Validi, A. Buchanan. The optimal design of low-latency virtual backbones. Accepted at *INFORMS Journal on Computing*, June 2019.

H. Validi, A. Buchanan. A Note on "A linear-size zero-one programming model for the minimum spanning tree problem in planar graphs". *Networks*, 73(1): 135-142, 2019.

A. Buchanan, Y. Wang, S. Butenko. Algorithms for node-weighted Steiner tree and maximum-weight connected subgraph. *Networks*, 72(2): 238-248, 2018.

Chris Burba - NSU

Articles:

Burba, Christopher M. 2019. "Dipolar Coupling and Molecular Vibrations in Ionic Liquids." *Physical Chemistry Chemical Physics* 21: 3976–88.
<https://doi.org/10.1039/c8cp07491g>.

Burba, Christopher M., and Hai-Chou Chang. 2019. "The Nature of Cation–Anion Interactions in Magnetic Ionic Liquids as Revealed Using High-Pressure Fourier Transform Infrared (FT-IR) Spectroscopy." *Applied Spectroscopy* 73 (3–5): 511–19.
<https://doi.org/10.1177/0003702818805499>.

Burba, Christopher M., and Hai Chou Chang. 2018. "Temperature- and Pressure-Dependent Infrared Spectroscopy of 1-Butyl-3-Methylimidazolium Trifluoromethanesulfonate: A Dipolar Coupling Theory Analysis." *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy* 193: 338–43. <https://doi.org/10.1016/j.saa.2017.12.026>.

Mark Fishbein - OSU

Awards:

2016-2019: National Science Foundation, Division of Biological Infrastructure, Major Research Instrumentation Program, "MRI: Acquisition of a Genomic Sequencer with a Shared Resource Facility for Interdisciplinary Sciences and Training at Oklahoma State University" (co-PI, \$250,000)

2015-2019: National Science Foundation, Division of Environmental Biology, Program in Phylogenetic Systematics, "Can Hundreds of Unlinked Loci Really Resolve Recent, Rapid Radiations of Plant Species?" (PI, \$303,659, collaborative, project total \$642,754)

Articles:

Gould, E., J. Sparks, M. Fishbein, and A. Agrawal. 2019. Integrated metabolic strategy: a mechanistic framework for predicting the evolution of carbon gain and water loss tradeoffs within plant clades. *Journal of Ecology* (in press).

Ollerton, J., et al. (75 authors). 2019. The diversity of pollination systems in large plant clades: Apocynaceae as a case study. *Annals of Botany* 123:311-325.

Fishbein, M., and K. N. Gandhi. 2018. Typification of *Sarcostemma heterophyllum* and nomenclatural notes in North American *Funastrum* (Apocynaceae). *Novon* 26:165-167.

Thompson, S., R. L. Pyle, et al. (130 authors). 2018. Taxonomy based on science is necessary for global conservation. *PLoS Biology* 16(3):e2005075.

Karl David Hambright - OU

Articles:

Witt, B.A., J.E. Beyer, T.C. Halliday, and K.D. Hambright. in press. Effect of the toxic alga *Prymnesium parvum* on a natural zooplankton community. *Aquatic Sciences*.

Beyer, J.E., Zamor, R.M., and K.D. Hambright. 2019. Detection limits affect the predictability of the presence of an invasive harmful alga across geographical space. *Biological Invasions* 21:2301–2311. (DOI: 10.1007/s10530-019-01977-z)

Beyer, J.E., and K.D. Hambright. 2019. The niche and morphology of the invasive *Daphnia lumholtzi* in a subtropical reservoir, 20 years after invasion. *Journal of Plankton Research* 41:90–100 (DOI: 10.1093/plankt/fby053). Published as a “Featured Article.”

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* 76:303–313. (DOI: 10.1007/s00248-017-1131-7; PMID: 29318328)

Tim Hubin - SWOSU

Awards:

2019-2022 “High valent Pd and Ni complexes of topologically constrained azamacrocycles for catalytic organometallic C-C bond formation” (PRF# 60150-UR3) American Chemical Society Petroleum Research “Undergraduate Research” Grant \$70,000

2020 Course Development of “Scientific Ethics” OK-INBRE Release Time Grant \$20,452

2018-2019 “Cross-Bridged Tetraazamacrocyclic Alzheimer's Radiopharmaceuticals Targeting A β Peptide” OK-INBRE MiniGrant \$34,133

Articles:

LSAMP scholar co-author's depicted in **bold**

“Copper-64 PET imaging of the CXCR4 chemokine receptor using a cross-bridged cyclam bis-tetraazamacrocyclic antagonist” Burke, B.; Miranda, C.; Lee, R.; Renard, I.; Nigam, S.; Clemente, G.; D’huys, T.; Ruest, T.; Domarkas, J.; Thompson, J.; Schols, D.; Hubin, T.; Cawthorne, C.; Archibald, S. *J. Nucl. Med.* 2019, DOI: 10.2967/jnumed.118.218008

“Tetraazamacrocyclic derivatives and their transition metal complexes as antileishmanial leads” Hubin, T. J.*; **Walker, A. N.**; **Davilla, D. J.**; Carder Freeman, T. N.; **Epley, B. M.**; Hasley, T. R.; Amoyaw, P. N. A.; Jain, S.; Archibald, S. J.; Prior, T. J.; Krause, J. A.; Oliver, A. G.; Tekwani, B. L.; Khan, M. O. F. *Polyhedron* 2019, 163, 42-53. <https://doi.org/10.1016/j.poly.2019.02.027>

“Acetate as a model for aspartate-based CXCR4 chemokine receptor binding of cobalt and nickel complexes of cross-bridged tetraazamacrocycles” Cain, A. N.; Carder Freeman, T. N.; Roewe, K. D.; Cockriel, D. L.; Hasley, T. R.; Maples, R. D.; **Allbritton, E. M. A.**; D’Huys, T.; van Loy, T.; Burke, B. P.; Prior, T. J.; Schols, D.; Archibald, S. J.*; Hubin, T. J.* *Dalton Trans.* 2019, 48, 2785-2801. <https://pubs.rsc.org/en/content/articlelanding/2019/dt/c8dt04728f>
DOI: 10.1039/C8DT04728F

“Increase of direct C-C coupling reaction yield by identifying structural and electronic properties of high-spin iron tetra-azamacrocyclic complexes” Brewer, S. M.; Wilson, K. R.*; **Jones, D. G.***; Reinheimer, E. W.; Archibald, S. J.; Prior, T. J.; **Ayala, M. A.***; Foster, A. L.*; Hubin, T. J.; Green, K. N. *Inorg. Chem.* 2018, 57, 8890–8902.

“Isosteric and Spatial Considerations of Drugs” Khan, M. O. F.; Hubin, T. J. in *Medicinal Chemistry for Pharmacy Students*; Khan, M. O. F.; Philip, A., Eds.; Bentham Science Publishers: Sharjah, United Arab Emirates, 2018, Vol. 1, p. 130-158.

Syed Hussaini - TU

Awards:

HR18-130, OCAST Health (08/01/18–07/31/21) “Discovery of indolizidine (-)-237D analogs as selective α_6^* receptor antagonists” The goal is to find selective and potent α_6^* nAChRs receptor antagonists Role: PI

Articles:

“Application of two magnetic nanoparticle-supported copper(I) catalysts for the synthesis of triazole derivatives”, L. Mohammadi, M. A. Zolfigol, M. Yarie, M. Ebrahimi, K. P. Roberts and S. R. Hussaini, *Research on Chemical Intermediates*, 2019, <https://doi.org/10.1007/s11164-019-03864-7>.

“Copper-catalyzed coupling of thioamides and donor/acceptor-substituted carbenoids: Synthesis of enaminones”, A. Pal and S. R. Hussaini, *ACS Omega*, 2019, 4, 269–280.

Brian Elbing - OSU

Articles:

G Kibble, JD Jacob, BR Elbing, A Alexander, P Ireland & JAB Black (2017) “Aerodynamic investigation of the conformal vortex generator,” *47th 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] 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>).

Ashlee N. Ford Versypt - OSU

Awards:

National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award, 2019

Selected among 20 “Outstanding Young Chemical Engineering Educators” to attend the Computer Aids for Chemical Engineering Conference on the Future of Cyber-Assisted Chemical Engineering Education, 2019

Articles:

Symbols: authors contributed equally (†), graduate advisee (), undergraduate advisee (**), corresponding author (+)*

Y. T. Nguyen Edalgo*, A. L. Zornes**, and **A. N. Ford Versypt+**, “A Hybrid Discrete-Continuous Model of Metastatic Cancer Cell Migration through a Remodeling Extracellular Matrix,” *AIChE Journal*, 2019 (In Press). DOI: 10.1002/aic.16671

A. N. Ford Versypt+, “Self-Evaluation and Reflection for Professional Development of Chemical Engineering Students,” *Chemical Engineering Education*, 53(3), 157–161, 2019.

M. R. Pilvankar*, H. L. Yong**, and **A. N. Ford Versypt+**, “A Glucose-Dependent Pharmacokinetic/Pharmacodynamic Model of ACE Inhibition in Kidney Cells,” *Processes*, 7(3), 131, 2019. DOI: 10.3390/pr7030131 **Cover article:** <https://www.mdpi.com/2227-9717/7/3>

J. D. Crall†, B. L. de Bivort, B. Dey†, and **A. N. Ford Versypt†+**, “Social Buffering of Pesticides in Bumblebees: Agent-Based Modeling of the Effects of Colony Size and Neonicotinoid Exposure on Behavior within Nests,” *Frontiers in Ecology and Evolution*, 7, 51, 2019. DOI: 10.3389/fevo.2019.00051

C. V. Eastep**, G. K. Harrell**, A. N. McPeak**, and **A. N. Ford Versypt+**, “A MATLAB App to Introduce Chemical Engineering Design Concepts to Engineering Freshmen through a Pharmaceutical Dosing Case Study,” *Chemical Engineering Education*, 53(2), 85–90, 2019.

J. D. Crall+, C. M. Switzer, R. L. Oppenheimer, **A. N. Ford Versypt**, B. Dey, A. Brown, M. Eyster, C. Guerin, N. E. Pierce, S. A. Combes, and B. L. de Bivort, “Neonicotinoid Exposure Disrupts Bumblebee Nest Behavior, Social Networks, and Thermoregulation,” *Science*,

362(6415), 683–686, 2018. DOI: 10.1126/science.aat1598 **Highlighted in perspective article: N. E. Raine, “Pesticide Affects Social Behavior of Bees,” Science, 362, 643–644, 2018. DOI: 10.1126/science.aav5273. Mentioned in 73 news stories in 69 news outlets including NPR and C&EN.**

A. N. Ford Versypt⁺, J. D. Crall, and B. Dey, “BeeNestABM: An Open-Source Agent-based Model of Spatiotemporal Distribution of Bumblebees in Nests,” *Journal of Open Source Software*, 3(27), 718, 2018. DOI: 10.21105/joss.00718

Y. T. Nguyen Edalgo* and **A. N. Ford Versypt**⁺, “Mathematical Modeling of the Metastatic Cancer Migration through a Remodeling Extracellular Matrix,” *Processes*, 6(5), 58, 2018. DOI: 10.3390/pr6050058 **Cover article: <https://www.mdpi.com/2227-9717/6/5>**

S. M. Ruggiero[†]*, J. Zhao[†], and **A. N. Ford Versypt**⁺, “Building a MATLAB Graphical User Interface to Solve Ordinary Differential Equations as a Final Project for an Interdisciplinary Elective Course on Numerical Computing,” *Journal of Computational Science Education*, 9(1), 19–28, 2018. DOI: 10.22369/issn.2153-4136/9/1/3

M. R. Pilvankar*, M. A. Higgins**, and **A. N. Ford Versypt**⁺, “Mathematical Model for Glucose Dependence of the Local Renin-Angiotensin System in Podocytes,” *Bulletin of Mathematical Biology*, 80(4), 880–905, 2018. DOI: 10.1007/s11538-018-0408-4

Chung-Hao Lee - OU

Awards:

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

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

Articles:

Wang, J., Luo, J., Li, Kunkel, R.*, Saha, M., Bohnstedt, B.N., Lee, C. H. & Liu, Y. Liu, Y. “Development of shape memory polymer nanocomposite foam for treatment of intracranial aneurysms,” *Materials Letters*, 250, 38-41, 2019.

Laurence, D.*, Ross, C.*, Jett, S.*, Johns, C.*, Echols, A.*, Baumwart, R., Towner, R., Liao, J., Bajona, P., Wu, Y. & Lee, C. H., “Regional biaxial mechanical data of the mitral and tricuspid valve anterior leaflets,” *Data in Brief*, In Press, 2019.

Wang, J., Kunkel, R.*, Luo, J., Li, Y., Liu, H., Bohnstedt, B.N., Liu, Y. & Lee, C. H., “Shape memory polyurethane with porous architectures for potential applications in intracranial aneurysm treatment,” *Polymers*, 11(4), 631 (14 pages), 2019.

Laurence, D.*, Ross, C.*, Jett, S.*, Johns, C.*, Echols, A.*, Baumwart, R., Towner, R., Liao, J., Bajona, P., Wu, Y. & Lee, C. H., “An investigation of regional variations in the biaxial

mechanical properties and stress relaxation behaviors of porcine atrioventricular heart valve leaflets,” *Journal of Biomechanics*, 83: 16-27, 2019.

Ross, C.*, Laurence, D.*, Wu, Y., and Lee, C. H., “Biaxial mechanical characterization of atrioventricular heart valves,” *Journal of Visualized Experiments*, 146: e59170, 2019.

Jett, S.*, Laurence, D.*, Kunkel, R.*, Babu, A.*, Kramer, K.*, Baumwart, R., Towner, R., Wu, Y., and Lee, C. H., “Biaxial mechanical data of porcine atrioventricular valve leaflets,” *Data in Brief*, 21: 358-363, 2018.

Kunkel, R.*, Laurence, D.*†, Wang, J., Robinson, D.*, Scherrer, J.*, Wu, Y., Bohnstedt, B., Chien, A., Liu, Y., and Lee, C. H., “Synthesis and characterization of bio-compatible shape memory polymers with potential applications to endovascular embolization of intracranial aneurysms,” *Journal of the Mechanical Behavior of Biomedical Materials*, 88: 422-430, 2018.

Jett, S.*, Laurence, D.*, Kunkel, R.*, Babu, A.*, Kramer, K.*, Baumwart, R., Towner, R., Wu, Y., and Lee, C. H., “An investigation of the anisotropic mechanical properties and anatomical structure of porcine atrioventricular heart valves,” *Journal of the Mechanical Behavior of Biomedical Materials*, 87: 155-171, 2018.

Chen, J., Zhou, B., Qiu, S., Ma, S., Lee, C. H., Aggarwal, A., Zeng, J., Gao, M., Feng, Y., Li, D., and Shan, H., “Evaluation of the laser-induced thermotherapy (LITT) treatment effect of breast cancer based on tissue viscoelastic properties.” *Journal of Engineering and Science in Medical Diagnostics and Therapy*, 1(4): 041009, 2018.

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.

Peer-Reviewed Journal Publications (*denotes the mentored students/researchers)

Tobby L. Nelson - OSU

Awards:

Outstanding Mentor of the Year, OK-LSAMP

Articles:

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

Sachinthani, 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 Electrogenenerated Chemiluminescence of Deep Blue Emitting Eumelanin-Inspired Poly(indoylenearylene)s for Polymer Light Emitting Diodes J. Polym. Sci. A Polym. Chem. 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.; Sclabassi, R. J.; Cheng, B.; Whiting, D. M.; Averick, S.; Nelson, T. L. Novel Organic Conductive Fibers as Non-metallic Electrodes and Neural Interconnects. Ind. Eng. Chem. Res. 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:

S. Gaikwad, S.-J. Kim and S. Han, CO₂ Capture using Amine Functionalized Bimetallic MIL-101 with Stability Study on Humid Air and Acid Gases, Micropor. Mesopor. Mater. 277 (2019), pp. 253-260 <https://doi.org/10.1016/j.micromeso.2018.11.001>

F. Rashidi, J. Leisen, S.-J. Kim, A. A. Rownaghi, C. W. Jones, S. Nair, All-Nanoporous Hybrid Membranes: Redefining Upper Limits on Molecular Separation Properties. Angew. Chem. Int. Ed. 131 (2019), pp. 242-245 <https://doi.org/10.1002/ange.201811629>

R. Liu, Y.R. A.K. Yegya, I. Shaik, C. Aichele, S.-J. Kim, Inorganic Microfiltration Membranes Incorporated with Hydrophilic Silica Nanoparticles for Oil-in-Water Emulsion Separation. *J. Water Process Eng.*, 26 (2018), pp. 124-130
<https://doi.org/10.1016/j.jwpe.2018.10.002>

H. Lin, R. Liu, S. Dangwal, S.-J. Kim, N. Mehra, Y. Li, J. Zhu, Permselective H₂/CO₂ Separation and Desalination of Hybrid GO/rGO Membranes with Controlled Pre-crosslinking. *ACS Appl. Mater. Interfaces*. 10 (2018) 28166-28175.
<https://pubs.acs.org/doi/10.1021/acsami.8b05296>

H. Lin, S. Dangwal, R. Liu, S.-J. Kim, Y. Li, J. Zhu, Reduced Wrinkling in GO Membrane by Grafting Basal-plane Groups for Improved Gas and Liquid Separations. *J. Membr. Sci.* 563 (2018) 336-344. <https://doi.org/10.1016/j.memsci.2018.05.073>

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*. 550 (2018) 108-114. <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*. 32 (2018) 4628-4637
<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.
<https://doi.org/10.1016/j.seppur.2017.11.064>

Laura-Isobel McCall - OSU -

Articles:

A complete *Leishmania donovani* reference genome identifies novel genetic variations associated with virulence. Lypaczewski P, Hoshizaki J, Zhang WW, McCall LI, Torcivia-Rodriguez J, Simonyan V, Kaur A, Dewar K, Matlashewski G. *Sci Rep*. 2018 Nov 8;8(1):16549. doi: 10.1038/s41598-018-34812-x. PMID:30409989

Cysteine proteases in protozoan parasites. Siqueira-Neto JL, Debnath A, McCall LI, Bernatchez JA, Ndao M, Reed SL, Rosenthal PJ. *PLoS Negl Trop Dis*. 2018 Aug 23;12(8):e0006512. doi: 10.1371/journal.pntd.0006512. eCollection 2018 Aug. Review. PMID:30138453

Best practices for analysing microbiomes. Knight R, Vrbanac A, Taylor BC, Aksenov A, Callewaert C, Debelius J, Gonzalez A, Kosciolk T, McCall LI, McDonald D, Melnik AV, Morton JT, Navas J, Quinn RA, Sanders JG, Swafford AD, Thompson LR, Tripathi A, Xu ZZ, Zaneveld JR, Zhu Q, Caporaso JG, Dorrestein PC. *Nat Rev Microbiol*. 2018 Jul;16(7):410-422. doi: 10.1038/s41579-018-0029-9. Review. PMID: 29795328

Amy McGovern - OU -

Awards:

University of Oklahoma Vice President for Research Award for Interdisciplinary Scholarship, Spring 2019

Articles:

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. *Remote Sensing in Ecology and Conservation*.

Moss, R.H.; Avery, S.; Baja, K.; Burkett, M.; Chischilly, A.M.; Dell, J.; Fleming, P.A.; Geil, K.; Jacobs, K.; Jones, A.; Knowlton, K.; Koh, J.; Melillo, J.; Pandya, R.; Richmond, T.C.; Scarlett, L.; Snyder, J.; Stults, M.; Waple, A.; Whitehead, J.; Zarrilli, D.; Ayyub, B.; Fox, J.; Ganguly, A.; Joppa, L.; Julius, S.; Kirshen, P.; Kreutter, R.; McGovern, A.; Meyer, R.; Neumann, J.; Solecki, W.; Smith, J.; Tissot, P.; Yohe, G.; Zimmerman, R.,(2019) Evaluating Knowledge to Support Climate Action: A Framework for Sustained Assessment: Report of an Independent Advisory Committee on Applied Climate Assessment, *Bulletin of the American Meteorological Society*, early online release.

Lagerquist, R., A. McGovern, and D.J. Gagne II, 2019. Deep learning for spatially explicit prediction of synoptic-scale fronts. *Weather and Forecasting*, early online release.

McGovern, A., D.J. Gagne II, R. Lagerquist, K. Elmore, and G.E. Jergensen, 2019: Making the black box more transparent: Understanding the physical implications of machine learning. *Bulletin of the American Meteorological Society*, accepted with minor revisions.

McGovern, A., C. Karstens, T. Smith, and R. Lagerquist, 2019: \Quasi-Operational testing of real-time storm-longevity prediction via machine learning. *Weather and Forecasting*, accepted with minor revisions.

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. *Remote Sensing in Ecology and Conservation*.

<https://doi.org/10.1002/rse2.92>

Rachel Mosier - OSU-

Rodke, P.,R. Valdes-Vasquez, and **Mosier, R.D.**(2019). “The Green Status of Fire Stations in the United States: An Analysis of LEED-NC v3.” *Journal of Green Building*. V14. N2. pp. 137-153.

Langar, S., **Mosier, R.D.**, and Adhikari, S. “Climate migration using highway infrastructure: A Review of Literature for Texas” Conference Proceedings, Associated Schools of Construction April 2019.

Langar, S., **Mosier, R.D.**, and Adhikari, S. “Identifying Characteristics of Societal Migration – A Review of the Literature” Poster Session presented at: Engineering Sustainability, April 2019.

Kurt P. Rouser - OSU -

Awards:

Kylar Moody and Kurt P. Rouser, “Design and Evaluation of a Turboelectric Power System for Small Unmanned Aircraft,” AIAA Region IV Student Paper Conference, Austin, TX, 29-31 March 2019.

Lauren Jones, Cole Replogle and Kurt P. Rouser, “Turboelectric Power System Characterization for a Multi-Rotor Unmanned Aircraft,” AIAA Region IV Student Paper Conference, Austin, TX, 29-31 March 2019.

Real KC, Alvin Ngo, Caleb Rhyne, Kurt P. Rouser and **Daniel Salinas**, “Investigation of a Geared Turbofan for Small Unmanned Aircraft Systems,” AIAA-2019-1947, 57th AIAA Aerospace Sciences Meeting, San Diego, CA, 7-11 January 2019.

Kurt P. Rouser, Nicholas Lucido, Matthew Durkee, Andrew Bellcock, and Tyler Zimelman, "Development of Turboelectric Propulsion and Power for Small Unmanned Aircraft", AIAA 2018-4618, 2018 Joint Propulsion Conference, Cincinnati, OH, 9-11 July 2018.

Kylar Moody and Kurt P. Rouser, “Development of a Turbo-Electric Power System for Multi-Rotor Unmanned Aircraft,” Presentation, 2nd Annual MAE Graduate Research Symposium, 2 November 2018.

Kirsten Eichelberger, Emily Hammon and Kurt P. Rouser, “Development of a Boundary Layer Ingestion Inlet for Turboelectric Unmanned Aircraft,” Poster, 2nd Annual MAE Graduate Research Symposium, 2 November 2018.

Cole Replogle and Kurt P. Rouser, “Turboelectric Propulsion and Power for UAS Application,” Poster, 2nd Annual MAE Graduate Research Symposium, 2 November 2018.

Jared Wallace and Kurt P. Rouser, “Unmanned Air System Variable-Cycle Engine Development and Analysis,” Poster, 2nd Annual MAE Graduate Research Symposium, 2 November 2018.

Ning X. Wu - ECU

Articles:

Hedgecock, T., Phillips, A., Ludrick, B., Golden, T., **Wu, N.** (2019). Molecular mechanisms and applications of a Reserpine-induced rodent model. *SSR Inst Int J Life Sci*, 5(1), 2160-2167. (DOI:10.21276/SSR-IIJLS.2019.5.1.8)

Zhao, J. J., Zhang, P., Li, L., Chen, S. X., Joines, A., Wu, D., Wong, M., Shahan, J., Golden, T., **Wu, N.**, Li, M. Z. (2018). Differential gene expression profile analysis in corticosterone-treated PC12 cells. *Int J Clin Exp Pathol* 11(6), 3097-3103.

Greenwood, R., Zhao, J., Ludrick, B., Golden, T., **Wu, N.** (2018). A Practical Animal Model for Depression by Reserpine-Administered Mice. *Theranostics Brain Disord*. 3(2), 555609.

Zhao, J. J., Zhang, P., He, Z., Chen, S. X., Golden, T., Li, L., Li, M. Z., **Wu, N.** (2018). The stress response HPA-axis hormone, glucocorticoid, reduces cellular SKA complex gene expression. *Psychiatry Research*, 260, 428–431.

Book:

Wu, N., Joines, A., Couch, C. J., Hedgecock, T. (2019). Human Anatomy Laboratory Manual and Atlas. 4th edition. Southlake, Texas: Fountainhead Press.

SCHOLAR AND BD FELLOW HIGHLIGHTS

OK-LSAMP scholars are among the top students on alliance campuses and throughout the nation. This year, Oklahoma had Scholars participate in national, state, and local conferences, 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 K)

Scholar Highlights

Katherine Avery - OU (1) publication: National Center for Women & Information Technology (NCWIT) Collegiate Award Honorable Mention; Chilson, C., K. Avery, A. McGovern, E. Bridge, D. Sheldon, and J. Kelly, 2018: Automated Detection of Bird Roosts Using NEXRAD Radar Data and Convolutional Neural Networks. Remote Sensing in Ecology and Conservation, submitted.; (2) NCWIT Collegiate Award Honorable Mention; (3) Goldwater Honorable Mention.

Beth Beker - OSU (1) Retention Initiative for Student Excellence scholar (RISE); New Student Orientation Leader; (3) XSEDE Internship (SPRING 2019 semester).

Juan Alvarado - TU (1) presented at NCUR April, 2019; (2) member of the Society of Hispanic Professional Engineers (SHPE).

