

# 2017 Annual Report

Kentucky-West Virginia  
Louis Stokes Alliance for  
Minority Participation  
(KY-WV LSAMP)



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





Annual Research Symposium



Brittani Grant-Symposium Keynote



LSMCE Conference



LSU France iREU in DC



UK Showcase



Women of Color STEM Conference



Women of Color STEM Conference



American Chemical Society Meeting



WV Res Day @ the Capitol



Tracy Drain Visit to UK



UK Conversations with the President

Kentucky-West Virginia Louis Stokes Alliance for Minority Participation

# 2017 Annual Report

Kentucky – West Virginia  
Louis Stokes Alliance for Minority Participation  
*In Science, Technology, Engineering, and Mathematics*  
(KY-WV LSAMP STEM)

Submitted by

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## INTRODUCTION

The Kentucky-West Virginia Louis Stokes Alliance for Minority Participation program (KY-WV LSAMP) is a nine institution alliance led by the University of Kentucky. Alliance members include: Bluegrass Community and Technical College (BCTC), Centre College, Kentucky State University (KSU), Marshall University, University of Kentucky (UK), University of Louisville (UofL), West Virginia State University (WVSU), West Virginia University (WVU), and Western Kentucky University (WKU). Alliance goals are to create, enhance, and expand programs designed to broaden participation and increase the quality and quantity of students from underrepresented populations who receive degrees in science, technology, engineering, and mathematics (STEM) disciplines. The alliance projects the following key outcomes: increase URM STEM BS degrees at alliance institutions by 50% for a total of 1,000 BS STEM degrees over five years. This will be accomplished by achieving increases in total alliance enrollments to 2000 average annually (a 25% increase) with similar increases in retention, transfer rate, and graduation rates. These increases will contribute to increases in application to and attendance in STEM graduate degree programs.

Each institution has developed programs consistent with LSAMP goals. Institutions have also, with the help of LSAMP, built sustainable partnerships within campus programs as well as with external (outreach) programs and organizations. Program activities and partnership resources focus on outreach and recruiting, peer mentoring, undergraduate research experiences, research presentation opportunities, summer bridge and transitional programs for entering students, curriculum reforms in “gatekeeper” courses, international experiences, and workshops on professional development and STEM career options.

The **intellectual merit** of the program is the increased knowledge base related to teaching and learning practices for STEM disciplines, practices for improved recruiting and retention, and the development of improved curriculum materials and practices for STEM disciplines. As Scholars pursue their degrees and participate in program activities, they develop the skills needed to succeed not only in their degree programs, but also in the professional community of their chosen field. They learn the skills necessary to be the leaders and experts. Scholars give and receive mentoring on multiple levels from middle school and high school students to world renowned researchers. In addition to increasing their knowledge and research skills, this multi-level mentoring also helps the Scholars to build excellent professional networks for current and future research, presentation, educational and professional opportunities. Often, the connections made through the LSAMP program guide Scholars to the next opportunity.

The **broader impact** is the increase in URM STEM BS degree production. This will broaden math, science, and engineering participation of underrepresented students from the two Experimental Program to Stimulate Competitive Research (EPSCoR) states and surrounding regions. Because of the skills developed and the connections made through LSAMP, Scholars are uniquely qualified for graduate programs and industry. Once they have received their BS degrees, many participants continue into graduate programs. This will increase the diversification of the STEM workforce and broaden the participation of underrepresented students who seek and earn graduate degrees.

The increase in skilled workforce has the potential to significantly improve the competitive position of the two states and eventually to improve faculty diversity in STEM fields. In turn, participants will play key roles in educating their respective communities about STEM fields and encouraging younger students to pursue STEM disciplines. The multi-level mentoring gives Scholars a venue for serving as role models for future generations.

The mission statement and logo adopted in 2016 continue to be used. The logo is easily recognized and is expected to be used by program staff and Scholars throughout the alliance on presentations, including, but not limited to posters and papers. The logo is helping to unify the alliance into a group working together for a common purpose.

There have been many successes as well as some continued challenges and trials in 2016-17. Progress continues to be made to increase the quality and quantity of students from underrepresented populations who receive degrees in science, technology, engineering, and mathematics disciplines.

## PROGRAM PROJECTED OUTCOMES

The Kentucky-West Virginia Louis Stokes Alliance for Minority Participation consists of nine colleges and universities. Of these, there are comprehensive research universities, two historically black college and universities (HBCU), regional universities, and a 2-year college. Using knowledge learned from past successes paired with lessons learned from past failures, the alliance will continue to increase the number of students from underrepresented populations who receive degrees in science, technology, engineering, and mathematics disciplines. To accomplish this goal, the following objectives were proposed and have been met.

### Projected Outcome One

*To increase URM STEM BS degrees from 168 annual average to 250 annually for a total of 1,000 degrees over 5 years*

In 2015-16, 274 URM STEM BS degrees were granted by KY-WV LSAMP institutions. This is a 63% increase from the 168 average used in the proposal and a 58% increase from the baseline year (173 degrees in 2006-07). Conservatively assuming there were no graduates in academic year 2013-14, the Alliance has granted 512 URM STEM BS degrees during the current funding period. KY-WV LSAMP anticipates the achievement of granting 482 degrees in order to meet the proposed goal of 1000 URM STEM BS degrees during the grant period. Figure 1 shows the number of degrees from 2006-07 to 2014-15. The significant decrease in numbers from 2011-12 can be attributed (in large part) to incomplete data. The first funding period ended in October 2012, and there was a break in documentation and reporting before the current funding period began.



Currently, complete and accurate data is not available for 2013 and 2014. Overall, there have been more than 1500 URM STEM BS degrees granted at KY-WV LSAMP institutions since 2006.

In addition, when exploring degrees by ethnicity, it is clear there has been a significant increase in degrees granted to African American and Hispanic students since 2011-12. Figure 2 shows the breakdown of URM STEM BS degrees granted by KY-WV LSAMP institutions by ethnicity.

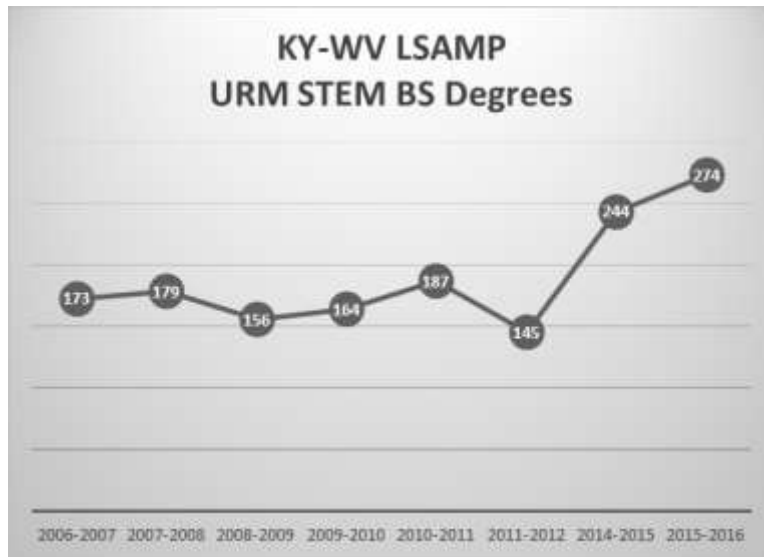


Figure 1: URM STEM BS Degrees Granted at KY-WV LSAMP Institutions

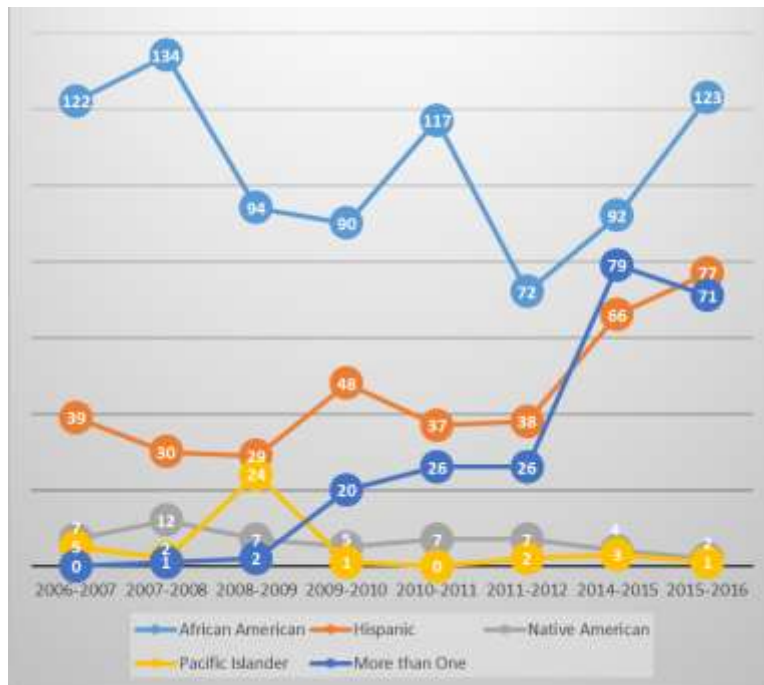


Figure 2: URM STEM BS Degrees Granted by Ethnicity

## Projected Outcome Two

*To increase URM STEM enrollments from 1599 to 2000 annual average*

Traditionally, underrepresented (URM) populations targeted by the national LSAMP program (African American, Hispanic, Native American, and Pacific Islanders) represent an almost unique recruiting challenge for the KY-WV LSAMP institutions because of their unusually low percentages of the populations of the two states. Even though the URM population accounted for over 26% of the US population, they comprise only 16% and 6%\* of the population in Kentucky and West Virginia, respectively. This continues to be a challenge to recruiting students.

Even with this challenge, the KY-WV LSAMP has been successful in increasing enrollments though there was a slight decline this last year. In 2015-16, 1841 URM students were enrolled in STEM BS degree programs at KY-WV LSAMP institutions. This does not meet, but comes close to the goal of 2000 per year. Figure 3 shows the number of URM STEM enrollments at KY-WV LSAMP institutions since 2006. Like the decrease in degrees, the significant decrease in enrollments in 2011-12 can be attributed (in large part) to a break in documentation and reporting. Currently, data is not available for academic years 2013 and 2014.

Even though the overall URM STEM enrollments dropped slightly, the number of African American and Hispanic students enrolled at KY-WV LSAMP institutions did increase slightly from the previous year – 5% and 10%, respectively. Figure 4 shows the breakdown of URM STEM enrollments by ethnicity.

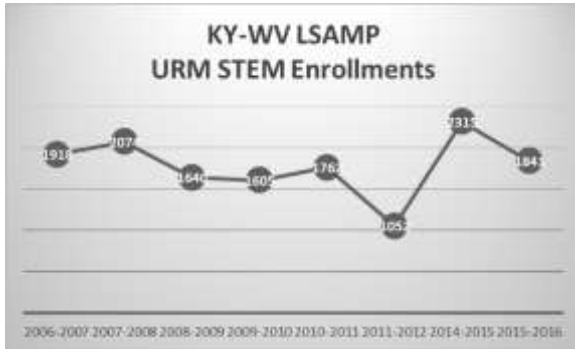


Figure 3: URM STEM Enrollments at KY-WV LSAMP Institutions

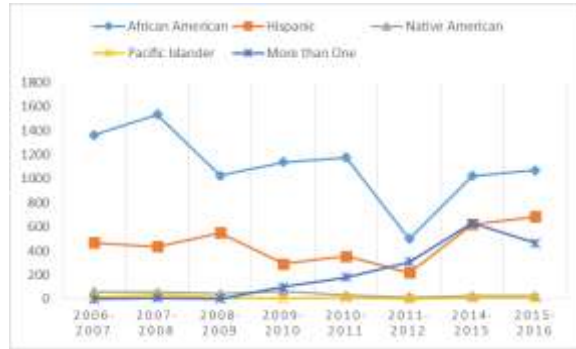


Figure 4: URM STEM Enrollments by Ethnicity

\* Source of URM population data: Kaiser Family Foundation estimates based on the Census Bureau's March 2015 Current Population Survey (CPS: Annual Social and Economic Supplement).

## Additional Important Outcomes

### KY-WV LSAMP Participants

In order to meet program goals of increasing URM STEM enrollments and degrees, KY-WV LSAMP must strive to increase the number of students who participate in program activities and receive program benefits. The increase in program participants (Scholars) should result in a ripple effect that increases the number of students earning STEM degrees not only at the partner institutions, but throughout the entire region including all of West Virginia and Kentucky. This is demonstrated in Figure 5. **Directly Funded Scholars** receive direct LSAMP financial support (such as stipends, tuition aid, textbooks, conference travel, etc.) *and* participate in program activities. **Unfunded Scholars** do not receive direct LSAMP financial support but are documented as being accepted into the program *and* participating in program activities. **Non-Scholar Participants** have not been formally accepted into the program but participate in one or more program activities (such as attending Scholar Meetings and research symposia). **Influenced Students** have no direct connection or communication with program staff or participation in program activities but may be influenced and/or mentored by friends and/or family who do. The ending result is an increase in URM, STEM, and undergraduate research programs and participants throughout the alliance and the region.

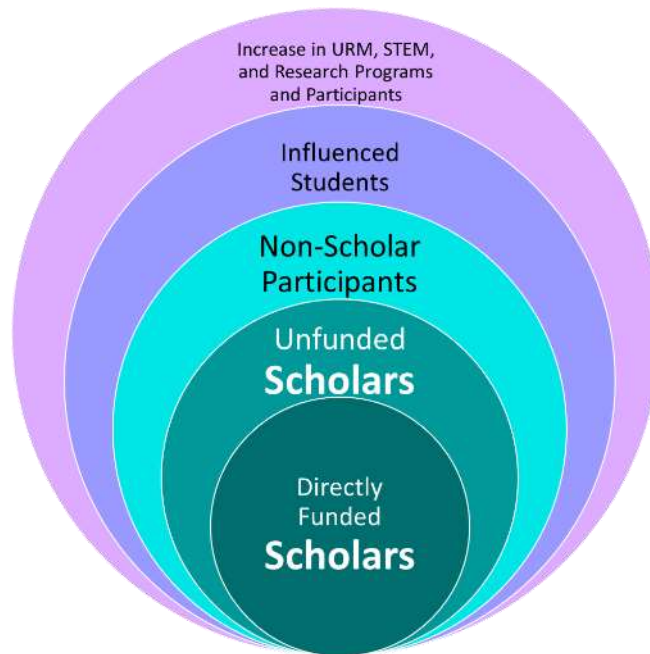


Figure 5: Graphic Representation of the KY-WV LSAMP Ripple Effect

In 2015-2016, KY-WV LSAMP supported 228 Scholars at nine institutions. In 2016-2017, the number of Scholars increased to 254 - an 11% increase. With recent changes in program staff and improvements in communications and sharing of best practices, there is renewed energy in the alliance. This should result in a jump in the number of participants as well as the level of participation in program activities in 2017-2018. Figure 6 shows the number of KY-WV LSAMP participants each year.

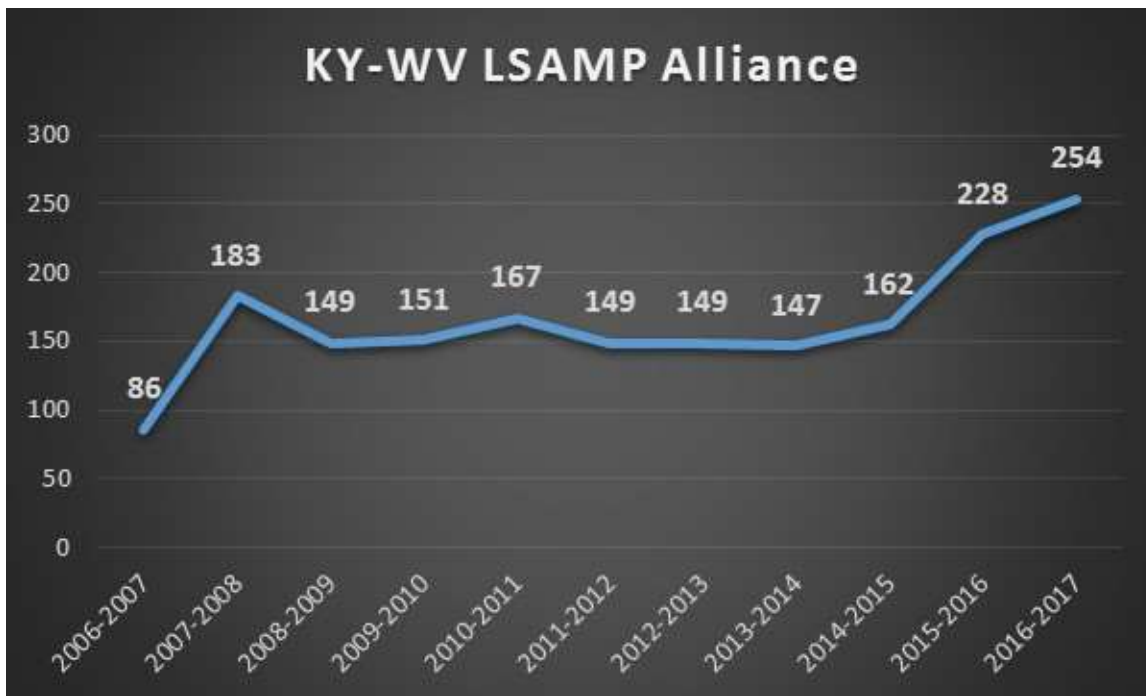


Figure 6: Number of KY-WV LSAMP Participants by Year

## PROGRAM ACTIVITIES

### Continued Activities

#### Research with Faculty Mentors

KY-WV LSAMP Scholars are highly involved in research projects. Many Scholars participated in research during the academic year, and some conducted research during a summer internship. These research projects led to almost 50 presentations at local, state, regional, and national conferences. These conferences included, but were not limited to: the Louisiana State University international Research Experience for Undergraduates Pre-Trip Conference in Washington, D.C., the Kentucky Academy of Sciences Annual Meeting, West Virginia Research Day at the Capitol, the KY-WV LSAMP Annual Research Symposium, the National Conference on Undergraduate

Research, and the American Chemical Society National Meeting. Table 1 shows the number of documented presentations by type and institution.

Table 1: Number of Presentations Made by KY-WV LSAMP Scholars by Type and Institution

	Local	State/Regional	National	International	<b>TOTAL</b>
<b>BCTC</b>	0	0	0	0	<b>0</b>
<b>Centre</b>	4	5	0	0	<b>9</b>
<b>KSU</b>	1	1	0	0	<b>2</b>
<b>Marshall</b>	1	10	1	0	<b>12</b>
<b>UK</b>	2	3	4	1	<b>10</b>
<b>UofL</b>	2	0	2	0	<b>4</b>
<b>WVSU</b>	1	2	1	0	<b>4</b>
<b>WVU</b>	0	4	0	0	<b>4</b>
<b>WKU</b>	0	1	2	1	<b>4</b>
<b>TOTAL</b>	<b>11</b>	<b>26</b>	<b>10</b>	<b>2</b>	<b>49</b>

### Annual Research Symposium

The 2017 KY-WV LSAMP Annual Research Symposium was held March 3-4, 2017. Activities on Friday, March 3 were for KY-WV LSAMP participants only. Sessions for the scholars included a presentation by Mike Heppler (a graduate college application expert) and a panel of graduate students as well as several networking activities. Friday sessions were attended by 66 people including 43 undergraduates and eight faculty. Saturday, March 4 was open to the general public and was attended by 93 people including 50 undergraduate students and 17 faculty. Sessions included recruitment tables as well as sixteen poster presentations and three oral presentations made by Scholars. Brittani Grant, project engineer, presented the keynote address. One of Ms. Grant's recent projects was the curtain wall of the new Smithsonian National Museum of African American History and Culture. Lunch for the scholars and general public was a networking lunch with each table having a host to keep conversation flowing. Lunch for the program staff was a focus group for the program evaluation team to explore the communications, support systems, and concerns of the program staff. Ed Marshall led the focus group.

Scholars who presented were:

#### Oral Presentations

Grayce	Behnke	Marshall	Forensic Chemistry
Noah	Ichite	Marshall	Health Informatics
Trevor	Claborn	KSU	Agriculture

#### Poster Presentations

Kaylind	Batey	Centre	Biochemistry
Sarah	Hodges	UK	Biochemistry
Edwina	Barnett	WVSU	Biology
Zachary	Kilwein	WVU	Chemical Engineering

Danielle	Chavis	WKU	Chemistry
Ana	Mira	Centre	Chemistry
Abel	Belachew	Marshall	Health Informatics
Tonnie	Mike	Marshall	Health Informatics
Firehiwot	Kebede	Marshall	Health Informatics
Bezawit	Wodajo	Marshall	Health Informatics
Bezawit	Wodajo	Marshall	Health Informatics
Catherine	O'Hearn	WVU	Electrical Engineering
Keenan	Kocan	WVU	Mechanical and Aerospace Engineering
Khalil	Appleton	UK	Mechanical Engineering
Alijah	Travasico-Green	UK	Computer Science
Torli	Bush	WVU	Mechanical Engineering
Nathan	Crowdus	WKU	Meteorology
Miguel	Heneriquez	WVU	Physics

Table 2 shows a comparison of the 2016 symposium as well as both Friday and Saturday of the 2017 symposium. The number of attendees in 2017 was a 58% increase from 2016. The cover of the program, event agenda, photos, and an event press release can be found in Appendix A. The program book can be found on the KY-WV LSAMP website on the Alliance Activities page.

Table 2: Number of Symposium Attendees

	<b>Faculty</b>	<b>Staff</b>	<b>Graduate Students</b>	<b>Undergraduate Students</b>	<b>Other</b>	<b>TOTAL</b>
<b>2016</b>	15	11	1	27	5	59
<b>2017 Friday</b>	8	9	4	43	2	66
<b>2017 Saturday</b>	17	14	8	50	4	93

### Course Corrections

### Operations Manual

An operations manual (Campus Coordinator Handbook) is being created. This document will help to provide guidance to new campus program staff and to create unity and consistency in program communications and data collection and maintenance. The manual will include information such as suggested program activities, requirements for student program participation, instructions and formats for providing participant data, and much more. Upon completion, the document will be provided to each campus in electronic and print formats.

### Data Collection, Management, and Reporting

A database of Scholars has been created to track demographics, program participation, and accomplishments. The database is updated periodically and can be easily edited to store additional information as needed for project evaluation, reports, and dissemination. Templates have been created for quarterly reporting, so information gathered and collected can be more easily documented and be more consistent throughout the alliance.

Quarterly reports are required from each institution. Using a template, coordinators must report on participants (including demographics and academic progress), program activities, and Scholar highlights (such as presentations, publications, honors, and awards). Reports are required to be submitted before invoices will be processed for payment.