Briana Anderson - LU (1) conducted research through K-INBRE; (2) presented at K-INBRE symposium; (3) member of Woman of Purpose.

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; (2) presented at NCUR April, 2019; (3) presented at 98th Annual Meeting of the American Meteorological Society.

Bethany Barrientos - LU (1) presented at Langston University Research Day; (2) member of technology Club.

Alexandra Bejarano - TU (1) presented research at the National Conference on Undergraduate Research, Kennesaw, GA; (2) member of the Society of Hispanic Professional Engineers; (3) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK.

Jonathan Bernal - OSU (1) attended the 2018 National Fire Protection Association June 2018; (2) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK.

Mary Catlett - OSU (1) member of the OSU Math club; (2) member of the OSU Physics Club; (3) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (4) presented research at NCUR Kennesaw, GA April 2019; (5) attended SACNAS 2019 in San Antonio, TX October 2018, through Physics sponsorship.

Sarah Crone - SWOSU (1) American Chemical Society, New Orleans, LA April 2018; (2) presented research at the National Conference for Undergraduate Research, Edmond, OK.

Stacii Cross - LU (1) conducted research through K-INBRE; (2) presented research at K-INBRE symposium; (3) presented at Langston University Research day; (4) presented at Oklahoma Research Day March 2019, Weatherford, OK.

Rainee DeRoin (1) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) at the National Conference for Undergraduate Research, April 2019, Kennesaw, GA; (3) presented at New Mexico State McNair conference; (4) presented at Emerging Researchers National conference 2019, Washington, DC; (5) accepted to present research at World Congress for Undergraduate Research, Oldenburg Germany.

Carley Eastep - OSU (1) 2018 Niblack Scholar; (2) publication: C. V. Eastep, G. K. Harrell, A. N. McPeak, and A. N. Ford Versypt, "A MATLAB App to Introduce Chemical Engineering Design Concepts to Engineering Freshmen through a Pharmaceutical Dosing Case Study," Chemical Engineering Education, 53(2), 85–90, 2019.(3) AIChE Natl conference Pittsburgh October 2018; (4) Research Day at the Capitol 2019; (5) graduated May 2019 and was accepted to OSU Master's graduate program in Chemical Engineering.

Emily Eix - OU (1) Presented at SACNAS national conference 2018, San Antonio TX; (2) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (3) was awarded 3rd place Life Sciences Poster at the Annual OK-LSAMP symposium.

Mariah Ewy - ECU (1) Honors Showcase; (2) presented at Research Day at the Capital, OKC; (3) presented at OK Academy of Science; (4) presented at Oklahoma Research Day March 2019 Weatherford, OK.

Marly Fixico-Hardison - OSU (1) presented research at the 2018 AISES national conference; (2) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (3) presented research at the 2019 NCUR conference, Kennesaw, GA; (4) president of the Alpha Pi Omega local chapter; (5) AISES Officer; (6) participated in IAIM NSF REU - Thailand with University of Arkansas.

Terin Fletcher - SWOSU (1) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) presented at Oklahoma Research Day March 2019 Weatherford, OK.

Karina Flores - OU (1) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) conducted research while at OTS LSAMP REU Internship Costa Rica, (3) presented at SACNAS 2018 National Conference, San Antonio TX.

Daniel Hayden - OU (1) McNair Research Conference. Denton, TX; McNair Heartland Conference; (2) George and Cleo Lynn Cross Scholarship; (3) Udall Foundation National Scholarship; (4) presented at SACNAS 2018 National Conference, San Antonio TX; (5) member of the Sanborn Entomology Club.

Tayler Hedgecock - OSU (1) publication: Hedgecock, T., Phillips, A., Ludrick, B., Golden, T., Wu, N. (2019). Molecular mechanisms and applications of a Reserpine-induced rodent model. *SSR Inst Int J Life Sci*, 5(1), 2160-2167. (DOI:10.21276/SSR-IIJLS.2019.5.1.8) (2) Wu, N., Joines, A., Couch, C. J., Hedgecock, T. (2019). Human Anatomy Laboratory Manual and Atlas. 4th edition. Southlake, Texas: Fountainhead Press.

Brandy Herrera - OSU (1) McNair Research Conference. Denton, TX; McNair Heartland Conference; (2) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK.

Theresa Hinkle - CU (1) CU Honors Summit, Lawton, OK; 18 February 2019; (2) presented at Oklahoma Research Day March 2019 Weatherford, OK.

Sean Jesse - ECU (1) 26th Annual McNair Scholars Research Conference at University of Maryland, Baltimore: September 21-22, 2018; (2) 107th Annual Technical Meeting, Oklahoma Academy of Science at Southwestern Oklahoma State University: November 2nd, 2018; (3)

presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (4) presented at Oklahoma Research Day March 2019 Weatherford, OK.

Jasmyn Lee - OSU (1) Recognized as Senior of Significance 2018; (2) Awarded Outstanding Senior 2019; (3) member of Inspiring Successful Engineers (ISE) chapter; (4) National Society of Black Engineers national member; (5) member of the Society of Women Engineers; (6) Civil Engineering (Chi Epsilon) honor society officer; (7) American Society of Civil Eng. (ASE-member).

Cecilia Kinlow - LU (1) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) presented at Oklahoma Research Day March 2019 Weatherford, OK.; (3) Langston Research Day; (4) Member of NAACP.

Tylor Killingsworth - OU (1) Texas National McNair Scholars Research Conference; (2) C2C Symposium Spring 2018.

Angelica Manning - SWOSU (1) 1. SWOSU's 25th annual Research and Scholarly Activity Fair 2018; (2) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK.

Sergio Mares - OSU (1) presented research at Life Sciences Freshmen Research Scholars Symposium (2018); (2) Vice President for the OSU SACNAS chapter; (3) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (4) Hispanic Student Association member; (5) presented at SACNAS 2019 National Conference San Antonio, TX.

Celois Moore - LU (1) K-INBRE scholar; (2) LU Research Day; (3) presented at Oklahoma Research Day March 2019 Weatherford, OK; (4) Biology Club member (5); LU Ambassador; (6) Scholar's Club; (7) Pre-PT Club; (8) Women of Purpose.

Cayla Moore - LU (1) Poster at INBRE-Washington D.C.; (2) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK.

Restituto Paris - CU (1) OK-INBRE Summer Research Conference (Oklahoma City, OK; July 2018); (2) American Chemical Society Annual Meeting (Orlando, FL; 01 April 2019); (3) CU Honors Summit (Lawton, OK; 18 February 2019); (4) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (5) presented at Oklahoma Research Day March 2019 Weatherford, OK.

Tajinee Porter - LU (1) Hampton; (2) LU Research Day; (3) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK.

Lizbeth Robles - ECU (1) American Chemical Society 64th Annual Pentasectional Meeting-April 13, 2019; (2) Oklahoma Research Day 2019, Weatherford, OK.

Juan Salinas - OSU (1) member of OSU SHPE chapter; (2) member of Engineers without Borders; (3) member of OSU Mercury Robotics Team; (4) Accepted in to University of Michigan PhD program.

Daniel Salinas - OSU (1) publication: Real KC, Alvin Ngo, Caleb Rhyne, Kurt P. Rouser and Daniel Salinas, “Investigation of a Geared Turbofan for Small Unmanned Aircraft Systems,” AIAA-2019-1947, 57th AIAA Aerospace Sciences Meeting, San Diego, CA, 7-11 January 2019. ; (2) member of the Hispanic Student Association; (3) member of OSU SHPE chapter; (4) Sigma Lambda Beta.

Jordan Sosa - TU (1) presented research at the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK; (2) presented research at the 2018 NCUR conference, Kennesaw, GA; (3) member of TU SHPE chapter; (4) presented at Society of Hispanic Professional Engineers National Conference; (5) graduated with Bachelor’s degree in Engineering; (6) accepted into Harvard University for PhD in engineering.

Tanner Tadlock - SWOSU (1) SWOSU's 26th Annual Research and Scholarly; (2) American Chemical Society, Orlando, FL April 2019; (3) presented at Oklahoma Research Day March 2019 Weatherford, OK.

Kennedy Williams - SWOSU (1) American Chemical Society, Orlando, FL April 2019.

Marissa Wilson - LU (1) member of the Biology Club; (2) participant of the Ambassador Program; (3) intern for the NASA-Johnson Space Center (summer 2018); (4) part of Student Government Association, Class Council; (5) LU Royal Court; (6) attended the 24th Annual OK-LSAMP Research Symposium, Stillwater, OK.

BD Fellow Highlights

The Oklahoma Bridge to the Doctorate program has received funding for nine programs, with Cohort I through IV completed. 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 through IV.

Cohorts I through IV Bridge to the Doctorate Fellows at both OSU and OU have been successful in completing a total of 32 Master of Science degrees and 15 Doctor of Philosophy degrees. Additionally, one fellow is expecting to complete Doctor of Philosophy degrees in the near future. Five fellows either transferred to another institution or left the program.

Cohort V. Fellows remaining in the program include:

Daron “DJ” Lamkin – (1) transferred to a different graduate program; (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.

Cohort VI. Fellows remaining in the program include:

Allison Quiroga – continued with Ph.D. requirements in Civil Engineering

Sergio Zegarra – continued with Ph.D. requirements.

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

Cohort VII. Fellows remaining in the program include:

Jorge Lightfoot – successfully completed Ph.D. degree in Microbiology 2019

Danielle Perryman – transferred to UC Berkley and continues with Ph.D. requirements.

Cohort VIII.

Cohort VIII was awarded through the National Science Foundation as grant number HRD-1408748 for a two-year period. Fall 2018 a full cohort of BD fellows had been selected and continued their progression through their graduate programs.

Fellows in the program include:

Justin Bowen – continued with Ph.D. degree requirements in Microbiology

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

James Nolan Craun – defended Master thesis and completed his Master of Science degree requirements in Natural Resource Ecology and Management

Michael Gorbet – continued with Ph.D. degree requirements in Veterinary Biomedical Sciences

Adrian A. Saenz – defended Master thesis and completed his Master of Science degree requirements in Biosystems and Agricultural Engineering

Bailey Bonjour (Whitman) – defended Master thesis and completed her Master of Science degree requirements in Industrial Engineering

Cohort IX.

Cohort IX was awarded through the National Science Foundation as grant number HRD - 1702495 for a two-year period. The University of Oklahoma underwent a transition in presidential leadership affecting the CO-PI role at OU. The institution is continuously working on filling all BD fellow spots for a full cohort.

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 Oklahoma 7th Annual Promoting Undergraduate Research Conference (2) attended OSU Staff Development Day seminar (3) attended 6th Annual Oklahoma Mentor Day, OSU (4) CEAT Summer Bridge co-presenter (5) attended and presented at the EPSCoR Women of Science conference (6) attended the Oklahoma Research Day, Weatherford OK; (7) served as judge for the Oklahoma FCCLA district competition; (8) attended the 2019 LSAMP PI/PD and BD Meeting; (9) attended the 2019 Emerging Researchers National Meeting.

Brenda L. Morales, Director: (1) attended the Oklahoma 7th Annual Promoting Undergraduate Research Conference; (2) President, Oklahoma State University Hispanic/Latino Faculty and Staff Association; (3) attended National SACNAS conference in San Antonio, TX; (4) attended 6th Annual Oklahoma Mentor Day, OSU (5) CEAT Summer Bridge co-presenter (6) attended and presented at the EPSCoR Women of Science conference (7) attended the Oklahoma Research Day, Weatherford OK; (8) attended Research Day at the Capitol, Oklahoma City, OK; (9) attended the 2019 LSAMP PI/PD and BD Meeting; (10) attended the 2019 Emerging Researchers National Meeting; (11) attended the National Conference on Undergraduate Research, Kennesaw, GA.

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, DIVERSITY CHAMPION AWARD, APLU CADE AWARD

Seventh 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 again recognized as a 'Diversity Champion'

Friday, September 14, 2018



The commitment to creating a culture of inclusion at Oklahoma State University is again being nationally recognized. *INSIGHT Into Diversity* magazine, the oldest and largest diversity publication and website in higher education today, has recognized Oklahoma State University as a 2018 Higher Education Excellence in Diversity Award recipient and a 2018 Diversity Champion.

“OSU is a visionary leader among institutions of higher education striving for inclusive excellence throughout their campus,” said Lenore Pearlstein, publisher of *INSIGHT Into Diversity*. “As a Diversity Champion school, OSU exceeds everyday expectations by developing successful strategies and programs that serve as models of excellence for other higher education institutions.”

As a recipient of the annual HEED Award, a national honor recognizing U.S. colleges and universities that demonstrate an outstanding commitment to diversity and inclusion throughout their campus, OSU will be featured, along with 95 other recipients, in the November 2018 HEED Award issue of *INSIGHT Into Diversity*. OSU is one of 10 institutions across the country to have earned this prestigious award for seven consecutive years.

“We are honored to once again receive higher education’s most prestigious national diversity award,” said OSU President Burns Hargis. “Our ongoing work and commitment to diversity is helping Oklahoma State create a welcoming and inclusive campus for all students, employees and visitors.”

INSIGHT Into Diversity also recognizes selected institutions — those that rank in the top tier of HEED Award recipients — as Diversity Champions. These institutions exemplify an unyielding commitment to diversity and inclusion throughout their campus communities, across academic programs, and at the highest administrative levels. Known for visionary leadership, Diversity Champions serve as role models and set the standard for thousands of U.S. college campuses striving for inclusive excellence. Under the leadership of Hargis, OSU continues its prominence as a national leader and role model for diversity and inclusion.

“OSU is again excited and honored to be recognized for our significant and sustained commitment to achieving inclusive excellence,” said Dr. Jason F. Kirksey, OSU vice president and chief diversity officer. “OSU’s continued national recognition reflects our commitment to achieving an open, welcoming and respectful university system. Greater efforts on behalf of the institution and campus communities are necessary to advance the culture of inclusion at OSU; however, the work presently currently occurring in all areas of the university is pretty special and spectacular.”

For more information about the HEED Award or the Diversity Champion recognition, visit insightintodiversity.com.



APU Commission on Access, Diversity and Excellence honors OSU's Kirksey

Friday, November 30, 2018

Dr. Jason F. Kirksey, vice president for Institutional Diversity and chief diversity officer at Oklahoma State University, received the 2018 Distinguished Service Award from the Association of Public Land-grant Universities' (APLU) Commission on Access, Diversity and Excellence (CADE). Kirksey received the award at the APLU's 131st annual meeting in New Orleans on Nov. 12. The APLU CADE Distinguished Service Award is presented to one recipient nationally who has created partnerships, broadened access and opportunity in higher education, and contributed to the achievement of diversity at all levels of an academic community.



Kirksey has served as OSU's chief diversity officer since April 2009.

"While I am certainly honored and humbled to be individually recognized with this nationally prestigious award for distinguished service, I owe a huge debt of gratitude to a phenomenal team within the OSU Division of Institutional Diversity," he said. "I am privileged to work alongside a group of individuals who show up every day with a commitment and a passion for improving the lives of the students, staff, and faculty we serve at OSU and beyond. The unwavering commitment of the OSU administration and Board of Regents to sustaining and enriching our culture of inclusion makes the necessary work we do that much more enjoyable and rewarding."

Kirksey, who grew up in inner-city Denver, is a first-generation college graduate. He came to OSU as a walk-on football player in 1985. He left with two bachelor's degrees, one in political science and the other in economics, as well as a master's degree in political science. He earned a doctorate in political science from the University of New Orleans in 1997.

In 1995, Kirksey returned to OSU as an assistant professor and held the Hannah D. Atkins Endowed Chair for Political Science and Government Information for 15 years. He was the first African-American at OSU to hold an endowed chair. In 2009, he was appointed the interim vice president for Institutional Diversity. After a nationwide search, President Burns Hargis selected

him to take over the position permanently. During his tenure as vice president at OSU, Kirksey has served as principal investigator for almost \$6 million in National Science Foundation funding, and in total had administrative oversight responsibilities of an additional \$11 million in NSF and U.S. Department of Education projects serving students from historically underrepresented groups, and students who are first generation, low income or who have disabilities. Institutional Diversity is also wrapping up an unconventional five-year capital campaign focused primarily on engaging OSU alumni of color, which raised \$5.6 million.

Although Kirksey won the award, he deflects the credit to all those who have positioned OSU as a leader in diversity and inclusion. He believes he is standing on the shoulders of those who came before him.

“When we talk about creating a culture of inclusion, that’s where it comes from — from everyone willing to do the work. This is heavy lifting, as I tell people,” he said. “We have been very fortunate to have had that throughout President Hargis’ tenure. That’s a decade of significant and sustained transformation and change at OSU. I tell people we aren’t just raising the bar; we really are the bar. It’s not bragging if it’s true. We have an inclusive excellence wall that houses nationally prestigious trophies and awards, and we are, without a doubt, the single most highly decorated institution in the nation in terms of nationally prestigious awards over the past several years.”

Oklahoma State University is one of 10 universities nationwide to earn the Higher Education Excellence in Diversity (HEED) Award from Insight into Diversity for seven years in a row. Since 2009, Oklahoma State University has experienced a 96 percent increase in the enrollment of students of color (African-American, Latino, Native American, Asian American, and biracial/multiracial students) and a 222 percent increase in first-generation students of color. Since May 2010, OSU has witnessed a 90 percent increase in students of color earning a bachelor’s degree. Also, over the past decade, more Native American students earned a college degree from OSU than from any other institution in the nation.

The Society for Diversity honors Oklahoma State University

By Darla Shelden
City Sentinel Reporter

OKLAHOMA CITY, OK – Recently, Oklahoma State University was honored with the 2018 Innovation + Inclusion Leadership Award from the Society for Diversity. Dr. Jovette Dew, assistant vice president for institutional diversity, accepted the award on behalf of OSU during the Diversity 4.0 Conference in June.

The Innovation + Inclusion Leadership Award recipients are selected based on their use of innovative or advanced equity, diversity and inclusion technology, next-generation strategies for inclusion or culture change, management learning/collaboration and revenue generation or cost saving from inclusion efforts.



Leah Smiley (right), President of The Society for Diversity, presents the 2018 Innovation + Inclusion Leadership Award to Dr. Jovette Dew (left), assistant Vice President for Institutional Diversity accepting on behalf of Oklahoma State University. Photo provided.

“OSU is honored and humbled to be a recipient of the Society for Diversity’s 2018 Innovation + Leadership Award,” said Dr. Jason F. Kirksey, vice president for the Division of Institutional Diversity and chief diversity officer at OSU. “During the past decade, the committed and engaged leadership of President Burns Hargis has propelled OSU to one of the most highly decorated institutions in the United States in terms nationally prestigious diversity and inclusion awards and honors.”

OSU is also the recipient of the 2012-2017 Higher Education Excellence in Diversity (HEED) Award from Insight Into Diversity magazine and the 2017 Dr. Roosevelt Thomas Champion of Diversity Award from the American Association for Access, Equity, and Diversity. In addition, OSU is one of 15 schools in the nation to receive the HEED Award six consecutive years and is ranked in the annual Top 100 Degree Producers edition of Diverse Issues in Higher Education. OSU is also ranked among the top 50 colleges for military veterans. Military Times, an online new source, included the university among the top 100 in its ‘best colleges’ rankings in 2018.

The Society for Diversity began in June 2009 as a virtual professional association for workplace diversity and inclusion efforts. Its mission is to educate and equip diversity executives and professionals with the tools needed to create and execute effective diversity and inclusion strategies; share information and resources through an international business network. The Society aims to establish a global standard of quality in the field of diversity.

The organization identifies itself as the largest professional association dedicated exclusively to diversity and inclusion with the goal to help members become the most knowledgeable, skilled and practicing diversity experts in the world.

Oklahoma State University has more than 36,000 students across its five-campus system and more than 25,000 on its combined Stillwater and Tulsa campuses, with students from all 50 states and around 120 nations. Established in 1890, OSU has graduated more than 260,000 students who have been serving Oklahoma and the world for 125 years.

To learn more about the Society for Diversity and the award, visit societyfordiversity.org. More information regarding OSU's efforts to promote a culture of inclusion can be found [online](#).



Oklahoma State University has been honored with the 2018 Innovation + Inclusion Leadership Award from the Society for Diversity

APPENDIX B
OSRHE SUMMER ACADEMIES

SUMMER ACADEMIES



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APPENDIX C

24th ANNUAL OK-LSAMP RESEARCH SYMPOSIUM

Stillwater, OK

Saturday, November 3rd, 2018
Oklahoma State University
Noble Research Center
Stillwater, Oklahoma

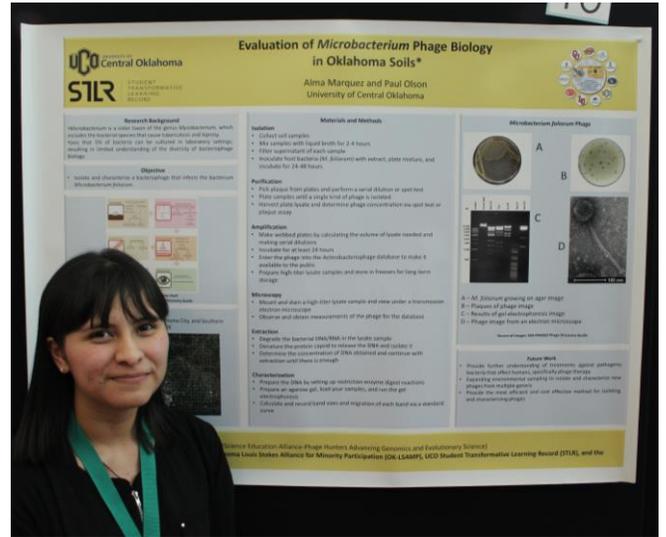
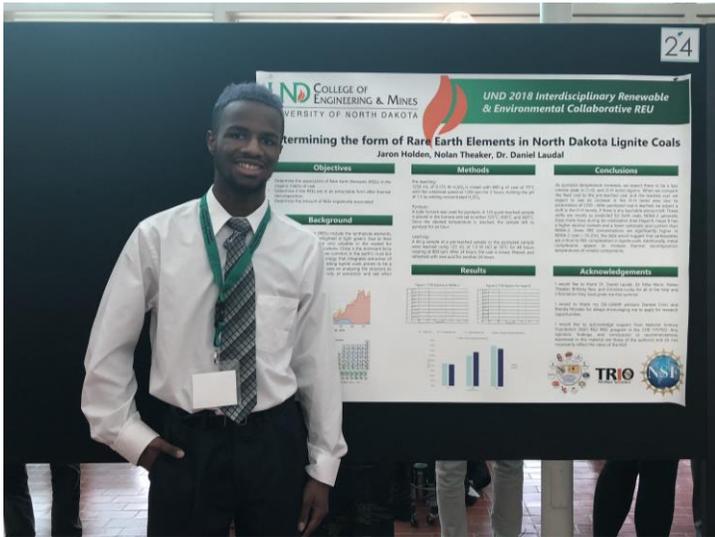
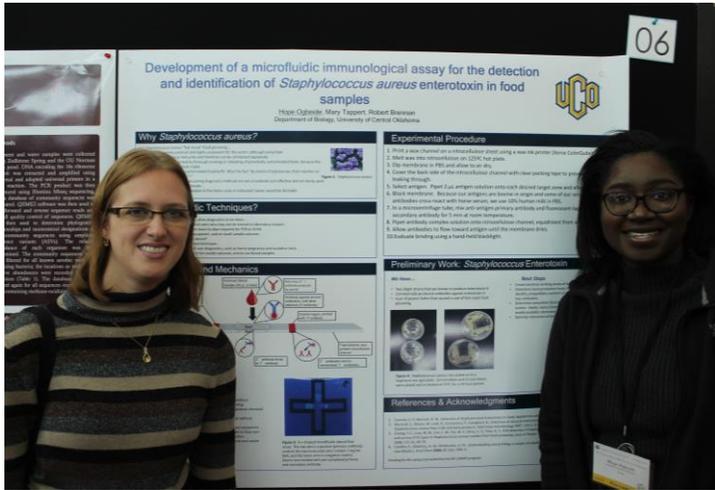


The Oklahoma Louis Stokes Alliance for Minority Participation 24th Annual Research Symposium



Keynote Speaker
Dr. Michael Ceballos





APPENDIX D

EMERGING RESEARCHERS NATIONAL CONFERENCE IN STEM

Washington, DC



Ana Chicas-Mosier, BD Fellow



Rainee DeRoin, OK-LSAMP Scholar



BD Fellows, OK-LSAMP Scholar, and OK-LSAMP Program Staff,

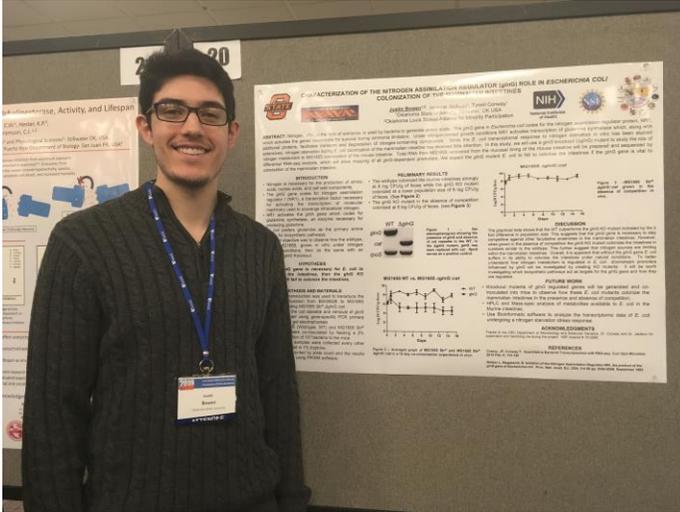


From Left to Right: Ana Chicas-Mosier, Tabitha Gunnars, Rainee DeRoin

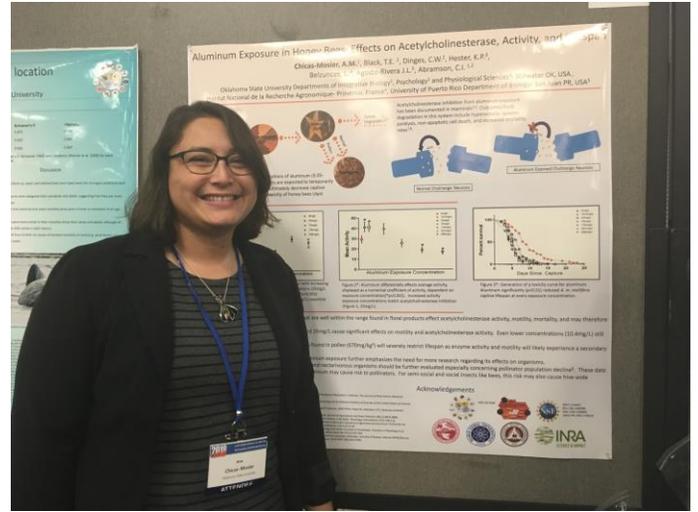
APPENDIX E

LSAMP/BD NATIONAL MEETING

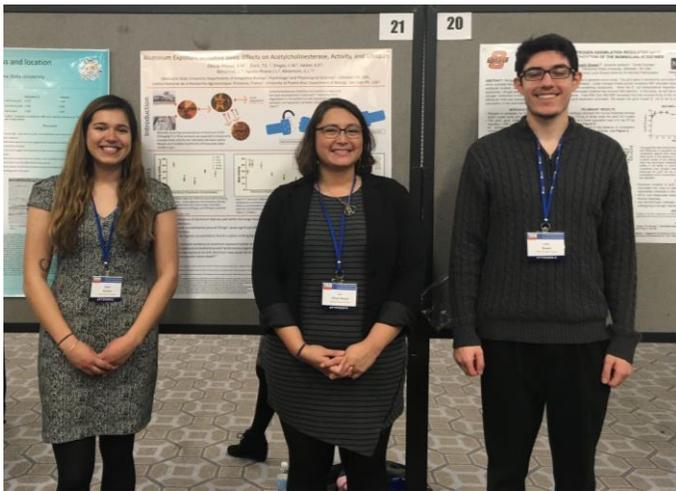
Washington, DC



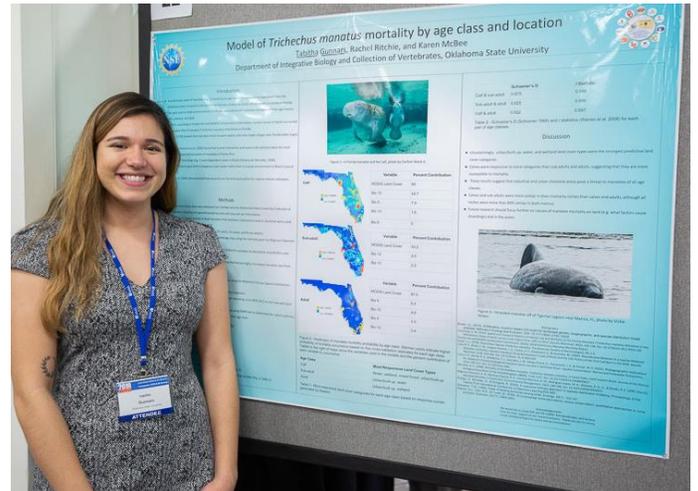
Justin Bowen, BD Fellow



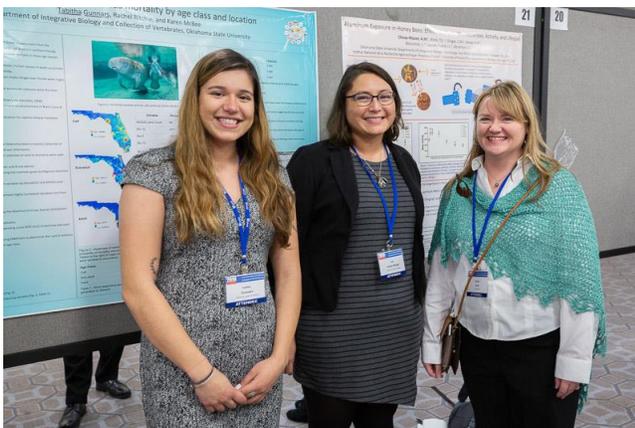
Ana Chicas-Mosier, BD Fellow



Three of the OK-LSAMP BD Fellow Cohort VIII



Tabitha Gunnars, BD Fellow



OK-LSAMP BD Fellow Tabitha and Ana with OK-LSAMP Coordinator, Darlene Croci



Left to right: PI, Dr. Jason F. Kirksey, Director, Brenda Morales and Dr. Randy Duran

APPENDIX F

NATIONAL CONFERENCE ON UNDERGRADUATE RESEARCH (NCUR)

Kennesaw State University
Kennesaw, GA



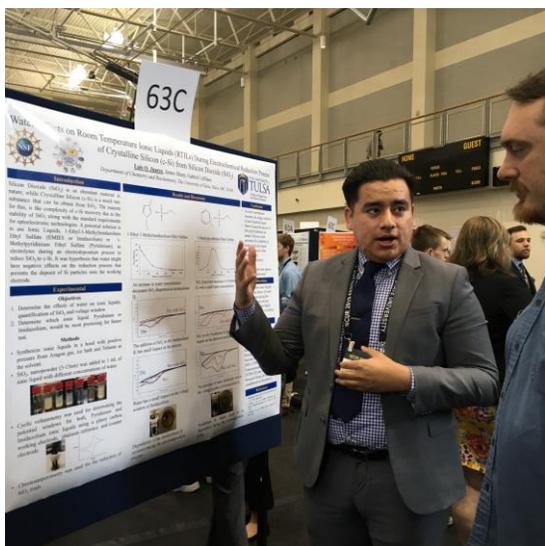
OK-LSAMP scholars at NCUR



OK-LSAMP scholars from UCO, TU, and OSU



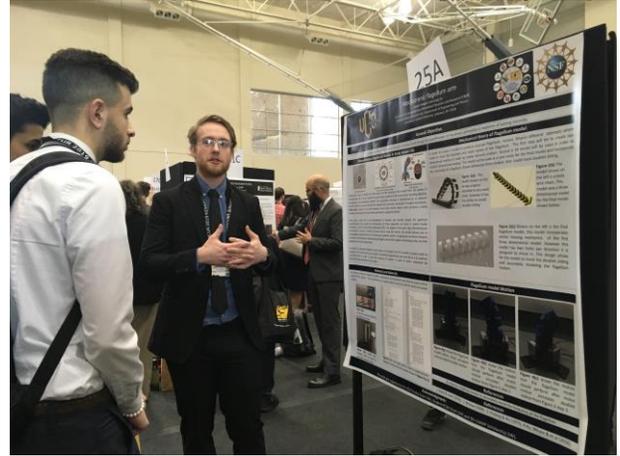
Mary Catlett - OSU



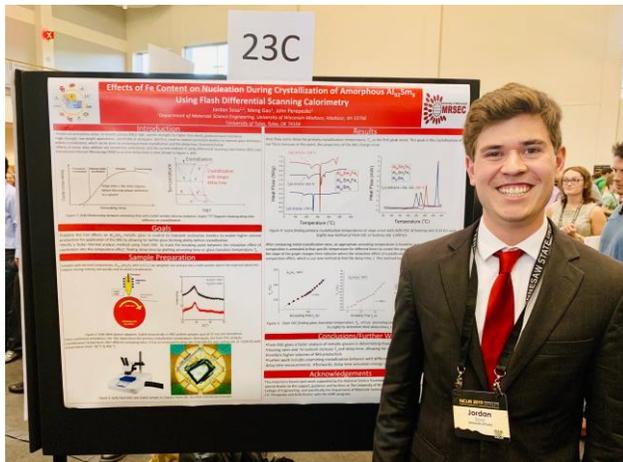
Luis Juarez - TU



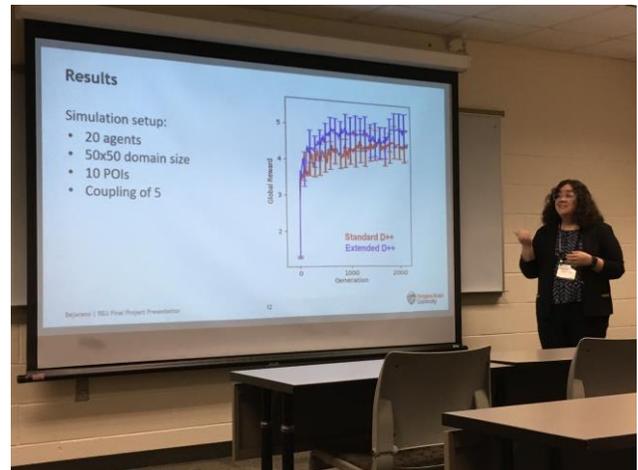
Marly Fixico-Hardison - OSU



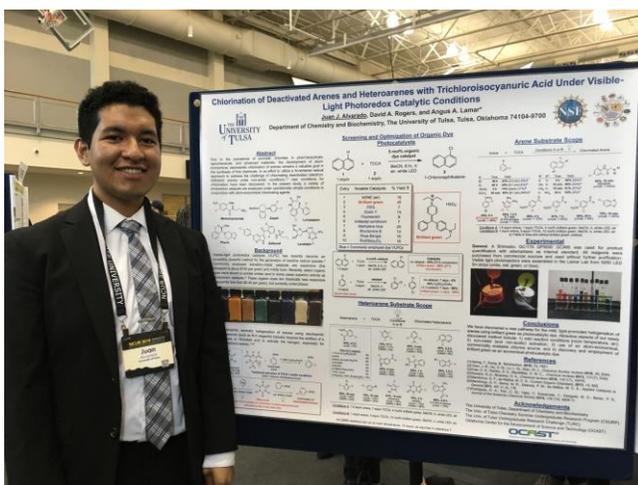
Joseph Wagner - UCO



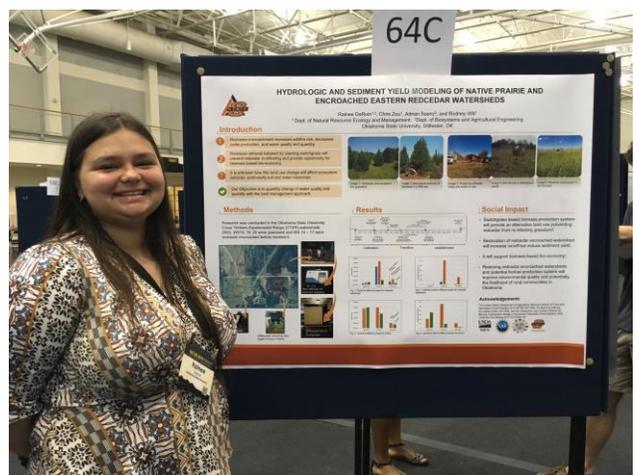
Jordan Sosa - TU



Alexandra Bejarano - TU



Juan Alvarado - TU



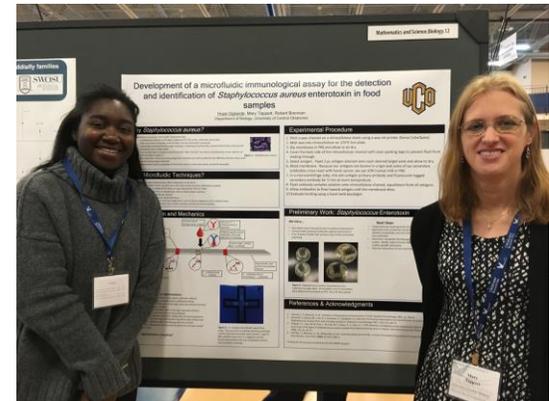
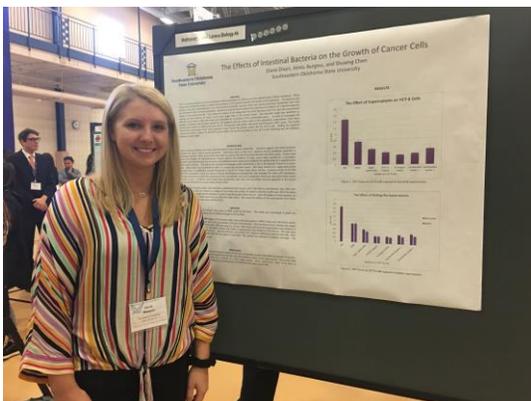
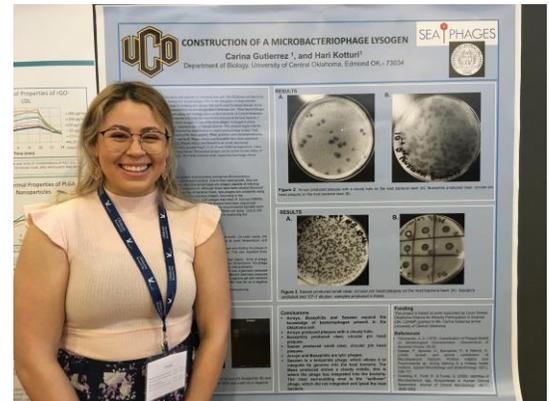
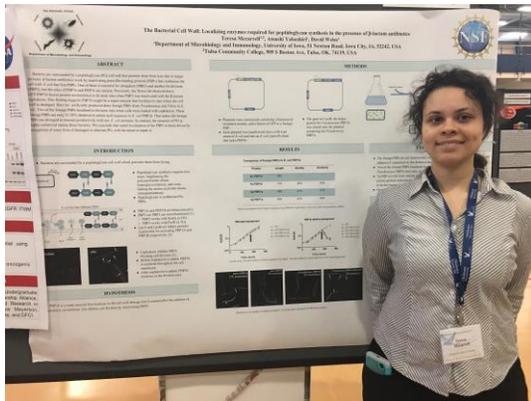
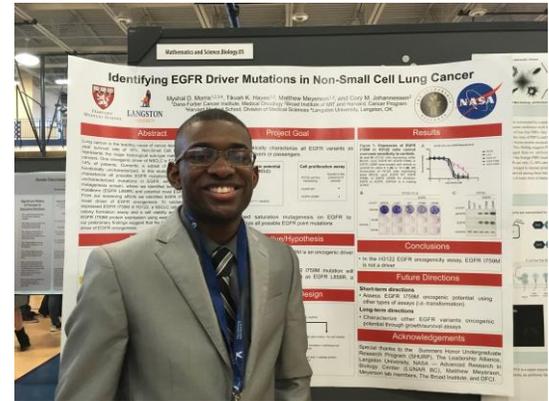
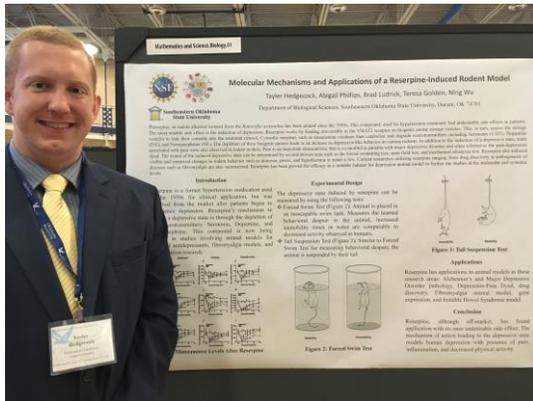
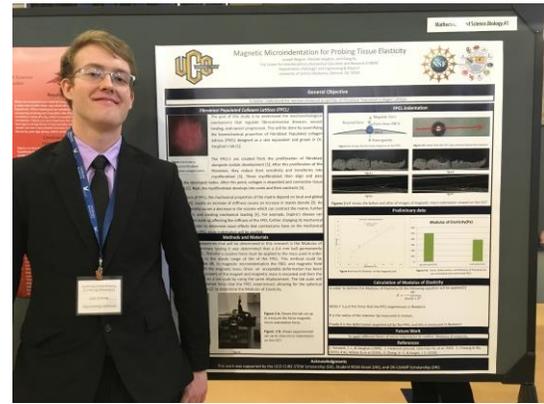
Rainee Deroin - OSU

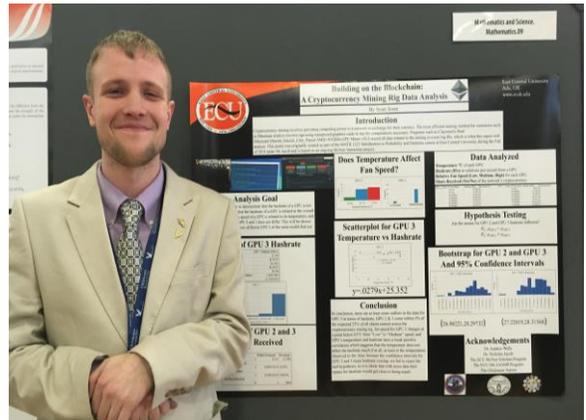
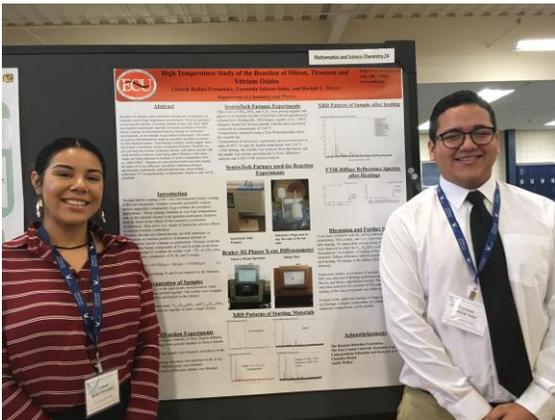
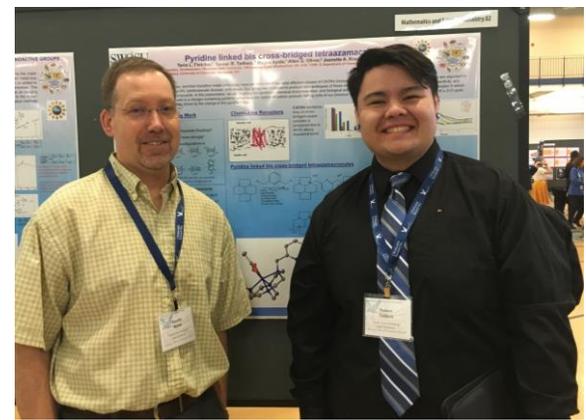
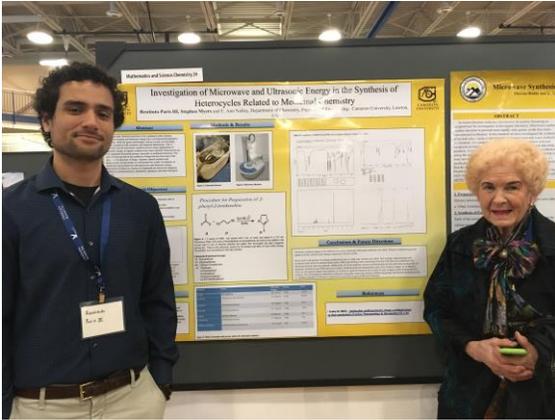
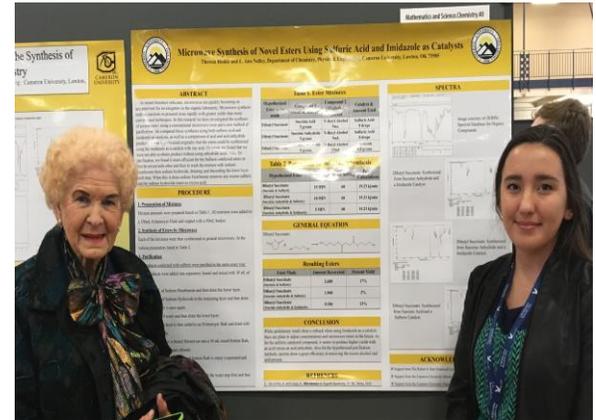
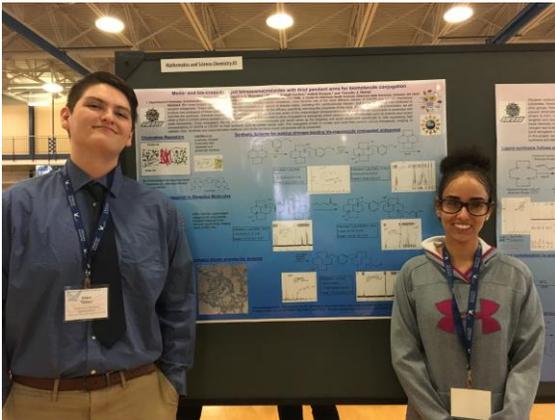
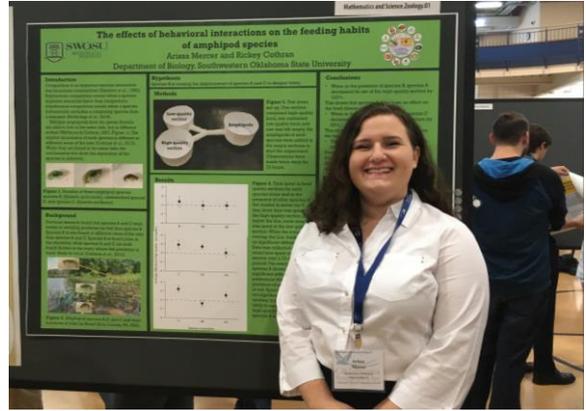
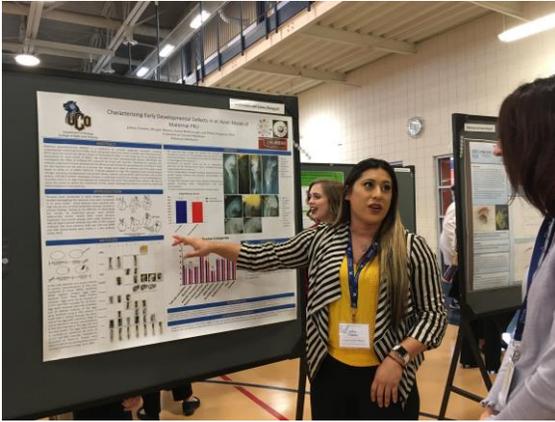
APPENDIX G

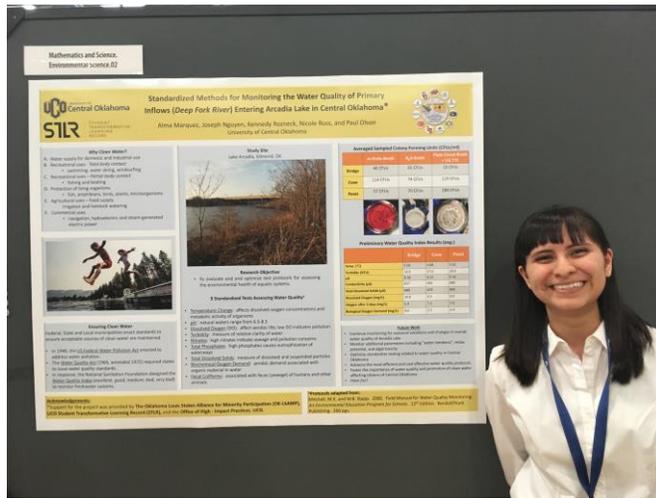
OKLAHOMA RESEARCH DAY

Southwestern Oklahoma State University
Weatherford, OK

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





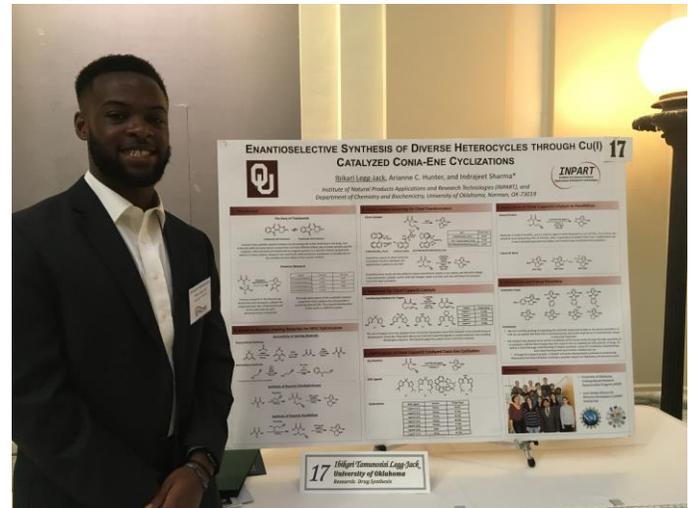
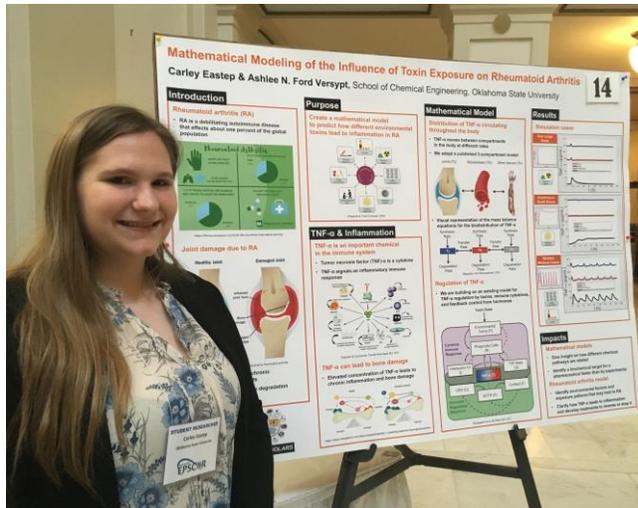
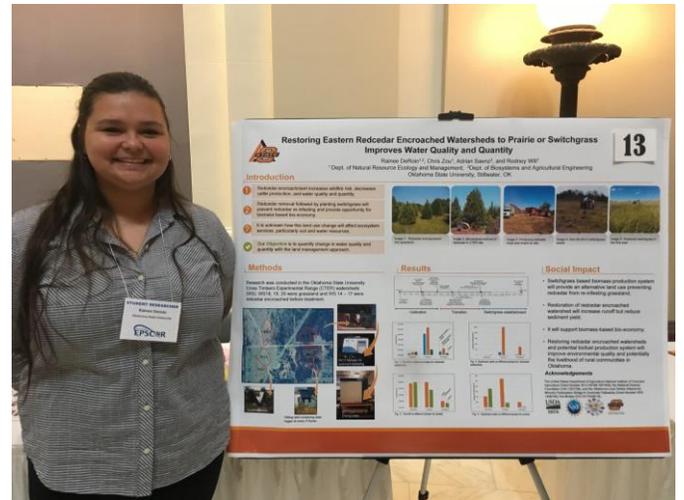
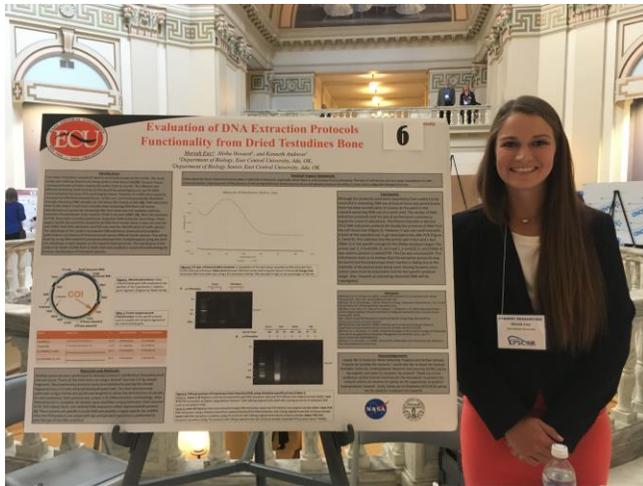