### External Evaluation

Dr. Willie Pearson, Jr. was contracted to provide an evaluation of the KY-WV LSAMP program. Ed Marshall assists Dr. Pearson in evaluating the program. In June 2015, nine recommendations were suggested by the evaluators. Of those, all have been addressed and/or continue to be addressed. Program aspects that require continuous adaptations and improvement include: data gathering and maintaining processes, dissemination of best practices, website updates, and inter-alliance communications. In June 2016, nine more recommendations were made. Of those, six have been and continue to be addressed. Three are in progress – documenting Hispanic recruitment, documenting program participation, and adjusting program activities and services to meet the needs of all participants.

March 2017, the evaluation team visited three of the nine alliance campuses. During those visits, the evaluators conducted faculty and Scholar focus groups and interviews. An electronic survey was created and emailed to each active KY-WV LSAMP Scholar. There was also a program staff focus group held during the 2017 symposium. Using these data and additional information received from alliance communications and from the project director, an evaluation was created. A copy of the complete evaluation is in Appendix B. A few highlights include:

The evaluation team drew several conclusions from the site visits. Though the three campuses were unique, the visits had similarities. There is a lack of campus visibility of the LSAMP program and the interviewed participants are willing to assist in solving this issue. Program staff and mentors are positive about the program and are enthusiastic about its progression. There is a need for more participation in research experiences, and those experiences need to be accurately documented and reported.

Recommendations for the coming year are:

*Students*

- Expand campus and near campus research opportunities, especially during the academic year
- More consistent and inclusive communication
- More interaction among students to build a sense of community
- More campus visibility

*Program staff*

- More programming for students and coordinators beyond the Symposium
- More community building among program participants
- Develop a talent pool based on a pathway model that begins as early as late middle school to ensure larger cohorts of students will get pre-college preparation in advanced science and mathematics courses and, consequently, be more likely to pursue a STEM major and continue the pathway to a STEM career

*Senior administrators*

- Promising marketing strategies to bring visibility to the program, especially to those students who are eligible but may be unaware of the program
- View the program as a tool to recruit high school students

*External evaluation*

- Develop a sustainability plan with less reliance on federal grants
- Formally recognize mentors' contributions to student development
- Enhance orientation and community building opportunities among research mentors
- Share promising practices (e.g., curricula, faculty research mentor database, data management)
- Strategies to promote collaborations that take into consideration differences in institutional missions (Carnegie classifications, demographic groups. etc.)
- Better communications with students on the importance of data collection (e.g., survey completions rates and focus group participation) as it relates to program funding
- Monitor and verify the actual number of students engaged in academic year and summer research



## Program Staff Roles

### ***Project Director***

In the last year, the project director has continued to learn about the successes and problems on each campus. She has worked to increase communication and collaboration within the alliance. There was an Alliance Retreat held August 11-12, 2016. This retreat was successful in creating a more cohesive alliance. Program staff communicated best practices and set goals for 2016-17. Some of those goals and the resulting data from the academic year include:

*Increase the number of participants to 250 in 2016-17*

In 2016-17, KY-WV LSAMP supported 254 students – the goal of 250 participants was met. This is an 11% increase from the 228 participants the previous year and almost three times the number of participants during the initial year (2006).

*Increase the number of documented scholar presentations from 51 in 2015-16 to 100 in 2016-17*

In 2016-17, KY-WV LSAMP Scholars made 49 presentations at local, state, national, and even international conferences. In addition to scholars who made research presentations (as seen on page 9), 18 scholars attended non-presentation national and regional conferences including the Women of Color STEM Conference, a GEM GRAD Lab, and the National Society of Black Engineers (NSBE) Regional Conference. Though the goal of 100 documented presentations was not met, the expectation of research presentations is spreading throughout the alliance.

*Increase the percentage of scholars conducting academic year research from 15% to 20% in 2016-17*

In 2016-17, twenty-nine of the 254 Scholars conducted research during the academic year. This is actually a decrease from 15% to 11% of participants. Studies have shown that students who conduct research have many benefits to their professional skills and connections as well as improvement of their academics. Each campus will need to encourage, enhance, and offer more opportunities for Scholars to participate in research projects during the academic year.

*Increase the number of documented summer research internships from 9 in 2015-16 to 50*

There was a significance increase in the number of scholars who participated in summer internships during Summer 2017. Thirty-five Scholars were selected to participate in summer experiences including one in France and one in Puerto Rico. Other internships include the US Department of Agriculture Wallace-Carver Fellowship, General Motors, and Air Products and Chemicals. Though the goal of 50 documented internships was not reached, there was an increase

of 289% from last year. With aggressive encouragement and promotion of summer opportunities, the number of Scholars participating in summer internships is expected to continue to rise.

*Document 20 KY-WV LSAMP graduates  
who have been accepted into graduate programs*

In 2016-17, forty-three Scholars graduated. Of those, 22 are pursuing graduate study. Not only did this meet the goal of 20 Scholars accepted into graduate programs, but 51% of all 2016-2017 KY-WV LSAMP graduates have plans to immediately pursue graduate degrees.

At the Alliance Retreat, photos were taken of each coordinator for use in future documents. A collage of photos from the event can be found in Appendix C.

The director, again, received enrollment and degree data directly from the Kentucky Council on Postsecondary Education (KY CPE) and the West Virginia Higher Education Policy Commission (WV HEPC). This ensures more accuracy and consistency in data provided to NSF through the WebAMP system. Each agency was provided a list of NSF CIP Codes. Those codes are used to retrieve data on STEM enrollments and degrees. A list of the most current CIP Codes can be found in Appendix D.

The director's office moved in August 2016. The University of Kentucky completed a new building to house classrooms and offices for the sciences. The Jacobs Science Building is a state-of-the-art structure with classrooms of various sizes including instructional labs, meeting rooms, and student lounge areas. A copy of the program from the dedication ceremony of the new structure can be found in Appendix E.

Other duties/tasks that continue to be improved include: 1) a database for tracking participant information and activities (a screen shot of the database can be found in Appendix F), 2) a streamlined plan for making participant data collection consistent and easier for campus coordinators as well as administration staff, 3) language and ideas for improving the program website, 4) programmatic and documentation ideas for increasing the quality and quantity of program activities and participants on each campus, and 5) planning of a second alliance retreat for all coordinators and lead program staff. The renewed energy and sense of purpose continues to grow. 2017-18 looks to be an extraordinary year.

***Financial Officer***

Mark Pittman has been designated as the project financial officer at the University of Kentucky. Mr. Pittman (with help and oversight of the Office of Sponsored Projects) 1) creates the subcontracts for the alliance institutions, 2) processes payment of invoices from the alliance institutions, 3) tracks all expenditures, and 4) provides monthly reports to the PI, UK Co-PI, and project director.

## External Partnerships and Funding

Scholars are encouraged to apply for summer internships through local, state, and federal programs as well as industry. Participation in these programs provides scholars with a wider range of experiences and a larger professional network. These paid summer internships also allow better leveraging of KY-WV LSAMP funds, so the program can support more participants during the academic year as well as the summer.

In addition, KY-WV LSAMP has partnerships and collaborations with other organizations, agencies, departments, and companies.

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**General Motors**, Detroit, MI – *is passionate about earning customers for life. This vision unites us as a team and is the hallmark of our customer-driven culture.*

<http://www.gm.com/company/company-overview.html>

**Hensel Phelps**, Phoenix, AZ – *Plan. Build. Manage. From planning and design, to construction, and facility management, we work to solve our clients' challenges from start to finish, and beyond. Our clients, both domestic and international, have entrusted us with a tremendous range of landmark projects, in nearly every market sector.* <http://www.henselphelps.com/>

**Kentucky EPSCoR** – *Kentucky Experimental Program to Stimulate Competitive Research exists to stimulate sustainable improvements in the Commonwealth's R&D capacity and to advance science and engineering capabilities for discovery, innovation, and knowledge-based prosperity. KY EPSCoR's activities are focused upon: developing human and physical infrastructure to advance academic research, promoting and nurturing a culture of innovation and economic creativity, and supporting increased STEM education, workforce development, and research participation diversity.* <http://kyepscor.org/>

**LSU iREU**, France – *the Louisiana State University international Research Experience for Undergraduates program sponsors students who are interested in projects that feature aspects of translational chemistry and incorporate major European "Innovation Campuses" where national laboratory, industry, and university scientists work as teams. This will provide students the opportunity to experience a network of research not typically available to students at most American colleges and universities.* NSF #1263336

**NASA Kentucky** – *Kentucky's Space Grant Consortium partners with NASA to advance research, education, and workforce development within the state. Managed alongside Kentucky's NASA EPSCoR, these programs promote aerospace-related scientific and technological innovation.* <http://nasa.engr.uky.edu/>

**Research Experiences for Undergraduates** – The REU program *supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the REU program.* [https://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=5517](https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517)

**Summer Health Professional Education Program (SHPEP)** - The program at Louisiana State University is *strongly committed to increasing the number of students from underrepresented/underserved, rural, and/or disadvantaged backgrounds who are skilled, confident, and motivated to remain and succeed in challenging academic programs/majors that are designed to support health sciences careers.* <http://www.shpep.org/site/louisiana-state-university-health-sciences-center/>

**UK Environmental Research Training Laboratories**, Lexington, KY – *The University of Kentucky and the College of Engineering recognize the need to enhance the statewide infrastructure for environmental studies. Open to users from throughout the university, ERTL is a hands on learning and research facility used for a variety of organic and inorganic analyses and microbial analyses. Established in March of 2002, ERTL’s mission is to increase research opportunities and improve results by offering personalized training and access to state-of-the-art laboratory equipment and techniques.* <http://ertl.uky.edu/>

**USDA Wallace-Carver Fellowship** – *offers exceptional college students the opportunity to collaborate with world-renowned scientists and policymakers through paid internships at leading USDA research centers and offices across the United States. The fellows also participate in a high-level week-long Wallace-Carver Leadership Symposium at the US Department of Agriculture in Washington, DC, hosted by the US Secretary of Agriculture*  
. [https://www.worldfoodprize.org/en/youth\\_programs/usda\\_wallacecarver\\_fellowship/](https://www.worldfoodprize.org/en/youth_programs/usda_wallacecarver_fellowship/)

#### Links to Existing Campus Programs

#### **Bluegrass Community and Technical College**

**BCTC/KSU BLINKS** Transfer Enterprise is a transfer collaboration. B is for BCTC, K is for KSU, and LINK is for The Links, Incorporated. The Links, Inc. *is one of the oldest and largest volunteer service organizations of women who are committed to enriching, sustaining, and ensuring the culture and economic survival of African Americans and other persons of African ancestry.* Students who are selected for the BLINKS Program receive *an opportunity to utilize mentoring, study strategies, and other resources to help them be successful at BCTC and to graduate with an Associate of Arts or an Associate of Science degree. After which, if they have a 2.8 GPA or above, they are awarded full tuition to KSU for their undergraduate study.* The purpose of the program is to: *increase the graduation rate of community college students, increase the number of community college students who transfer to HBCUs, encourage greater collaboration among community colleges and HBCUs, increase the enrollment of selected HBCUs, and increase the graduation rate of students at HBCUs.* <http://www.linksinc.org/>  
[http://bluegrass.kctcs.edu/en/Multiculturalism\\_and\\_Inclusion/Blinks.aspx](http://bluegrass.kctcs.edu/en/Multiculturalism_and_Inclusion/Blinks.aspx)

In 2017, six scholars transferred to KSU from BCTC through the BLINKS program.

**Carnegie Hall** is a one week intense summer immersion camp continuing throughout the year with semi-monthly Saturday learning activities. The mission of Carnegie Hall is: *sparking an age of a generation who conquers all challenges, while remaining committed to success. Constructing mathematical and engineering thought processes so that the sciences and technological aspect lead to more success. Making others stronger, by forfeiting....NOTHING!*

This year, Carnegie Hall celebrated its 10<sup>th</sup> year and held a reunion banquet with student reflections. [http://bluegrass.kctcs.edu/Multiculturalism\\_and\\_Inclusion/Carnegie\\_Hall.aspx](http://bluegrass.kctcs.edu/Multiculturalism_and_Inclusion/Carnegie_Hall.aspx)

**Latino Leadership and College Experience Camp (LLCEC)** is a unique experience that provides Latino and immigrant youth with an intensive college preparation and leadership development experience. *Simulating college processes, high school students from across the state of Kentucky are able to enjoy a creative mix of college-like courses, leadership development workshops, team-building activities and social justice awareness. The LLCEC introduces participants to current college students, college professors, community leaders, and an extensive peer network. The close work with professors allows students to forge healthy and challenging professor/student mentorships that focus on academic success and personal accomplishment.* [http://bluegrass.kctcs.edu/en/Multiculturalism\\_and\\_Inclusion/Latino\\_Hispanic\\_Outreach/Camp.aspx](http://bluegrass.kctcs.edu/en/Multiculturalism_and_Inclusion/Latino_Hispanic_Outreach/Camp.aspx)

### **Centre College**

**The Posse Foundation** has partnered with Centre College for over 10 years. *It has identified, recruited and trained 7,728 public high school students with extraordinary academic and leadership potential to become Posse Scholars. Since 1989, these students—many of whom might have been overlooked by traditional college selection processes—have been receiving four-year, full-tuition leadership scholarships from Posse’s partner institutions of higher education. Most important, Posse Scholars persist and graduate at a rate of 90 percent and make a visible difference on campus and throughout their professional careers.* <http://www.possefoundation.org/>

### **University of Kentucky**

**Center for Applied Energy Research (CAER)** serves as a center to answer today’s energy questions. *Among the most important aims is to assure that the benefits of investigations, research and study are applied, made available to the public and brought into the widest possible use. The Center, through its technology innovation and service to the community, contributes to improving the lives of Kentuckians by creating jobs and economic opportunities; by sustaining vital industries and public services; and by improving energy efficiency and protecting the environment.* <http://www.caer.uky.edu/energy/energy-research.shtml>

**Engineering Broadening Participation Program** is funded by the National Science Foundation and focuses on mentoring students from underrepresented populations at both the undergraduate and graduate level. Housed at the CAER, the program has three goals: *1) to motivate African American, Hispanic, and Native American students to choose engineering and help them graduate with engineering degrees, 2) to help these students acquire the skills they need to become engineering professionals, academics, leaders, and role models, and 3) to investigate if mentoring in research centers offers advantages over mentoring in traditional engineering departments.*

<http://engr-mentoring.caer.uky.edu/about.html>

**Office of Undergraduate Research**'s mission is *to promote high quality, undergraduate student-faculty collaborative research and scholarship in all disciplines across campus, and to use all available resources to support and advance the research endeavor.* This office provides extensive matching assistance as well as support for academic year research, summer research, and presentation opportunities and support including the annual UK Showcase of Undergraduate Research and the National Conference on Undergraduate Research (NCUR).

<http://www.uky.edu/academy/UGResearch>

**STEMCats**, is a Howard Hughes Medical Institute (HHMI) funded initiative. STEMCats is *a pre-Fall freshmen academic, research and professional-development residential program. This living learning program is intended for first year students who have applied for a STEM major or who are interested in a STEM major plus a small cohort of transfer students from the Bluegrass Community and Technical College. STEMCats is supported by the College of Arts and Sciences, Pharmaceutical Sciences, Physiology, Molecular & Biomedical Pharmacology, and the Division of Natural Sciences at Bluegrass Community and Technical College. STEMCats will make for a smoother transition for first year and transfer students coming to UK.*

<https://stemcats.as.uky.edu/stemcats-about-us>

### **West Virginia University**

The Emerging Scholars Program (ESP) classes at West Virginia University are 100% funded by the institution. The faculty salaries, classroom space, and other needs of the class are provided by WVU at no cost to the LSAMP program.

### **Programs on Multiple Campuses**

On each campus, the LSAMP program has a close working relationship with the **Diversity Offices**. The level of support and partnership varies among institutions, but types of support have included, but is not limited to: direct financial support for LSAMP Scholars, support for recruitment and retention initiatives, and partnerships with programs housed under the diversity office. In some cases, the LSAMP program is directly housed under the Diversity Office.

**Bucks for Brains** began in 1997 when *the Kentucky legislature approved a bold plan to reform the state's system of higher education. The goal was to develop a "seamless, integrated system of postsecondary education strategically planned and adequately funded to enhance economic development and quality of life."* A key component of this reform was the state's creation of the *Research Challenge Trust Fund, a strategic investment in university research designed to create new jobs, generate new economic activity and provide new opportunities for Kentucky citizens. Commonly known as "Bucks for Brains," the program uses state funds to match private donations, effectively doubling the impact of private investment supporting research in strategically defined areas and planting the seeds for a better future.* A copy of "Kentucky's Bucks for Brains Initiative: The Vision, the Investment, the Future. 1997-2007" can be found in Appendix C of the KY-WV LSAMP 2016 Annual Report. <http://louisville.edu/bucksforbrains>

**Student Support Services (SSS) Program** is a TRiO program funded by the Department of Education. This program exists on many of the alliance campuses and serves as a partner for recruitment and services to LSAMP Scholars. *Funds are awarded to institutions of higher*

*education to provide opportunities for academic development, assist students with basic college requirements, and to motivate students toward the successful completion of their postsecondary education. SSS projects also may provide grant aid to current SSS participants who are receiving Federal Pell Grants. The goal of SSS is to increase the college retention and graduation rates of its participants.* <http://www2.ed.gov/programs/triostudsupp/index.html>

**Upward Bound and Talent Search** are TRiO programs funded by the Department of Education. These programs are intended for middle school and high school students to prepare them for entrance into and success in college. One or both programs exist on many alliance campuses and serve as a resource for recruiting students to college and the LSAMP program. In addition, there are occasions when LSAMP Scholars serve as volunteers, speakers, and/or summer staff for these programs.

### New Activities

#### Cyber-Sharing

KY-WV LSAMP strives to increase communications and dissemination of program accomplishments and best practices. The program website has been extensively updated and continues to evolve to include more information and resources for Scholars, program staff, mentors and faculty across the nation. New features include, but are not limited to: revised information on each of the partner campuses and important resource links for Scholars and other students including copies of the Annual Reports and symposium program books.

<http://www.uky.edu/KYWV-LSAMP/index.html>

The Facebook group continues to grow. Though it has not, yet, gained adequate participation, it will aid in conversations regarding accomplishments and opportunities. Information and questions may be posted by anyone who is a member of the Facebook group. Scholars are encouraged to post questions to each other and to other members of the group including faculty mentors and graduate students. The possibilities are endless.

<https://www.facebook.com/groups/750676201700146/>

#### Evaluation Plan

Each year, the evaluation team will visit three of the nine institutions in order to perform focus groups and interviews with Scholars, faculty mentors, program staff, and campus administration. An electronic survey will be distributed to all Scholars throughout the alliance. Interviews will also be held with the Project Director and other program staff at the lead institution. Using data collected through these methods as well as data provided by the Project Director, the evaluation team will create an analysis of the success of the LSAMP program as an alliance. They will offer recommendations to improve the program as a whole as well as give quality feedback to the site visit campuses.

## Dissemination

There have been several avenues for dissemination. KY-WV LSAMP continues to update the program website by continuing to add resources for Scholars, faculty mentors, and program staff. There continues to be plans for Co-PI's, campus coordinators, and the project director to submit abstracts to conferences and continue working on articles for peer-reviewed journals. Dissemination in 2016-2017 include: (1) Dr. David Miller, WVU Co-PI and Coordinator, submitted a publication on the Emerging Scholars Program (ESP) at WVU. The ESP calculus classes are taught through cooperative learning rather than lecture. "An Active Classroom: The Emerging Scholars Program at West Virginia University" was written by Jessica Deshler, David Miller, and Matt Pascal and published in *Problems, Resources, and Issues in Mathematics Undergraduate Studies (PRIMUS)*. <http://dx.doi.org/10.1080/10511970.2016.1191570> (2) Dr. Kazi Javed, KSU Co-PI and Coordinator, presented on a panel at the Louis Stokes Midwest Center of Excellence (LSMCE) Conference, October 28-29, 2016. He talked about the KSU Peer Led Team Learning (PLTL) activities. PLTL is supplemental academic instruction that focuses on cooperative learning for STEM classes including physics, chemistry, and calculus. (3) Fara Williams, project director, presented KY-WV LSAMP activities and processes to Ohio LSAMP administration and staff at the Ohio LSAMP Research Conference in Cincinnati, OH, March 30-April 1, 2017.

## FACULTY HIGHLIGHTS

### Faculty Presentations and Publications

KY-WV LSAMP program administration and staff continue to be active in their respective fields as well as disseminate best practices learned via LSAMP. Copies of abstracts, conference proceedings, and news releases can be found in Appendix G.

**Pamela Feldhoff**, UofL Coordinator, presented a paper at the Special Highlands Conference on Plethodontid Salamander Biology, Highlands, NC, August 4-7, 2016. "From molecules to mating: Characterizing 100 million years of gene duplication, co-option, and structural evolution in plethodontid courtship pheromones" Damien B. Wilburn<sup>1</sup>, Lynne D. Houch<sup>2</sup>, Stevan J. Arnold<sup>2</sup>, Pamela W. Feldhoff<sup>3</sup>, and Richard C. Feldhoff<sup>3</sup> <sup>1</sup>Department of Genome Sciences, University of Washington; <sup>2</sup>Department of Integrative Biology, Oregon State University, <sup>3</sup>Department of Biochemistry, University of Louisville

**Kazi Javed**, KSU Co-PI and Coordinator, presented on a panel at the Louis Stokes Midwest Center of Excellence (LSMCE) Conference, October 28-29, 2016. He talked about the KSU Peer Led Team Learning (PLTL) activities. PLTL is supplemental academic instruction that focuses on cooperative learning for STEM classes including physics, chemistry, and calculus.



**Kazi Javed**, KSU Co-PI and Coordinator, presented “Enhancing the chemistry curriculum through case studies at Kentucky State University” at the 24<sup>th</sup> Biennial Conference on Chemical Education.

**David Miller**, WVU Co-PI and Coordinator, published an article on the ESP Calculus classes. The ESP calculus classes are taught through cooperative learning rather than lecture. “An Active Classroom: The Emerging Scholars Program at West Virginia University” was written by Jessica Deshler, David Miller, and Matt Pascal and published in *Problems, Resources, and Issues in Mathematics Undergraduate Studies (PRIMUS)*.

<http://dx.doi.org/10.1080/10511970.2016.1191570>

**John Wilson**, Centre Coordinator, was selected as Diversity and Inclusion Faculty Fellow for Centre College. In this role, he will work to develop support mechanisms that will increase the number of students from underrepresented populations who pursue STEM degrees at Centre.

### Speaker Series

Before the 2016-17 academic year got underway, KY-WV LSAMP administration discussed the idea of beginning a speaker series – bringing well-known URM STEM professionals to KY-WV LSAMP campuses to present to the program participants as well as the general public. At the 2016 Women of Color STEM Conference, Cagney Coomer Felton (UK biology Ph.D. student and founder of a Lexington community STEM outreach program-NerdSquad) met and interacted with Tracy Drain. Tracy Drain works at the Jet Propulsion Lab and was filmed as part of the 20<sup>th</sup> Century Fox Hidden Figures/Modern Figures video series.