OK-LSAMP campus representatives, scholars and mentors from Langston University OK-LSAMP

APPENDIX H

RESEARCH DAY AT THE CAPITOL

Oklahoma City, OK



OK-LSAMP Scholars from ECU, OSU and OU presenting their research at the 2019 Research Day at the Capitol





OK-LSAMP Scholars from ECU, OSU and OU with their local state representatives at the 2019 Research Day at the Capitol

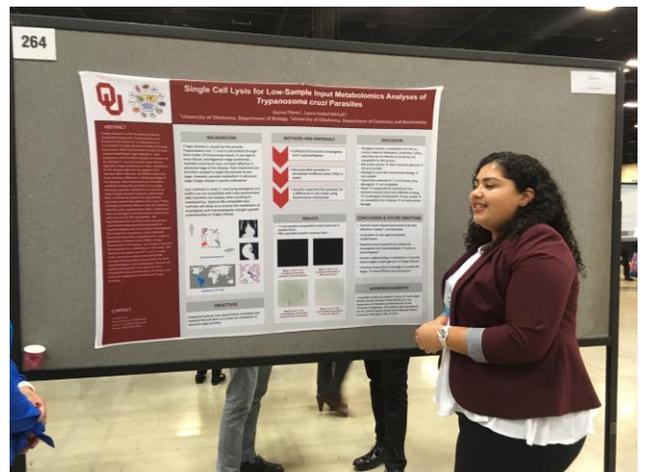
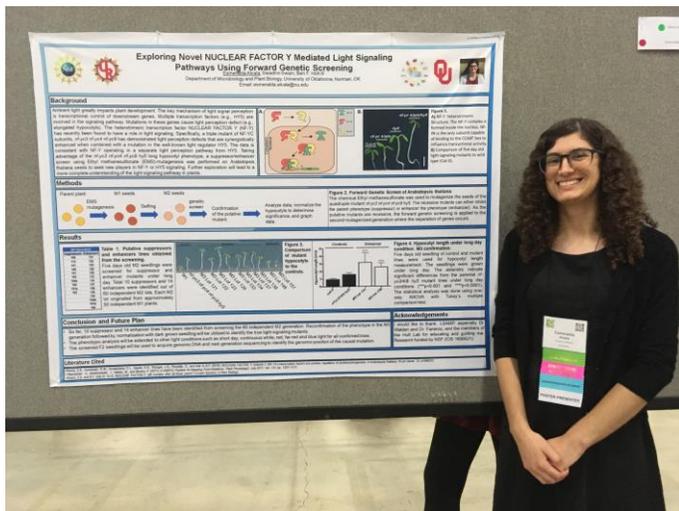
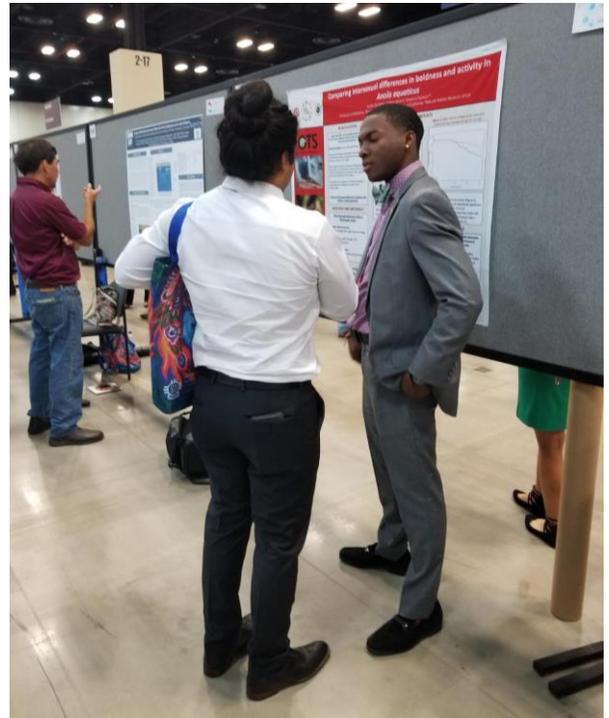
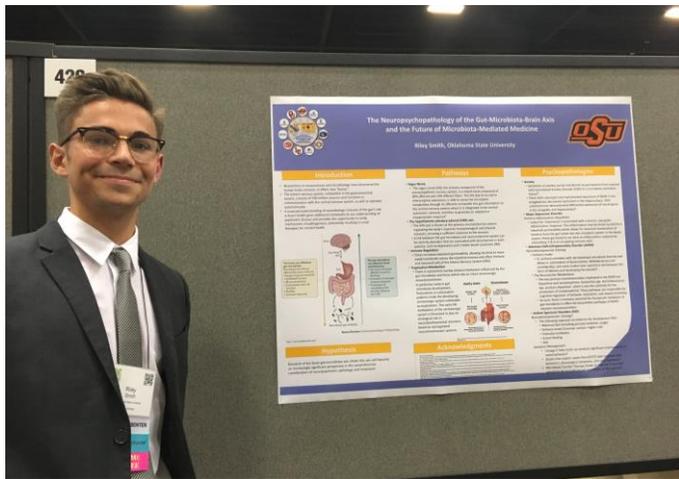
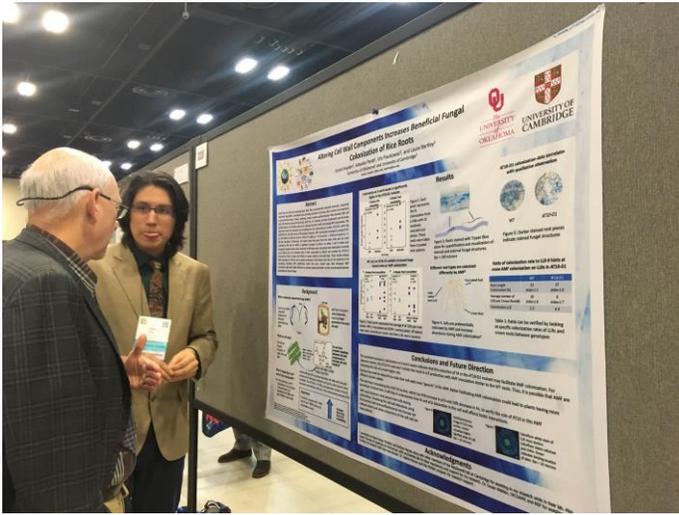


APPENDIX I

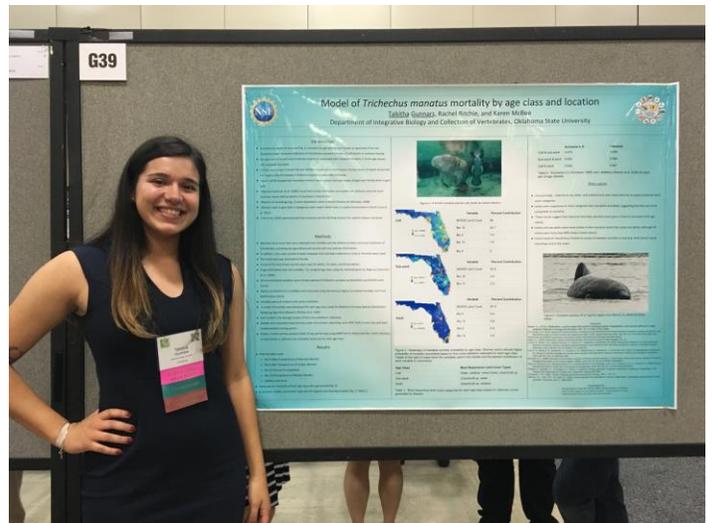
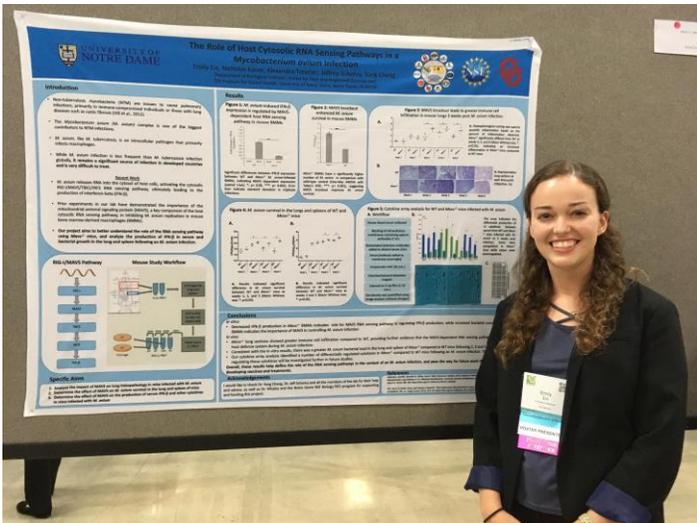
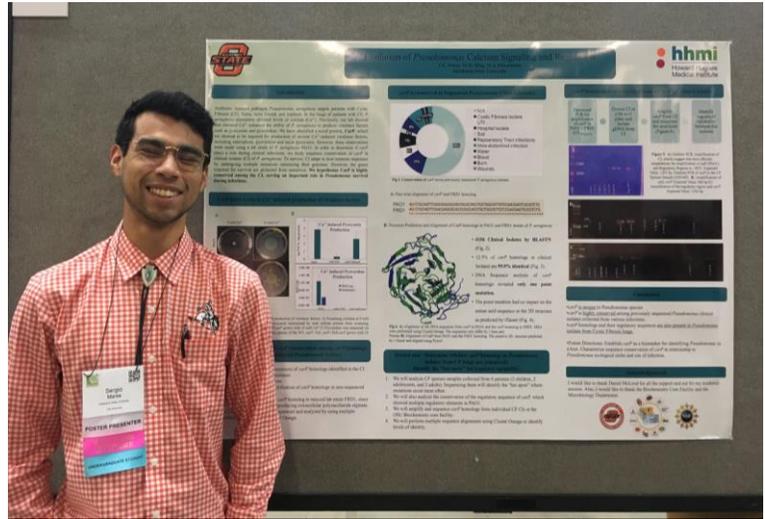
NATIONAL CONFERENCE:
SOCIETY FOR THE ADVANCEMENT OF CHICANOS AND NATIVES IN THE SCIENCES
(SACNAS)

San Antonio, TX

OK-LSAMP Scholars at SACNAS national conference.



OK-LSAMP Scholars at SACNAS national conference.



APPENDIX J

FACULTY HIGHLIGHTS



OK-LSAMP Research Mentor Dr. Toby Nelson being recognized as an exemplary Oklahoma Mentor 2019



Dr. Amy McGovern from University of Oklahoma receiving the Vice President for Research Award for Interdisciplinary Scholarship

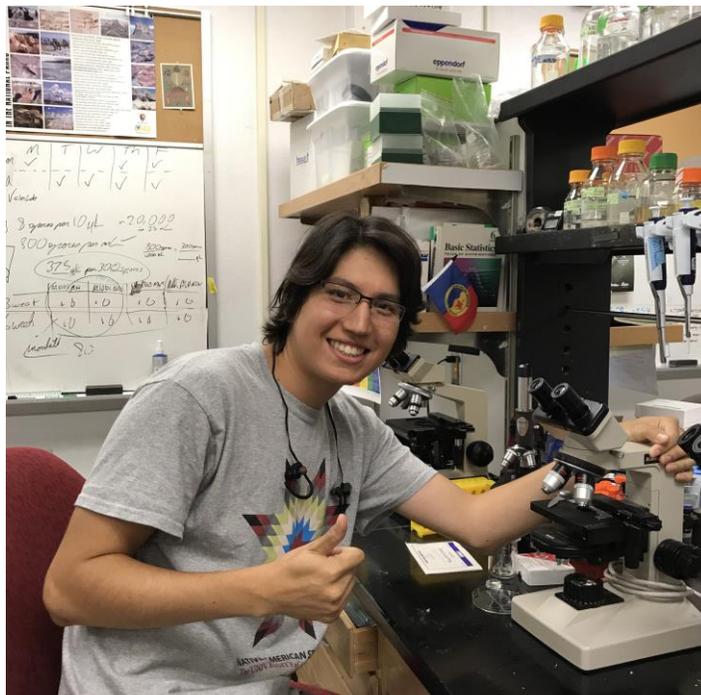


APPENDIX K

SCHOLAR AND BD FELLOW HIGHLIGHTS



Scholar Casandra Salinas presenting at the American Society for Microbiology

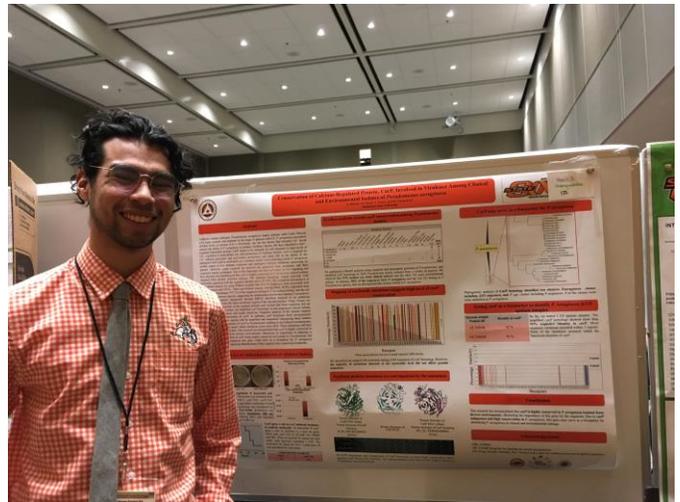


OU OK-LSAMP Scholar Daniel Hayden conducting research.

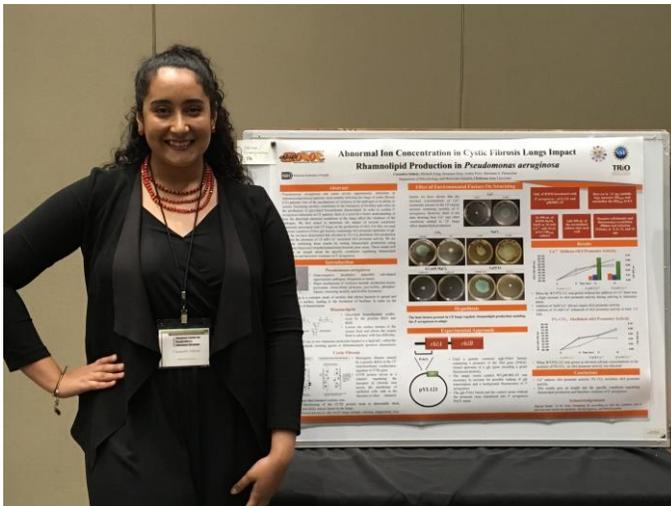
Scholars presenting their research that the 2019 Oklahoma Research Conference for Infectious Diseases



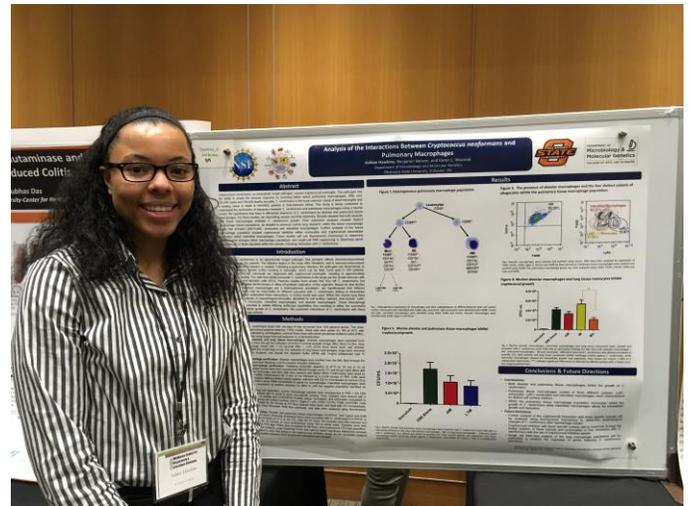
OK-LSAMP scholar Jacee McCoy



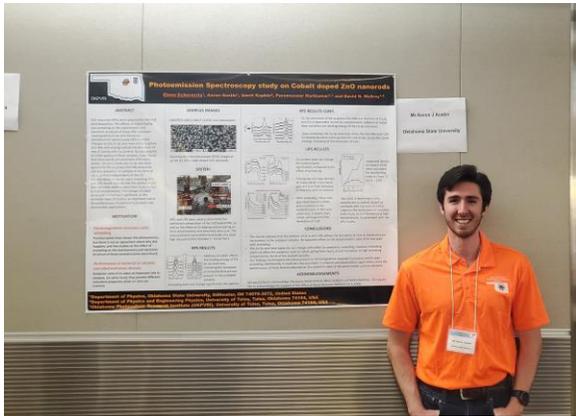
OK-LSAMP scholar Sergio Mares



OK-LSAMP scholar Casandra Salinas



OK-LSAMP BD Fellow Ashlee Hawkins



Scholar Aaron Austin presenting his research



Scholar Rainee DeRoin presenting her research at the Oklahoma Women Impacting Science and Entrepreneurship (OK-WISE)



Scholar Shawn Ray in an international experience in Japan.



OK-LSAMP Scholars Daniel Salinas and Jonathan Bernal being recognized for their diversity efforts through the college of engineering.

OK-LSAMP Scholar graduates



Alma Marquez - UCO



Daniel Hayden (right) - OU



Jasmyn Lee - OSU

Rendi Rogers - OSU

Jordan Sosa (right) - TU



OSU undergraduate presenting research at global event

Friday, April 19, 2019

Rainee DeRoin

Oklahoma State University environmental science major Rainee DeRoin loves all things water. For the past two years the 21-year-old junior has monitored seven small watersheds — including lands that have eastern redcedar, prairie and switchgrass — at OSU’s 1,820-acre Cross Timbers Experimental Range southwest of Stillwater as part of a long-running research study.



DeRoin has been selected to present her findings at the Second World Congress on Undergraduate Research this May in Germany.

“Our aim is to bring together the world’s best undergraduate research and to work on some of the most significant challenges the global community is facing today,” program organizers promise.

DeRoin — a first-generation college student from Tulsa — credits the Oklahoma Louis Stokes Alliance for Minority Participation (OK-LSAMP) with giving her direction when she first got to OSU. OK-LSAMP includes 11 Oklahoma universities led by OSU working together to increase the number of underrepresented students earning degrees in science, technology, engineering and math fields.

“They are actually the reason I started doing research because I didn’t know where to start but knew I wanted to do it,” she said.

OK-LSAMP Director Brenda Morales is thrilled DeRoin’s efforts are being rewarded.

“Her zealous attitude towards her research has provided her with many opportunities to present,” Morales said. “I am so excited to see what Rainee has in store for her future and how her research can impact the world.”

Numerous students, including DeRoin, and faculty members from OSU’s Division of Agricultural Sciences and Natural Resources have participated in the now 10-year, multimillion-dollar study of encroached eastern redcedar and native prairie watersheds at the Cross Timbers Experimental Range, which is west of South Cottonwood Road at West 56th Street.

Funding for the study comes from the U.S. Geological Survey and the Oklahoma Agricultural Experiment Station.

“The purpose is to see if taking eastern redcedar out and replacing them would be both economically and environmentally friendly,” DeRoin said. “We are hoping that if we show that switchgrass has better sediment yield and runoff that farmers will want to replace their eastern redcedars.”

Eastern redcedar is a native, fire-sensitive juniper species that is invading upland areas that are no longer regularly burned.

Surface runoff is water that flows over the land surface. A land area that produces runoff draining to a common point is called a watershed. And sediment yield is the amount of sediment per unit area removed from a watershed by flowing water during a specified period of time.

“If the vegetation is using lots of water like redcedar does, less flows into streams means less is available for municipal, agricultural and industrial uses as well as ecological flows for aquatic organisms,” said Dr. Rod Will, silviculture professor in OSU’s Department of Natural Resource Ecology and Management. “We want to minimize sediment yield no matter what since sediment is considered to be a pollutant and causes loss of topsoil and nutrients from the ecosystem.”

His team found that a 12-inch diameter tree could use as much as 42 gallons of water on a hot day and as little as one gallon on a dry winter day.

DeRoin — who hopes to pursue a master’s degree in environmental science at OSU — is looking forward to sharing OSU’s data at the conference, which will be her first trip overseas.

“I don’t know what to expect but I’m super excited,” she said. “I don’t really meet a lot of other environmental scientists who do research, and I hope to find some others like me.”

MEDIA CONTACT: Monica Roberts | Director of Media Relations | 405-744-4800 | monica.roberts@okstate.edu

*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 2018 through Spring 2019

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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. The participating institutions are: Cameron University (CU), East Central University (ECU), Langston University (LU), Northeastern State University (NEOSU), Northwestern Oklahoma State University (NWOSU), Oklahoma State University (OSU), Southeastern Oklahoma State University (SEOSU), Southwestern Oklahoma State University (SWOSU), University of Central Oklahoma (UCO), University of Oklahoma (OU), and University of Tulsa (TU). This evaluation includes results from the fifth year of the five-year phase (Summer 2018 through Spring 2019).

This phase of funding represents Oklahoma's 25th 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 and Recommendations

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 fifth year of the five-year project. For the past four years, the Alliance has been exceeding the goal of 60 graduates per year, so only an additional 12 graduates are needed to meet the goal of 296 students.

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 2018 through Spring 2019. 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. One scholar who had originally identified as a URM student changed their race/ethnicity to non-URM during this evaluation period and was removed from the program at that time.

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 2018 through Spring 2019*

Standing	URM	Other	Total
Freshman	13	0	13
Sophomore	38	0	38
Junior	59	0	59
Senior	156	1	157
TOTAL	266	1	267

In the program year under review, the Alliance supported 267 students: 157 seniors, 59 juniors, 38 sophomores, and 13 freshmen. This represents a 15.0% decrease in the total number of participants this year compared with last year when there were 314 scholars. Of the 267 participants this year, 99.6% (266 out of 267) were underrepresented minority students. Table 2 displays participating students by class standing and institution.

Although most 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 2018, Fall 2018, and Spring 2019), regardless of classification or race/ethnicity.

Table 2: *Participants by Partner Institution – Summer 2018 through Spring 2019*

Institution	Freshman	Sophomore	Junior	Senior		Total URM	Total Non-URM	% Non-URM		Total Scholars
CU	0	1	2	8		11	0	0.0%		11
ECU	0	0	3	9		12	0	0.0%		12
LU	6	10	11	14		41	0	0.0%		41
NEOSU	0	0	4	6		10	0	0.0%		10
NWOSU	0	0	0	5		5	0	0.0%		5
OSU	6	18	21	59		103	1	1.0%		104
OU	0	3	3	31		37	0	0.0%		37
SEOSU	0	2	5	7		14	0	0.0%		14
SWOSU	0	3	2	7		12	0	0.0%		12
TU	0	0	2	7		9	0	0.0%		9
UCO	1	1	6	4		12	0	0.0%		12
TOTAL	13	38	59	157		266	1			267
Percentage of Total Scholars	4.9%	14.2%	22.1%	58.8%		99.6%	0.4%			100%

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 2018 through Spring 2019, a total of 68 OK-LSAMP scholars graduated with STEM degrees. The Alliance surpassed its goal of having a minimum of 12 students during this evaluation period achieve a bachelor’s degree in a STEM field. Figure 1 shows the cumulative results of the past five years of graduates compared to the goal of 60 graduates per year. The Alliance has exceeded its goal.

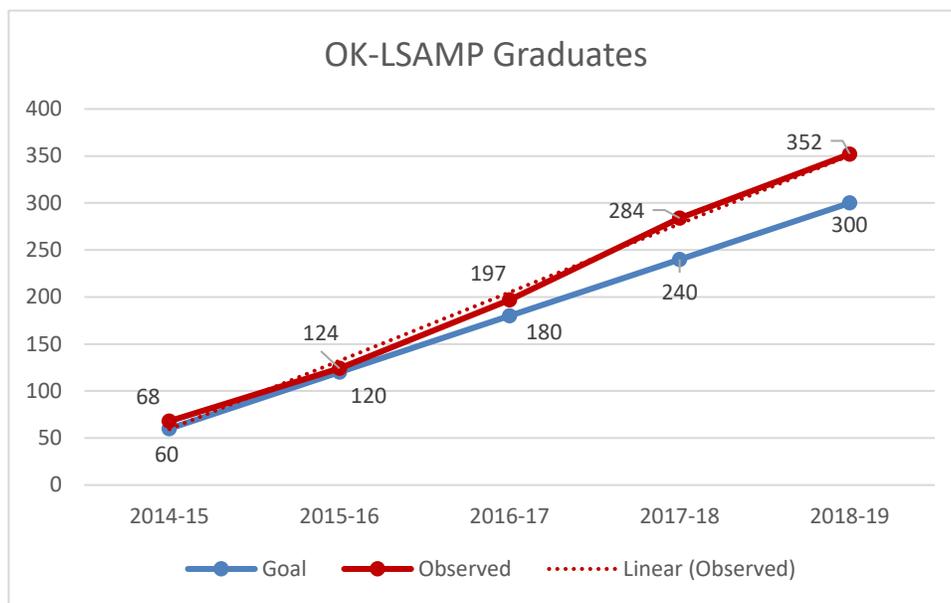


Figure 1: Graduation Counts – Goal vs Observed

The OK-LSAMP graduates accomplished the following during the 2018-2019 review period:

- 43.3% of the OK-LSAMP seniors (68 out of 157) graduated during this period with the majority of the remaining seniors continuing in the program
- 100.0% of the graduates (68 out of 68) were URM students
- 25.0% of the graduates (17 of 68) took the GRE
- 25.0% of the graduates (17 of 68) were accepted into graduate school
- 100.0% of the graduates (17 of 17) who were accepted into graduate school were URM scholars
- 80.9% of the graduates (55 of 68) had a GPA of 3.0 or higher
- 61.8% of the graduates (42 of 68) had at least one summer internship
- 30.9% of the graduates (21 of 68) had at least two summer internships

Of the 21 graduates who had at least two summer internships, 15 scholars had two, five scholars had three, and one scholar had four internships.

Fewer OK-LSAMP scholars graduated this year (68) compared to last year (87), and fewer students were accepted into graduate school this year (17) compared to last year (23). 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 51 graduates who were not accepted into graduate school—or did not apply—39 (76.5%) had a GPA of 3.0 or greater, 21 (41.2%) had participated in research opportunities in Fall 2018 or Spring 2019, and 30 (58.8%) participated in at least one summer internship during this reporting period. Thirteen of these 51 students (25.5%) took advantage of both research and internships while they were OK-LSAMP scholars. Of these 13 students, only two of them (15.4%) applied to graduate school based on the data received from the Alliance institutions that were used for this evaluation.

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 267 scholars in the program from Summer 2018 through Spring 2019. Below are the results of the Alliance-wide efforts in providing opportunities for the participants to be successful in their graduate school applications.

- 10.2% of the junior and senior scholars (22 of 216) took the GRE
- 39.4% of the Fall 2018 students (95 of 241) participated in research that semester
- 39.8% of the Spring 2019 students (96 of 241) participated in research that semester
- 34.6% of students (73 of 211) who were in the program prior to Fall 2018 participated in a Summer 2018 internship
- Of the 185 students who participated in Spring 2019 and had not left the program as of Summer 2019, 47 (25.4%) were scheduled for Summer 2019 internships.
- 38.6% of students (93 of 241) who were in the program in Fall 2018 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, 12.4% (33 of 267) 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.

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 all OK-LSAMP scholars with a link to the 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. The list included 251 email addresses. Students were asked if they participated in the OK-LSAMP program during Summer 2018, Fall 2018, and/or Spring 2019. 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 soon after they returned from spring break. Students at all 11 alliance institutions received the email on March 28, 2019. Each group of students were sent two follow-up emails before the survey closed on April 12, 2019.

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 2018 through Spring 2019. Fifty-nine students responded to the survey. Ten of these students did not complete the survey, so their responses are not included in these results. Six of the emails containing the survey invitation were undeliverable or bounced, so those emails have not been considered in the response rate. The response rate of useable data from the survey was 20.0% (49 out of 245).

At least one student from each of the 11 alliance institutions responded to the survey. The largest response to the survey (28.6%) came from Oklahoma State University, which has the largest representation of OK-LSAMP scholars in the program. The second largest number of survey respondents came from East Central University with the responses comprising 22.4% of the total.

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. Table 3 shows 18.4% (49 of 267) of all scholars completed the survey. This differs from the response rate because fewer of the scholars' emails were available at the time the survey was distributed. 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	Distribution of Survey Responses	% of Total Scholars who Responded to Survey
CU	11	4.1%	2	18.2%	4.1%	0.7%
ECU	12	4.5%	11	91.7%	22.4%	4.1%
LU	41	15.4%	3	7.3%	6.1%	1.1%
NEOSU	10	3.7%	1	10.0%	2.0%	0.4%
NWOSU	5	1.9%	2	40.0%	4.1%	0.7%
OSU	104	39.0%	14	13.5%	28.6%	5.2%
OU	37	13.9%	4	10.8%	8.2%	1.5%
SEOSU	14	5.2%	1	7.1%	2.0%	0.4%
SWOSU	12	4.5%	8	66.7%	16.3%	3.0%
TU	9	3.4%	2	22.2%	4.1%	0.7%
UCO	12	4.5%	1	8.3%	2.0%	0.4%
Grand Total	267	100.0%	49		100.0%	18.4%

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

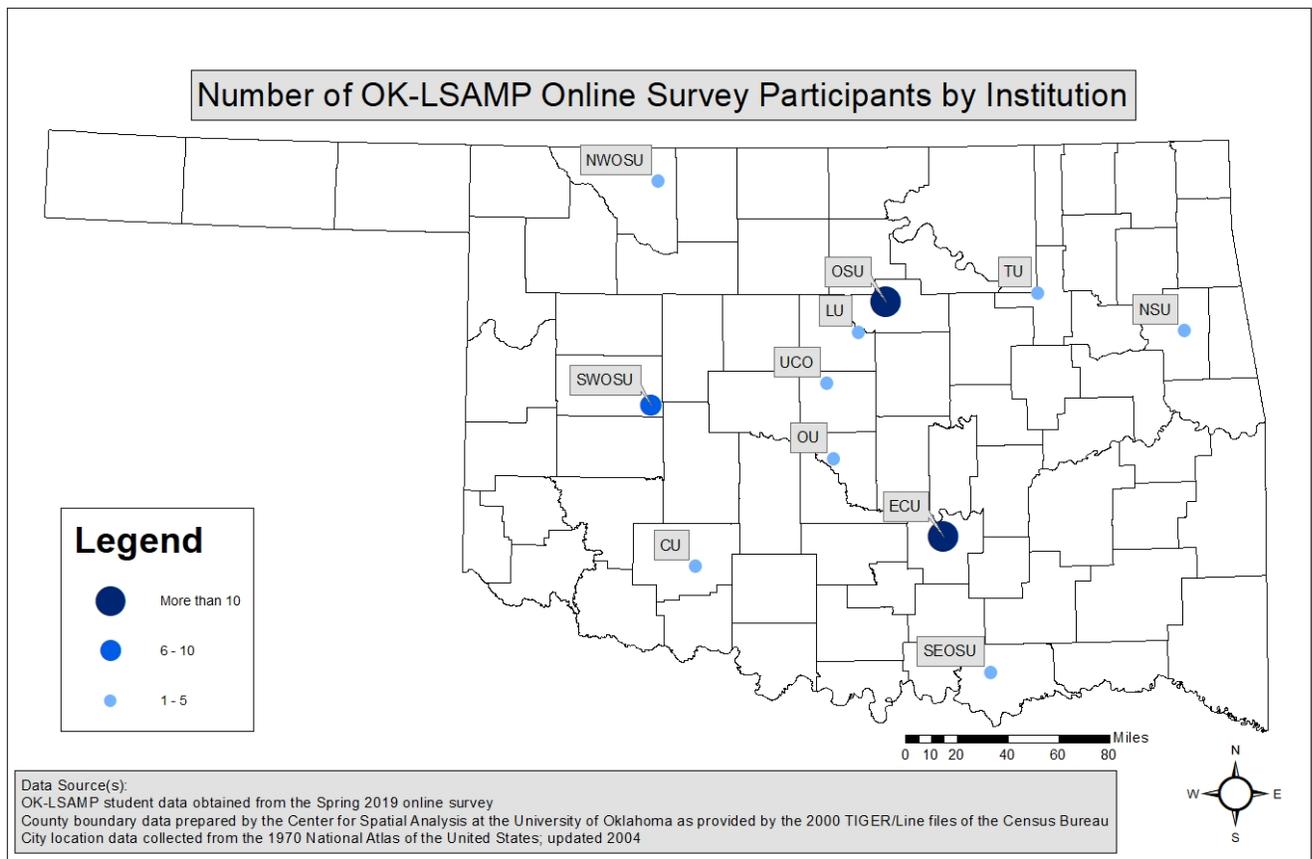


Figure 2: Map of Survey Respondents by Institution

Students were asked when they first began participating in the OK-LSAMP program. More than half (53.1%, 26 out of 49) began before Summer 2018. The majority (79.6%, 39 out of 49) were attending their original institution of entry. Ten students reported transferring from the following institutions: Beloit College, (WI), Carl Albert State College (OK), Iowa State University, New Mexico State University, Oklahoma State University – Oklahoma City, Seminole State College (OK), Spelman College (GA), Tulsa Community College (OK), University of Arkansas, and University of Oklahoma.

Recruitment is essential to the growth of the OK-LSAMP program. The top sources reported for learning about the OK-LSAMP program included professors, campus recruitment events, and current OK-LSAMP participants. 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 2018 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. See Appendix 7 for a complete list of survey questions.

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 49 students who answered the question on the survey related to attendance at Fall 2018 and Spring 2019 meetings, 57.1% (28 students) attended at least two meetings in Fall 2018 and 53.1% (26 students) attended at least two meetings in Spring 2019. In Fall 2018, 16.3% of students (8 out of 49) attended at least five meetings and 12.2% of students (6 out of 49) attended at least five meetings in Spring 2019.

Students were asked about the helpfulness of the group meetings. Responses ranged from 1 to 5 with 5 being the most helpful. Nine students (18.4%) did not attend meetings in Fall 2018 or Spring 2019. Figure 3 shows the scholars' responses to how helpful they felt the meetings were for them. Only the students who attended at least one meeting in Fall 2018 or Spring 2019 were included in Figure 3. Overall, most respondents found the group meetings to be helpful.

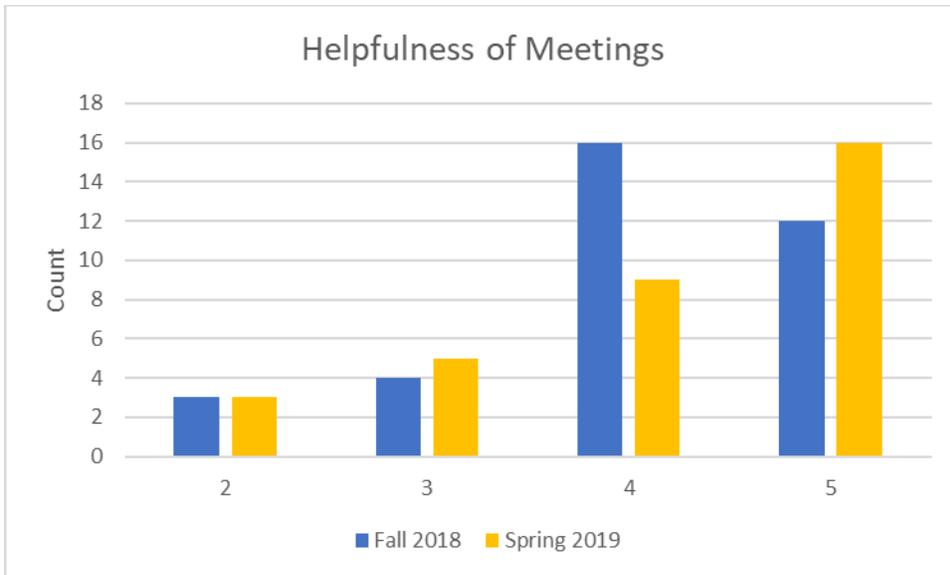


Figure 3: Helpfulness of Meetings

1=Least Helpful; 5=Most Helpful

There were no responses of “1”.

35 students reported attending at least 1 meeting in Fall 2018; 33 in Spring 2019

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 49 students who responded to the question pertaining to mentors, 63.3% of the respondents (31 students) indicated that they had a mentor. In Fall 2018, 90.3% (28 out of 31) of students attended at least one meeting with their mentor and 64.5% (20 out of 31) met with their mentor at least five times. In the Spring 2019 semester, 96.8% (30 out of 31) met with their mentor at least once, and 71.0% (22 out of 31) 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 31 students who had a mentor and responded to this question, 93.5% (29 out of 31) gave their mentors an “A” rating, and 6.5% (2 out of 31) gave their mentors a “B” rating. There were no responses below a “B” rating. Student responses to this question can be seen in Table 4.

Table 4: Helpfulness of Mentors

Score	Count
A	29
B	2
C	0
D	0
F	0

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 and conduct research if they have a mentor. Fifty-nine percent of all respondents had a GPA of 3.0 or greater and a mentor, and 44.9% of respondents participated in research and worked with a mentor compared to 18.4% of students who conducted research without an OK-LSAMP research mentor. Tables 5 and 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 5: *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	17	18
		%	2.0%	34.7%	36.7%
	Yes	Count	2	29	31
		%	4.1%	59.2%	63.3%
Total		Count	3	46	49
		%	6.1%	93.9%	100.0%

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

			Research		Total
			No	Yes	
Do you have an OK-LSAMP mentor?	No	Count	9	9	18
		%	18.4%	18.4%	36.7%
	Yes	Count	9	22	31
		%	18.4%	44.9%	63.3%
Total		Count	18	31	49
		%	36.7%	63.3%	100.0%

Progress Reports

OK-LSAMP scholars are required to submit progress reports to their mentors at each Affiliate campus each semester that they participate in the program. Thirteen out of 31 (41.9%) students who had mentors were required to submit a progress report in both the Fall 2018 and Spring 2019 semesters.

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. Fifty-seven percent (28 out of 49) of the students who responded to this question attended the OK-LSAMP Research Symposium in Fall 2018. Of those 28, 14 students (50.0%) presented at the symposium. The reasons the 21 students gave for not attending included: schedule conflict (8 students), not being in the program at the time (6 students), did not know about it (6 students), and an unexpected illness (1 student).

Of the 49 students who responded concerning participation in other professional meetings, 36 (73.5%) reported attending other professional meetings during Summer 2018, Fall 2018, or Spring 2019. Of those 36 students, 17 (47.2%) reported receiving financial assistance to attend the other professional meetings, and 30 students (83.3%) presented at the other professional meetings. Of the 30 students that presented at other professional meetings, the average number of presentations was two.

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, 85.7% 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 websites and career fairs. Students were allowed to choose more than one response if applicable. The results are seen in Figure 4.

Of the 49 respondents, 19 (38.8%) reported participating in an internship in 2018, and 23 (46.9%) planned to participate in an internship in 2019. Of those students who were juniors or seniors (38 out of 49), 44.7% (17 students) participated in an internship in 2018, and 42.1% (16 students) planned to do an internship in 2019. Internship participation information for juniors and seniors can be found in Tables 7 and 8.

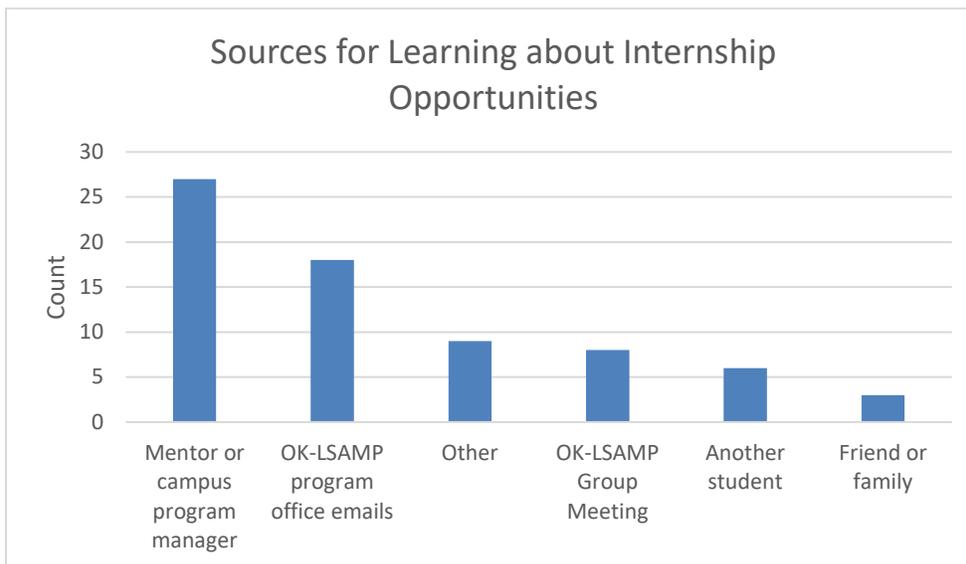


Figure 4: Sources for Learning about Internship Opportunities

Table 7: Junior/Senior Summer 2018 Internship Crosstabulation

			Did you participate in an internship in Summer 2018?		Total
			No	Yes	
Classification	Junior	Count	10	6	16
		%	26.3%	15.8%	42.1%
	Senior	Count	11	11	22
		%	28.9%	28.9%	57.9%
Total		Count	21	17	38
		%	55.3%	44.7%	100.0%

Table 8: Junior/Senior Planning Summer 2019 Internship Crosstabulation

			Are you planning to participate in an internship in Summer 2019?			Total
			No	Yes	Not Sure	
Classification	Junior	Count	6	8	2	16
		%	15.8%	21.1%	5.3%	42.1%
	Senior	Count	11	8	3	22
		%	28.9%	21.1%	7.9%	57.9%
Total		Count	17	16	5	38
		%	44.7%	42.1%	13.2%	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, 73.7% (28 out of 38) reported that they were encouraged to take the GRE, 34.2% (13 out of 38) received help from the OK-LSAMP program in preparing for the GRE, and 21.1% (8 out of 38) 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 PHD Camp (Pursuing Higher Degrees) 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 48 students who responded to the question concerning participation in a PHD camp, 29.2% (14 students) reported that they would be interested in attending if it were offered. Additionally, 16 students (33.3%) were not sure if their campus offered a PHD camp so it is possible some of these students might have been interested if they had been aware of this opportunity. Students were also asked if they were interested in participating in an international travel workshop. Of the 48 students who responded to this question, 27.1% (13 students) indicated they were interested in attending the travel workshop if it were offered by their institution. Thirteen students (27.1%) were not sure if their campus offered an international travel workshop, so it is possible some of these students might have shown interest if they had known about this workshop. One student graduated and did not answer the questions about the PHD camp or the international travel workshop. This student indicated they would be interested in attending these opportunities if they were still a scholar. Student responses are seen in Tables 9 and 10.

Table 9: *PHD Camp Participation*

Has your institution offered a PHD camp?	Count	%
Yes, it was offered and I attended	2	4.2%
Yes, it was offered but I did not attend	2	4.2%
No, but I would be interested in attending if it were offered	14	29.2%
No	14	29.2%
Not sure	16	33.3%
Total	48	100.0%

Table 10: *International Travel Workshop Participation*

Has your institution offered a workshop on international travel?	Count	%
Yes, it was offered and I attended	3	6.3%
Yes, it was offered but I did not attend	2	4.2%
No, but I would be interested in attending if it were offered	13	27.1%
No	17	35.4%
Not sure	13	27.1%
Total	48	100.0%

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) with an option to select “N/A”. In all six areas, the “Excellent” ranking was reported by the highest number of students followed by the “Good” ranking.

Figure 5 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.

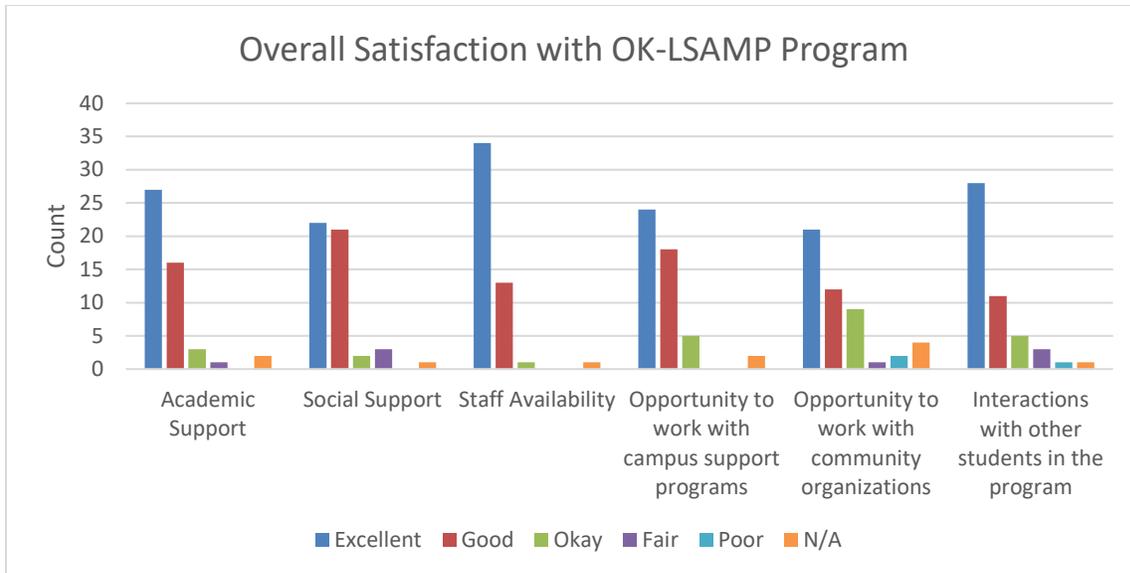


Figure 5: Number of Student Responses for OK-LSAMP Experiences

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 (33 out of 49 students, or 67.3%) gave a score of 5. There were no ratings of 1 or 2. 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 (30 out of 49 students, or 61.2%) gave a score of 5.

See Tables 11 and 12 for the responses. Appendix 6 offers student responses to strengths and weaknesses of the program, and overall satisfaction.

Table 11: Overall Satisfaction with the OK-LSAMP Program

Score	Count	%
1	0	0.0%
2	0	0.0%
3	2	4.1%
4	14	28.6%
5	33	67.3%
Total	49	100.0%

1=Least Satisfied; 5=Most Satisfied

Table 12: Helpfulness of OK-LSAMP Program on Academic Career

Score	Count	%
1	1	2.0%
2	2	4.1%
3	3	6.1%
4	13	26.5%
5	30	61.2%
Total	49	100.0%

1=Least Helpful; 5=Most Helpful

Discussion

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

Fifty-seven percent of the survey respondents indicated they participated in at least two meetings during the Fall 2018 semester, with 53.1% reporting that they attended at least two meetings for the Spring 2019 semester. Based on the scholars' responses, 16.3% of students attended at least five meetings during the Fall 2018 semester and 12.2% for the Spring 2019 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 learning about research from their peers, receiving information about conferences, graduate school, and other opportunities, and learning about available resources. There were several responses indicating that there were no meetings offered. Of the students who gave reasons for not attending the meetings that were offered, most reported that they were not in the program at the time, or that they had a schedule conflict.

Mentor Support

Nearly two thirds (63.3%) of the students stated they had a mentor. Ninety percent of the students with a mentor indicated that they met with their mentor at least once during Fall 2018, and 96.8% did so in Spring 2019. Of these students, 64.5% (Fall 2018) and 71.0% (Spring 2019) 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, many 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, 29.0% were not asked for a report in both Fall 2018 and Spring 2019. 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-six students reported attending professional meetings other than the OK-LSAMP Research Symposium, and 83.3% of those participants indicated that they presented at other meetings. The average number of presentations given was two. 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. Fifty-seven 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 38.6% of students who were in the program during Fall 2018 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 (85.7%). Nearly half (44.7%) of the juniors and seniors who participated in the survey reported doing internships in Summer 2018, and 42.1% were planning to do an internship during Summer 2019. 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 38 juniors and seniors who responded to the survey, eight students (21.1%) had applied to at least one graduate school, and six students (15.8%) 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, 73.7% (28 out of 38 students) reported that they had been encouraged to take the GRE, and 34.2% (13 out of 38 students) had received assistance in the process. However, only 21.1% (8 out of 38 students) had taken the GRE at the time of this survey (April 2019). 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 12.4% of all scholars included in this report have international experience. Students who responded to the survey indicated again this year that they were interested in attending a workshop assisting them with passports, travel, insurance, and other topics related to international internships; therefore, the evaluator 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.

Survey respondents were interested again this year in participating in a PHD camp related to graduate school assistance. The evaluator recommends again this year that the OK-LSAMP program move forward with this event each year. 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 after students returned from spring break during the Spring 2019 semester. The response rate was 20.0% compared to 17% 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, with at least one survey response from each institution.

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 late March 2019 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 2018 and Spring 2019 semesters in the program. Students who responded concerning their participation during the Fall 2018 semester may not have remembered the details accurately.

Based on the last year's recommendation to distribute the survey earlier, this year's survey was sent during the semester rather than after the semester. This year's response rate improved by over 2.0% when compared to last year, perhaps due to the survey being distributed before students left for the summer.