Spearheaded by Dr. Johné Parker (KY-WV LSAMP Co-PI and one of Tracy Drain’s professors when she was a student at UK), the UK LSAMP partnered with Kentucky EPSCoR and the UK Office of Institutional Diversity in order to bring Tracy Drain and her colleague Danielle Nuding, Ph.D. to campus. There were a series of events at UK and in the Lexington community at which Tracy Drain and Danielle Nuding spoke about their career paths and experiences.

The itinerary for Tracy and Danielle included:

Wednesday, April 12, 2017

1:00 PM - Speaking in Dr. Suzanne Smith’s systems class

3:00 PM - Meet and Greet with students from aerospace groups and student organizations

Thursday, April 13, 2017

10:00 AM - Meet and Greet with students from KY-LSAMP and engineering groups

11:30 AM - Lunch with KY-WV LSAMP participants and potential participants

4:00 PM - Presentation and talk to campus

Friday, April 14, 2017

Local community events as described below

Thursday’s meet and greet was attended by seven students and staff. Attendees were given the opportunity to ask questions about Tracy and Danielle’s current positions as well as their career paths. The luncheon was attended by 20 students, faculty, and staff. They were able to visit with Tracy and Danielle in a relaxed setting. In addition, potential LSAMP scholars were able to interact

with current LSAMP Scholars as well as potential faculty mentors. The campus presentation was attended by 55 students, faculty, and staff from a range of fields including various engineering disciplines and STEM education.

On April 14<sup>th</sup>, after their visit to the University of Kentucky, Tracy Drain and Danielle Nuding spent the day interacting with the local Lexington community. Through two very well organized #NOMOREHIDDENFIGURES events put on by NerdSquad. The local youth had the opportunity to ask questions and pick Tracy's and Danielle's brains. It was great to see so many get inspired by their story.

Early in the afternoon, Tracy and Danielle attended a luncheon put on at the LYRIC Theater in Lexington to honor the winners of the Nerd Squad's Hidden Figure's Contest. This contest was organized by Mrs. Coomer Felton as a way to get local girls from the community to think critically about their lives, both present and future. Local community members, including KY-WV LSAMP program coordinator Raul Torres and graduate student mentor Kayla Titiali, read many essay entries. After careful consideration, eight entries were selected to receive small prizes as well as invitations to the luncheon. At the luncheon event, the contest winner had the opportunity to talk on a very personal basis with Tracy and Danielle.

The second event occurred later that same afternoon. Tracy and Danielle gave a wonderful presentation at Bryan Station High School to an even bigger group of local children and their parents. Tracy and Danielle could be seen having a great time as the children grew more excited with the presentation and got very involved. The presentation was similar to the one they gave at UK the day before but with more of a playful, personal touch. The fact that Tracy Drain is a fellow Kentuckian really resonated with the children and helped them connect with the presentation.

All in all, the multi-day visit could not have gone any better. Cagney Coomer-Felton and Nerd Squad volunteers organized the community events and initiated the efforts to bring Tracy Drain and Danielle Nuding to Lexington and Dr. Johné Parker worked diligently to make the visit a reality. Tammy Arnold, Institutional Diversity administrative assistant, and Brenda Heeter, Department of Mechanical Engineering administrative assistant, coordinated and organized most of the UK events. You can see pictures and more information in Appendix H.

KY-WV LSAMP will pursue bringing other speakers to the Lexington area as well as other campuses within the alliance. What we see as an inaugural event was extremely successful.

## SCHOLAR and ALUMNI HIGHLIGHTS

### Conferences and Symposia

There were some conferences that were attended by Scholars from multiple campuses. In some cases, travel for these events was coordinated in order to provide opportunities for scholars on

different campuses to meet and interact with one another. Pictures and graphics from those events can be found in Appendix I.

*The GEM GRAD Lab* was held at the University of Tennessee, Knoxville, September 30-October 1, 2016. Fara Williams accompanied four Scholars to the event designed to prepare students for the graduate school application process and provide resources for funding. Scholars who attended were: **Danielle Chavis**, WKU; **Makaylah Garrett**, KSU; **Siraj Ramsey**, KSU; and **Alijah Travascio-Green**, UK.

Twelve KY-WV LSAMP Scholars attended the *Women of Color STEM Conference* held in Detroit, MI, October 13-15, 2016. The Scholars were accompanied by **Fara Williams**, project director; **Kayla Titalii**, biology graduate student and former LSAMP scholar from Washington State University; **Cagney Coomer Felton**, biology graduate student and founder of Nerd Squad; and **Dr. Charles McGruder**, WKU LSAMP coordinator. Scholars in attendance included: **Zita Ackah**, UofL; **D'Jreya Boyd**, UofL; **Gabriel Brown**, Marshall; **Danielle Chavis**, WKU; **Deja Curry**, UofL; **Ronnice Edwards**, Marshall; **Alexus Levingston**, UofL; **Courtney McKelphin**, UK; **Raisa Nunez**, Marshall; **Aliyah Powell**, UofL; **Yesnia Rodriguez**, Marshall; and **Taylor Speight**, UofL.

*The Louis Stokes Midwest Center of Excellence Conference* was held in Chicago, IL, October 28-29, 2016. Four Scholars attended with three of them presenting. **Sabita Dumre**, UK, presented "Screening of a Peptide Library for a Neuroprotective Binding Target." **Maya Huss**, UofL, presented "Stealth and Cell Penetrating Nanoparticles in Cervical Cancer Tissue Mimics." **Courtney McKelphin**, UK, presented "Kinetic Study of Catalytic Decarboxylation/Decarbonylation of Triglycerides to Fuel-like Hydrocarbon." **Sarah Hodges**, UK, and **Fara Williams**, project director, also attended the event. **Dr. Kazi Javed**, KSU LSAMP Coordinator, presented on a panel session.

Three Scholars were selected to represent their respective universities and presented at *West Virginia's Research Day at the Capitol*. They were: **Grayce Behnke**, Marshall, *Modification of the Surface of Zinc Oxide Nanoparticles to Increase Efficiency of Solar Cells*; **Edwina Barnett**, WVSU, *Optimization of DNA Extraction Protocol for Herbarium Preserved Rubus Tissue*; and **Catherine O'Hearn**, WVU, *Light Extraction Efficiency Enhancement of III-V Nitride Based LEDs through Periodic Plasmonic Structures*.

KY-WV LSAMP was represented at the *31<sup>st</sup> National Conference on Undergraduate Research* (NCUR). The April 2017 event was held at the University of Memphis, Memphis, TN. Scholars presented posters and gave oral presentations on their research projects. In addition, they attended other student presentations, visited with graduate school and industry representatives, made connections with faculty, and explored the Memphis area through excursions offered by the conference.

Four Scholars were selected to present at the 2017 NCUR. Those Scholars were: **I. Khalil Appleton**, UK, *Quantification of Factors Contributing to Cross-Programming in Radio Frequency Identification Applications*; **Danielle Chavis**, WKU, *Novel Binary Reactive Group Functionalized Silsesquixane Micro-Particles and Their Colloidal Self-Assemblies*; **Nathan**

**Crowdus**, WKU, *Elevation and Mesoscale Temperature Variations*; and **Karen Udoh**, UofL, *The Effect of Verrucarin J on Lung Cancer Cells and Cancer Stem Cells*.

Wednesday, April 26, 2017, the University of Kentucky hosted its *Showcase of Undergraduate Scholars*. Two KY-WV LSAMP scholars (**Sarah Hodges** and **Alexis Priddy**) submitted abstracts for this event.

Two Scholars presented posters at the Louisiana State University (LSU) international Research Experience for Undergraduates (iREU) Pre-Trip Conference at the French Embassy in Washington, D.C., March 27, 2017. **Sarah Hodges**, UK biochemistry sophomore, will spend the summer in Grenoble, France conducting research with Dr. Gerard Mortha. **Danielle Chavis**, WKU chemistry senior, will spend the summer in Puerto Rico conducting research with Dr. Antonio Martinez. In addition to their research posters, the scholars had to have a one page (front and back) handout to provide to attendees of the poster session.

### Individual Accomplishments

Many Scholars made accomplishments and received honors throughout the 2016-2017 academic year. Snapshots and news releases of select accomplishments can be found in Appendix J. Below are some examples of KY-WV LSAMP Scholar accomplishments.

**Zita Ackah**, UofL chemical engineering senior, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016. After graduation, she will be pursuing a master's degree in engineering at UofL.

**Berhanu Amsalu**, KSU biology junior, will conduct research during summer 2017 at the UK Environmental Research Training Laboratory.

**I. Khalil Appleton**, UK mechanical engineering sophomore, presented at the National Conference on Undergraduate Research, University of Memphis, Memphis, Tennessee, April 6-8, 2017.

**Malik Appleton**, UK agriculture technology freshman, will spend summer 2017 shadowing a Walgreens pharmacist.



**Edwina Barnett**, WVSU biology freshman, (1) presented at West Virginia Research Day at the Capitol, Charleston, West Virginia, February 24, 2017, (2) received 1<sup>st</sup> place in the undergraduate research category for Renewable Energy, Natural Resources and Environment for her poster presentation at the 18<sup>th</sup> 1890 Association of Research Directors Research Symposium in Atlanta, GA, April 1-5, 2017, and (3) presented at the KY-WV LSAMP Annual Research Symposium.

**Kaylind Batey**, Centre biochemistry and molecular biology senior, (1) presented at the KY-WV LSAMP Annual Research Symposium, (2) presented at the Southeastern Medical Scientist Symposium at the University of Alabama, Birmingham, AL, November 5-6, 2016, (3) was listed as third author on a publication, "The Notch Ligand Jagged1 Regulates the Osteoblastic Lineage

by Maintaining the Osteoprogenitor Pool,” and (4) will be participating in the National Heart, Lung, and Blood Institute’s Biomedical Research Training Program for Underrepresented Groups, a post baccalaureate Intramural Research Training Award fellowship.

**Grayce Behnke**, Marshall forensic chemistry senior, (1) presented at West Virginia Research Day at the Capitol, Charleston, West Virginia, February 24, 2017, (2) presented both a poster and an oral presentation at the KY-WV LSAMP Annual Symposium in Huntington, WV, (3) received Outstanding Graduating Chemist from the Marshall University Chemistry Department, (4) received funding from a NASA graduate grant to pursue research this summer, and (5) is an author on two articles submitted for publication in peer reviewed journals – one has already been accepted with revisions.

**D’Jreya Boyd**, UofL industrial engineering senior, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016.

**Deja Bowen**, UK biology junior, participated in a UK Martin Luther King Jr. Wildcats for Service trip to Alabama.

**Gabriel Brown**, Marshall, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016, and presented a poster on “Low-level Manganese Exposure Affects Behavior and Development of Juvenile *Procambarus Clarkii*” at the WVU Institute of Water Security and Science Spring Symposium held in Morgantown, WV, February 28, 2017.

**Lecia Brown**, UofL graduate, was a professional volleyball middle blocker after graduating with her BS in biology. She continued her education to receive a MS in health services / allied health / health sciences and is now pursuing her Ph.D. in neuroscience from the University of South Florida.

**Danielle Chavis**, WKU chemistry senior, (1) attended the GEM GRAD Lab, University of Tennessee, Knoxville, TN, September 31-October 1, 2016, (2) attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016, (3) presented at the Louisiana State University (LSU) international Research Experience for Undergraduates (iREU) Pre-France Conference, Washington, D.C., March 27, 2017, (4) presented at the National Conference on Undergraduate Research, University of Memphis, Memphis, TN, April 6-8, 2017, and (5) will be conducting research in Puerto Rico during summer 2017 thanks to the LSU iREU program.

**Trevor Claiborn**, (Former BCTC) KSU agriculture senior, (1) served on a panel of speakers during the MOSAIIC Conference, Kentucky State University, Frankfort, KY, November 3, 2016, (2) was featured and interviewed several times throughout the year by various media including a session on WKYT, November 11, 2016, and (3) was honored by the Kentucky Association for Environmental Education (KAEE) as the Outstanding Rising Star for Excellence in Environmental Education – presented to him at the KAEE Fundraising Luncheon, March 21, 2017.

**Nathan Crowdus**, WKU meteorology senior, presented at the National Conference on Undergraduate Research, University of Memphis, Memphis, Tennessee, April 6-8, 2017 and will

spend summer 2017 as a meteorology intern at a local TV station, spending time in a local Mesonet facility, and working with a summer camp for K-12 students.

**Deja Curry**, UofL biology sophomore, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016.

**Demetrius Davis**, KSU biology junior, will conduct research during summer 2017 at the UK Environmental Research Training Laboratory.



**Tat'ana Dillard-Sims**, WVSU biology sophomore, attended the Wildlife Diversity Summit and presented a poster titled, "Nutrigenomic Studies in Rainbow Trout (*Oncorhynchus Mykiss*)" at the WVSU 22<sup>nd</sup> Annual College of Natural Sciences and Mathematics Research Symposium.

**Sabita Dumre**, UK biology senior, attended and presented at the Louis Stokes Midwest Center of Excellence (LSMCE) Conference, Chicago, IL, October 28-30, 2016 and graduated December 2016.

**Ronnice Edwards**, Marshall biology sophomore, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016.

**Eliana Figueredo Zamora**, UofL biology senior, will pursue medical school after graduation.

**Makaylah Garrett**, KSU biology junior, attended the GEM GRAD Lab, University of Tennessee, Knoxville, TN, September 31-October 1, 2016. She was also listed as an author on an article ("Effect of Cu promotion on cracking and methanation during the Ni-catalyzed deoxygenation of waste lipids and hemp seed oil to fuel-like hydrocarbons") to be published in *Catalysis Today*.

**Lynnora Grant**, WVU mechanical engineering graduate, received a National Science Foundation Graduate Research Fellowship. She will be attending Rice University for graduate study.

**Tyrone Hairston**, WVSU chemistry senior, graduated Fall 2016 and is working in the chemistry industry while he pursues a pharmacy degree.

**Sarah Hodges**, UK biochemistry sophomore, (1) attended the LSMCE Conference, Chicago, IL, October 28-30, 2016, (2) presented at the LSU iREU Pre-France Conference, Washington, D.C., March 27, 2017, (3) presented at the University of Kentucky, Showcase of Undergraduate Scholars, April 26, 2017, and (4) will be conducting research in Grenoble, France during summer 2017 thanks to the LSU iREU program.

**Maya Huss**, UofL industrial engineering junior, attended and presented at the LSMCE Conference, Chicago, IL, October 28-30, 2016.

**Onyee Ibekwe**, UK biology sophomore, will spend the summer 2017 in Spain for study abroad.

**Noah Ichite**, Marshall exercise science junior, received an undergraduate research fellowship from the NASA West Virginia Space Grant Consortium.

**Fabian Leon**, UK agriculture biotechnology sophomore, received a Wallace-Carver Fellowship. With this fellowship, Fabian will conduct research during summer 2017 with the Agriculture Research Service at the National Laboratory for Agriculture and the Environment in Ames, IA. His project will be working to evaluate the effect of increasing temperatures on corn and wheat response of a variety of different genetic material.

**Alexus Livingston**, UofL psychology sophomore, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016.

**Jordan Martinez**, Marshall chemistry, received the Hypercube Award from the Marshall University Chemistry Department.

**Corey Mattic**, KSU chemistry and chemical engineering sophomore, will conduct research during summer 2017 in the UK Materials Science and Chemical Engineering Department.

**Khadijah Mazon**, KSU biology senior, graduated and will attend a dental seminar at Tufts University.

**Corey McKee**, UofL biology senior, will pursue a master's degree in public health after graduation.

**Courtney McKelphin**, UK chemical engineering senior, (1) attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016, (2) received a Student Leadership Award at the Women of Color STEM Conference, (3) attended and presented at the LSMCE Conference, Chicago, IL, October 28-30, 2016, (4) was an author on research published in a peer reviewed journal, (5) volunteered at the UK Showcase of Undergraduate Scholars, Lexington, KY, April 26, 2017, and (6) has accepted an offer to work for Colgate after graduation.

**Jimmy Mickens**, UK mechanical engineering sophomore, has received an internship with General Motors in Detroit for Summer 2017.

**Lydia Millard**, KSU chemistry sophomore, will participate in a REU program in the UK Chemical Engineering Department.

**Ana Gabriella Mira**, Centre freshman, (1) presented at the Kentucky Academy of Sciences (KAS) Annual Meeting at the University of Louisville, November 4-5, 2016, (2) received second place for her poster in the Chemistry: Analytical and Physical division at KAS, (3) presented at the KY-WV LSAMP Annual Research Symposium, and (4) presented at the Centre Summer Research Symposium.

**Raisa Nunez**, Marshall biotechnology junior, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016.

**Catherine O'Hearn**, WVU electrical engineering senior, presented at West Virginia Research Day at the Capitol, Charleston, West Virginia, February 24, 2017, and presented at the KY-WV LSAMP Annual Research Symposium at Marshall University, Huntington, WV, March 3-4, 2017.

**Jordan Potts**, UofL civil and environmental engineering senior, will complete a master's degree in engineering after completing his BS degree.

**Aliyah Powell**, UofL industrial engineering junior, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016.

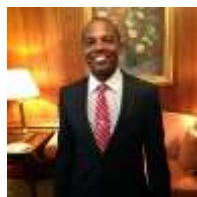
**Alexis Priddy**, UK biology senior, had an abstract accepted for the University of Kentucky, Showcase of Undergraduate Scholars, April 26, 2017.

**Siraj Ramsey**, KSU engineering sophomore, attended the GEM GRAD Lab, University of Tennessee, Knoxville, TN, September 31-October 1, 2016.

**Chelsea Robinson**, UK mechanical engineering sophomore, has received an internship with Air Products and Chemicals for Summer 2017.

**Raven Robinson**, KSU mathematics senior, has completed her degree and will pursue a teaching career.

**Yesnia Rodriguez**, Marshall, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016.



**Larry Rush**, WVU graduate, received his BS in mathematics, chemistry, and physics. He is currently working as a theoretical/computational condensed matter physicist while pursuing a MS in physics from Wake Forest University. *“I am very thankful for my experience as a past LSAMP student, because I remember a time when Dr. Miller waited all night for an event that I was part of as an undergraduate so he could then transport me to where the WV-KY LSAMP research symposium was being held, somewhat close to midnight. It demonstrated that he and the LSAMP community really cared about providing me with opportunities to thrive as a student and scientist-in-training.”*

**Peter Scott**, UK civil engineering junior, will spend Summer 2017 in Phoenix, AZ, as an intern for Hensel Phelps.

**Taylor Speight**, UofL, attended the Women of Color STEM Conference, Detroit, MI, October 13-15, 2016.

**Alijah Travascio-Green**, UK computer science sophomore, attended the GEM GRAD Lab, University of Tennessee, Knoxville, TN, September 31-October 1, 2016 and presented at the KY-WV LSAMP Annual Research Symposium at Marshall University, Huntington, WV, March 3-4, 2017.



**Karen Udoh**, UofL biology junior, presented at the National Conference on Undergraduate Research, University of Memphis, Memphis, TN, April 6-8, 2017.

**Deyshon Ward**, KSU engineering sophomore, will conduct research during summer 2017 at the UK Center for Applied Energy Research.

**Joseph Wilkins**, UofL graduate, completed his Ph.D. in meteorology from the Department of Earth and Atmospheric Sciences at Saint Louis University. He is now working for the Environmental Protection Agency in the Research Triangle Park, Raleigh-Durham, North Carolina.

**Hailee Wilson**, KSU biology senior, graduated and will attend dental school at the University of Nevada, Las Vegas.

**James Zechella**, UofL biology senior, will pursue medical school after graduation.

## STAFF TRAINING AND DEVELOPMENT

KY-WV LSAMP support staff are an important aspect of the program. Project staff continue to seek professional development opportunities. Pictures and news releases of staff training activities can be found in Appendix K. Highlights, include, but are not limited to:

**Johné Parker**, UK Co-PI, participated in the University (of Kentucky) Leadership Forum - the focus of the series was diversity and recognizing and overcoming biases. One of the sessions was an unconscious bias workshop for faculty, October 25-27, 2016.

**Fara Williams**, project director, (1) presented/volunteered for the Cherokee College Preparatory Institute (CCPI) - college readiness program for Native American high school juniors and seniors, at Rogers State University, Claremore, OK, July 17-22, 2016, (2) planned and implemented an Alliance Retreat for KY-WV LSAMP program staff including Co-PI's and Campus Coordinators, Natural Bridges State Resort Park, KY, August 11-12, 2016, (3) participated in a National Science Foundation Data Management Plan Virtual Meeting, September 26, 2016, (4) attended the launch of the Million Women Mentors campaign in Kentucky, Frankfort, KY, September 28, 2016, (5) accompanied four scholars (two from KSU, one from WKU, and one from UK) to the GEM GRAD Lab, University of Tennessee, Knoxville, TN, September 30-October 1, 2016, (6) accompanied twelve KY-WV LSAMP Scholars (five from UofL, five from Marshall, one from WKU, and one from UK) as well as two graduate students to the Women of Color STEM Conference, Detroit, MI, October 14-15, 2016, (7) participated in the University (of Kentucky) Leadership Forum - the focus of the series was diversity and recognizing and overcoming biases; one of the sessions was an unconscious bias workshop for staff, October 25-27, 2016, (8), attended the LSMCE Conference with three UK KY-WV LSAMP Scholars in Chicago, IL, October 28-30, 2016, (9) served as a student poster judge at the LSMCE Conference, (10) attended the Multicultural Opportunities, Strategies, and Institutional Inclusiveness Consortium (MOSAIC) Conference, Kentucky State University, Frankfort, KY, November 3-4, 2016, (11) attended West Virginia

Research Day at the Capitol, Charleston, WV, February 24, 2016, (12) attended Kentucky Posters at the Capitol, Frankfort, KY, March 2, 2017, (13) accompanied two KY-WV LSAMP Scholars (one from UK, one from WKU) to the LSU iREU Pre-trip Conference, Washington, D.C., March 26-27, 2017, (14) attended the Ohio LSAMP Conference, March 30-April 1, 2017, Cincinnati, Ohio, (15) presented KY-WV LSAMP to Ohio LSAMP administration and staff at the Ohio LSAMP Conference, (16) attended the NCUR at the University of Memphis, Memphis, TN, April 6-8, 2017, (17) attended UK HR Professional Development session *Group Problem Solving*, Friday, April 28, 2017, and (18) attended various events and activities at the University of Kentucky including the UK Showcase of Undergraduate Scholars, Conversations with the President, and Conversations with the Provost.