Section 3: The National STEM Retention and Graduation Data

In August 2019, the Consortium for Student Retention Data Exchange (CSRDE) finalized the data processing for the annual national STEM retention study, *2018-19 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 176 colleges and universities in the U.S. and Canada. 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 from Cameron University (CU), 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 2008 through 2017 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 176 institutions observed in the 2018-19 CSRDE retention reports, regardless of major. These reports include data from Cameron University, 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 13, the six-year graduation rates are provided for the 2012 cohorts of all students in the national study, as well as CU, 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 13: *Six-year Graduation Rates – 2012 Total and URM Cohorts*

Category	Total	URM
All Majors		
National	64.6%	54.0%
OU	67.2%	58.2%
OSU	61.5%	50.6%
CU	30.0%	22.0%
Any Major		
National	67.1%	54.8%
OU	67.5%	58.0%
OSU	61.3%	56.5%
CU	36.4%	28.8%
STEM Major		
National	48.6%	33.8%
OU	44.1%	33.5%
OSU	47.0%	43.5%
CU	29.3%	24.8%

As seen in Table 13, 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 three Oklahoma institutions are doing compared to similar institutions nationally, Table 14 provides data based on institutional selectivity. The table shows the six-year graduation rates for the following 2012 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. Cameron University is included in the Less Selective category.

- *Highly Selective institutions:*
ACT scores above 24.0 or SAT scores above 1180
- *Selective institutions:*
ACT scores from 22.5-24.0 or SAT scores from 1125-1180
- *Moderately Selective institutions:*
ACT scores from 21.0-22.4 or SAT scores from 1080-1124
- *Less Selective institutions:*
ACT scores below 21.0 or SAT scores below 1080

Table 14: *Six-year Graduation Rates by Selectivity – 2012 URM Cohort*

Category	Highly Selective	Selective	Moderately Selective	Less Selective	All URM
All Majors					
National	67.2%	49.0%	50.3%	43.6%	54.0%
OU	58.2%				
OSU	50.6%				
CU				22.0%	
Any Major					
National	66.5%	48.0%	49.4%	40.8%	54.8%
OU	58.0%				
OSU	56.5%				
CU				28.8%	
STEM Major					
National	44.4%	27.4%	27.2%	22.4%	33.8%
OU	33.5%				
OSU	43.5%				
CU				24.8%	

Table 14 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 two of the three categories (All Majors and Any Major categories). We also see that more than half (54.8%) 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 two of the three categories (All Majors and Any Major). Similarly, 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). Cameron University’s six-year graduation rates were below average for all URM students in each category. However, when compared to other Less Selective institutions, CU’s six-year graduation rate was higher than the national average in the STEM Major category.

Table 15 provides the six-year graduation rates for all majors, within any major, and within STEM majors for the Total 2012 cohort by selectivity.

Table 15: Six-year Graduation Rates by Selectivity – 2012 Total Cohort

Category	Highly Selective	Selective	Moderately Selective	Less Selective	Total
All Majors					
National	74.9%	56.3%	56.3%	48.2%	64.6%
OU	67.2%				
OSU	61.5%				
CU				30.0%	
Any Major					
National	75.4%	56.2%	56.6%	46.0%	67.1%
OU	67.5%				
OSU	61.3%				
CU				36.4%	
STEM Major					
National	57.2%	37.0%	36.7%	28.1%	48.6%
OU	44.1%				
OSU	47.0%				
CU				29.3%	

In Figures 6-8, the national data for the 2012 URM cohort and the Total cohort are provided for comparison, based on the percentages listed in Tables 14 and 15. Figure 6 shows the graduation rates for all students, regardless of their major when they began college. Figure 7 shows the data for students who began as a STEM major at the institution and graduated in any major at the institution. Figure 8 provides the rates for students who began as a STEM major at the institution and graduated within a STEM discipline.

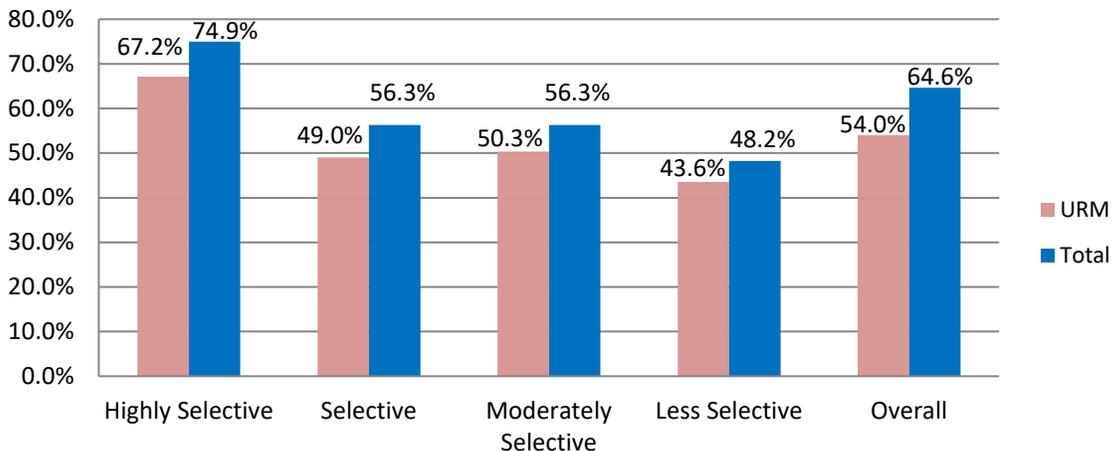


Figure 6: Six-year Graduation Rates for 2012 Total and URM Cohorts by Selectivity – All Majors

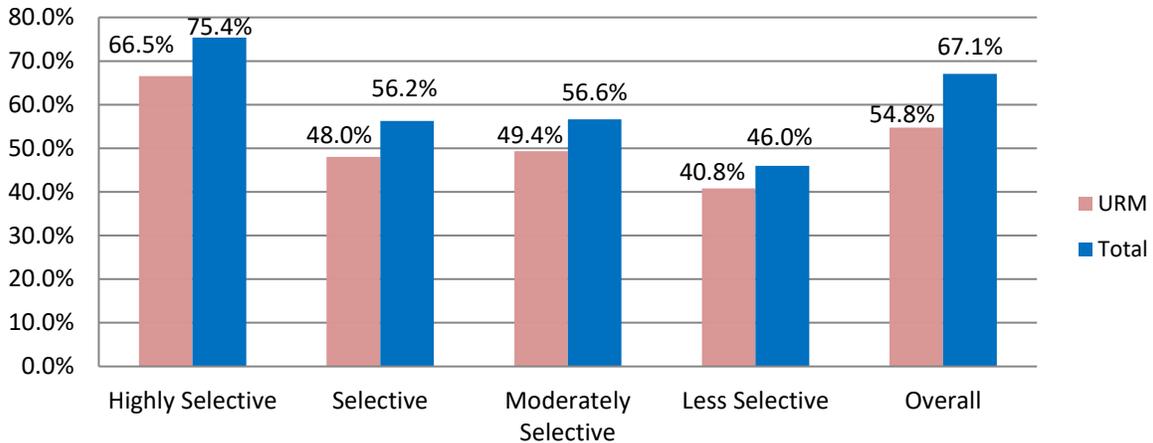


Figure 7: Six-year Graduation Rates for 2012 Total and URM Cohorts by Selectivity – Any Major

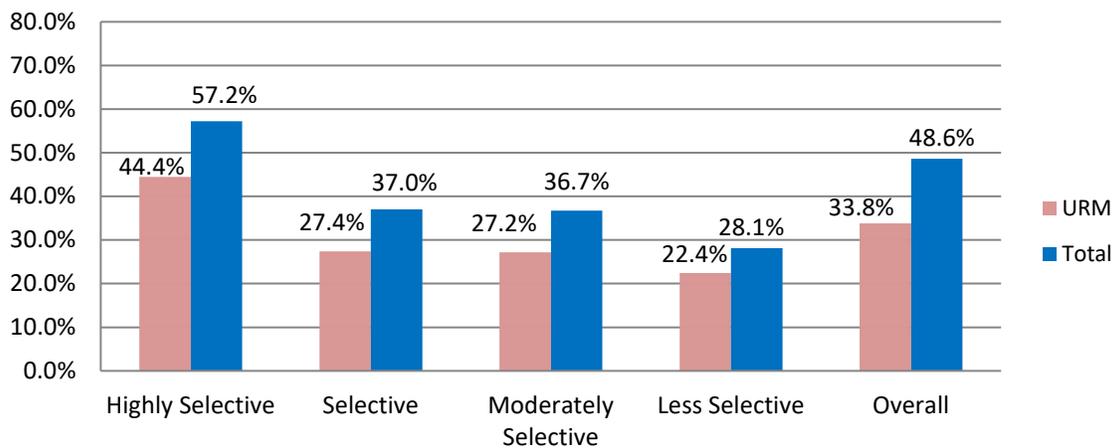


Figure 8: Six-year Graduation Rates for 2012 Total and URM Cohorts by Selectivity – STEM Major

As seen in Tables 14 and 15 and Figures 6-8, the graduation rates of the Total cohort of students generally decrease as the selectivity of the institution decreases with the exception of the Selective and Moderately Selective categories which are typically very similar. URM students in Moderately Selective institutions graduate at a higher rate than the URM students at Selective institutions in the All Majors and Any Major categories. The gap between the graduation rates for URM students and the Total cohort of students is considerable in all institutions, but the difference is slightly 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 16, the first-year retention rates are provided for the 2017 cohorts of all students in the national study as well as for CU, OU, and OSU. The data for underrepresented minority students are shown as well.

As with the graduation rates, in order to gain a better understanding of how the three Oklahoma institutions are doing compared to similar institutions nationally, Table 17 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 2017 URM cohorts by selectivity.

Table 17 indicates that the retention rates for underrepresented minority students are generally positively related to the selectivity of the institution for all cohorts of students, except for 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 except for the STEM Major category where it is the same. Conversely, Oklahoma State University's first-year retention rates were below the average for URM students within the highly selective group except for the STEM Major category. OU and OSU's first-year retention rates were greater than or equal to the average for all URM students with the exception of OSU in the All Majors category. Cameron University's first-year retention rates for URM students were below the average in the Less Selective group. Table 18 provides the first-year retention rates of the Total 2017 cohort by selectivity for the national data as well as the three Oklahoma institutions that participated in the study.

Table 16: *First-year Retention Rates – 2017 Total and URM Cohorts*

Category	Total	URM
All Majors		
National	83.6%	79.4%
OU	90.2%	89.3%
OSU	81.8%	77.8%
CU	59.7%	62.9%
Any Major		
National	85.9%	81.2%
OU	91.0%	89.3%
OSU	84.5%	83.6%
CU	65.1%	61.1%
STEM Major		
National	73.6%	67.5%
OU	68.8%	67.5%
OSU	83.8%	82.2%
CU	42.2%	38.9%

Table 17: *First-year Retention Rates by Selectivity – 2017 URM Cohort*

Category	Highly Selective	Selective	Moderately Selective	Less Selective	All URM
All Majors					
National	86.3%	77.0%	76.8%	74.1%	79.4%
OU	89.3%				
OSU	77.8%				
CU				62.9%	
Any Major					
National	87.2%	76.7%	77.5%	75.2%	81.2%
OU	89.3%				
OSU	83.6%				
CU				61.1%	
STEM Major					
National	73.6%	61.4%	63.3%	62.8%	67.5%
OU	67.5%				
OSU	82.2%				
CU				38.9%	

Table 18: *First-year Retention Rates by Selectivity – 2017 Total Cohort*

Category	Highly Selective	Selective	Moderately Selective	Less Selective	Total
All Majors					
National	89.1%	79.3%	78.5%	74.8%	83.6%
OU	90.2%				
OSU	81.8%				
CU				59.7%	
Any Major					
National	90.3%	79.7%	79.7%	75.7%	85.9%
OU	91.0%				
OSU	84.5%				
CU				65.1%	
STEM Major					
National	78.8%	65.0%	66.9%	62.7%	73.6%
OU	68.8%				
OSU	83.8%				
CU				42.2%	

Tables 16-18 show that, generally, 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 6.1 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 13-15 and Tables 16-18). The gap between graduation rates of URM students and all students ranges from 10.6 to 14.8 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 9-11, the national data for the 2017 URM cohort and the Total cohort are provided for comparison, based on the percentages listed in Tables 17 and 18. Figure 9 provides the first-year retention 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 returned for their second year in any major at the institution. Figure 11 provides the rates for students who began as a STEM major at the institution and continued to their second year within a STEM discipline.

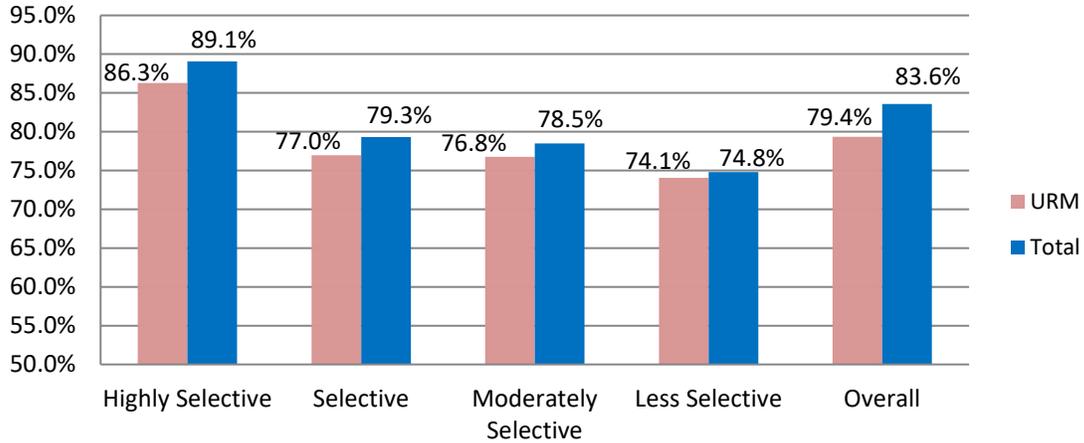


Figure 9: First-Year Retention Rates for 2017 Total and URM Cohorts by Selectivity – All Majors

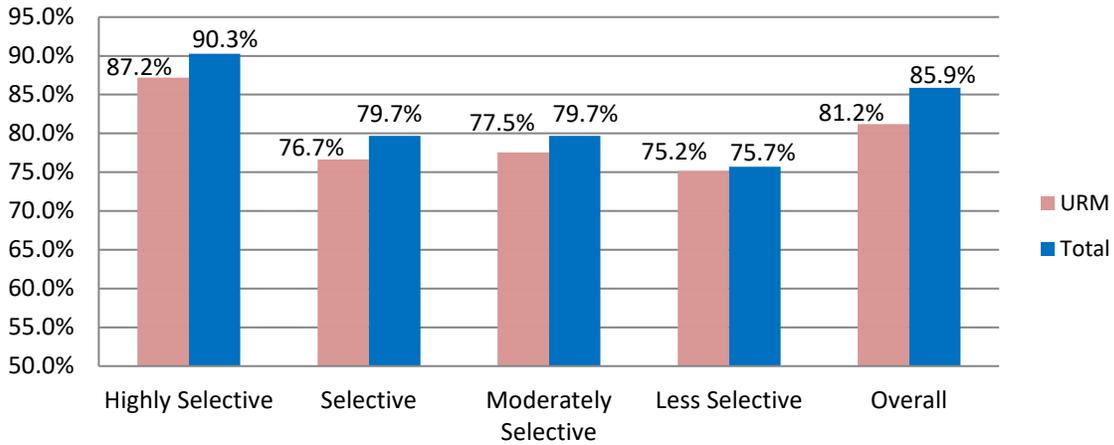


Figure 10: First-Year Retention Rates for 2017 Total and URM Cohorts by Selectivity – Any Major

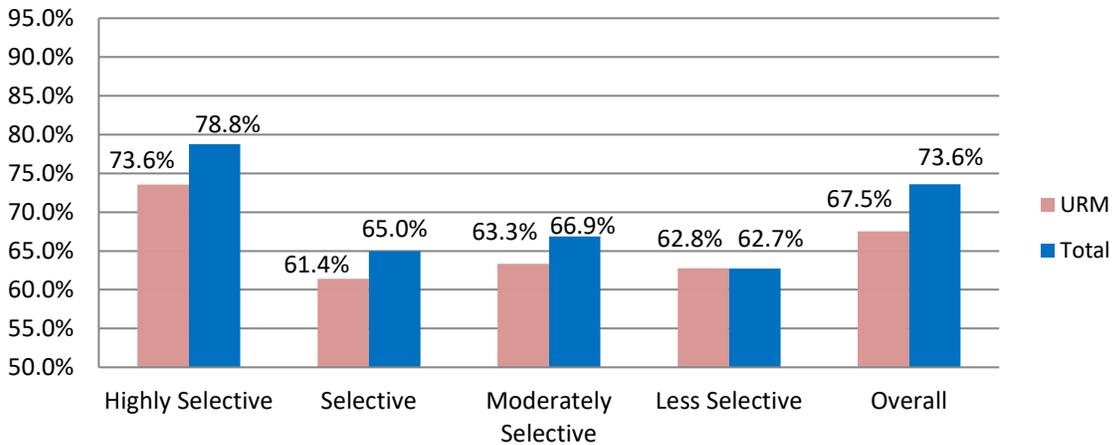


Figure 11: First-Year Retention Rates for 2017 Total and URM Cohorts by Selectivity – STEM Major

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 241 students who participated in Fall 2018, 13 students (5.4%) graduated and eight did not return. Ninety-one percent (220 out of 241) continued to Spring 2019.

A total of 241 students participated in Spring 2019, which included the new students who began the program that semester. Of those 241 scholars, 52 graduated, and only four were known to have left the program. As of the time data was received for this report, 76.8% of the Spring 2019 students (185 out of 241) were still in the program. When the students (185) who were scheduled to continue in the OK-LSAMP program are combined with the students who graduated (52), we see that the persistence rate for the scholars from Spring 2019 to Fall 2019 would be 98.3% (237 out of 241). Table 19 shows the retention and graduation data for OK-LSAMP scholars during the Fall 2018 and Spring 2019 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 19: *OK-LSAMP Graduation and Retention Data, 2018-2019*

	Total Participating OK-LSAMP Scholars	Graduates at End of Semester		Known Departures at End of Semester		Returning Following Semester (Spring 2019 Known; Fall 2019 Anticipated)		Graduates and Continuing Students	
		Count	%	Count	%	Count	%	Count	%
Fall 2018	241	13	5.4	8	3.3	220	91.3	233	96.7
Spring 2019	241	52	21.6	4	1.7	185	76.8	237	98.3

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. Fewer students participated this year compared to last year (267 vs 314). 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 43.3% of the seniors (68 of 157) graduated during the evaluation period, and all of these graduates were URM students. The Alliance exceeded its goal to graduate at least 12 OK-LSAMP scholars during this evaluation period.

The seniors who did not graduate during the 2018-2019 project year appear to be on track for graduation and graduate-school readiness as well. Of the 86 seniors who participated in the program in Spring 2019 but did not graduate, 76.7% (66 of 86) had a GPA of 3.0 or greater, and 44.2% (38 of 86) had participated in at least one summer internship. Only two were known to have left the program as of the end of the Spring 2019 semester, and two students were known to have graduated in the summer of 2019. Therefore, 82 scholars (95.3%) were expected to continue in the program and pursue their STEM degree in Fall 2019; all 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 March 2019, 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 13.1% (up from 12% in the 2016-17 report). During this evaluation period, based on the data the evaluator received from the OK-LSAMP program office, 12.4% of the current scholars (33 out of 267) have had international experience. The Alliance continues to make efforts to improve this percentage; however, to meet this objective in the next phase, many more scholars will need to take advantage of international opportunities.

Many students who responded to our online surveys for the past five years have expressed an interest in an international workshop. 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 30% in the next grant cycle.

2. Host a PHD camp to help with the graduate school process

Many students who responded to our online surveys for the past five years have indicated an interest in attending a PHD camp. 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 five student surveys.

A workshop was offered at the 2018 Research Symposium titled “Graduate Research Fellowship Program: Prepare to Apply as an Undergraduate Student”. This was a great opportunity for scholars to learn more about graduate school opportunities. In addition to continuing to host similar workshops, we recommend hosting the PHD camp each year to provide a dedicated time for guidance in the graduate school process.

3. Increase research opportunities for scholars

Data from the OK-LSAMP program office indicate that 47.1% of the seniors (74 of 157) identified during this evaluation period participated in research during at least one semester, and 56.8% of these (42 of 74) participated in both semesters. Students doing research during this period attended conferences (including the Research Symposium) at a higher rate than those who did not conduct research. The numbers are similar for juniors: 45.8% (27 of 59) participated in research at some point during this evaluation period.

Over half of the juniors and seniors during the evaluation period did not work on research (115 of 216). 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. We recommend that the program increase the number of mentors to provide more research opportunities for scholars.

4. Provide more opportunities for students to interact

Scholars who responded to the past four 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 PHD 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 expressed interest in receiving more information about the program, meetings, and potential research mentors. For Alliance institutions that are not holding regular meetings, sending consistent communication to their scholars, and providing them with needed guidance, we recommend this.

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

- 11 students were included in this evaluation
- 1 student was a sophomore, 2 students were juniors, and 8 were seniors
- 11 of 11 scholars (100%) were URM students

Support

- 9 of the 11 students included in this evaluation (81.8%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 1 of the 7 students (14.3%) who was in the program through Summer 2018 participated in an internship that summer
- 1 of 3 graduates (33.3%) participated in at least one summer internship

Graduate School Preparation

- 7 of 9 students (77.8%) who participated in Fall 2018 conducted research
- 8 of 10 students (80.0%) who participated in Spring 2019 conducted research
- 3 of 3 graduates (100.0%) had a minimum GPA of 3.0
- 1 of 10 juniors and seniors (10.0%) took the GRE
- 1 of 10 juniors and seniors (10.0%) completed at least one graduate school application. No students completed three or more applications.

Results

- 3 of 8 seniors (37.5%) graduated
- 3 of 3 graduates (100.0%) were URM students
- 1 of 1 graduate (100.0%) who applied to graduate school was accepted

East Central University

Participants

- 12 students were included in this evaluation
- 3 students were juniors and 9 were seniors
- 12 of 12 scholars (100.0%) were URM students

Support

- 12 of the 12 students included in this evaluation (100.0%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 3 of the 9 students (33.3%) who were in the program through Summer 2018 participated in an internship that summer
- 3 of 6 graduates (50.0%) participated in at least one summer internship. Two of the graduates participated in two or more.

Graduate School Preparation

- 6 of 11 students (54.5%) who participated in Fall 2018 conducted research
- 6 of 12 students (50.0%) who participated in Spring 2019 conducted research
- 6 of 6 graduates (100.0%) had a minimum GPA of 3.0
- 4 of 12 juniors and seniors (33.3%) took the GRE
- 4 of 12 juniors and seniors (33.3%) completed at least one graduate school application. No students completed three or more applications.

Results

- 6 of 9 seniors (66.7%) graduated
- 6 of 6 graduates (100.0%) were URM students
- 3 of 4 graduates (75.0%) who applied to graduate school were accepted

Langston University

Participants

- 41 students were included in this evaluation
- 6 students were freshmen, 10 were sophomores, 11 were juniors and 14 were seniors
- 41 of 41 scholars (100.0%) were URM students

Support

- 29 of the 41 students included in this evaluation (70.7%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 12 of the 31 students (38.7%) who were in the program through Summer 2018 participated in an internship that summer
- 9 of 11 graduates (81.8%) participated in at least one summer internship. Six of the graduates participated in two or more.

Graduate School Preparation

- 17 of 38 students (44.7%) who participated in Fall 2018 conducted research
- 15 of 37 students (40.5%) who participated in Spring 2019 conducted research
- 10 of 11 graduates (90.9%) had a minimum GPA of 3.0
- 2 of 25 juniors and seniors (8.0%) took the GRE
- 1 of 25 juniors and seniors (4.0%) completed at least one graduate school application. No students completed three or more applications.

Results

- 11 of 14 seniors (78.6%) graduated
- 11 of 11 graduates (100.0%) were URM students
- 1 of 1 graduate (100.0%) who applied to graduate school was accepted

Northeastern State University

Participants

- 10 students were included in this evaluation
- 4 students were juniors and 6 were seniors
- 10 of 10 scholars (100.0%) were URM students

Support

- 6 of the 10 students included in this evaluation (60.0%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 5 of the 9 students (55.6%) who were in the program through Summer 2018 participated in an internship that summer
- 3 of 3 graduates (100.0%) participated in at least one summer internship. One of the graduates participated in two or more.

Graduate School Preparation

- 6 of 9 students (66.7%) who participated in Fall 2018 conducted research
- 4 of 6 students (66.7%) who participated in Spring 2019 conducted research
- 1 of 3 graduates (33.3%) 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. No students completed three or more applications.

Results

- 3 of 6 seniors (50.0%) graduated
- 3 of 3 graduates (100.0%) were URM students
- 2 of 2 graduates (100.0%) who applied to graduate school were accepted

Northwestern Oklahoma State University

Participants

- 5 students were included in this evaluation
- All 5 students were seniors
- 5 of 5 scholars (100.0%) were URM students

Support

- 5 of the 5 students included in this evaluation (100.0%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 0 of the 3 students (0.0%) who were in the program through Summer 2018 participated in an internship that summer
- 0 of 1 graduate (0.0%) participated in at least one summer internship

Graduate School Preparation

- 0 of 5 students (0.0%) who participated in Fall 2018 conducted research
- 0 of 5 students (0.0%) who participated in Spring 2019 conducted research
- 0 of 5 juniors and seniors (0.0%) took the GRE
- 0 of 5 juniors and seniors (0.0%) completed at least one graduate school application.

Results

- 1 of 5 seniors (20.0%) graduated
- 1 of 1 graduate (100.0%) was a URM student
- 0 of 0 graduates (0.0%) who applied to graduate school were accepted

Oklahoma State University

Participants

- 104 students were included in this evaluation
- 6 students were freshmen, 18 were sophomores, 21 were juniors and 59 were seniors
- 103 of 104 scholars (99.0%) were URM students

Support

- 55 of the 104 students included in this evaluation (52.9%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 20 of the 83 students (24.1%) who were in the program through Summer 2018 participated in an internship that summer
- 14 of 27 graduates (51.9%) participated in at least one summer internship. Six of the graduates participated in two or more.

Graduate School Preparation

- 25 of 92 students (27.2%) who participated in Fall 2018 conducted research
- 15 of 91 students (16.5%) who participated in Spring 2019 conducted research
- 17 of 27 graduates (63.0%) had a minimum GPA of 3.0
- 6 of 80 juniors and seniors (7.5%) took the GRE
- 6 of 80 juniors and seniors (7.5%) completed at least one graduate school application. Three students completed three or more applications.

Results

- 27 of 59 seniors (45.8%) graduated
- 27 of 27 graduates (100.0%) were URM students
- 4 of 5 graduates (80.0%) who applied to graduate school were accepted

Southeastern Oklahoma State University

Participants

- 14 students were included in this evaluation
- 2 students were sophomores, 5 were juniors and 7 were seniors
- 14 of 14 scholars (100.0%) were URM students

Support

- 12 of the 14 students included in this evaluation (85.7%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 3 of the 12 students (25.0%) who were in the program through Summer 2018 participated in an internship that summer
- 1 of 1 graduate (100.0%) participated in at least one summer internship

Graduate School Preparation

- 9 of 14 students (64.3%) who participated in Fall 2018 conducted research
- 9 of 13 students (69.2%) who participated in Spring 2019 conducted research
- 1 of 1 graduate (100.0%) had a minimum GPA of 3.0
- 0 of 12 juniors and seniors (0.0%) took the GRE
- 0 of 12 juniors and seniors (0.0%) completed at least one graduate school application.

Results

- 1 of 7 seniors (14.3%) graduated
- 1 of 1 graduate (100.0%) was a URM student
- 0 of 0 graduates (0.0%) who applied to graduate school were accepted

Southwestern Oklahoma State University

Participants

- 12 students were included in this evaluation
- 3 students were sophomores, 2 were juniors and 7 were seniors
- 12 of 12 scholars (100.0%) were URM students

Support

- 10 of the 12 students included in this evaluation (83.3%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 5 of the 9 students (55.6%) who were in the program through Summer 2018 participated in an internship that summer
- 2 of 3 graduates (66.7%) participated in at least one summer internship. One of the graduates participated in two or more.

Graduate School Preparation

- 10 of 10 students (100.0%) who participated in Fall 2018 conducted research
- 9 of 11 students (81.8%) who participated in Spring 2019 conducted research
- 3 of 3 graduates (100.0%) had a minimum GPA of 3.0
- 1 of 9 juniors and seniors (11.1%) took the GRE
- 2 of 9 juniors and seniors (22.2%) completed at least one graduate school application. One student completed three or more applications.

Results

- 3 of 7 seniors (42.9%) graduated
- 3 of 3 graduates (100.0%) were URM students
- 1 of 2 graduates (50.0%) who applied to graduate school were accepted

University of Central Oklahoma

Participants

- 12 students were included in this evaluation
- 1 student was a freshman, 1 was a sophomore, 6 were juniors and 4 were seniors
- 12 of 12 scholars (100.0%) were URM students

Support

- 11 of the 12 students included in this evaluation (91.7%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 3 of the 8 students (37.5%) who were in the program through Summer 2018 participated in an internship that summer
- 0 of 2 graduates (0.0%) participated in at least one summer internship.

Graduate School Preparation

- 8 of 9 students (88.9%) who participated in Fall 2018 conducted research
- 11 of 12 students (91.7%) who participated in Spring 2019 conducted research
- 2 of 2 graduates (100.0%) had a minimum GPA of 3.0
- 0 of 10 juniors and seniors (0.0%) took the GRE
- 0 of 10 juniors and seniors (0.0%) completed at least one graduate school application.

Results

- 2 of 4 seniors (50.0%) graduated
- 2 of 2 graduates (100.0%) were URM students
- 0 of 0 graduates (0.0%) who applied to graduate school were accepted

University of Oklahoma

Participants

- 37 students were included in this evaluation
- 3 students were sophomores, 3 were juniors and 31 were seniors
- 37 of 37 scholars (100.0%) were URM students

Support

- 21 of the 37 students included in this evaluation (56.8%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 15 of the 32 students (46.9%) who were in the program through Summer 2018 participated in an internship that summer
- 4 of 6 graduates (66.7%) participated in at least one summer internship. One of the graduates participated in two or more.

Graduate School Preparation

- 0 of 36 students (0.0%) who participated in Fall 2018 conducted research
- 11 of 35 students (31.4%) who participated in Spring 2019 conducted research
- 6 of 6 graduates (100.0%) had a minimum GPA of 3.0
- 2 of 34 juniors and seniors (5.9%) took the GRE
- 3 of 34 juniors and seniors (8.8%) completed at least one graduate school application. Two students completed three or more applications.

Results

- 6 of 31 seniors (19.4%) graduated
- 6 of 6 graduates (100.0%) were URM students
- 2 of 2 graduates (100.0%) that applied to graduate school were accepted

University of Tulsa

Participants

- 9 students were included in this evaluation
- 2 students were juniors and 7 were seniors
- 9 of the 9 scholars (100.0%) were URM students

Support

- 8 of the 9 students included in this evaluation (88.9%) received funding during Summer 2018, Fall 2018, and/or Spring 2019
- 6 of the 8 students (75.0%) who were in the program through Summer 2018 participated in an internship that summer
- 5 of the 5 graduates (100.0%) participated in at least one summer internship. Four of the graduates participated in two or more.

Graduate School Preparation

- 7 of 8 students (87.5%) who participated in Fall 2018 conducted research
- 8 of 9 students (88.9%) who participated in Spring 2019 conducted research
- 5 of 5 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. Two students completed three or more applications.

Results

- 5 of 7 seniors (71.4%) graduated
- 5 of 5 graduates (100.0%) were URM students
- 3 of 4 graduates (75.0%) that applied to graduate school were accepted

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

Appendix 2: Scholar Responses About Group Meetings

What was most helpful about the group meetings that you attended?

Talking about conference deadlines

Hearing from doctorate students in the program.

Receiving information about graduate school applications

The information provided about upcoming events and requirements.

The ability to ask question pertaining to summer REU programs

I heard another student's research experience and how they obtained their research experience.

The group meetings are informative.

Knowing the deadlines for research days and when to present my posters.

Writing workshop

Getting the opportunity to see different kinds of research being done and information on graduate school.

It was beneficial to know some resources that are available to us as students both on campus and in industry.

The variety in information

The things being talked about

Talking about GRE, grad school ect

The interaction with faculty and other peers.

The information

Got to hear about other students research

Awareness of upcoming deadlines

The group meetings gave me information about upcoming conferences or other possible presentation opportunities.

The information available for graduate school applications and general help with the process.

The group meetings that we conducted often discussed research opportunities and planning after graduation. Both of these things were very helpful, [Name of leader] helped me greatly in preparing for graduate school.

I was able to learn about what other professors are working on in their field and it gave me a greater appreciation of the various areas in STEM.

The information about graduate school

Info on grad school and practicing presentations

It talked about the importance of statistics in biology.

Learning about the different opportunities on/around the campus for research and classes.

The information released to us in regards to the program

What would you change for future group meetings?

Ensuring everyone's presentation material was based on scientific research and had fully completed abstracts instead of being allowed to give a talk on why Carl Segan was wrong.

It would be helpful to know the agenda ahead of time so that I knew whether or not I should go.

The times, because most conflicted with schedule.

Nothing at all

Have just one more meeting.

Scheduling group meetings at more convenient times.

nothing

More organized and to the point

Maybe take a poll from the scholars of different topics and speakers we would be interested in listening to.

I really liked the speaker who used the Iphone surveys/questionnaire to keep us engaged. I think more need to consider doing this.

More exciting speakers

Nothing

Just more info provided

More interaction with faculty and head departments as well as presentation of students from other research fields

Have more time options

I would like to go to more

N/a

I would like to have group meetings at least once a month to aid in staying on track.

Have student presenters rather than mainly lecture style presentations.

I don't have any recommendations for improvement.

Having the presenter to find a way to have students interact, even briefly, during the presentation.

N/A

I understand I have to go to the meeting for the participation but most of the time the topics do not apply to my major or area of research/intrst. I hink trying to have a larger variety of speakers or topics that are more widely relevent would help because sometimes I feel like I'm wasting my time sitting through a hour presentation tht has absolutely no relevance to me.

N/A

I wouldn't change anything, the style of our meetings work well for our campus

Appendix 3: Scholar Responses About Mentor Support

How did your research mentor help you?

Advised me on course work, internship programs, and helped me work through personal issues impacting my studies.

Walked me through research procedures that were unfamiliar to me.

By proof reading and assisting in the thought processes of my research.

My research mentor provided me direction on where to go with my study, and how to perform the statistical tests with my data.

He has provided me with experience within a multi-module apparatus that has enabled me to ascertain creative insight with how I can intermingle and engage my studies with other disciplines.

He was in the lab guiding and helping out with any questions that needed answering.

I wrote a thesis in the fall semester. We met many times to get my thesis edited and submitted!

Provide research materials

She helps in so many ways I couldn't begin to list them.

Considering my research mentor is the professor under whom I'm completing my senior design project, he's helped me a lot on my project as well as with other schoolwork questions I may have.

Helped me find solutions to problems

She was highly essential for the involvement and participation in all events

He served as a guide for the research projects that I was a part of and helped me learn the protocols to effectively run experiments on my own or with limited supervision.

He helped me understand areas of my research that I didn't fully understand.

(I got my research mentor in the spring.)

Talked with me about professional development, works with me in the lab, helping me learn to work with data.

Helped us with conference deadlines, making posters and presentations, attaining more research opportunities, on campus collaboration & scholarship opportunities

Figuring out the next steps in my project. Encouragement with figuring the research out. Encouragement figuring out future school plans.

Provided excellent advice regarding current and future opportunities for things like graduate school, research projects, and lab experience.

Always kept me updated on different opportunities

My mentor helped me find the students that last worked on my project and connect me with them to get the project started.

I've been working with my research mentor since before I was involved in OKLSAMP. They help guide me through a lot of the research processes I am unfamiliar with as well as a lot of other things like selecting my courses, etc. Almost acts as a secondary advisor in addition to being a research mentor.

She's been helping with teaching me various lab skills and independence in the lab.

He helps students understand how our research plays into the bigger picture and is a great resource to talk to.

How could your research mentor improve?

N/A

None, did an excellent job.

More strict deadlines

I don't know... my mentor did such a good job.

Well, we could meet more, but he is a rather occupied individual.

He is great

I have two research mentors who collaborated into one project. Both were very helpful in my project.

He has little experience working with undergrads, so he could be a little better at guiding me.

Being a bit more available. I often have to text him first to see if he's in his office or not.

Get back to me about my problems quicker

I honestly don't have any complaints. He's the best mentor I could have gotten.

She's really great, I can't think of improvability..

I'm not sure they could be much better in terms of helpfulness, availability, and enthusiasm.

My mentor is very busy with other projects. I'm not trying to criticize him but I do feel that I am working on my project alone.

I might be better to have a more planned schedule of when we are going to meet. Usually I just drop by their office or email a few days before. I might be nice to have more set dates throughout the semester.

N/A

He can't.

Appendix 4: Scholar Responses About Graduate School Preparation

What kind of help did you receive in order to prepare for the GRE?

Magoosh GRE prep course

They gave me sources to use so that I can prepare for the GRE

How to apply for it

Prep course

Reimbursment, importance of GRE

They want to get me to do a prep course. They'll pay for it and refund the exam fee.

GRE Review Books

OK-LSAMP paid for half of my GRE cost.

Practice tests, general advice

Financial

No

Course advice

Textbook

Appendix 5: Scholar Responses About 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?

Funding

Social events through oksamp to meet other scholars and spread ideas as well as network.

The department that ran the program was recently dissolved, so I'm not sure what the current state of the program is.

Research workshops to improve resumes would help students to a substantial degree. Building a resume for graduate school is so crucial and is dearly missed by the students at my institution.

Everything has been great! LSAMP helped me learn about the internship I got accepted to this summer.

Better food at the research days and symposiums

LSAMP at [Name of institution] is great!

Leadership, which at this point has been addressed.

A more concrete schedule of the events and abstract open to submission. A general calendar that students can add to their personal account, in this way can see availability and participation of the event/abstract submission or others

Everything is great! I would have liked to see more computer science researchers though.

Maybe add social activities, I guess. The seminars and encouragement to go into research is good.

The [Name of institution] program lost the coordinator and did not meet at all this semester. Having better communication with the LSAMP scholars would be helpful.

Campus promotion, as far as I know the student body is fairly unaware of LSAMP.

I think the interactions with other students could be increased.

Finding ways to help students interact more often and get to know each other better because I don't know many people in the program and I don't usually get the chance to sit and chat because of my schedule.

N:A

There is nothing that really get me to be excite that I'm in this program. Meeting feel more like something I have to do versus something I want to do. It feels more like something Im trying to get through instread of looking forward to being involved in the program.

Appendix 6: Scholar Responses About Program Strengths, Weaknesses, Recommended Changes, and Final Comments

What are the strengths of the OK-LSAMP program?

People who look like me and go through similar struggles are brought together

Community, pushing education and allowing individuals from all background present their research and talk about their lives. The guest speaker at the FA 2018 symposium was incredible.

Semesterly research stipends, information about graduate schools

Opportunities they provide and the financial assistance.

It not only provides financial support to students, but personal assistance in reaching the goals of those students in higher education.

The opportunities that the program provides

The resources that it offers.

Communication and help

Being able to interact with other minority scholars and research friends.

Preparation in research presentations.

It incentivizes the steps that are necessary to get into and be successful in graduate school.

The program advisers are very helpful and have your best interest at heart regardless of if a person wants to pursue their masters or not.

Great people that are always trying to help you succeed!

Ok

Encourages to further education

The diversity, inclusion and awareness of the science field. OK-LSAMP propelled and encouraged the participation in research from a start, and continued funding unique opportunities that will later aid me to Graduate School.

The financial aid provided to the students and the ability to be involved in undergraduate research it is a great way to get experience in a field you are interested.

The great leaders promoting research and conferences.

Scholarships, support, help for grad school, mentoring

OK-LSAMP provides underrepresented groups to come together, engaging in conversations about research and graduate school.

There is a lot of support, and I got a lot of information on opportunities. I also got to connect with others doing research that I wouldn't have otherwise.

Bringing in students of many backgrounds and hearing current barriers to successes so that they can be removed.

LSAMP delivers important academic information regarding scholarship and internship opportunities that I find quite helpful while fostering a community of scientific individuals with similar backgrounds.

I think that the OK-LSAMP staff is your biggest strength, everyone that I have met involved with the program is very helpful and passionate about students and program.

It connects students to the importance of research and what it has to offer.

It helps students find what they are most interested in by directly interacting with professors in research, and it gives a numerous amount of help in finding internship opportunities for students.

Help with graduate school and information provided by OK-LSAMP

Grad school reimbursement programs, prep programs, presentation conferences

I thing the idea behind the program is excellent but the execution could be improved.

Everybody is kind and the newsletters are really helpful.

It's a great way to connect and gather information that was previously difficult to get a hold of in some cases.

What are the weaknesses of the OK-LSAMP program?

Sometimes it takes a while for emails to be received/replied to from the main [Name of institution] campus and their coordinators- but I understand people are busy.

The department that organized the program at [Name of institution] was dissolved.

None

Less statewide program interaction than some other organizations.

The program is solid

Social interaction between its members.

Sometimes the emails are messy

None

Academic and personal support.

Nothing. They recommend and give the best to students that they can.

Ok

Not enough meetings

As a student in the [Name of institution] campus, none.

there could be more communication

Not enough potential mentors are known.

Needs more structure

I cannot think of any.

Only one meeting a month and nothing much outside of the meetings

I would like to see more workshops at [Name of institution], it could have been that I missed the few that were held but including more would be nice.

There does not seem to be opportunities for interactions between scholars and schools

Other than the weaknesses of the student interactions during meeting, I don't think I've been in the program long enough to say that there are many.

Awareness, I didn't know much about the program until I joined

There seems to be a lot more focus on the engineering students (which makes sense because I think a majority of the students in the program are engineering students).

N/A

While the information is useful, sometimes it's heavy-handed towards one minority and shows nothing for others in terms of scholarship offers

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

N/A

I would try to recover some of the more helpful aspects of the program before the [Name of department] was dissolved.

None

More statewide conferences to encourage students to do research and present it.

I would not make any

I would initiate members to work on independent/joint projects with each other.

None

None

More compassion.

Reach out to more students in CEAT. I know a lot of minorities within my program and college that knew nothing about OK-LSAMP until I mentioned it to them.

Ok

Meet more, make more known to prospective students

Availability of a calendar to all students to see the submissions of abstract and other conferences.

to see more topics related to computer science

More activities for scholars to interact, more mentors asking for scholars, because it can be hard to find a mentor in your field.

Adding more structure...freshman levels, sophomore levels, junior levels, senior levels. Each level has things that must be done

I would like for the meetings to be held more often, and have more financial incentives, which could only occur through an increased budget for the program.

More outside events for students

I cannot recommend any changes at this time.

I would find ways for students to interact more with each other during meetings, and possibly encourage students from different universities and similar majors to interact.

N/A

It would be cool if there was a way to make it feel more like I'm a part of a program instead of just meeting I attend twice a month and a presentation in the fall.

Show people how to ask a professor about their research and show interest in being a part of their research.

Any other final comments?

I am honored to be apart of the LSAMP program and excited to continue my undergrad research through this program.

I've really enjoyed being a part of this program.

N/A

I have been very fortunate to participate in the OK-LSAMP program.

It's a great program and I'm thankful for their support and help all these years.

No

OK-LSAMP helped me get an internship at [Name of institution]!

Thank you guys for all of your help!

No

N/A

Appendix 7: List of Survey Questions

All survey questions are listed below. Due to question logic, all respondents may not answer each question.

Did you participate as a student in the OK-LSAMP program during Summer 2018, Fall 2018, and/or Spring 2019?

Yes

No

When did you first begin participating in the OK-LSAMP program?

Before Summer 2018

Summer 2018

Fall 2018

Spring 2019

Did you transfer from another institution?

Yes

No

What is the name of the institution you attended prior to transferring?

How did you find out about the OK-LSAMP program? (Choose all that apply)

Campus recruitment

State-wide STEM activity (Name the activity below)

On-campus program, such as McNair Scholars, summer academy or camp (Name the program)

OK-LSAMP Website

Social Media

Friends or family

Current OK-LSAMP participant

Professor(s)

Other (Specify below)

You selected that you heard about the OK-LSAMP program from a professor. Where was the professor(s)?

At my previous school (If you transferred)

At my current school

Other (Specify below)

Please rate your OK-LSAMP experiences with the following?

	Excellent	Good	Okay	Fair	Poor	Not Applicable
Academic support	<input type="radio"/>					
Social Support	<input type="radio"/>					
Staff availability	<input type="radio"/>					
Opportunity to work with campus support programs	<input type="radio"/>					
Opportunity to work with community organizations	<input type="radio"/>					
Interactions with other students in the program	<input type="radio"/>					

What can be improved?

Do you have an OK-LSAMP research mentor?

Yes, my research mentor is also the OK-LSAMP campus program manager

Yes, my research mentor is someone other than the OK-LSAMP program manager

No

How many times did you meet individually with your research mentor during the **Fall 2018** semester?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Were you required to submit a progress report to your research mentor during the **Fall 2018** semester?

Yes

No

How many times did you meet individually with your research mentor during the **Spring 2019** Semester?

0

1

2

3

4

5

6

7

8

9

10

Were you required to submit a progress report to your research mentor during the **Spring 2019** semester?

Yes

No

Rate the helpfulness of your research mentor. 1=Least Helpful; 5=Most Helpful

1

2

3

4

5

How did your research mentor help you?

How could your research mentor improve?

Have you met with your campus OK-LSAMP program manager in Fall 2018 or Spring 2019?

Yes

No, but I know who the campus program manager is

No, I do not know who the campus program manager is

How many times did you attend OK-LSAMP group meetings at your institution in the **Fall 2018** semester?

- 0
- 1
- 2
- 3
- 4
- 5
- More than 5

Reasons for not attending **Fall 2018** group meetings (Choose all that apply)

- Not in the program at the time
- There were no meetings
- Schedule conflicts
- Not interested in topics
- Other (Specify below)

Overall, how helpful were the **Fall 2018** group meetings you attended? 1=Not at all Helpful; 5=Extremely Helpful

- 1
- 2
- 3
- 4
- 5

How many times did you attend OK-LSAMP group meetings at your institution in the **Spring 2019** semester?

- 0
- 1
- 2
- 3
- 4
- 5
- More than 5

Reasons for not attending **Spring 2019** group meetings (Choose all that apply)

- Not in the program at the time
- There were no meetings
- Schedule conflicts
- Not interested in topics
- Other (Specify below)

Overall, how helpful were the **Spring 2019** group meetings you attended? 1=Not at all Helpful; 5=Extremely Helpful

- 1
- 2
- 3
- 4
- 5

What was most helpful about the group meetings that you attended?

What was least helpful about the group meetings that you attended?

What would you change for future group meetings?

Did you attend the annual OK-LSAMP Research Symposium at Oklahoma State University in Fall 2018?

- Yes
- No

Reasons for not attending the annual OK-LSAMP Research Symposium (Choose all that apply)

- Not in the program at the time
- I did not know about it
- I was not interested
- Schedule conflict
- Other (Specify below)

Did you present at the Fall 2018 Symposium?

- Yes
- No

How many other professional meetings (excluding the Research Symposium) did you attend during Summer 2018, Fall 2018 or Spring 2019?

- 0
- 1
- 2
- 3
- 4
- 5
- More than 5

Did you receive financial assistance from OK-LSAMP to attend any of these meetings?

- Yes
- No

How many presentations did you make at the other professional meetings you attended?

- 0
- 1
- 2
- 3
- 4
- 5
- More than 5

Are there any professional meetings you would recommend that all scholars attend?

Reasons for not attending other professional meetings (Choose all that apply)

- Not in the program at the time
- I did not know about them
- It was too expensive
- I was not interested
- Schedule conflict
- Other (Specify below)

Did you complete Responsible Conduct of Research (RCR) training in Summer 2018, Fall 2018, or Spring 2019?

- Yes
- No
- Not sure

Were you encouraged to participate in a summer internship?

- Yes
- No

How did you find out about internship opportunities? (Choose all that apply)

- Mentor or campus program manager
- OK-LSAMP program office emails
- OK-LSAMP Website
- OK-LSAMP Group Meeting
- Friend or family
- Another student
- Other (Specify below)

Did you participate in an internship in Summer 2018?

- Yes
- No

Are you planning to participate in an internship in Summer 2019?

- Yes
- No
- Not sure

Were you a junior prior to beginning the Spring 2019 semester?

Yes
No

Were you a senior prior to beginning the Spring 2019 semester?

Yes
No

Have you graduated?

Yes
No

Did someone in the OK-LSAMP program encourage you to take the GRE?

Yes
No

Did someone in the OK-LSAMP program provide you with help in preparing for the GRE?

Yes
No

What kind of help did you receive?

Have you taken the GRE?

Yes
No

Have you applied to any graduate schools?

Yes
No

How many graduate school applications have you completed?

How many acceptances have you received?

Has your institution offered a Ph.D. camp that provides hands-on training in how to successfully apply for and succeed in pursuing a graduate program of study?

Yes, it was offered and I attended
Yes, it was offered but I did not attend
No, but I would be interested in attending if it were offered
No
Not sure
Other (Specify below)

Reason(s) for not attending (Choose all that apply)

- Not in the program at the time
- I did not know about it
- I was not interested
- Schedule conflict
- Other (Specify below)

Has your institution offered a workshop on international travel, including passport and visa information, and travel rules, regulations, and expectations?

- Yes, it was offered and I attended
- Yes, it was offered but I did not attend
- No, but I would be interested in attending if it were offered
- No
- Not sure
- Other (Specify below)

Reason(s) for not attending (Choose all that apply)

- Not in the program at the time
- I did not know about it
- I was not interested
- Schedule conflict
- Other (Specify below)

If you were still a scholar, would you be interested in participating in a one-day Ph.D. camp that provides hands-on training in how to successfully apply for and succeed in pursuing a graduate program of study?

- Yes
- No
- Maybe

If you were still a scholar, would you be interested in participating in a workshop on international travel, including passport and visa information, and travel rules, regulations, and expectations?

- Yes
- No
- Maybe

Please rate your overall satisfaction with the OK-LSAMP program. 1=Least Satisfied; 5=Most Satisfied

- 1
- 2
- 3
- 4
- 5

Please rate how the OK-LSAMP program has helped your academic career? 1=Least Helpful; 5=Most Helpful

- 1
- 2
- 3
- 4
- 5

What are the strengths of the OK-LSAMP program?

What are the weaknesses of the OK-LSAMP program?

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

Any other final comments?

*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

Five-Year Summary Report

Summer 2014 through Spring 2019

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. The fifth year of this phase of funding represented Oklahoma's 25th 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). During this grant cycle, 659 students participated in the program. Oklahoma State University served as the lead institution for the alliance of 11 universities within the state, and the funding cycle covered Academic Years 2014-15 through 2018-19. The participating institutions were Cameron University, East Central University, Langston University, Northeastern State University, Northwestern Oklahoma State University, Oklahoma State University, Southeastern Oklahoma State University, Southwestern Oklahoma State University, University of Central Oklahoma, University of Oklahoma, and University of Tulsa. This evaluation includes a brief summary of the results from the first through the fifth year of the five-year phase (Summer 2014 through Spring 2019).

Purpose of this Summary Evaluation

The OK-LSAMP program had specific goals and objectives that served as the framework for their activities and efforts throughout the five-year funding cycle. The Center for Institutional Data Exchange and Analysis (C-IDEA) at the University of Oklahoma has served as the evaluator for the program throughout this grant cycle and has prepared this summary report to assess the progress of the program toward meeting its goals and objectives. This summative evaluation is an important component of the program as it offers feedback about program status on meeting its goals. It can serve as a guide as the Alliance moves into Phase VI, the next five-year funding cycle. This report provides information on the activities and accomplishments of OK-LSAMP scholars participating in the program as they relate to the program's overall goals.