## APPENDIXES

APPENDIX A

KY-WV LSAMP  
ANNUAL RESEARCH SYMPOSIUM  
HUNTINGTON, WEST VIRGINIA  
MARCH 3-4, 2017

*KY-WV LSAMP*  
*9th Annual Research Symposium*



*Saturday, March 4, 2017*

*Hosted by: Marshall University LSAMP*

*Located: Memorial Student Center,*

*Huntington, West Virginia*

# Agenda

Friday, March 3, 2017		For KY-WV LSAMP Scholars Only	
03:00-04:00 PM	Registration and Refreshments		1st Floor Lobby
03:15-04:00 PM	Welcome and Introductions	Maurice Cooley, Assoc VP Intercultural Affairs Girmay Berhie, Ph.D., MU LSAMP Director Fara Williams, KY-WV LSAMP Director	BE5
04:00-04:30 PM	What is LSAMP?	Fara Williams, KY-WV LSAMP Director	BE5
04:30-05:00 PM	Why the focus on Grad School & Research?	Fara Williams, KY-WV LSAMP Director	BE5
05:00-06:00 PM	Graduate School Application Process	Mike Heppler, Oklahoma State University, Research Scholar Relations Director	BE5
06:00-06:30 PM	Dinner		BE5
06:30-07:30 PM	Graduate Student Q&A	Graduate Student Panel Mike Heppler, moderator	BE5
07:30-09:00 PM	Networking Mixer / Graduate Application Clinic		BE5
<b>Saturday, March 4, 2017</b>		<b>For the General Public and KY-WV LSAMP</b>	
08:00-10:00 AM	Symposium Registration and Refreshments		BE5 Foyer
09:00-09:30 AM	Welcome and Introductions	Maurice Cooley, Associate VP, Intercultural Affairs David Miller, Ph.D., KY-WV LSAMP Co-PI Fara Williams, KY-WV LSAMP Director	BE5
09:30-10:30 AM	Keynote Presentation	Brittani Grant, Assistant Project Manager, The Tower Companies	BE5
10:30-11:00 AM	Brief Introduction of Recruitment Tables		BE5
11:00-11:15 AM	Break		
11:15-12:15 AM	Poster Session	See Presentation List	1st Floor Lobby
11:15-12:45 AM	Recruitment Tables	See Recruitment List	1st Floor Lobby
12:15-1:30 PM	Networking Lunch		John Marshall Dining Room
12:15-01:30 PM	Alliance Meeting Lunch	KY-WV LSAMP Administration, Campus Coordinators, and Invited Guests	Shawkey Dining Room
01:30-01:45 PM	Break		
01:45-02:30 PM	Oral Presentations	See Presentation List	BE5
02:30-03:00 PM	Closing / Recognition Presentations	Fara Williams, KY-WV LSAMP Director	BE5



# KY-WV LSAMP 9<sup>th</sup> Annual Research Symposium



Marshall University, Memorial Student Union  
Huntington, WV, March 3-4, 2017



Brittani Grant, Keynote Speaker



Mike Heppler, Speaker



Graduate Student Panel

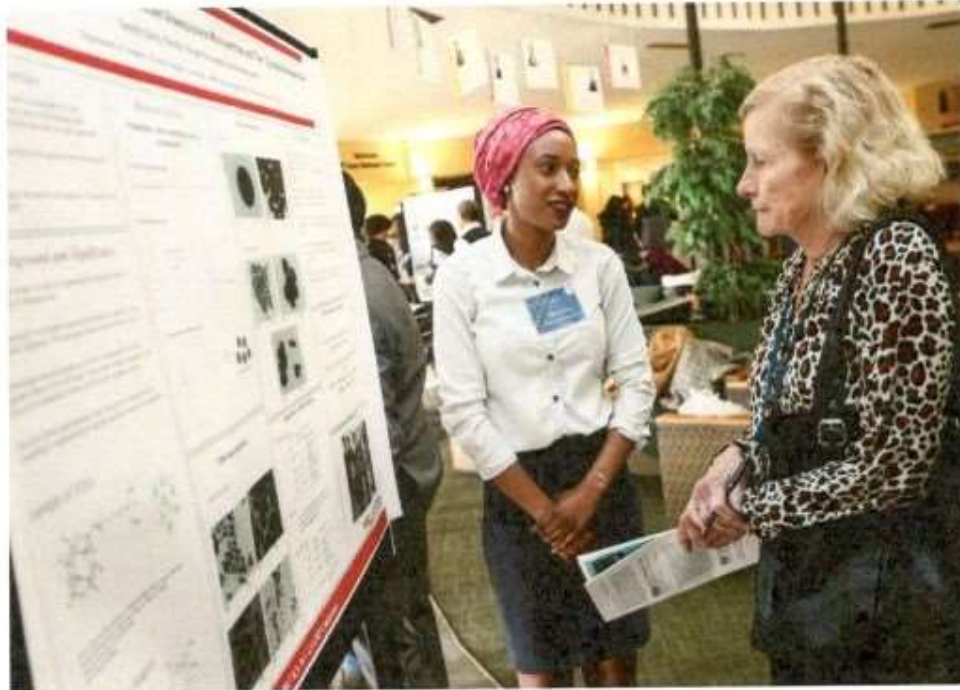


16 Scholar Poster Presentations  
3 Scholar Oral Presentations

[http://www.herald-dispatch.com/news/marshall\\_university/marshall-symposium-attracts-kentucky-west-virginia-students/article\\_51e8727e-273d-54f5-9887-7c916f9e5c9d.html](http://www.herald-dispatch.com/news/marshall_university/marshall-symposium-attracts-kentucky-west-virginia-students/article_51e8727e-273d-54f5-9887-7c916f9e5c9d.html)

## Marshall symposium attracts 100 Kentucky, West Virginia students

By DAVID E. MALLOY Mar 5, 2017



Sholten Singer/The Herald-Dispatch

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Sholten Singer/The Herald-Dispatch Danielle Chavis of Western Kentucky University discusses her group's project with Pamela Feidhof during the 2nd annual Kentucky-West Virginia Louis Stokes Alliance for Minority Participation (LSAMP) research symposium on Saturday March 4, 2017, at the Marshall University Memorial Student Center in Huntington.



Photos: LSAMP Research Symposium  
Mar 4, 2017

HUNTINGTON - About 100 Kentucky and West Virginia college students participated in a symposium Saturday at Marshall University geared toward getting more minority students involved in the sciences, math and engineering.

The second annual Louis Stokes Alliance for Minority Participation was hosted Friday and Saturday at Marshall University. The inaugural symposium was hosted last year at the University of Kentucky.

The goal of the program is to double the number of minority graduates in the science, technology, engineering and math disciplines. The program is funded through a five-year grant.



Maurice Cooley, Marshall's associate vice president for intercultural affairs, said Marshall volunteered to serve as the host site this year. That allows the university to showcase its spirit of academic excellence, Cooley said.

"The annual research symposium is an inspiring event that advances student learning and provides opportunities for networking," Cooley said. "We want to increase the enrollment and retention of minority students in the sciences. We need more minorities in research."

Kaylind Batey, a senior at Centre College, will be one of those. Batey, who is majoring in biochemistry and molecular biology, will be taking a job with the National Institutes of Health in Washington, D.C., after he graduates this spring.

"This is the first time I've attended the symposium," he said. "It's giving me networking opportunities."

Gretell Toloza Alvarez, a native of Cuba and a Marshall freshman, plans to major in pre-med and chemistry.

"I think this will help me," she said of the symposium. "It'll be a big help to learn from my peers."

About 25 of the students attending Saturday were from Marshall, Cooley said.

"The symposium consists of STEM learning opportunities, graduate school and research planning, keynote presentations and both poster and oral presentations from undergraduate research students," said Dr. Girmay Berhie, director of the program at Marshall.

The colleges and universities from West Virginia and Kentucky participating in the program include the University of Louisville, Kentucky State University, Bluegrass Community and Technical College, Center College, the University of Kentucky and Western Kentucky University in Kentucky and Marshall, West Virginia State University and West Virginia University in West Virginia.

APPENDIX B

2017 KY-WV LSAMP  
PROGRAM EVALUATION  
SUBMITTED BY  
DR. WILLIE PEARSON JR. &  
MR. ED MARSHALL

**External Formative Evaluation Report: 2016-2017**

**Kentucky\West Virginia LSAMP Alliance**

Prepared by

Willie Pearson, Jr.

External Evaluator

with assistance from

Edward Marshall

Submitted to:

**Eli Capilouto, University of Kentucky, PI**

and

**Johne Parker, University of Kentucky, Co-PI**

**David Miller, West Virginia University, Co-PI**

**Kavi Javed, Kentucky State University, Co-PI**

**Orlando McMeans, West Virginia State University, Co-PI**

June 4, 2017

## Executive Summary

Phase II of the KY-WV Alliance for Louis Stokes Alliance for Minority Participation (LSAMP) Program, funded by the National Science Foundation, aims to build on achievements of Phase I of the grant, further enhancing the participation of underrepresented racial minority (URM) populations in STEM related academic majors and careers. Some of the key successes in Phase I included the recruitment of target populations and enhancement of undergraduate research experiences.

Phase II of the grant seeks to address challenges associated with Phase I, including the recruitment of Hispanics, project management, and faculty development. In addition, Phase II aims to implement virtual platforms to help generate a better sense of community among LSAMP participants, and to aid with the sharing of resources among partner institutions. Given some demographic transitions at the partner institutions, the recruitment of Hispanics has proven to be a challenge. As a result, some partner institutions have sought to redefine their target URM populations to include individuals who are low-income, first-generation-to-college, biracial or disabled, as well as individuals in rural locales.

A gap associated with the funding between Phase I and Phase II of the grant led to disruptions in program management at some institutions, including the lack of an Administrative Director (AD) at the lead institution. However, based on recommendations from external evaluators, an AD was hired. This has resulted in operational changes that were immediately apparent to and embraced by Alliance partners, including enhanced communication and streamlined data management. While faculty development specific to functioning within LSAMP was an objective of Phase II, it has not emerged as a significant issue during external evaluation. This may be partially reflective of the high degree to which partner institutions have not fully regained function as a true Alliance, often operating in silos. The establishment of a virtual/cyber environment to enhance community and the sharing of resources among participants and faculty at the various partner institutions is still lacking, which is one of many factors that may be contributing to the low level of program identity among participants. Nevertheless, substantial and measurable progress has been made with the enhancement of the Alliance website, allowing general information, forms and documents to be readily accessed.

The most significant themes emerging from this year's external evaluation fall into these major categories: (1) fostering greater campus program visibility, (2) building a greater sense community both within and cross partner institutions, (3) developing funding strategies to sustain the program, (4) developing pathway model (and recruitment tool) that engages students as early as late middle school, (5) facilitating more research opportunities for students during the academic year, (6) faculty research development at predominantly teaching institutions, (7) formally valuing the contributions of research mentors, and (8) continuing build in the progress made in the last two years. Most of the recommendations for this year are already being addressed. The Alliance Director is encouraged to monitor and verify the actual numbers of students participating in research during the academic year and summer. Preliminary data suggests that institutions may be underperforming on this primary goal. Overall, the three sites were performing well given the limited available resources. Each Coordinator had developed innovative practices to support the students.

## Introduction

While there has been some measurable progress, African Americans, Hispanics, Native Americans, Alaska Natives, and Pacific Islanders (underrepresented racial/ethnic minorities or URM) continue to be underrepresented at each level of science, technology, engineering and mathematics (STEM) education and the workforce (Slaughter, Tao and Pearson, 2015; National Research Council, 2011; National Science Foundation, 2014). Many federal and private foundation efforts have been implemented to increase the participation of URM in STEM disciplines and careers (BEST, 2004; National Research Council, 2005, 2011). There is strong evidence that a high-quality undergraduate research experience and mentoring play significant roles in recruiting and retaining URM in STEM disciplines and careers (Leggon and Pearson, 2010; Chemers et al., 2011; Ghee et al., 2014).

The National Science Foundation's Louis Stokes Alliance for Minority Participation (LSAMP) Program seeks to proactively encourage greater participation of URM in STEM disciplines, especially during the undergraduate years. In 2006, Phase 1 of the KY-WV Alliance (hereafter Alliance) began by establishing a relationship among 10 diverse academic institutions, two state EPSCoR programs, and the undergraduate research and diversity programs at the partner institutions. During Phase 1, some success occurred in the areas of outreach and recruiting, peer mentoring, undergraduate research experiences, as well as summer bridge transitional programs for entering students, curricular reforms in "gatekeeper" courses, and workshops on STEM research career options. Aspects of Phase 1 that proved particularly challenging included recruitment from Hispanic Communities, project management, faculty development to improve academic climate, the implementation of a new cyber-enabled project component, and the communication/sharing of information between campuses (Pearson, 2015).

Phase II attempts to capitalize on the successes and momentum of Phase 1, as well as remedy key challenges that were encountered. Nine of the original ten institutional partners are participants in this phase. Targeted initiatives in Phase II are aimed at aggressively increasing the quality and quantity of students from URM receiving baccalaureate degrees in STEM fields, as well as increasing the number of URM attending graduate school or entering the STEM workforce upon receipt of a STEM degree (KY-WV LSAMP Proposal).

The primary purpose of this formative evaluation report is to continue assessing the extent to which the KY-WV Alliance is accomplishing the goals and objectives outlined in its Phase II proposal, covering academic year 2016-2017. This report is organized in four sections: (1) *status of 2015-2016 evaluation recommendations*, (2) *methodology*, (3) *findings*, (4) *conclusions*, and (5) *recommendations*.

## Status of 2015-2016 Recommendations

The following recommendations relate to enhancing the efficiency and effectiveness of the KY-WV LSAMP Alliance:

- Continue to build on the steps taken to address the 2015 recommendations.  
**Status:** Organization chart to be revised; coordinator handbook to be completed; presentations and articles to be submitted to conferences and peer-reviewed journals
- Some coordinators raised concerns that their institutions were struggling to support the level of LSAMP activities agreed to in Phase II because promised institutional resources have not been forthcoming. It is recommended that the Coordinator investigate the extent to which this is a problem.  
**Status:** Begin with a discussion at the 2016 Alliance Retreat. Follow-up with phone calls and add to director 2016 campus visits as needed.
- All partners should engage in a joint process to review and implement required goals and objectives that encourage operation as an Alliance, more specifically the development of intercampus digital communities, as well as the sharing of resources and best practices.  
**Status:** Communications to be highly encouraged and relationships to be strengthened beginning with the Alliance Retreat in August 2016. Will discuss digital community options as well.
- Provide formal orientations for all research mentors, compensated administrators and students. Institution C has developed an orientation presentation that could serve as a potential model for all Alliance sites.  
**Status:** Director will add an orientation presentation to her itinerary for Fall 2016 campus visits.
- Enhance summer research opportunities for students external to their respective campuses.  
**Status:** Director to provide links to NSF REU and Pathways to Success search engine sites. Conversation to be included in the Alliance Retreat. Opportunity solicitations to be shared directly with scholars as well as mentors.
- For those institutions with goals of increasing Hispanic student participation, document the extent to which they are achieving this goal.  
**Status:** Can be done through yearly enrollment and degree data as well as participant data. Coordinators should also include any activities specifically geared to Hispanic recruitment efforts.
- While Alliance partners are encouraged to continue collaborations with LSAMP related efforts on their respective campuses, it is essential that LSAMP participants be properly tracked and/or labeled once integrated into such efforts. There were situations in two case studies where data reported included students who fit within

LSAMP demographically, but were not indicated on the roster provided to the evaluator.

**Status:** Make sure ALL KY-WV LSAMP Scholars are included in the quarterly reports. Use the "Ripple Effect" for definitions of participating scholars. Data collection and management processes are being adapted to allow for more consistent and accurate information collected. Adjustments are also being made to make the collection and maintenance of the information smoother and easier for all parties.

- Alliance coordinators should review the range of majors that participants are enrolled in at their respective institutions and insure that program activities and services reflect their findings.

**Status:** Coordinators should adjust program activities and leaders as needed.

- Despite advanced planning, two of the three case study sites seemed ill-prepared to ensure that the interviewees showed up. In conjunction with the evaluators, the Alliance Director should hold a brief orientation regarding the nature and structure of evaluations with sites selected for next year's case studies, and emphasizing the criticality of participating in focus groups and interviews.

**Status:** Conversations to be held during the Alliance Retreat. Follow-up with 2016-17 selected sites to include more details, help, and guidance.

- The Alliance Director is strongly encouraged to work with campus coordinators to develop a relational database (e.g., including demographic information) that has an authenticated list of documented LSAMP participants.

**Status:** A Scholar Database has been drafted. Details will be shared at the Alliance Retreat. Revisions can and will be made to the database as needed. Data gathered from Quarterly Reports will be maintained in the Scholar database.

## Methodology

This formative evaluation plan calls for data collection using a mixed method approach-- quantitative and qualitative (Babbie, 2014; Berg and Lune, 2012; Booth, Colomb, and Williams, 2008; Frankfort-Nachmias and Leon-Guerrero, 2015; Neuman, 2011; Posava and Carey, 2007). As was the case last year, in conjunction with the Project Director, three partner institutions of varying Carnegie classifications, geographical location and student demographic composition were selected for case studies. To maximize participant anonymity and confidentiality, institutions are identified as A, B, and C. See methodological footnote in Appendix. *Quantitative* data collection is based on e-surveys distributed via participant emails which were provided by the three case study institutions. Surveys were requested from a total of 66 student participants, with 38 responding (58 percent response rate). Unless otherwise noted, all scaled items are on a 5-point scale (5=highest).

*Qualitative* data were gathered from individual and focus group interviews with LSAMP participants. At the case study sites, data were collected via focus group interviews with student participants and faculty research mentors. Individual interviews were conducted with campus program administrators. The evaluators also met with the Alliance Project coordinator on the campus of the University of Kentucky to discuss this year’s evaluation plan. A total of 6 administrative interviews were conducted (100 percent response rate). Focus groups were conducted with 17 student participants (35 percent response rate) and ten faculty research mentors (100 percent response rate). Table 1 shows overall response rates by case study site.

<b>Table 1 – Response rates by Stakeholder and Institution</b>			
	Institution A	Institution B	Institution C
Student Surveys	35%	76.6%	80%
Student Focus Groups	36%	100%	80%
Faculty Research Mentors	100%	100%	NA
Administrative Interviews	100%	100%	100%
Senior Administrative Interviews	100%	NA	NA

All participants were informed of their rights as human subjects. All interviewees signed a form giving their consent (or gave verbal consent) for interviews to be audio taped. All tapes were transcribed verbatim without any identifiers by a professional transcriptionist. The transcripts were analyzed for critical themes by two experienced evaluators. In compliance with the confidentiality agreement, every effort has been made to avoid the identification of any respondent and partner institution; therefore, some responses are presented in general terms. What follows is a discussion of findings of the case studies.

## **Case Study Findings**

### **Institution A**

Institution A is a coeducational comprehensive public university offering a range of degrees but mostly undergraduate degrees. Approximately 9 in 10 students are applicants for financial aid.

#### *Program Administration*

The LSAMP administrative staff indicated a firm understanding of the goals and objectives of LSAMP. There were some administrative challenges with program management due to the



absence of a dedicated LSAMP graduate assistant. At the time of the site visit, a new graduate assistant had been in place less than two months. The institutional Coordinator recognized some of the challenges associated with staff turnover, and has established some clear objectives to get the program back on track. A comment from a staff member explains:

*We are setting up a system to basically make it so that whoever comes on after me can instantly interact and retain students. The turnover in graduate assistant seems to have been a problem. If (a staff member) is there to give the constant contact and if (a staff member) is there, turnover will be less of an issue. Whoever comes after me can get the ball rolling and there's no learning or time gap.*

All LSAMP administrative staff were rated very highly—5, by student focus group participants. Faculty research mentors also had positive responses to the LSAMP administration, which enhanced their desire to support the program. One research mentor stated:

*Personally, and I think I can speak for the college, we truly believe in the goals and the mission of LSAMP and we have tremendous respect for (Division Administrator). That's why we volunteered*

In terms of communication and marketing by the LSAMP administration, students reported the need some for improvement. One student elaborated: “*Last year, we got a lot more emails, reminders, and updates from the staff. They really kept more in contact with the program. But this semester, I haven't heard from anyone (other than institutional Coordinator) all semester.* Although all student focus group participants were aware of the existence of the LSAMP Alliance, slightly more than two-fifths were unaware of the 2017 LSAMP annual research symposium.

#### *Senior Institutional Administration*

One-hour interviews were conducted with two senior level administrators, respectively: Division Director and Provost. The LSAMP program reports to the Division Director. The Director's comments focused primarily on ways in which the LSAMP could be further developed, including:

- More group learning workshops, especially related to ‘soft’ skills
- More exposure to research opportunities
- Compile list of institutional initiatives that focus on maintaining under-represented populations in the K-16 STEM pipeline
- Establish stronger LSAMP identity on campus
- Develop a mechanism to utilize grant supplements to support LSAMP goals and objectives.

The Director acknowledged the need to take a more holistic approach to addressing the needs of LSAMP participants, which has been partially done by imbedding the program staff within the Director's Office.

The Provost was keenly aware and supportive of LSAMP goals. The Provost acknowledged the necessity for more institutional support, and readily admitted that under the extant state fiscal

challenges, additional resources are unlikely be forthcoming in near future. Nevertheless, the Provost believes that establishing a central position or office to aid in coordinating STEM focused diversity funding from external sources, including research supplements, would a step in the right direction and a key opportunity to address funding issues.

### *Research Mentors*

A one-hour focus group interview was conducted with seven faculty research mentors, representing a wide range of STEM disciplines. While all of the research mentors indicated having participated in an orientation related to LSAMP, some could not recall specific goals and objectives of the program. One mentor recalled:

*I'm not sure if I know specifically what their goals are. I presume that it must have to do with improving both the retention of minority students and their career outcomes. Helping them achieve a better outcome than would exist without the program.*

While all research mentors believed that there were adequate resources for LSAMP students to participate in research at the institution, several recalled that not all of the funding originated from the LSAMP grant. In fact, some attributed some of the institutional funding to historical funding from Phase I when the institution received more resources from the LSAMP grant. One mentor claimed: “*Compared with the amount of money that was available the previous round, this is very minimal.*” Another mentor added:

*I don't know the exact numbers. We did have more resources in the previous round (Phase I). And this time, the monies are considerably smaller. I can't tell you exactly how much smaller. But I remember thinking, wow, that's a lot less than what we had. If it wasn't for grants held by individual faculty members or departments supplementing, there would be no resources for the laboratories experiences.*

The mentors said that they did not receive any financial compensation for their LSAMP-related duties. Nevertheless, all expressed being satisfied. One mentor stated: “*I think this group is willing to volunteer.*” Another mentor comments: “*...it's a role that is comparatively small. So, I wouldn't accept compensation anyway even if there was money for it...there is not a lot of time involved.*”

Mentors recognized some challenges working with the LSAMP population. One mentor had this to say:

*There is an aspect of the LSAMP students—that is to say, half of our students are first generation college students. Many of them are from very rural, impoverished areas. So, I think that we are used to dealing with students who are coming in with significant academic challenges.*

However, there was a consensus regarding the important role that LSAMP plays in student success. One mentor emphasized the importance of LSAMP program support:

*... There is that motivation and support. And I think they get that from their interaction with the LSAMP Program. They get lots of discussion about how important it is to engage with these activities and being professional and showing up when you say you are going to show up. So, with that level of preparation, I think they are probably better prepared than the average student.*

Another mentor stated the following in terms of establishing an early support system by early participation in research labs:

*...they immediately get a faculty advocate. They develop multiple additional social supports with their lab mates..... three or four people. And it helps them socialize in the department and in the lab. As they go through their classes, they get more challenges, but they will know people whom they can ask questions and things like that. Our experience with our department has been that the earlier you get the students in the lab, the better their outcome is going to be.*

Suggested enhancements from the mentors included the establishment of a newsletter, regular mentor meetings and the provision of a list with LSAMP participants each Fall. The list was deemed important to enable mentors to identify LSAMP participants early in the academic year, which in turn allows the participant to be steered directly to LSAMP support services when issues arise.

*Students*

Table 2 provides student focus group responses to perceptions of goals and objectives that are associated with the LSAMP program.

<b>Table 2 –2016-17 Students’ Perceptions of LSAMP Goals and Objectives (Institution A)</b>		
	<b>Yes</b>	<b>No</b>
<b>Improved Enrollment</b>	100%	0%
<b>Improved Retention</b>	14%	86%
<b>Enhanced Academic Performance and Achievement</b>	100%	0%
<b>Acquisition of knowledge and proficiency</b>	42%	58%
<b>Research Skills</b>	100%	0%
<b>Successful application to graduate school in a STEM discipline</b>	100%	0%

Among focus group participants, all believed that gaining research skills was an important component of the LSAMP experience. One participant commented: *“It (research experience)*

*looks good on my resume...it's fun. It's like an opportunity to travel and totally get to meet people. I am presenting at a conference.*" Below are some relevant comments:

- This is my first year, so I am kind of trying to get involved and learn a little bit of what I must do. I am planning on getting involved in research.
- To maintain good grades. I plan to get involved with the program and find research opportunities.
- I believe that it is important to have mentors who specialize in my field.

However, the visibility of the participants as LSAMP scholars seems to be an issue. One faculty member stated: "I can say that in the last three years now, I've yet to have a student in the LSAMP Program come into my office, self-identify as such, or mention the program."

Self-efficacy in terms of the ability to conduct research was attributed to a range of abilities. All the participants rated LSAMP a 5 in terms of enhancing their confidence to do well in STEM courses and to pursue a graduate degree. All students felt that there could be a higher level of connectivity among the LSAMP participants, and all agreed that they could assist with this by trying to attend more gatherings and meetings. One student provided the following related comment: "*I can walk past people who may be part of the program and not know it because we don't gather that often.*" Emphasizing the importance of their role in LSAMP as a community, another student commented:

*We are responsible for helping each other. If someone comes to me, and they are part of the program or even if they are not, and they have questions, if I know, then I inform them and if I don't, then I tell them where to start.*

### *Students*

A one- hour focus group was conducted with seven student participants during the site visit. E-surveys were emailed to 31 program participants. The initial response rate was 23% (seven students). After several attempts by the program staff to increase the response rate, the rate only reached 35% (11 students). As a result, the survey data were deemed insufficient for analysis. This is unfortunate and raises questions regarding the strength of the relations of the student participants and the staff. Indeed, one participant alleged that some participants seem to be more privileged to staff than others, especially in terms of communications. Significantly, this institution presented a well-organized and exemplary site visit.

## **Institution B**

Institution B is a small public coeducational serving almost exclusive undergraduate students. A large proportion of the students are first-generation and qualify for Pell Grants. The primary responsibility of faculty members is teaching. At this institution, two separate one-hour interviews were conducted with the LSAMP program Coordinator and a senior institution administrator (Dean).

### *Program Administration*

This institution has a blended funding source (i.e., funds from two separate NSF programs) to provide what the Coordinator described as 'a comprehensive approach' to serving its LSAMP

students. Students from the two programs share a common academic resource. However, there is one major difference: LSAMP students have opportunities to participate in external summer research experiences mostly in the region. The Coordinator views this approach as an innovative mechanism to leverage limited institutional and extramural resources.

According to the Coordinator, there was a concerted effort to recruit faculty members with the ‘temperament’ to work with undergraduates. Faculty members participated in the recruitment and selection of students. Selected students were required to participate in a formal program orientation. During the semester, students were required to attend program meetings, and tardiness was unacceptable. The Coordinator explains: *“The first time that they are 2 minutes late, I pat them on the back and say that’s not going to happen ever again...”*

Failing to participate in the meeting and complying with other program requirements resulted in a range of consequences—from warnings to removal. The Coordinator explains: *“My strong personal conviction is that you challenge the students, you tell them what their obligations are, and they understand that it’s for their own good and they will live up to it.”* Apparently, this approach is working, because recently, the average retention rates range around the mid-80%. Moreover, the Coordinator emphasized that there are no problems recruiting students. In fact, the Coordinator asserts: *“The buzzword is out about the program...so a whole bunch of students see the national website and want to be involved...but the LSAMP program requires that the students fall into a specific CIP code...so there is some disappointment.”* This is a testament to the Coordinator’s respect in the institution. However, the Coordinator admitted that expanding the program would require additional external resources to support students and faculty because the institution is underfinanced. The Coordinator identified another challenge to providing more research experiences on campus: *“Our institutional challenge is that we don’t have enough faculty members engaged in rigorous research.”* Furthermore, extant funding is primarily for the academic year. There is some limited funding for on campus summer research, but most students engage in summer research experiences at major institutions. Such experiences have a positive effect on the students. The Coordinator recalled the impact on one student: *“Based on \_’s summer research experience, \_ has gained so much self-confidence.”* The Coordinator adds: *“We want them to get to the point where they believe that they are as good as anyone else.”*

Given the large percentage of first-generation students at the institution, the Coordinator asserts that financial aid is not only the key to recruitment but also to persistence to the degree. The Coordinator emphasizes: *“The stipend serves a powerful incentive.”* At the time of the site visit, the Coordinator reported approximately 30 LSAMP active scholars (all African Americans, except for one Hispanic).

#### *Senior Institutional Administrator*

A half-hour interview was held with the Dean, to whose office the LSAMP program reports. This administrator was extremely knowledgeable about the goals and performance of the program. This is in large part an indicator of the Dean’s personal commitment to enhancing the quality of STEM education for all undergraduates. To produce highly-qualified STEM graduates, the Dean argues that students must have both high-quality classroom and research experiences beginning at the middle school level and continuing along a visible pathway to a STEM-related career. The Dean elaborates: *“I wish we could take the program to the high schools as means of recruitment...I think it is a good tool. We should highlight the program*

*when talking to teachers and parents. This is particularly the case when recruiting high-performing minority students because they are in high demand”*

As a largely teaching institution, the Dean recognizes and supports efforts for LSAMP students to engage in research experiences outside of the institution. The Dean admitted that “the small but engaged STEM faculty is stretched thin.” The Dean adds: *“This is a small institution with several grants besides LSAMP but a very small STEM faculty...overworked.”* To be successful, the Dean emphasized the critical roles of mentoring, high academic expectations, comprehensive advising, and personal counseling. Additionally, the Dean pointed out that the President was extremely supportive of the program. As for the Dean’s office, there is no compensation, not even for the secretary who handles the program’s paperwork. The Dean’s fiscal and personal commitment was confirmed by the Coordinator, faculty mentors, and students. The Dean expressed pride in the program’s participants’ progression rates which are higher than the campus norm, and the students praised the Dean’s ‘open door’ policy. The Dean comments: *“Our task is to make sure that the students are prepared and they can continue with their education and complete their STEM education in any field they choose...hopefully in 4 years.”* It is noteworthy that the program has been particularly successful in students’ performance in the gateway courses; thereby, positively affecting student learning. The successful implementation notwithstanding, the Dean acknowledged some of the challenges ahead because of the uncertainty of state and federal funding for higher education. At the time of the site, there was considerable speculation regarding deep cuts, especially to the National Science Foundation, Department of Education, and other federal mission agencies. Specifically, the institution depends heavily on Title I funds and Pell Grants, with a significant portion of the student body being eligible for federal financial aid. Although the Dean would like to see the program expanded to bring opportunities to other deserving students, the uncertainties temporarily temper this goal.

### *Research Mentors*

Three faculty mentors participated in a one-hour focus group. It is important to emphasize that the mentors participated in the blend programs. As the Coordinator pointed out, these mentors were not necessarily aware of which students were designated as LSAMP. This turned out to be the case. Their roles were largely providing classroom experiences that involve peer collaboration in problem solving in mathematics and computer science. The activities were not specifically geared to research conducted by the mentors. The primary goal was to enhance success in gateway (usually chemistry and mathematics) and advanced courses. The mentors agreed that it was important for the students to see each other excel, especially in the most advanced science and mathematics courses where African American students are virtually invisible. In recognition of the recruitment process, there was consensus among the mentors that the recent cohort of students was better prepared than those in the past. Although the mentors were unable to identify LSAMP students, they pointed out that in the upper level courses, students in the blended program outperformed those who were not. The mentors were satisfied with their compensation because they were motivated by the opportunity to enhance the students’ performance.

*Students*

Seven LSAMP students attended the one-hour focus group interview, and 23 completed a survey. All were well versed on the goals and objectives of the program. Table 3 shows student focus group responses to perceptions of which goals and objectives are associated with the LSAMP program.

<b>Table 3 –2016-17 Students’ Perceptions of LSAMP Goals and Objectives (Institution B)</b>		
	<b>Yes</b>	<b>No</b>
<b>Improved Enrollment</b>	0%	100%
<b>Improved Retention</b>	100%	0%
<b>Enhanced Academic Performance and Achievement</b>	100%	0%
<b>Acquisition of knowledge and proficiency</b>	100%	0%
<b>Research Skills</b>	100%	0%
<b>Successful application to graduate school in a STEM discipline</b>	100%	0%

Indeed, their responses were impressive. As was the case with the mentors, there was some uncertainty regarding the students’ program identity or program designation. This was especially the case during the academic year when they participated in the common learning activities. However, they were aware that they had summer research opportunities while their co-program peers did not. All were very satisfied with their research experiences, especially with labs external to campus. One student provided this account: “...*I am very satisfied considering I got there and I didn’t know what I was doing and I came out learning a whole lot more than I would have.*”

When asked about the benefits of being in the program, the ‘research experience’ was the most frequent response. One student explained: “*It gave me a feeling of what it would be like as a graduate student committed to a PhD...I recognized that it was something that I would want to do.*” Moreover, students said that the research experience enhanced their ability to work effectively in teams. They characterized the labs as welcoming, supportive, and reported being an equal member of the team. Not surprisingly, the second major response involved activities related to collaborative peer learning and mentoring. There was consensus that mentoring their peers reinforced their own comprehension and sharpened their ability to clearly explain complex material.

The students were asked to rate several items on a 5-point scale (5=highest), the responses follow:

- Quality of Coordinator’s performance 4.6
- Quality of the Dean’s performance 5.0
- Organization of the program 4.0
- Ability to perform well in STEM courses 5.0
- Prepared for upper-level coursework 4.6
- Research skills 4.1
- Confidence to conduct research 4.6
- Ability to do graduate-level work 4.0
- Pursue graduate studies 5.0

One student reported presenting a poster at a local meeting, while five students had attended at least one LSAMP conference. All indicated that they were highly motivated to do research. Similarly, all were very satisfied with their research mentors and the knowledge that they gained from them.

### **Institution C**

At this public institution, the primary mission is teaching, especially non-traditional-college age and first-generation students. Consequently, limited research is conducted by faculty. In fact, at the time of the site visit, there were no faculty research mentors participating in the program; however, students are expected to pursue research opportunities at other institutions.

#### *Program Administration*

The Coordinator had clearly established goals and objectives for LSAMP. Although the Coordinator does not receive compensation from LSAMP, they reported being satisfied with LSAMP’s support for students. The Coordinator has considerable administrative responsibilities and a limited staff, and indicated that the “President is supportive.” This is most evident in the fact that recently, additional institutional resources were provided to hire a part-time assistant who tutors mathematics and assists with recruiting.

According to the Coordinator, approximately 90% of the LSAMP students have a clear understanding of the goals of the program: “They understand that there are resources available to them to pursue STEM careers.” The Coordinator contends that the remaining students may not fully comprehend the long-term goals of the program, which include pursuing advanced studies in STEM fields. Because most students are older and many have dependents, much of their focus is on entering the workforce after earning the first college degree. The Coordinator explains: “...most focus on the immediate because for a thirty-year old, a PhD seems a long time away.”



Nevertheless, the Coordinator asserts that reasonable and realistic progress is being accomplished.

The Coordinator emphasized that the institution's primary goal is not so much on numbers, but instead on recruiting students from underrepresented racial and ethnic groups. At the time of the site visit, there were five active LSAMP students. Given the limited staffing and resources, the Coordinator admits that this number is near capacity. With more staff and resources, the program could accept more applicants. The Coordinator points to some student demographic challenges. The Coordinator gave this account: "The real problem is that many are not citizens...Frequently, I have students banging at the door to join the program...When I ask, 'Do you have a social security card'? They answer: 'No ma'am'...Then, I have to tell them 'Sorry, I can't help you'." The Coordinator finds this disappointing because many of these students' pre-college mathematics and science backgrounds as well as their interest in pursuing a STEM major are usually stronger than those of their citizen peers. The latter are particularly challenged upon arriving on campus and to "...discover that they are really unprepared for college-level course work, especially in mathematics and science...This leads to frustration." However, the program's intensive mathematics tutoring seems to be successful because the pass rates in gatekeeping and advanced mathematics courses have improved dramatically. Nevertheless, the Coordinator now sees a critical need for tutors to work with students taking sciences courses, especially physics and chemistry.

Going forward, the Coordinator plans to continue building on past successes. For example, in the past, STEM summer camps and outreach to middle and high schools have provided talent pools. The Coordinator is committed to building a pre-college STEM pathway model that would result in a larger and deeper-quality pool to enter the institution well-prepared and committed to major in a STEM field. This effort would rely heavily on college students as mentors. The Coordinator admitted that more resources (human capital and financial capital) are critical to sustaining such an effort. Therefore, the Coordinator believes that faculty need to be more engaged. According to the Coordinator, given the racial composition of the STEM faculty, students are hard pressed "to see STEM faculty members who look like them." STEM faculty recruitment has been a challenge because of the lack of compensation.

With increasing Hispanic and biracial student populations on campus, the Coordinator plans more targeted outreach to these communities. Another effective feature of the program is incentivizing through the purchasing of books. The Coordinator implemented a practice where LSAMP students taking STEM courses have their book expenses covered. Furthermore, those maintaining a 3.0/4.0 scale at the end of the semester, have all books are covered.

When asked to comment on the organization of the Alliance, the Coordinator had this to say: "...it is stronger than in the past...because \_ (Alliance Director) makes reporting much easier..."

does a good job and I appreciate that... makes it easier for us to do things as far as reporting because it's hard to do the reporting if you are doing all the work on your campus, too.... So, XX has literally taken a load off me." The Coordinator pointed out that the consistently high turnover rates among Coordinators during this Phase of the Program is a serious challenge for Alliance community building. At the time of the site visit (prior to the Alliance Symposium in West Virginia), the Coordinator had not met some of the new Coordinators. The Coordinator concluded:

*I wish I had more time to devote to the program but that's not going to happen in my current administrative role...I just don't have the energy to take on more responsibility...Plus, I don't have the staff support.*

### *Students*

During the site visit, four students (80% response rate) participated in the focus group interview. All the students could articulate the goals and objectives of the program.

When asked to describe the strengths of the program, the students reported the following:

- supportive administrator
- positive reinforcement
- access to one-on-one tutoring aligned with individual learning styles
- access to a computer lab dedicated to the program
- mentoring
- funds to attend Alliance meetings
- group meetings

The students emphasized the significance of having their book expenses covered. Given their limited financial resources and the high cost of science and mathematics texts, students indicated that the practice provides some financial security. Interestingly, the students singled out the motivation to excel because the program would cover the expense of all their books (if they maintain a 3.0 at the end of the semester). This was precisely the Coordinator's intent. It was instrumental in reinforcing high academic aspirations as they strove to excel in advanced mathematics and science coursework. This level of engagement resulted in students' motivation to attend the Alliance meeting in West Virginia. Clearly, the program was serving as a catalyst to instill a STEM identity in the students.

Relatedly, students were asked to respond to a series of 5-point scaled items (5=highest). Given the adulation of the Coordinator, it is not surprising that her performance and the program's organization were rated 5. After joining the program, the students indicated a significant boost in their confidence and performance. This is reflected in the fact that students assigned a rating of 5 to the following items:

- preparation for upper-level science and mathematics coursework
- ability to do college-level work

One non-traditional age student commented:

*I was isolated on campus and struggling in my classes. Finally, I went to \_ (the Coordinator) to ask for help. \_ (the Coordinator) told me about the program and its benefits. Since joining the program...the experience has been life changing. I have a*

*quiet place to study. The tutorials in mathematics have really lifted my test anxiety. I am doing well in my classes. The staff's door is always open and they are there for me...Whereas, before I got into the program, it wasn't like that...I didn't have access to much...So, it's like a 180-degree difference for me since being in LSAMP.*

When asked about the features of the program that need the most improvement, all the students said not necessarily improvement, perhaps just some ‘tweaking’. All suggested that the program needs to have greater visibility (or marketing on campus) because some eligible students are not aware of it. They volunteered to post flyers and work at orientation booths or tables. All would recommend the program to others.

Table 4 provides participants’ perceptions of the goals and objectives associated with the LSAMP program at their institution.

<b>Table 4– 2016-17 Students’ Perceptions of LSAMP Goals and Objectives (Institution C)</b>		
	<b>Yes</b>	<b>No</b>
<b>Improved Enrollment</b>	100%	0%
<b>Improved Retention</b>	100%	0%
<b>Enhanced Academic Performance and Achievement</b>	100%	0%
<b>Acquisition of knowledge and proficiency</b>	100%	0%
<b>Research Skills</b>	100%	0%
<b>Successful application to graduate school in a STEM discipline</b>	100%	0%

### **Conclusions**

This year’s evaluation focused on three institutions with vastly different missions and therefore student and faculty demographics. Despite the diversity of these institutions, strikingly similar themes emerged from the site visits. As was the case with previous site visits, students bemoan the lack of campus visibility of the LSAMP program. They see this

as problematical because it fails to touch students who may be eligible and committed to STEM major and career. The students call for a more concerted and systematic messaging recruitment process. In all instances, students expressed a willingness to assist the program. Students called for more opportunities for those in the program to meet, so they can build a stronger sense of community among LSAMP participants on their campus. Overall, students expressed appreciation for the opportunities to participate in LSAMP. However, those at institutions where the institutional focus is primarily on teaching faculty are desperate for academic year research opportunities. While they understand their faculty's responsibility to teaching, the hope is that the faculty can attend workshops to re-ignite their research skills; thereby providing more opportunity for undergraduate research. Clearly, the Alliance will need to explore mechanism (electronic or otherwise) to meet the growing interest in an authentic research experience.

Some themes also emerged from program staff and senior institutional administrators. Unsurprisingly, the issue of limited resources continues to be omnipresent. Despite being in different geographical spaces, state budget for higher education continues to be problematic. The lingering presence of the recession continues to negatively impact the institutional resources. Nevertheless, these stakeholders were not only positive about their LSAMP program, they had developed strategies to cobble together various pieces of institutional grants to support the programs. Another theme that emerged from these groups pertained to using the LSAMP program as a mechanism to recruit high-achieving high school students. The success of these stakeholders in communicating the value of programs like LSAMP could be seen in the enthusiasm of the faculty mentors, the clear majority of whom did not receive any financial remuneration. In fact, mentors mentioned that volunteering their services was in line with the mission of their institutions. As was the case with students, most mentors pointed to the lack of campus visibility of the LSAMP program.

Interestingly, interviews with students and survey responses suggest that a significant number of the students had yet to participate in research during the academic year or summer. Actual research experience rates were lower than expected given its centrality to the mission of the program. In some cases, there was a dearth of opportunities for students in their first year. Nevertheless, the Alliance Director will need to monitor and authenticate the data reporting.

As was the case last year, each campus Coordinator had high praise for the Alliance Director's organizational and communication skills. The Alliance Director is credited with reducing clerical burden (especially data reporting) on Coordinators and responding quickly to their questions or concerns. Although the Alliance Director is relatively new, there is consensus among Coordinators that much of the turnaround in the Alliance beginning to function as a cohesive organization is due to the Alliance Director's "*incredible skill set, personality and energy.*"

## Recommendations

The magnitude of progress in the last two years cannot be overstated. The organizational, managerial, and structural changes are beginning to bring the partnerships closer to a functioning alliance. While the progress is measurable, there is a need to build on last year's promising practices and policy. The year's recommendations are clustered based on key recommendations based on site visits. Several of these recommendations are already being addressed:

### *Students*

- Expand campus and near campus research opportunities, especially during the academic year
- More consistent and inclusive communication
- More interaction among students to build a sense of community
- More campus visibility

### *Program staff*

- More programming for students and coordinators beyond the Symposium
- More community building among program participants
- Develop a talent pool based on a pathway model that begins as early as late middle school to ensure larger cohorts of students will get pre-college preparation in advanced science and mathematics courses and, consequently, be more likely to pursue a STEM major and continue the pathway to a STEM career

### *Senior administrators*

- Promising marketing strategies to bring visibility to the program, especially to those students who are eligible but may be unaware of the program
- View the program as a tool to recruit high school students

### *External evaluation*

- Develop a sustainability plan with less reliance on federal grants
- Formally recognize mentors' contributions to student development
- Enhance orientation and community building opportunities among research mentors
- Share promising practices (e.g., curricula, faculty research mentor database, data management)
- Strategies to promote collaborations that take into consideration differences in institutional missions (Carnegie classifications, demographic groups. etc.)
- Better communications with students on the importance of data collection (e.g., survey completions rates and focus group participation) as it relates to program funding
- Monitor and verify the actual number of students engaged in academic year and summer research

## References

Babbie, E. R. (2014). *The Basics of Social Research*. 6<sup>th</sup> Edition. Boston: Cengage Learning.

Berg, B. L. and Lune, H. (2012). *Qualitative Research Methods for the Social Sciences*. 8<sup>th</sup> Edition. Boston: Pearson.

Booth, W. C., Colomb, G.G. and Williams, J. M. (2008). *The Craft of Research*. Chicago: University of Chicago Press.

Building Engineering and Science Talent (BEST) (2004). *A Bridge for All: Higher Education Design Principles to Broaden Participation in Science, Technology, Engineering and Mathematics*. San Diego: BEST.

Chemers, M.M., Zurbriggen, E.L., Syed, M., Goza, B. K., and Bearman, S. (2011). "The Role of Efficacy and Identity in Science Career Commitment Among Underrepresented Minority Students." *Journal of Social Issues* 67 (3):469-491.

Frankfort-Nachmias, C. and Leon-Guerrero, A. (2015). *Social statistics for a Diverse Society*. 7<sup>th</sup> Edition. Thousand Oaks, CA: Sage.