OK-LSAMP Objectives

The primary goal for this five-year phase of the OK-LSAMP program was 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 were 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. Phase V of the OK-LSAMP program was dedicated to continuing these achievements.

This evaluation uses data on alliance scholars as provided by the OK-LSAMP Program Office over the past five years. 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.

OK-LSAMP Objective 1: *To recruit, retain, and graduate 50% more URMs in STEM fields and increase their matriculation into graduate programs.*

In order to meet the 50 percent goal over the five-year period, the program must have graduated a total of 296 students. To help meet this goal, the Alliance institutions strove to graduate at least 10 percent of the total needed each year during the five-year period. If approximately 60 students graduated per year—with a total of 296 or more graduating by the final year of the five-year period—the Alliance would have met its goal. Figure 1 shows the Alliance exceeded this goal, with a total of 352 graduates over the entire evaluation period.

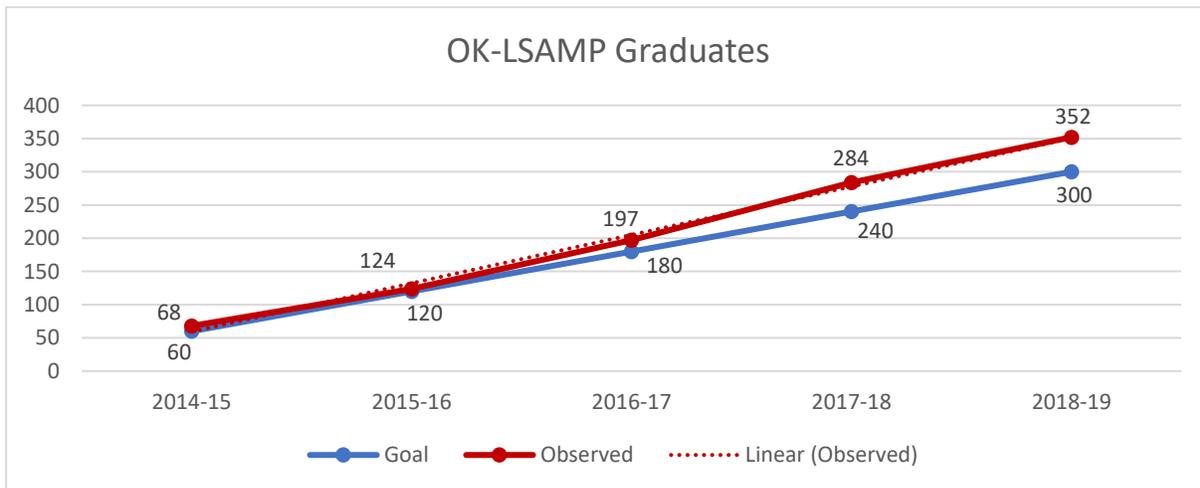


Figure 1: Graduation Counts – Goal vs Observed

Although the program exceeded its graduation target, the final number of URM scholars in the 2018-19 report was slightly below the goal of a 50 percent increase. Based on the starting value of 185 URM students from the 2013-14 report period, the Alliance should have had a total of 278 URM students who participated in the program by the conclusion of the 2018-19 reporting period. By the end of the 2018-19 report period, the Alliance had a total of 266 URM scholars (12 students below the goal). However, it is important to note the Alliance had 305 URM scholars participating during the 2017-18 report period. Figure 2 shows the count of URM scholars each year over this five-year period of the program.

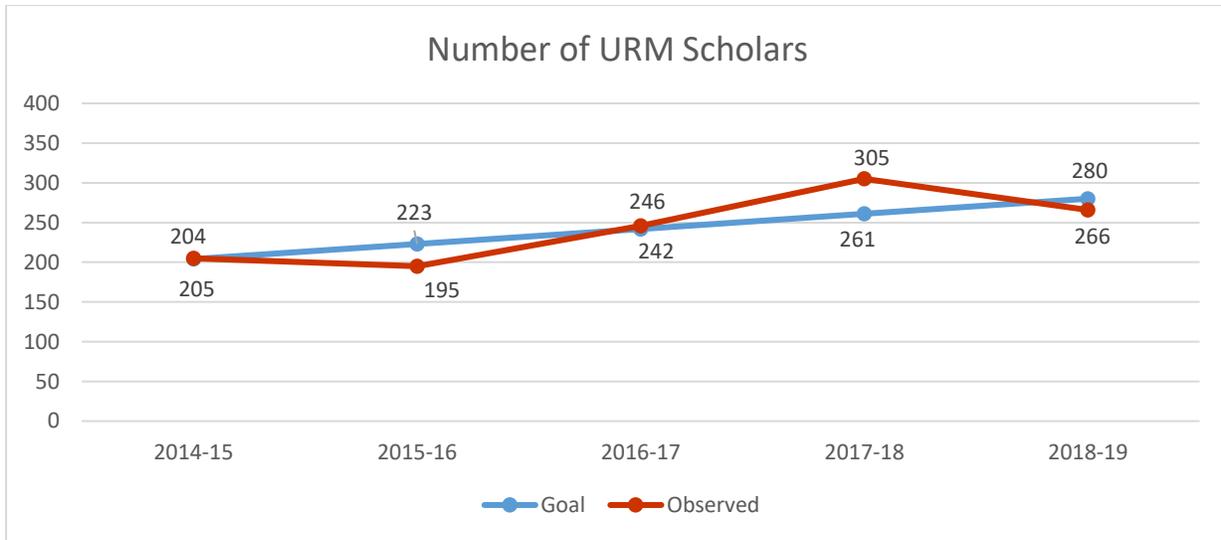


Figure 2: Count of URM Scholars

Objective 1 also states that URM students’ matriculation into graduate programs should increase. Figure 3 shows the count of URM scholars who were accepted into graduate programs for each year of the five-year period. Though the count remained fairly stable throughout this period, the number of students accepted into graduate school did not increase.

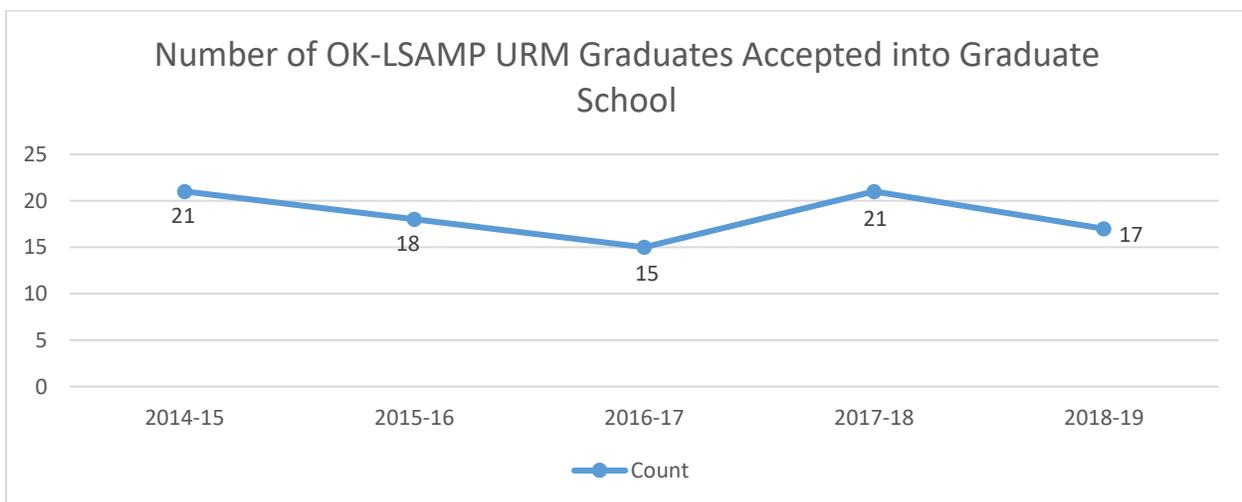


Figure 3: Acceptance into Graduate School

OK-LSAMP Objective 2: *To provide the support students require, academically and professionally, to ensure they build the connections, skills, and motivation to excel.*

The OK-LSAMP program offered a variety of resources to support students’ success academically and professionally. Alliance institutions hosted group meetings where students could interact with other scholars in the program, get research ideas, and learn about important events and deadlines. Additionally, scholars were encouraged to conduct research with support from mentors on their campus. Scholars were also encouraged to participate in summer internships to further develop connections and skills in their fields of study. Figure 4 shows the count and percentage of students who participated in internships each summer, based on the data received from the OK-LSAMP office. While the count of students who completed internships remained fairly stable throughout the evaluation period, the percentage decreased over this time.

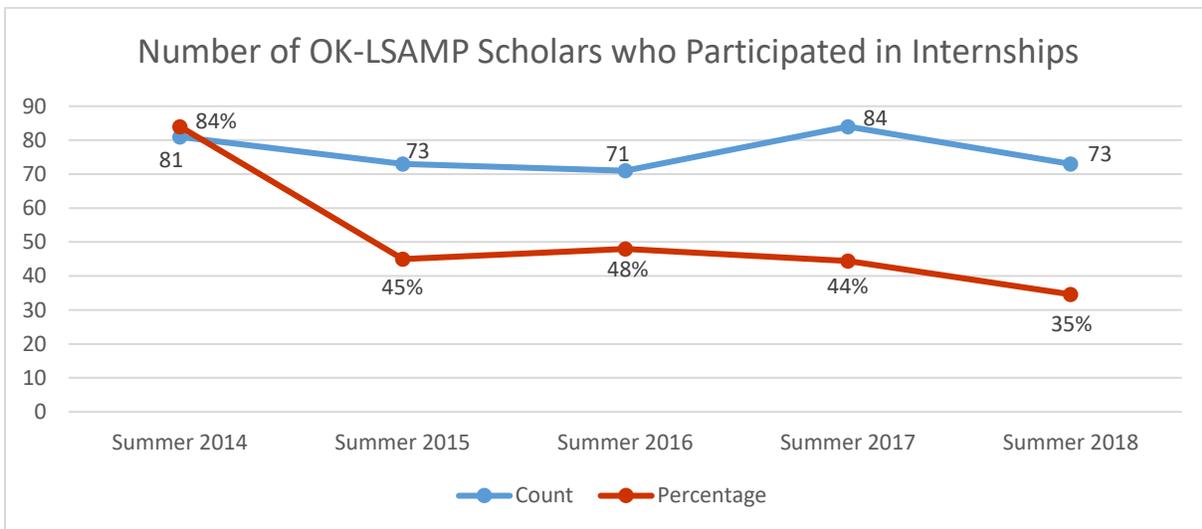


Figure 4: Internship Participation

In addition to the data received by the OK-LSAMP Program Office, an online survey was distributed to OK-LSAMP scholars at least once per year during the funding period. The following results were obtained from the completed student surveys. During the 2015-16 report year, two surveys were administered – one at the conclusion of the Fall 2015 semester, and one at the conclusion of the Spring 2016 semester. One survey was administered near the conclusion of the Spring semester for all other reports (2014-15, 2016-17, 2017-18, and 2018-19). Figure 5 shows the total number of responses as well as the response rates for each survey administered during this period. In general, the response rate has been satisfactory.

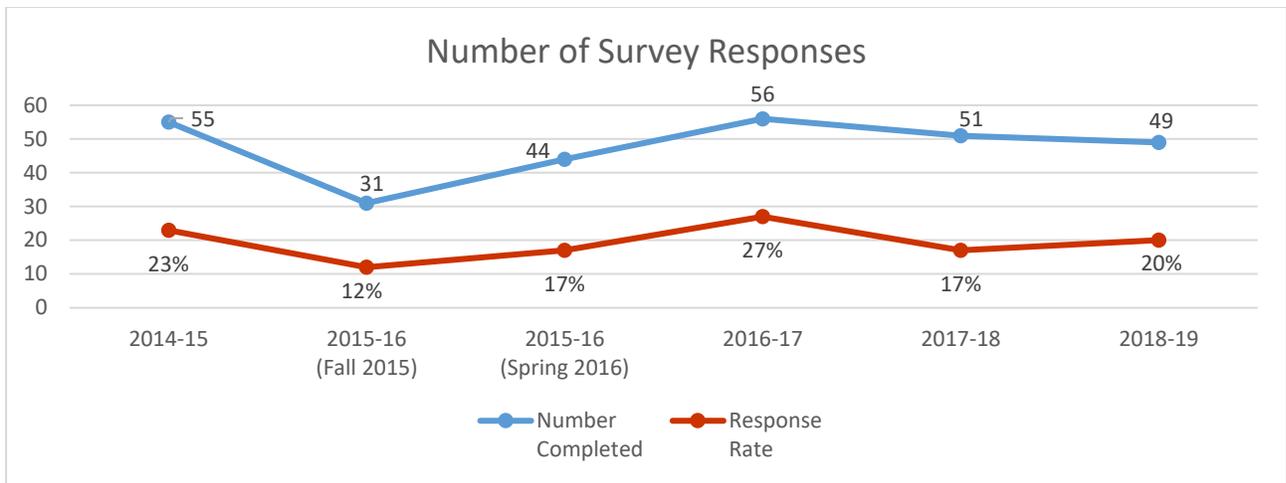


Figure 5: Survey Responses

Based on the student surveys, it appears scholars utilized the opportunities and resources offered by the Alliance institutions for OK-LSAMP scholars. Figure 6 shows the count and percentage of students who attended at least one group meeting each semester. In general, more than half of students attended at least one meeting each semester, and up to 91.0% attended at least one meeting in a given semester.

Scholars were also encouraged to meet with their mentor to conduct research or for other academic support. Figure 7 shows the count and percentage of students who attended at least one meeting with their mentor each semester of the program. Typically, at least 80.0% of students with a mentor attended at least one meeting except for the Fall 2014 and Spring 2015 semesters.

Finally, survey respondents were asked to rate how helpful the OK-LSAMP program was in their academic careers. These ratings were on a scale of 1-5 with 5 being the most helpful. Figure 8 shows the count and percentage of students who rated the helpfulness of the program as either a 4 or a 5.

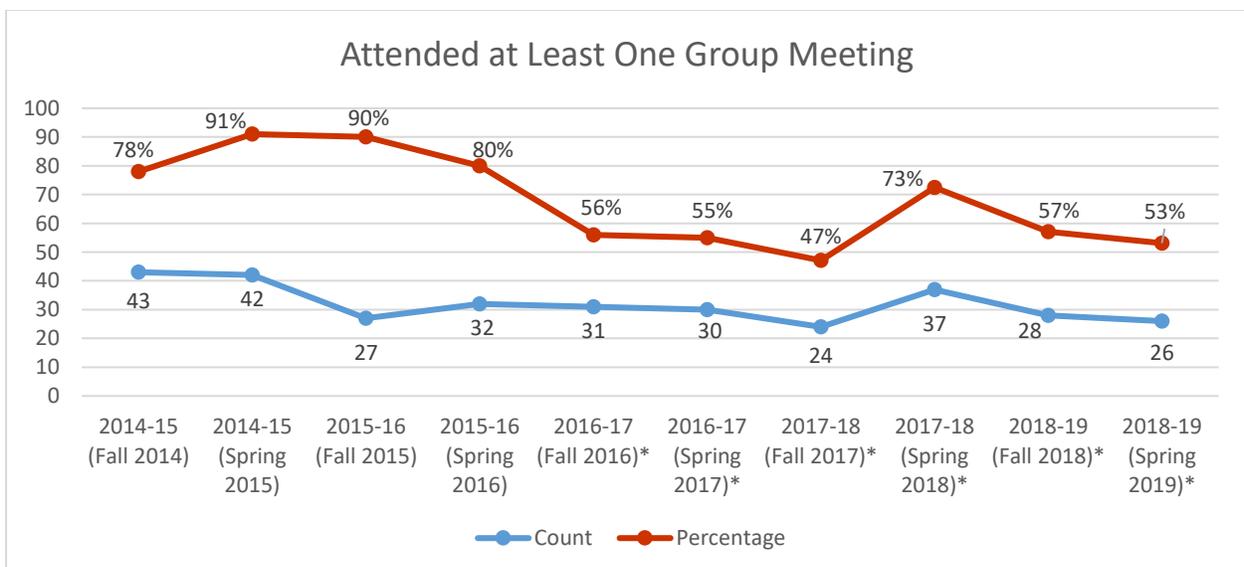


Figure 6: Group Meeting Attendance

*Data collected show minimum of two meetings attended

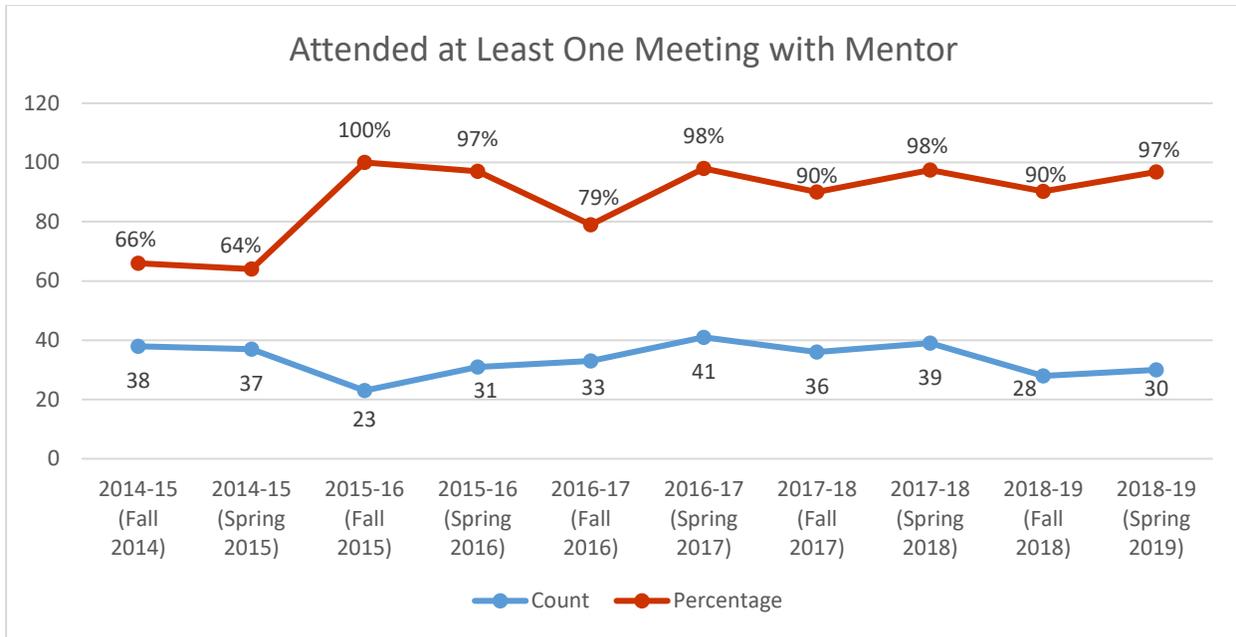


Figure 7: Mentor Meeting Attendance

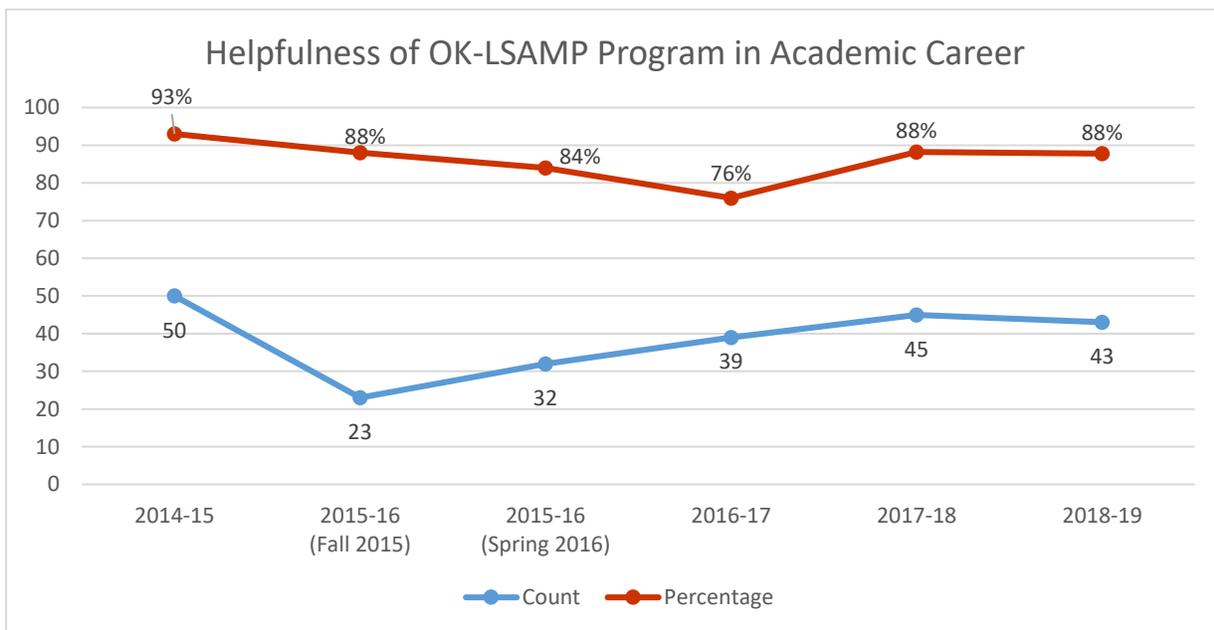


Figure 8: Helpfulness of OK-LSAMP Program – Ratings of 4 or 5

1=Least Helpful; 5=Most Helpful

OK-LSAMP 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 accomplish this objective, the Alliance offered financial support, workshops, and assistance in obtaining international internships. During the first two years of this reporting period, only four percent of scholars had participated in international experiences such as study abroad or an international internship or research opportunity. Figure 9 shows the count, actual percentage, and goal percentage of participation in international experiences over the five-year period.

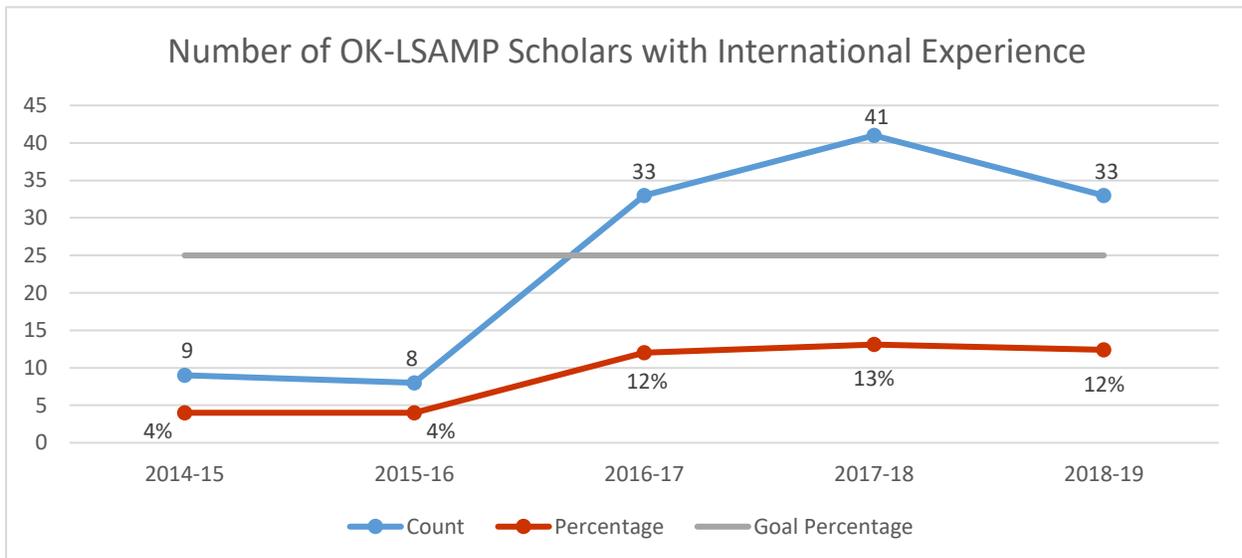


Figure 9: International Experience Participation

Although the Alliance did not meet the goal of 25 percent, the percentage of scholars participating in international experiences increased to at least 12 percent, and up to 13 percent over the final three years of the reporting period.

Conclusion

Over the course of the project, the OK-LSAMP institutions attempted to support their underrepresented minority students as they moved through their academic undergraduate careers as STEM majors. A total of 659 students participated in the program during this five-year evaluation period. In this grant cycle, the Alliance had three main 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.

Based on each year's data from the OK-LSAMP Program Office at Oklahoma State University combined with the data collected from each student survey, the OK-LSAMP program met (or exceeded), in whole or in part, Objectives 1 and 2. The Alliance exceeded its goal of 250 graduates by the end of the 2018-19 report period with a total of 352 students graduating by Spring 2019. Objective 2 was also met during this grant cycle. Generally, the majority of students attended the OK-LSAMP group meetings offered on their campuses, met with their mentors, and found the program to be helpful in their academic careers. Although the Alliance did not meet Objective 3 by the conclusion of the 2018-19 reporting period, the percentage of students who participated in international experiences increased considerably and remained stable for the final three years of the evaluation period.

During the next funding cycle, the Alliance will continue to provide information and resources for OK-LSAMP scholars who express interest in participating in international travel opportunities in an effort to further increase the percentage of scholars with international experiences. The objectives in the next five-year phase of the OK-LSAMP project build upon this cycle's goals, but are slightly more targeted towards increasing URM graduate school enrollment, as well as engaging in more collaboration with community colleges to more effectively recruit, retain, and graduate URM students in STEM fields who are transferring from two-year to four-year institutions. The OK-LSAMP program has supported and will continue to support URM students in their efforts to pursue STEM degrees, attend graduate school, conduct research, and participate in summer internships so they may be successful in their chosen career paths after graduation.