Ghee, M., Collins, D., Wilson, V., and Pearson, Jr., W. (2014). "The Leadership Alliance: Twenty-years of Developing a Diverse Research Workforce." *Peabody Journal of Education* 89 (3): 347-367.

Leggon, C. and Pearson, Jr., W. (2010). "What We Know and What We Need to Know?" C. Kuh and R. Ehrenberg, Editors. *Future of Faculty Higher*. Ithaca, NY: Cornell University Press.

National Research Council (2011). *Expanding Underrepresented Minority Participation: America's Science and Technology Talent at the Crossroads*. Washington, DC: National Academies Press.

National Research Council (2005). *Assessment of NIH Minority Research and Training Programs: Phase 3*. Washington, DC: National Academies Press.

National Science Foundation (2014). *Women, Minorities and Persons with Disabilities*. Arlington, VA: NSF.

Neuman, W. L. (2011). *Social Research Methods: Qualitative and Quantitative Approaches*. 7<sup>th</sup> Edition. Boston: Pearson.

Pearson, Jr., W. (2015). *KY-WV LSAMP Formative Evaluation: 2013-2014 and 2014-2015*. June 1.

Pearson, Jr., W. and Fechter, A. (1994). Editors. *Who Will Do Science? Educating the Next Generation*. Baltimore: Johns Hopkins University Press.

Posavac, E. J. and Carey, R. G. (2007). *Program Evaluation: Methods and Case Studies*. 7<sup>th</sup> edition. Upper Saddle River, NJ: Pearson Prentice Hall.

Slaughter, J. B., Tao, Y. and Pearson, Jr., W. Editors. *Changing the Face of Engineering: The African American Experience*. Baltimore: Johns Hopkins University Press.

APPENDIX C

ALLIANCE RETREAT  
AUGUST 11-12, 2016





APPENDIX D  
CIP CODES

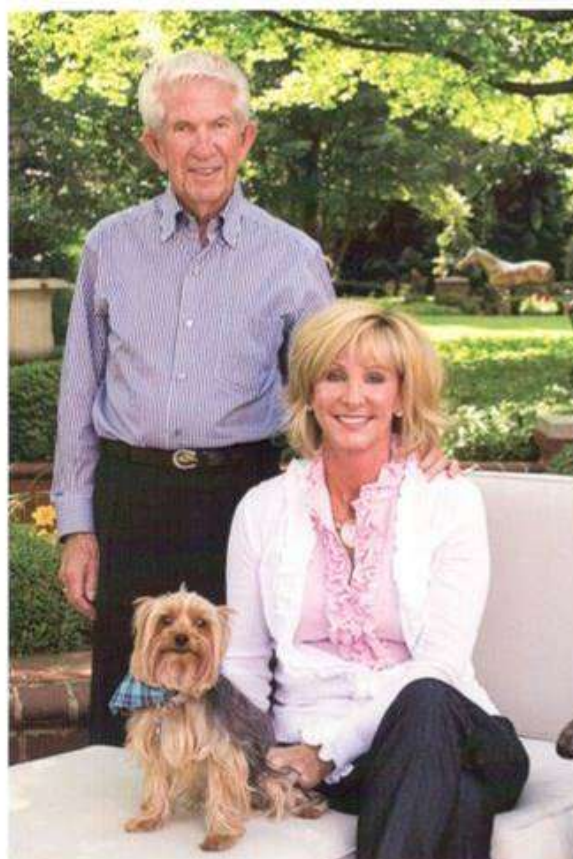
Agricultural Sciences	01.09	Animal Sciences
Agricultural Sciences	01.10	Food Science and Technology
Agricultural Sciences	01.12	Soil Sciences
Agricultural Sciences	01.99	Agriculture, Agriculture Operations and Related Sciences, Other
Architecture	04.02	Architecture
Biological Sciences	26.01	Biology, General
Biological Sciences	26.02	Biochemistry, Biophysics and Molecular Biology
Biological Sciences	26.03	Botany/Plant Biology
Biological Sciences	26.04	Cell/Cellular Biology and Anatomical Sciences
Biological Sciences	26.05	Microbiological Sciences and Immunology
Biological Sciences	26.07	Zoology/Animal Biology
Biological Sciences	26.08	Genetics
Biological Sciences	26.09	Physiology, Pathology and Related Sciences
Biological Sciences	26.11	Biomathematics, Bioinformatics, and Computational Biology
Biological Sciences	26.12	Biotechnology
Biological Sciences	26.13	Ecology, Evolution, Systematics, and Population Biology
Biological Sciences	26.15	Neurobiology and Neurosciences
Biological Sciences	26.99	Biological and Biomedical Sciences, Other
Business and Management	52.13	Management Sciences and Quantitative Methods, Other
Computer and Information Sciences	11.01	Computer and Information Sciences, General
Computer and Information Sciences	11.04	Information Science/Studies
Computer and Information Sciences	11.07	Computer Science
Engineering	14.01	Engineering, General
Engineering	14.02	Aerospace, Aeronautical and Astronautical Engineering
Engineering	14.03	Agricultural Engineering
Engineering	14.04	Architectural Engineering
Engineering	14.06	Ceramic Sciences and Engineering
Engineering	14.07	Chemical Engineering
Engineering	14.08	Civil Engineering
Engineering	14.09	Computer Engineering, General

Engineering	14.10	Electrical, Electronics and Communications Engineering
Engineering	14.11	Engineering Mechanics
Engineering	14.12	Engineering Physics
Engineering	14.13	Engineering Science
Engineering	14.14	Environmental/Environmental Health Engineering
Engineering	14.19	Mechanical Engineering
Engineering	14.20	Metallurgical Engineering
Engineering	14.21	Mining and Mineral Engineering
Engineering	14.22	Naval Architecture and Marine Engineering
Engineering	14.23	Nuclear Engineering
Engineering	14.24	Ocean Engineering
Engineering	14.25	Petroleum Engineering
Engineering	14.27	Systems Engineering
Engineering	14.28	Textile Sciences and Engineering
Engineering	14.32	Polymer/Plastics Engineering
Engineering	14.37	Operations Research
Engineering	14.40	Paper Science and Engineering
Engineering	14.41	Electromechanical Engineering
Engineering	14.42	Mechatronics, Robotics, and Automation Engineering
Engineering	14.43	Biochemical Engineering
Engineering	14.44	Engineering Chemistry
Engineering	14.45	Biological/Biosystems Engineering.
Engineering	14.99	Engineering, Other
Engineering Technologies	15.15	Engineering-Related Fields
Engineering Technologies	15.16	Nanotechnology
Interdisciplinary Studies	30.01	Biological and Physical Sciences
Interdisciplinary Studies	30.06	Systems Science and Theory
Interdisciplinary Studies	30.08	Mathematics and Computer Science
Interdisciplinary Studies	30.1	Biopsychology
Interdisciplinary Studies	30.19	Nutrition Sciences

Interdisciplinary Studies	30.27	Human Biology
Interdisciplinary Studies	30.3	Computational Science
Interdisciplinary Studies	30.32	Marine Sciences
Mathematics	27.01	Mathematics
Mathematics	27.03	Applied Mathematics
Mathematics	27.05	Statistics
Mathematics	27.99	Mathematics and Statistics, Other
Natural Resources and Conservation	03.01	Natural Resources/Conservation, General
Natural Resources and Conservation	03.01	Natural Resources Conservation and Research
Natural Resources and Conservation	03.02	Natural Resources Management and Policy
Natural Resources and Conservation	03.03	Fishing and Fisheries Sciences and Management
Natural Resources and Conservation	03.05	Forestry
Natural Resources and Conservation	03.06	Wildlife and Wildlands Science and Management
Natural Resources and Conservation	03.99	Natural Resources and Conservation, Other
Physical Sciences	40.02	Astronomy and Astrophysics
Physical Sciences	40.05	Chemistry
Physical Sciences	40.06	Geological and Earth Sciences/Geosciences
Physical Sciences	40.08	Physics
Physical Sciences	40.10	Materials Science
Physical Sciences	40.99	Physical Sciences, Other

APPENDIX E

UK JACOBS  
SCIENCE BUILDING  
DEDICATION  
OCTOBER 20, 2016



*Don and Cathy Jacobs  
Science Building Dedication*

Thursday, October 20, 2016  
10 a.m.  
680 Rose Street



The Don and Cathy Jacobs Science Building integrates teaching and research, makes science visible and supports active learning and student engagement. Every science student on campus, and the vast majority of all undergraduates at the University of Kentucky, will experience 21st Century science with 21st Century laboratories and instrumentation in the new science building. The building is designed to foster active, inquiry-based learning which includes active-learning laboratories, advanced instrumentation, classrooms with movable work spaces, lecture halls with multimedia presentations and demonstration capabilities, IT-enabled discussions, visualizations and simulations; and a myriad of informal learning spaces that facilitate interaction and knowledge exchange.



The new science building houses centrally-scheduled classrooms, numerous chemistry and biology teaching laboratories and office space for the Department of Chemistry, biology lecturers and the College of Arts and Sciences Business Center. On the first floor of the building, there is a 300-seat lecture hall, several biology teaching laboratories for physiology, general biology and microbiology; and multiple technology-enabled active learning (TEAL) classrooms, as well as a Shared Imaging Suite and Biology Learning Center. The second floor houses eight general chemistry teaching laboratories, a 132-seat TEAL classroom, the General Chemistry Learning Center and multiple small TEAL classrooms. On the third floor, there is a 200-seat lecture hall and multiple upper-level chemistry laboratories, including four organic and one each of synthetic chemistry, biochemistry, analytical chemistry and physical chemistry/instrumental analysis. The third floor also houses the Organic Chemistry Learning Center, a Nuclear Magnetic Resonance (NMR) and Shared Instrumentation Suite to support all the upper-division laboratories and a Science, Technology, Engineering and Mathematics (STEM) teaching laboratory.

The exterior courtyard has two outdoor classrooms with natural slate chalkboards with geological features built into the walls. All interior and exterior landscaping contains only native Kentucky plants.

The new Don and Cathy Jacobs Science Building is an embodiment of science and science education in the 21st century. As a state-of-the-art facility, built with the latest green technology, this building is the epicenter of the university's scientific community.

APPENDIX F  
KY-WV LSAMP  
SCHOLAR DATABASE

**Demographics** | **Contact and Degree Information** | **KY-WV LSAMP Participation** | **Summer Internships** | **Professional Development** | **Conferences**

Gender:  Male  Female  
 Ethnicity:  Native American  Hispanic  Asian  
 African American  Pacific Islander  White  
 Tribe\_Island:   
 Citizenship:  US Citizen  Permanent Resident  
 First Generation:  Yes  No  
 Veteran:  Yes  No  
 Disability:  Yes  No  
 Pell Eligible:  Yes  No  
 Participation In a Summer Bridge Program:  Yes  No  
 If\_Yes\_\_Name\_and\_Year:   
 Freshman Cohort Year:

Begin Date:  Exit Date:  Record Created:  Record Last Updated:  5/30/2017 9:04:17

APPENDIX G

FACULTY AND STAFF  
HIGHLIGHTS  
PUBLICATIONS AND  
PRESENTATIONS

**Dr. Pamela Feldhoff**, UofL, attended and presented at the Special Highlands Conference on Plethodontid Salamander Biology

*P. Feldhoff*

Special Highlands Conference on  
**Plethodontid Salamander Biology**



Highlands, North Carolina  
4-7 August 2016



Celebrating 25 years of the Houck-Arnold-Feldhoff's EBS plethodontid research collaboration.

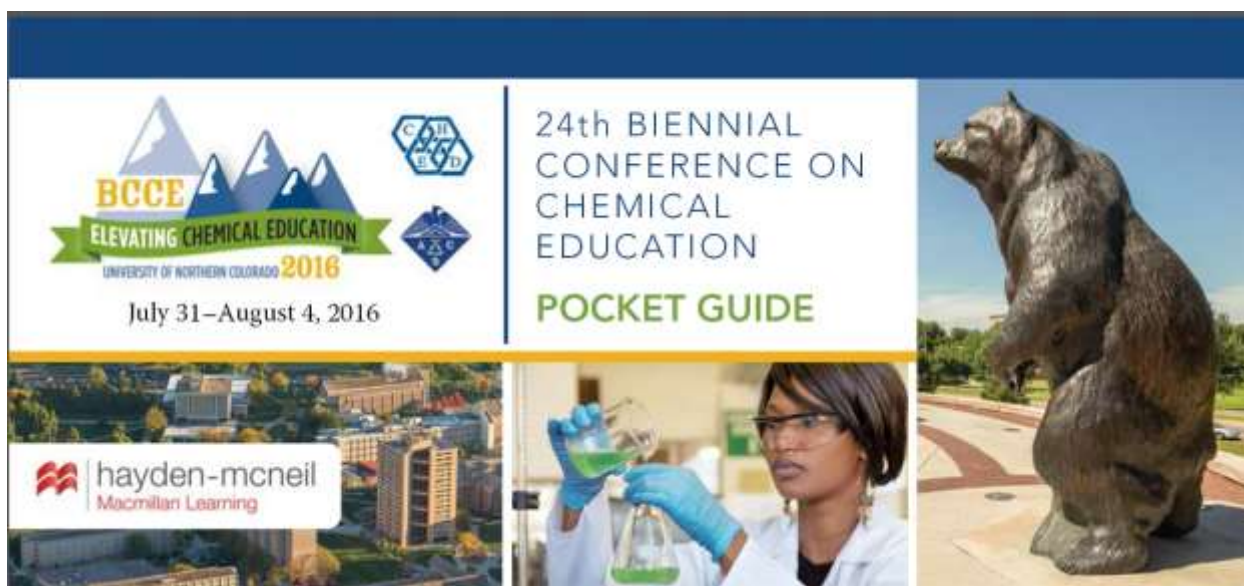
**From molecules to mating: Characterizing 100 million years of gene duplication, co-option, and structural evolution in plethodontid courtship pheromones**

Damien B. Wilburn<sup>1</sup>, Lynne D. Houck<sup>2</sup>, Stevan J. Arnold<sup>2</sup>, Pamela W. Feldhoff<sup>3</sup>, and Richard C. Feldhoff<sup>3</sup>

<sup>1</sup>Department of Genome Sciences, University of Washington; <sup>2</sup>Department of Integrative Biology, Oregon State University; <sup>3</sup>Department of Biochemistry, University of Louisville

A hallmark of proteins involved in reproduction is rapid evolution, usually driven by the “arms race” resulting from males and females utilizing different reproductive strategies. The protein courtship pheromones in plethodontid receptors have been a classic example of such rapidly evolving reproductive proteins, with male pheromones adapting to changes in female receptors to improve reproductive success. Over the last 100 million years, the structure and composition of the male mental gland has adapted with changes in courtship timing and behavior. More than 20 years of biochemical and molecular studies have shed insight into how different gene families have been duplicated, mutated, and co-opted for pheromone roles through specific sequence and structural changes. Sequencing and mass spectral proteomic analyses have enabled identification and characterization of multiple pheromone families, some with lineage specific expression. In our principal model, the red-legged salamander (*Plethodon shermani*), we have employed a combination of behavioral, neurophysiological, and structural techniques to better characterize the functional mechanisms and consequences of these evolutionary changes in two of the most well-characterized protein pheromones: Plethodontid Receptivity Factor (PRF) and Plethodontid Modulating Factor (PMF). Continuing a >25 year collaboration at Highlands Biological Station, we will highlight our recent work sequencing olfactory receptor genes in female salamanders and bridging gaps in molecular evolutionary theory regarding co-evolution of male signals and female receptors.

Dr. Kazi Javed attended and presented at the 24<sup>th</sup> Biennial Conference on Chemical Education



TUESDAY, AUGUST 2, 2016 9:45 AM

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S21c: cCWCS as a catalyst for curriculum and pedagogical reform: Faculty development and communities of scholars—Case studies and new pedagogies

PRESIDER: David Colvard (Georgia Institute of Technology)

ROOM: Ross 0090

TECHNICAL SYMPOSIA  
TUESDAY

9:45		Introduction
9:50	Tracy J. Terry	P482 Using case studies from current events to engage general chemistry students with their environment
10:10	Sharada Buddha	P483 Case studies as a tool for formative and summative assessment of an upper level biochemistry laboratory course
10:30	Kazi Javed	P484 Enhancing the chemistry curriculum through case studies at Kentucky State University
10:50	Pete Golden	P485 Integrated approach to a flipped/hybrid chemistry course
11:10		Break
11:25	Donata Abramovitch	P486 Steps towards chemistry major at Anderson University
11:45	Stacy K. Hutchison	P487 Modifications to general chemistry labs including inquiry and large data sets based on cCWCS
12:05	Emily K. Lesher	P488 Teaching quantity for quality in introductory chemistry lab with inquiry based learning
12:25	Daniel Eves	P489 Applications of cCWCS material to reinvigorate existing laboratory classes

Dr. Kazi Javed attended and served on a panel session at the LSMCE Conference

Session 2	<p><b>Leveraging External Funding for California State University LSAMP International Research Programs</b>  <b>John Banks:</b> California State University, Fullerton and CSU-LSAMP  <b>Christina Goode:</b> California State University, Fullerton and CSU-LSAMP</p>	Forest Room
10:20 am	<p><b>NSF LSAMP Bridge to the Doctorate: Facilitating Graduate Academic Success</b>  <b>Denise Yates:</b> University of Illinois at Chicago and IL-LSAMP  <b>Ari Arciero-Pino:</b> University of Texas El Paso and UT Systems LSAMP  <b>Joan Blanton:</b> Jackson State University and LSAMP</p>	White Oak Room
	<p><b>Collaborative Efforts for Student Transition in Mathematical Sciences</b>  <b>Tuncay Aktosun:</b> University of Texas at Arlington and UT Systems LSAMP</p>	Willow Room
	<p><b>New Program Development: Best Practices and Lessons Learned</b>  <b>MODERATOR Anthony Quinn:</b> University of Toledo and LSMCE  <b>PANELISTS</b>  <b>Linda Brazdil:</b> Loyola University Chicago and LSMCE  <b>Kazi Javed:</b> Kentucky State University and KY-WV LSAMP  <b>Scott Mollitor:</b> University of Toledo and LSMCE  <b>Donna Stallings:</b> Lincoln University and LSMCE  <b>Sheela Vemu:</b> Waubesa Community College and LSMCE</p>	Savannah Room

4TH ANNUAL  
**2016 LSMCE**  
**CONFERENCE**

*Prism of Possibilities: Focus on the Future*

October 28-29, 2016  
Hyatt Regency Lisle  
Lisle, Illinois

[ismceconference.org](http://ismceconference.org)



Sponsored by the National Science  
Foundation Award #1202563



**Dr. David Miller**, WVU, published an article on the LSAMP ESP classes

Research article

## **An Active Classroom: The Emerging Scholars Program at West Virginia University**

Jessica M. Deshler ✉ David Miller & Matthew Pascal

Jessica Deshler is an Associate Professor of Mathematics and the Graduate Teaching Assistant Coordinator in the Institute for Mathematics Learning in the Department of Mathematics at West Virginia University. She received her PhD in Mathematics from the University of New Mexico. Her research is in undergraduate mathematics education, specifically focusing on teaching assistant professional development and gender equity in mathematics.

David Miller is an Associate Professor of Mathematics in the Department of Mathematics at West Virginia University, where he serves as the Undergraduate Program Director and co-coordinator of College Algebra and Pre-calculus. He received his PhD in Mathematics from Oklahoma State University. He has a wide range of research interest in undergraduate mathematics education not limited to cognitive science, mathematical proof, technology, and group learning. He is also interested in expository work in pure mathematics.

Matthew Pascal is an Associate Professor of Mathematics in the Natural Sciences & Engineering Technology department at Point Park University in Pittsburgh, PA. He received his Ph.D. from the American University Department of Mathematics and Statistics in 2006. His research has focused broadly on mathematics learning as well as the effects that education legislation and homeschooling may have on mathematics teaching and learning.

Page null | Received 31 May 2014, Accepted 15 May 2016, Accepted author version posted online: 23 Jun 2016, Published online: 23 Jun 2016

### **Abstract**

In an effort to support the success of minority students and to incorporate inquiry-based learning (IBL) into the calculus sequence of courses at West Virginia University, a modified version of the Emerging Scholars Program (ESP) was implemented in fall of 2009. Since then, approximately 100 students have taken ESP Calculus I, and many have continued through ESP sections of Calculus II, III and Differential Equations. In this paper we describe in detail the use of class time in this modified course with a focus on inquiry-based learning and present student success data and information from student evaluations of instruction. Data indicate students take authority for their own learning in this class and prefer the format to that of a traditional classroom. Success rates indicate they are succeeding at higher rates than their non-ESP counterparts in Calculus I and at the same rates as the general population in Calculus II.

Keywords: [Emerging Scholars Program](#), [Calculus](#), [Inquiry-Based Learning](#),

As a service to authors and researchers we are providing this version of an accepted manuscript (AM). Copyediting, typesetting, and review of the resulting proofs will be undertaken on this manuscript before final publication of the Version of Record (VoR). During production and pre-press, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal relate to these versions also.

**Fara Williams**, project director, was invited to speak to the Ohio LSAMP administration and staff during The Ohio LSAMP Alliance 2017 Conference.



## CONFERENCE AGENDA

### Thursday, March 30

5:00 p.m. Registration (West Pre-Function Area)

6:00 p.m. Reception (Ballrooms AB)

### Friday, March 31

7:30 a.m. Continental breakfast (Ballrooms AB)

9:00 a.m. Student Research Posters/Presentations (Ballroom C)

Graduate School Information Booths (North Pre-Function Area)

Faculty/Staff Workshop (Mt. Echo)

12:00 p.m. Lunch (Ballrooms AB)

1:30 p.m. Industry Excursions for Junior/Seniors

Workshops for Freshmen/Sophomores (Amphitheater 1/Mt. Auburn)

Faculty/Staff Steering Committee Meeting (Amphitheater 2)

6:00 p.m. Conference Banquet (Cincinnati State)

### Saturday, April 1

7:30 a.m. Continental breakfast (Ballrooms AB)

9:00 a.m. Breakout sessions for students (Breakout Rooms)

Breakout sessions for faculty/staff (Breakout Rooms)

12:00 p.m. Lunch (Ballrooms AB)

1:30 p.m. Breakout sessions for students (Breakout Rooms)

Task force meetings for faculty/staff (Breakout Rooms)

3:30 p.m. Closing Session (Ballrooms AB)



## FACULTY/STAFF BREAKOUT SESSIONS DESCRIPTIONS

Saturday, April 1

### 9:00 – 9:45 SESSION I

#### MENTORING FOR SUCCESS IN INTERNATIONAL RESEARCH

**Randy Duran | Amphitheater 2**

One or more positive mentoring experiences can be attributed to the success of many US graduate students. One of the more advanced and educational mentoring experiences for students is research abroad promoting a global view of future research careers. While the benefits of international experiences are significant, mentoring talented undergraduates in authentic research experiences while they are in another country presents a challenge for both the US mentor and the undergraduate mentee. Before students and faculty participate in international programs, it is helpful to consider what are the benefits? What are the characteristics of such mentoring and what are the attributes that are most valuable for subsequent graduate study success? This presentation will explore some of these questions.

#### WEBAMP

**Michael Rossi | Mt. Lookout**

Mr. Michael Rossi is the project manager for the National Science Foundation's LSAMP WebAMP Survey. WebAMP is the online data reporting system for the Louis Stokes Alliances for Minority Participation. It allows LSAMP alliances to provide the National Science Foundation with reliable annual data. These data include: enrollment, degrees, LSAMP students, LSAMP activities, and LSAMP faculty participation. The WebAMP reports also include narrative accounts about alliance-wide activities, curriculum development, bridge programs, use of funds and other support, and accomplishments and obstacles. Michael Rossi has been provided with a list of questions about WebAMP from the partner institutions of The Ohio LSAMP Alliance. He will answer these questions and provide additional insights into the LSAMP data reporting system.

### 10:00 – 10:45 SESSION II

#### BUILDING SCIENCE NETWORKS FOR STUDENTS, FACULTY, AND RESEARCHERS

**Marcela Hernandez | Amphitheater 2**

Due to the underrepresentation in STEM faculty and staff, underrepresented (URM) students in the sciences have few opportunities to encounter mentors and role models who are familiar with their experiences, cultures and languages. To address this challenge, staff

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and a group of students established a local chapter of SACNAS. SACNAS is a national organization dedicated to the advancement of Latino and American Indian scientists.

There is now a community of undergraduate and graduate students and faculty members who support URM student aspirations in research and academic careers in science. In the first year since establishing the campus SACNAS chapter, the group organized a team of undergraduate and graduate students to represent Ohio State at the national conference, and for the first time ever, Ohio State students won best poster (graduate) and best presentation (graduate) awards. Using pooled funds and leveraging these against national SACNAS Travel Scholarships, the chapter assembled a team of nearly 30 students and faculty who attended the national SACNAS conference and presented research this fall. In this session, we will describe the advantages of having a STEM-focused organization like SACNAS on campus; the steps we took to establish the organization; and will explore ways that URM science groups at Ohio colleges and universities can collaborate to strengthen to expand their network and strengthen the Ohio URM science community.

### 11:00 – 11:45 SESSION III

#### THE KENTUCKY-WEST VIRGINIA LSAMP

**Fara Williams | Amphitheater 2**

The Kentucky - West Virginia Louis Stokes Alliance for Minority Participation (KY-WV LSAMP) is a consortium of colleges and universities working together to create, enhance, and expand programs designed to broaden participation and increase the quality and quantity of students from underrepresented populations who receive degrees in science, technology, engineering, and mathematics (STEM) disciplines. Program goals and activities focus on undergraduate research experiences, graduate school preparation, and international experiences. KY-WV LSAMP was initially formed in 2006. There have been many programmatic and staff changes since then. Currently, the program consists of nine partners with the University of Kentucky serving as the lead institution. Other institutions include Bluegrass Community and Technical College, Centre College, Kentucky State University, Marshall University, the University of Louisville, West Virginia State University, West Virginia University, and Western Kentucky University.

### 1:30 – 2:15 SESSION IV

#### INDUSTRY AND COMMUNITY PARTNER TASK FORCE

**Kenneth Simonson | Amphitheater 2**

Ken Simonson, chair of the Industry and Community partner task force for The Ohio LSAMP Alliance, will discuss opportunities and strategies for engaging with industry and community partners. In order to double

33

## Dr. John Wilson was selected as the Centre Diversity and Inclusion Faculty Fellow

30 Mar  
2017

### Lesley Wiglesworth and John Wilson lend their expertise to teaching and learning

Posted by Centre News in Academics, Math, News

In 2015, Centre College established the faculty fellows program, one element of [Creative Centre](#), a long-term initiative meant to enhance and link creative and critical thinking in the classroom as part of the College's quality enhancement plan (QEP).

Supported by the Center for Teaching and Learning (CTL), this faculty fellow leads campus discussions about creativity and its relationship to pedagogy at Centre, then disseminates the results of those discussions to the campus community. Associate Professor of Mathematics Lesley Wiglesworth has been named the Creative Thinking Faculty Fellow.

The Diversity and Inclusion Faculty Fellowship was established in 2016 as the result of the College's success in securing a grant from the Andrew W. Mellon Foundation for enhancing diversity and inclusion initiatives on campus. This fellow conducts research on issues of diversity and inclusion each year, then works alongside CTL staff to provide programming that features the results of their work. H.W. Stodghill, Jr. and Adele H. Stodghill Professor of Mathematics John Wilson will serve as the Diversity and Inclusion Faculty Fellow for the 2017-18 academic year.

#### Lesley Wiglesworth, Creative Thinking Faculty Fellow



As Creative Thinking Faculty Fellow, Wiglesworth will undertake a project designed to investigate the effects of classroom climate on student risk taking. It will explore teaching strategies and uncover how faculty across campus are encouraging students to take risks. This project aims to help the campus community understand how we can cultivate a culture of risk-taking and creative thinking.

"We are becoming more and more familiar with students who grow terrified when pushed out of their comfort zones and faced with new challenges," Wiglesworth says. "I will use this fellowship to investigate pedagogical strategies that encourage students to take risks academically, think beyond 'what the teacher wants' and 'correct answers,' and effectively encourage students to think beyond the grade earned in a course. This project is extremely important in finding ways to promote creative thinking in our students and across all disciplines; encouraging students to take risks in the

classroom is the first step."

#### John Wilson, Diversity and Inclusion Faculty Fellow



As Diversity and Inclusion Faculty Fellow, Wilson will seek to understand and begin addressing the barriers to success for underrepresented students, particularly in math and science. The purpose of the project is to understand how to improve performance and retention of underrepresented students in these fields through inclusive pedagogies.

"My goal as the Diversity and Inclusion Fellow next year is to develop support mechanisms and resources that will double the number of students who major in STEM fields from traditionally underrepresented groups at Centre by 2022," Wilson says. "My plans for next year begin with a one-day summer workshop for faculty members to help us identify what we can do in our classes and in our offices to be more supportive and welcoming to students of color."

Wilson hopes to continue these discussions throughout the year, brainstorming with faculty and students about community building, study spaces, research opportunities and career possibilities for students from these underrepresented populations.

"With a concerted effort, I believe we can be more inclusive and make a difference in the mix of students who graduate from Centre with STEM majors," he adds.

by Cindy Long  
March 22, 2017



APPENDIX H

SPEAKER SERIES  
TRACY DRAIN AND  
DANIELLE NUDING  
APRIL 12-14, 2017

**APRIL 13** **THURSDAY 4:00 PM** **WOODWARD HALL**  
*Reception to Follow* **GATTON Rm. 307**

**Tracy Drain**  
 Flight Systems Engineer  
 JET PROPULSION LABORATORY

**Danielle Nuding**  
 Planetary Scientist, Systems Engineer  
 JET PROPULSION LABORATORY

A CONVERSATION WITH  
**Tracy Drain & Danielle Nuding**

LSAMP  
 NSF EPSCoR  
 Office for Institutional Diversity

**Drain/Nuding Itinerary**

Wednesday, April 12, 2017

- 1 PM – Technical talk in systems class
- 3 PM – Meet and greet with students

Thursday, April 13, 2017

- 10 AM – Meet and greet with students
- 11:30 AM – Lunch with LSAMP scholars and invited faculty, staff, and students
- 4 PM – Presentation to campus and general public followed by a reception

Friday, April 14, 2017

Community events organized by Nerd Squad

UK Happenings

# Tracy Drain and Danielle Nuding – NASA Engineers – Speaking Today

By [Whitney Harder](#) Thursday



Watch a profile of Tracy Drain from the "Hidden Figures, Modern Figures" series.

**LEXINGTON, Ky. (April 13, 2017)** — Tracy Drain, a University of Kentucky [College of Engineering](#) alumna, and her colleague Danielle Nuding will be on campus today, April 13, speaking about their careers as NASA flight systems engineers and the paths they took to get there.

A public talk will take place at 4 p.m. in the [Gatton College of Business and Economics'](#) Woodward Hall, Room 307. A Q&A and reception will follow.

Both women are engineers at the NASA Jet Propulsion Laboratory and have contributed significantly to multiple space missions.

Drain, from Louisville, Kentucky, currently serves as the deputy chief engineer for the Juno mission. In her 17 years at the Jet Propulsion Laboratory, she has participated in the development and operation of the Mars Reconnaissance Orbiter, the Kepler mission and the Juno mission. Drain has also served as supervisor for the Flight System Systems Engineering Group. She was featured last year by 20th Century FOX in its "Hidden Figures, Modern Figures" series. Drain received a bachelor's degree in mechanical engineering from UK and a master's degree in mechanical engineering from the Georgia Institute of Technology.

## Media Resources

### CONTACT

WHITNEY HARDER  
whitney.harder@uky.edu  
859-323-2396

### Share This



## Latest Stories

**STUDENT LIFE** Friday  
Phi Beta Kappa Inducts 47 New Students

**STUDENT LIFE** Friday  
First UK ICT Student Presents at National Conference on Undergraduate Research

**CAMPUS NEWS** Friday  
Minority and Women Contractor Training Graduates Eight

**CAMPUS NEWS** Friday  
Final Candidate for Dean of Lewis Honors College Attends Public Forum

**RESEARCH** Friday  
UK Geophysicist Helps Develop High-Res Map of Earth's Magnetic Field



Nuding is currently working on the Mars 2020 rover, the next rover mission slated for the Martian surface. Specifically, she works on integrating the entry, descent and landing cameras for public outreach and the SHERLOC (Scanning Habitable Environments with Raman and Luminescence for Organics and Chemicals) instrument. She also trains university students through a new course at the University of Colorado Boulder that provides hands-on experience in mission concept development. Nuding received a bachelor's degree in physics, atmospheric science, and math from the University of Alabama in Huntsville and a doctoral degree in atmospheric and oceanic sciences from the University of Colorado Boulder.

The talk is sponsored by [KY NSF EPSCoR](#) (Kentucky's Experimental Program to Stimulate Competitive Research sponsored by the National Science Foundation), [UK's Office for Institutional Diversity](#) and the [Kentucky-West Virginia Louis Stokes Alliance for Minority Participation](#) (KY-WV LSAMP).

2 of 2 <>



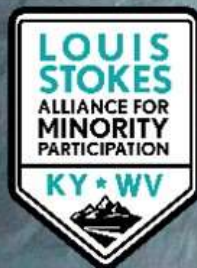
Danielle Nuding, flight systems engineer at the NASA Jet Propulsion Laboratory.

*UK is the University for Kentucky. At UK, we are educating more students, treating more patients with complex illnesses and conducting more research and service than at any time in our 150-year history. To read more about the UK story and how you can support continued investment in your university and the Commonwealth, go to: [uky.edu/uk4ky](http://uky.edu/uk4ky). #uk4ky #seeblue*

# TRACY DRAIN AND DANIELLE NUDING



University of Kentucky  
Thursday, April 13, 2017



APPENDIX I  
CONFERENCES AND  
SYMPOSIA



# GEM GRAD Lab

*(GEM Getting Ready for Advanced Degrees Laboratory)*



## University of Tennessee, Knoxville

### September 30 - October 1, 2016



*Siraj Ramsey (KSU), Makaylah Gaviett (KSU),  
Danielle Chavis (WKU), Alijah Travascio-Green (UK)*



# Women of Color STEM Conference

## Detroit Marriott at the Renaissance Center

### October 13-15, 2016



Pictured Front Row L-R: Dr. Charles McGruder, WKU; D'Jreya Boyd, UofL; Raisa Nunez, UM; Ronnice Edwards, UM; Gabriel Brown, UM; Danielle Chavis, WKU; Yesnia Rodriguez, UM; Deja Curry, UofL. Back Row L-R: Alicia Aguilar, OSU; Taylor Speight, UofL; Courtney McKelphin, UK; Kayla Titalii, UK; Cagney Coomer, UK; Alexis Levingston, UofL; Aliyah Powell, UofL; Zita Achah, UofL.



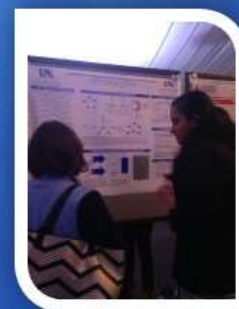


# LSMCE Conference

(Louis Stokes Midwest Center of Excellence)

## Hyatt Regency, Lisle, Illinois

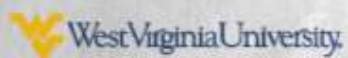
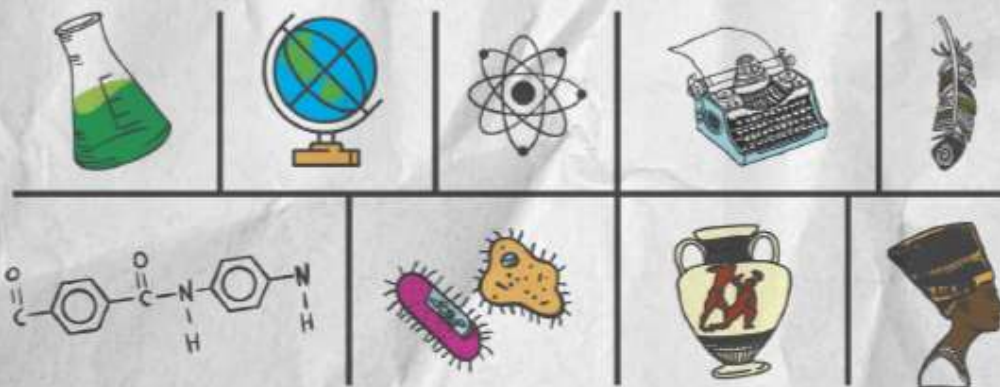
### October 28-29, 2016



UK Scholars: Sarah Hodges, chemical engineering sophomore; Sabita Dumre, biology senior; and Courtney McKelphin, chemical engineering senior attended the conference. Courtney and Sabita presented posters of their research. Dr. Kazi Javed, KSU Coordinator, presented the PLTL model on a panel during a breakout session. Fara Williams, Director, attended as well.



14<sup>th</sup> Annual Undergraduate  
**RESEARCH**  
**DAY AT THE** | February 24,  
**CAPITOL** | **2017**



#### 46. Optimization of DNA Extraction Protocol for Herbarium Preserved Rubus Tissue

Edwina Barnett (Ohio)

Institution: West Virginia State University  
Field: Sciences (Biology)  
Faculty Advisor: Barbara Liedl

Rubus is the taxonomic name for a genus of fruiting plants including the blackberry, raspberry, and thimbleberry. This genus is ecologically important in early forest succession and economically important as fruiting crops and ornamentals. There is a lack of genetic and morphological diversity due to the domestication of Rubus. However, wild species of Rubus offer many desirable traits for breeders to access. Although this may be true, the taxonomy of the genus is complex. Interspecific hybridization, polyploidy, various growth habits, along with the lack of a universal species concept complicate breeder attempts to obtain these desirable traits. Therefore, a solid understanding of the evolutionary relationship within the genus is needed for breeders to take advantage of these traits. Herbarium Rubus specimens hold much of the necessary genetic material needed to conduct a molecular based study. These specific specimens are key because they have been named by authorities based on morphology, but a genetic study is still necessary to help identify synonyms amongst the species. In order to achieve this molecular based study of herbarium Rubus a DNA extraction protocol was optimized. PCR and sequencing success of the herbarium samples extracted from the optimized extraction protocol showed minimal improvement in comparison to the original protocol. Furthermore, success rates of PCR and sequencing of the fresh tissue was less successful than the original protocol.

Funding: KY-WV Louis Stroke Alliance for Minority Participation



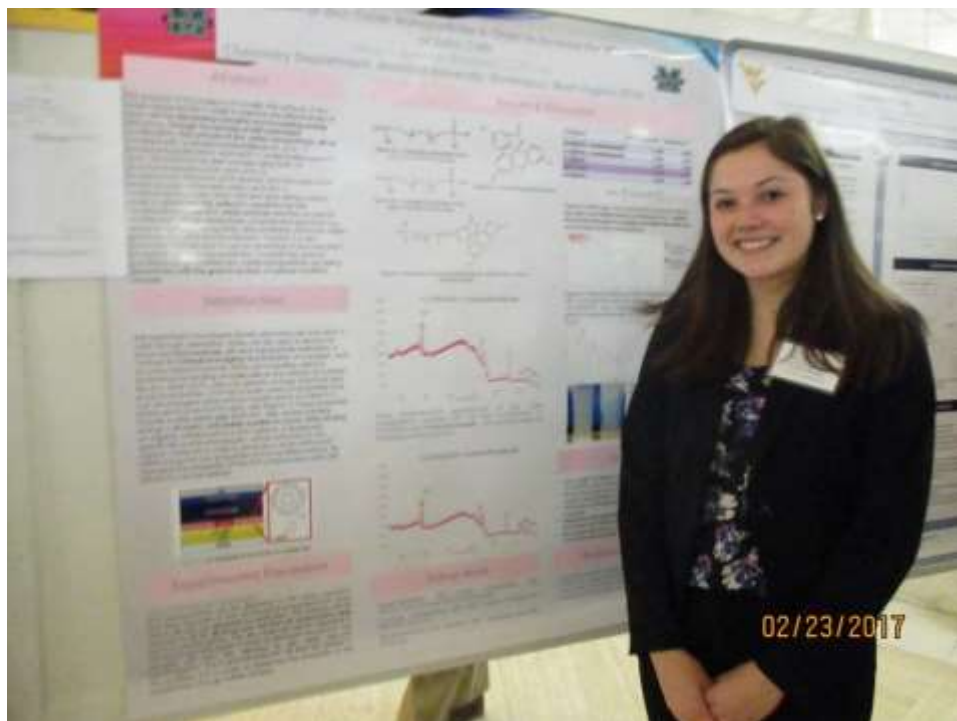


## 61. Modification of the Surface of Zinc Oxide Nanoparticles to Increase Efficiency of Solar Cells

Grayce Behnke (Pennsylvania)

Institution: Marshall University  
Field: Sciences (Chemistry)  
Faculty Advisor: Rosalynn Quinones

Self-assembled monolayers (SAMs) are molecules that bind to solids through adsorption. SAMs can be used as sensors for lethal bacterial enzymes, pH and conductivity indicators, and can inhibit corrosion. SAMs are incredibly useful due to the ability for chemical binding of molecules to the surface of a metal, like zinc oxide (ZnO), and can greatly change chemical and physical properties. ZnO specifically has a large variety of properties that are useful for surface modification. These properties include a wide band gap (3.37 eV), high exciton binding energy (~60 meV), and stable wurtzite structure. Through the process of SAMs, the surfaces of ZnO nanoparticles are modified with 16 phosphonohexadecanoic acid, 11 phosphonoundecanoic acid and 11 undecynylphosphonic acid. After binding an organic compound to a ZnO surface 5 aminofluorescein is attached to the organic molecule in order to serve as a fluorescent marker that can be used for determining the new properties of the modified surface. By changing the properties of the ZnO surface layer, solar cell efficiency can be altered by decreasing corrosion and increasing energy efficiency. The sample concentration and use of “linker” molecules will be altered in order to determine the optimum conditions for the modifications to the ZnO surface and the success of modification will be determined using infrared spectroscopy, dynamic light scattering, zeta potential, ultraviolet-visible spectroscopy, scanning electron microscopy, and electrochemistry. UV-Vis spectroscopy was used to determine the band gap of the surface modified nanoparticles.



## 7. Light Extraction Efficiency Enhancement of III-V Nitride Based LEDs through Periodic Plasmonic Structures

Catherine O'Hearn (Upshur County, West Virginia)

Institution: West Virginia University  
Field: Engineering (Electrical Engineering)  
Faculty Advisor: Jeremy Dawson

III-V nitride-based LEDs are more radiation resistant than their silicon counterparts, therefore potentially requiring less shielding and producing lighter, more efficient launch vehicles for space exploration. The addition of periodic plasmonic structures to the LEDs would be the sensible next step in our group's research goals of increasing LED operating efficiency. Most LEDs attempt to improve light extraction efficiency by locating photonic crystals on the outer layer of the LED. However, this has shown to hinder the electrical characteristics of the device. By including a nanoporous metal plasmonic lattice on the surface of the LED, it is believed that spontaneous emission and light extraction could be enhanced through electric field resonance (higher energy of photon emission) and the Purcell effect (more photons per unit time), thus increasing the external quantum efficiency,  $\eta_{ext}$ . It has been shown that plasmonic nanostructures can greatly increase the extraction efficiency of blue LEDs. However, this structure has not been modeled nor tested, and would could assist in understanding how to maximize LED efficiency. Our group has experienced success in plasmonic enhancement for biosensor applications, and has experience in LED fabrication.



31ST NATIONAL CONFERENCE ON UNDERGRADUATE RESEARCH

# CONFERENCE PROGRAM



THE UNIVERSITY OF  
MEMPHIS

APRIL 6-8, 2017

[www.cur.org/ncur\\_2017](http://www.cur.org/ncur_2017)



**NCUR**<sup>®</sup> 2017  
NATIONAL CONFERENCE ON  
UNDERGRADUATE RESEARCH



THE UNIVERSITY OF  
**MEMPHIS**





*Nathan Crowder, WKU*



*Karen Vah, UofT*



*Daniella Davis, WKU*

*April 6-8,  
2017*



*Khalil Appleton, USK*





The Showcase of



# Undergraduate Scholars



Celebrating  
ideas for over a  
decade!



University of Kentucky

April 26, 2017

3:00PM - 6:00PM



## Poster Abstracts

This summer research project studies creativity as a cultural practice in summer classes in Lexington, Kentucky. The study addresses the questions: How do teachers define creativity and what benefit do they see in students' use of creativity? How do students define creativity and how do they respond to encouragements to be creative? Through interviews and fieldwork at the Carnegie Center for Literacy and Learning, the Living Arts and Science Center, the Lexington Children's Theatre, and the Fine Arts Institute, the researcher observed shared understandings of creativity in the classroom. Students of ages 8 to over 60 were interviewed, providing a wide perspective of the topic. Research also drew upon existing scholarly works on creativity, contributing to the growing field of study. Understanding how teachers and students define and express creativity is foundational to improved implementation of creativity in educational settings. Conclusions from this research could be used to encourage funding and strengthen curriculum for creativity-based programs in educational institutions.

### Applied Energy Research

5C. Sarah Hodges

Mentor(s): Tom Robl

#### *Manipulation of pH in the Creation of Piezoelectric Cements*

There are two main types of cement used in modern construction, Calcium Sulfoaluminate (CSA) cement and Ordinary Portland cement (OPC). Both types of cement contain ettringite, a piezoelectric mineral after hydration. To determine ettringite's functionality as a piezoelectric mineral in cement, research was conducted on the effect that the pH solution has on the formation of ettringite fibers in cement. Five sample batches of nine mortar cubes were created from solutions of varying pH values: 7, 10, 12, 13, and 14. The cement samples were then run through a series of tests including: tensile strength, voltage drop, resistance, and cyclic loading to determine the effects of ettringite on the integrity of the cement and whether the piezoelectric properties correlated with a change in pH. Samples were also crushed, and then analyzed using scanning electron microscopy (SEM) and X-ray diffraction (XRD) to obtain information on the presence of the ettringite in the cement. A second batch of samples was also conducted utilizing CSA cement and OPC type 1 cement in cylinders. The cylinder testing cycle was composed of various sized aggregate mixed in with the cements and included pH values 7 and 12. The cylinder testing cycle underwent the same trials as the cube testing cycle, in order to observe the piezoelectric properties on a larger scale. Confirming ettringite as the source of piezoelectricity in cement, and understanding the mechanisms that can maximize its piezoelectric response is a key step in the process to develop energy harvesting materials.

## Poster Abstracts

CAA ( $p < .443$ ). The most interesting finding was that there was an age-dependent increase in WM binding of PiB in DS that approached significant levels ( $p < .056$ ). Our results suggest that PET imaging studies using PiB in DS that show early age of onset of striatal binding may be due predominantly to WM binding and not that of plaques or CAA. This shows that WM binding of PiB may be nonspecific or be unique to DS.

### 76B. Alexis Priddy

Mentor(s): Eric Blalock

#### *Isolating and Evaluating Quality and Quantity of Exosomes from Rodent Brain Tissue*

Exosomes are recently-discovered microvesicles that make up an intercellular signaling system that can transport products, including RNA, enzymes, and metabolic products, from one cell to another. They are known to play a role in cancer biology and blood chemistry, and may play a part in immune function. Recent studies have shown that they may also be involved in brain function, and may be perturbed in aging and Alzheimer's disease. We worked to investigate this change in signaling by examining the RNA and microRNA content of exosomes in neuronal cells as an organism ages. However, isolating exosomes for analysis is difficult and few studies have actually examined exosomes in aged brain tissue. To address this, we modified a protocol to isolate exosomes from aged rodent brain tissue and used Western blotting to evaluate the quality and quantity of exosomes from the isolation protocol. Using hemisected cortex removed from young and aged rats that had been behaviorally examined with the Morris water maze, we modified a centrifugation-based protocol to isolate the exosomes. CD63 and TSG101 antibodies were used in Western blots to quantify the exosomes extracted. This produced an extraction protocol that was effective and produced high-quality exosomes. This procedure can be used to determine if RNA and microRNA content changes as an organism ages, and if these changes specifically contribute to declining cognitive function and developing Alzheimer's disease.

### 76C. Meghan Turner

Mentor(s): Elizabeth Head

#### *The role of inflammation in the Posterior Cingulate Cortex of individuals with Alzheimer Disease and Down Syndrome*

Alzheimer Disease (AD) neuropathology is found in people with Down Syndrome (DS) over the age of 40 years due, at least in part, to the increased expression of amyloid precursor protein on chromosome 21. Little is currently known about the progression of AD in DS individuals, however higher astrocyte and microglial loads were expected in DS with increased age, consistent with known AD pathology. Tissue samples from the Posterior Cingulate Cortex of six groups of interest [Down Syndrome (<40 years; n=10, DS); DS with AD (>40 years; n=5, DSAD); Young healthy controls (<40 years; n=10, YC); Middle-aged healthy controls (45-65 years; n=10, MC); Sporadic AD (75+ years; n=5, AD); Advanced age controls (75+ years; n=6, OC)] were single-labeled using immunostaining with anti-IBA-1 and anti-GFAP antibodies. Anti-IBA-1 antibody identifies microglia, and anti-GFAP identifies astrocytes, both of which will become activated in the presence of AD pathology. Protein load was quantified for each set of stains and then analyzed. A two-way ANOVA (age group, genotype) suggests that there are no main effects of age or genotype on IBA loads, however



The  
US/France/Belgium  
iREU Site  
2017 Predeparture  
Meeting

Monday  
March 27, 2017

French Embassy  
Washington DC

NSF Grant CHE 1560390



**LSU**



## AGENDA

### Sunday, Mar 26, 2017

#### *Morning*

Program logistics, tips, and best practices

David Spivak, Douglas Villien, Steve Penouilh

Characteristics for research success... getting publication quality data in an international lab

Randy Duran

Scientific Tourism – leveraging your IREU for professional development

David Masiello

The “Class of 1998” – the value of networking

Jennifer Logan

Assessment (interviews throughout the day)

Brenda Nixon

#### *Afternoon*

Cohort building on the Mall

### Monday, Mar 27, 2017

**9:00 - 9:15** Opening remarks, several dignitaries

**9:15 - 9:45** *Higher Education and Research in France*

Minh-Ha Pham Science and Technology Counsel

**9:45 - 10:05** Presentations from two REU Alumni

Professors Jennifer Logan and David Masiello

and by Video Conference from Bordeaux

Vice President Vincent Dousset

**10:05 - 10:30** *Careers in Chemistry and the role of NSF in your professional development*

David Rockcliffe, NSF

**10:30 - 11:00** Coffee break

**11:00 - 11:30** Graduate Fellowships and programs

Joerg Schlatterer, ACS

**11:30 - 12:00** *Science Careers and AAAS programs for young scientists*

Sean Sanders AAAS/Science

- 12:05 - 12:35** *U.S.-France bilateral brief*  
*Europe update and personal safety*  
Monica Damberg-Ott and Carl Watson,  
US Department of State
- 12:35 - 12:40** Group photo
- 12:40 - 2:00** Poster session and light lunch
- 2:00 - closing** Closing Remarks  
David Spivak and Randy Duran

**Goal –**

The IREU Pre-Departure weekend meeting is designed to enhance the cohort experience and prepare undergraduate students for their research experience abroad. These NSF-supported undergraduates, who will be experiencing deep-immersion in world-class research labs, will be hosted by Bordeaux, Grenoble and Toulouse for three to six months and will be challenged to accomplish enough substantive research to merit coauthorship on a peer-reviewed publication.



The purpose of this Pre-Departure Meeting is to inform the students about their upcoming experience through briefings on best practices in international research, personal security, and opportunities in Europe by the State Department and the French Embassy officials. Participants will also be briefed on NSF programs and opportunities, Science/AAAS opportunities, and hear from alumni from the IREU program. The students and alumni will have the opportunity to present their current and upcoming research to the distinguished guests during the poster sessions.

## 2017 IREU Predeparture Meeting

### IREU Participant Posters

1. **Bordeaux meets Nitric Oxide: A collaboration to Study the Morphology and Bioactive Properties of Bacterial Cellulose**  
Nettie Brown<sup>a</sup>, Hitesh Handa<sup>b</sup>, Veronique Coma<sup>c</sup>, Angela Birkes-Grier<sup>c</sup>
  - a. Peach State LSAMP, University of Georgia, Athens
  - b. School of Chemical Materials and Biomedical Engineering  
University of Georgia, Athens
  - c. Biopolymers and Bio-based materials group  
LCPO, Bordeaux, France
2. **From CERN to Super-Resolution Imaging: A Scientific Journey to Bordeaux**  
Jessica Flores<sup>a</sup>, Paul Siegel<sup>b</sup>, and Mireille Blanchard-Desce<sup>c</sup>
  - a. Stony Brook University, Dept of Physics and Astronomy
  - b. Stony Brook University, Dept of Technology and Society
  - c. University of Bordeaux, Institute of Molecular Sciences
3. **From TiO<sub>2</sub> Nanofibers to Silicon Nanowires: The Use of Poly (3,4-ethylenedioxythiophene) (PEDOT) in Pseudosupercapacitor Devices**  
Maggie Foxa<sup>a</sup>, Wayne Jones<sup>a</sup>, William Bernier<sup>a</sup>, Said Sadki<sup>b</sup>,  
Patrice Rannou<sup>b</sup>, Shanise Kent<sup>a</sup>, and Linyue Tong<sup>a</sup>
  - a. Binghamton University
  - b. Institute for Nanosciences and Cryogenics, CEA, Grenoble
4. **The Manipulation of pH in the Creation of Piezoelectric CSA Cements and The Study of Thermal Degradation in Biomass Constituents**  
Sarah Hodges<sup>a</sup>, Gerard Mortha<sup>b</sup>, Eduardo Santillan-Jimenez<sup>c</sup>,  
Capucine Dupont<sup>d</sup>, Tristana Duvallet<sup>c</sup>, and Fara Williams<sup>e</sup>
  - a. Environmental and Coal Technologies Group, Center for  
Applied Energy Research, Lexington, KY
  - b. Professor of Chemical Engineering at Grenoble INP-Pagora,  
Grenoble, France
  - c. Center for Applied Energy, Research, Lexington, KY
  - d. Laboratory of Technology of Biomass in the (CEA), Grenoble,  
France
  - e. Director, KY-WV LSAMP, University of Kentucky, Lexington, KY
5. **Planar Molecular Scale Devices**  
K. Anjulique Jones<sup>a</sup>, Sebastien Gauthier<sup>b</sup>, and Anderson Sunda-Meya<sup>a</sup>
  - a. Xavier University of Louisiana
  - b. CEMES, Toulouse France

2. **Electrochemical Performance of Silicon Nanowire Supercapacitors Using Ionic Liquids**

Isaiah Woodson<sup>a</sup>, David Aradilla<sup>b</sup>, Fleur Thier<sup>b</sup>, Pascal Gentile<sup>c</sup>, Gerard Bidan<sup>b</sup>, Said Sadki<sup>b</sup>, Kalliat T. Valsaraj<sup>d</sup>, Gautam Gupta<sup>e</sup>

- Louisiana State University
- CEA/INAC/SPRAM Grenoble
- CEA/INAC/SP2M Grenoble
- Department of Chemical Engineering and Office of Research & Economic Development
- Department of Chemical Engineering, University of Louisville

3. **Pathogenicity of Mycobacterium Tuberculosis**

Katie Hogan<sup>a</sup>

- Louisiana State University

4. **Signal Enhancement of Surface Plasmon Resonance (SPR) Based DNA Biochips**

Craig Richard<sup>a</sup> and Yanxia Hou-Broutin<sup>b</sup>

- Louisiana State University
- CEA-Grenoble

**Potential Future IREU/Graduate Student Participants**

1. **Detailed Characterization and Fabrication of 3D Printed Graphene/Polymer Structures for Heterojunction-Devices with MoS<sub>2</sub> and Other 2D Nanomaterials**

Deisy Arrington<sup>a</sup>, Dylan Lynch<sup>a</sup>, Vikas Berry<sup>a</sup>

- Chemical Engineering, University of Illinois, Chicago

2. **The Effect of Mutations on the Activity and Stability of Cellulase**

Chanell Upshaw<sup>a</sup>

- Miami University of Ohio

3. **Novel Binary Reactive Group Functionalized Silsesquioxane Micro-Particles and Their Colloidal Self-Assemblies**

Danielle Chavis<sup>a</sup>, Niharika Neerudu Sreeramulu<sup>a</sup>, Hemali Rathnayake<sup>a</sup>, Antonio Martinez-Collazo<sup>b</sup>

- Department of Chemistry, Western Kentucky University
- Department of Physics, University of Puerto Rico

**The 2017 Chemistry/LSAMP IREU in Translational Chemistry**

Brown	Nettie	University of Georgia Athens	Peach State LSAMP
Flores	Jessica	Stonybrook University	SUNY LSAMP
Fox	Maggie	Binghamton University	SUNY LSAMP
Hodges	Sarah	University of Kentucky	KY/WV LSAMP
Jones	Anjulique	Xavier University of Louisiana	LS-LAMP
Niyongabo	Aurelie	Binghamton University	SUNY LSAMP
Pano	Emeline	Fresno State University	CSU LSAMP
Perez	Rosa	University of Texas El Paso	Texas LSAMP
Rosales	Jose	University of Texas El Paso	Texas LSAMP

**Louis Stokes Alliance Minority Programs Represented**

Ohio LSAMP	SUNY LSAMP	Texas LSAMP
Northeast LSAMP	Cal State LSAMP	Peach State LSAMP
Louisiana LAMP	Illinois LSAMP	Kentucky-W Virginia LSAMP



## The Study of Thermal Degradation behavior in Biomass Constituents



Sarah Hodges, Gérard Mortha, Capucine Dupont, Eduardo Santillan-Jimenez

**NSF iREU Grant Number:** CHE 1560390

### About the Research:

University of Grenoble Pagora-INP, Grenoble, France

LPG2 Laboratory: Chemistry of Lignocellulosics Extraction and Bio-refinery Processes

### Research Mentor:

Gérard Mortha, Ph D.

Professor of Chemical Engineering at Grenoble INP-Pagora, Grenoble, France

461 rue de la Papeterie - CS 10065 - 38402 Saint Martin d'Hères Cedex – FRANCE

Laboratoire LGP2

Telephone. : 04 76 82 69 38

Email: [gerard.mortha@pagora.grenoble-inp.fr](mailto:gerard.mortha@pagora.grenoble-inp.fr)

### About the Student:

Sarah Hodges

University of Kentucky

Email: [sarah.hodges@uky.edu](mailto:sarah.hodges@uky.edu)

### Laboratory skills this research experience will improve:

- Infrared spectroscopic analysis
- Liquid chromatography
- Pyrolysis –gas chromatography
- Mass spectrometry

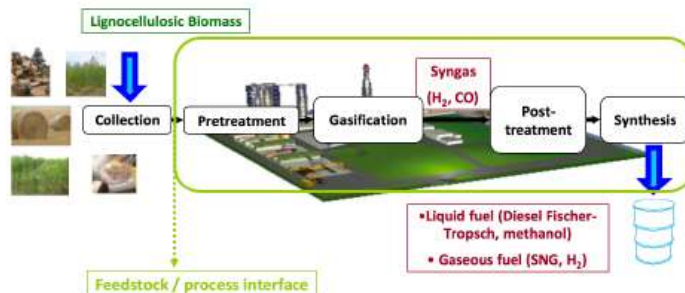


Image from "CEA Activities in the field of Bioenergy" by C. Dupont

**Kentucky-West Virginia Louis Stokes Alliance for Minority Participation**



Director: Fara Williams  
KY-WV LSAMP  
University of Kentucky  
161-H Jacobs Science Building Lexington, KY 40506  
859-218-6326  
fara.williams@uky.edu



**NSF Grant Number:** HRD 1305039

**Participating Institutions:** University of Kentucky (Lead Institution), Bluegrass Community and Technical College, Centre College, Kentucky State University, Marshall University, University of Louisville, West Virginia State University, West Virginia University, Western Kentucky University.

**Mission Statement:**

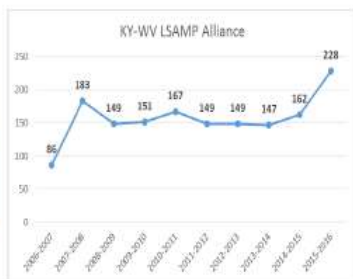
To create, enhance, and expand programs designed to broaden participation and increase the quality and quantity of students from underrepresented populations who receive degrees in science, technology, engineering, and mathematics (STEM) disciplines.

**Impact:**

The KY-WV LSAMP 9th Annual Research Symposium, Marshall University, Huntington, WV, March 4, 2017 had 93 attendees (an increase of 58% from the previous year). KY-WV LSAMP had 12 scholars attend the Women of Color STEM Conference, Detroit, MI, October 14-15, 2016. Six Scholars presented at the 2016 National Conference on Undergraduate Research (NCUR) in Ashville, NC.

**Growth:**

In 2016, KY-WV LSAMP institutions granted 274 STEM BS degrees to URM students – an increase of 12% from the previous year, and an increase of 58% from the initial data year (173 degrees in 2006-07). In 2015-16, the number of KY-WV LSAMP participants (228) increased 41% over the previous year and 165% over the initial data year (86 participants in 2006-07).





**LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION**



**KY \* WV**

West Virginia State University  
Marshall University  
Western Kentucky University

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Centre College  
University of Louisville  
Bluegrass Community and Technical College  
University of Kentucky  
Kentucky State University  
West Virginia University

**DANIELLE CHAVIS**

daniellechavis@gmail.com

Fara Williams  
Director, KY-WV LSAMP  
859-218-6326  
[fara.williams@ukv.edu](mailto:fara.williams@ukv.edu)



"It is okay to not be okay as long as you never give up. Because of this program, my life will forever be changed. Through LSAMP, I have learned *resilience*."

**Through care and commitment**

KY-WV LSAMP for eleven years has provided its scholars and the region with elite opportunities that will inspire for a lifetime. Through the dedication of program director, Fara Williams, the program has grown significantly in the past two years. Scholars of this region are provided true care and commitment in pursuing their goals by both Williams and university advisors.

Scholars at the 2016 KY-WV LSAMP Conference



**Quick Facts**

- Since 2006, KY-WV LSAMP institutions have granted over 1,500 STEM BS degrees to students from underrepresented (URM) populations
- In 2015-16, the number of KY-WV LSAMP participants (228) increased 41% over the previous year and 165% over the initial data year (86 participants in 2006-07).



In 2015-16, KY-WV LSAMP Scholars made over 50 local, national, and international research presentations.

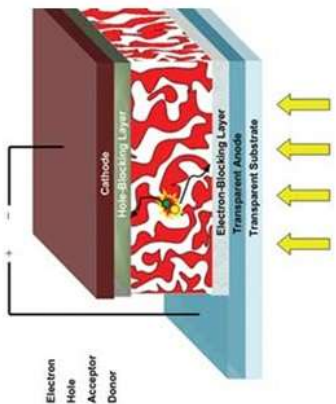


12 KY-WV LSAMP Scholars attended the Women of Color STEM Conference, October 13-15, 2016. Two scholars were nominated for a student award — one received an award.

**Novel Binary Reactive Functionalized Silsesquioxane Micro-Particles and Their Colloidal Self Assemblies**

Danielle Chavis Niharika Neerudu Sreeramulu  
Dr. Hemali Rathmayake

Through direct hydrolysis and co-condensation of their appropriate silane precursors, benzyl chloride and amine functionalized group silsesquioxane particles were assembled. By adjusting the molar ratio and the base concentration, the size and distribution of the particles were controlled. The colloidal self-assemblies of the particles were determined by TEM spectroscopy. Through the TEM images, the particles arrangement, average size and shape were examined. On average, the Benzyl Chloride SSQ particles ranged approximately 1~2  $\mu\text{m}$ . The TEOS Amine-SSQ resulted in nanoparticles approximately 200~300nm. In the future, these particles will be further functionalized with anthracene and rhodamine B for dual fluorescent.



Example of a Bulk Hetero-Junction Solar Cell

**Future Goals**

Due to the hybrid nanostructure of the silsesquioxane, there has been an intense focus on researching its applicability in optical, electrical and physical properties. In the past organosilicon hybrids have been used for coatings, adhesives and even dental fillings. It has not been until recently that further advancements have been made in their function as alternative fuel cells as well as their optical properties. Our research group is focused on expanding the alternative fuel cell applicability of silsesquioxane. Directly our group has created a series of organic functionalized silsesquioxane nanostructure semiconductors for organic-based solar cells.

Reference: Paramasivam, M., et.al. RSC Adv. 2014, 4, 35318

**Remote Spectroscopy Instrumentation for Cultural Heritage Application**

Danielle Chavis  
Johnny Lugo  
Dr. Antonio Martinez Collazo

The Department of Physics at University of Puerto Rico and the National Park Service of San Juan, Puerto Rico, research focus is to preserve historic Puerto Rican art of murals and oil painting. This is performed by examination of the physical-chemical properties characterized by Remote Fiber Optic Reflectance Spectroscopy (FORS) & Remote Raman Spectroscopy (RRS). During this project, I hope to expand my research by learning both instruments as well as enhancing my cross cultural communication skills.

**Support and Funding**

LSAMP iREU NSF Grant CHE-1560390







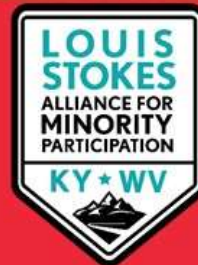
*Louisiana State University  
International Research  
Experience for Undergraduates  
Pre-Trip Conference  
March 26-27, 2017  
French Embassy, Washington, DC*



**Sarah Hodges, UK**



**Danielle Chavis, WKU**



APPENDIX J  
INDIVIDUAL  
SCHOLAR and ALUMNI  
HIGHLIGHTS

Kaylind Batey, Centre, was third author on a publication.

NCBI Resources How To

PubMed  
US National Library of Medicine  
National Institutes of Health

PubMed  Search

Advanced

Format Abstract Send to

J Bone Miner Res. 2017 Mar 9. doi: 10.1002/jbmr.3106. [Epub ahead of print]

### The Notch Ligand Jagged1 Regulates the Osteoblastic Lineage by Maintaining the Osteoprogenitor Pool.

Lawal BA<sup>1,2</sup>, Zhou X<sup>2</sup>, Batey K<sup>1</sup>, Hoffman CM<sup>1,3</sup>, Georger MA<sup>1</sup>, Radtke E<sup>4</sup>, Hilton MJ<sup>5</sup>, Xing L<sup>2</sup>, Frisch BJ<sup>1</sup>, Calvi LM<sup>1</sup>

Author information

**Abstract**

Notch signaling is critical for osteoblastic differentiation; however, the specific contribution of individual Notch ligands is unknown. Parathyroid hormone (PTH) regulates the Notch ligand Jagged1 in osteoblastic cells. To determine if osteolineage Jagged1 contributes to bone homeostasis, selective deletion of Jagged1 in osteolineage cells was achieved through the presence of Prx1 promoter-driven Cre recombinase expression, targeting mesenchymal stem cells (MSCs) and their progeny (PJag1 mice). PJag1 mice were viable and fertile and did not exhibit any skeletal abnormalities at 2 weeks of age. At 2 months of age, however, PJag1 mice had increased trabecular bone mass compared to wild-type (WT) littermates. Dynamic histomorphometric analysis showed increased osteoblastic activity and increased mineral apposition rate. Immunohistochemical analysis showed increased numbers of osteocalcin-positive mature osteoblasts in PJag1 mice. Also increased phenotypically defined Lin<sup>-</sup>/CD45<sup>-</sup>/CD31<sup>-</sup>/Sca1<sup>+</sup>/CD51<sup>+</sup> osteoblastic cells were measured by flow cytometric analysis. Surprisingly, phenotypically defined Lin<sup>-</sup>/CD45<sup>-</sup>/CD31<sup>-</sup>/Sca1<sup>+</sup>/CD51<sup>+</sup> MSCs were unchanged in PJag1 mice as measured by flow cytometric analysis. However, functional osteoprogenitor (OP) cell frequency, measured by Von Kossa<sup>+</sup> colony formation, was decreased, suggesting that osteolineage Jagged1 contributes to maintenance of the OP pool. The trabecular bone increases were not due to osteoclastic defects, because PJag1 mice had increased bone resorption. Because PTH increases osteoblastic Jagged1, we sought to understand if osteolineage Jagged1 modulates PTH-mediated bone anabolism. Intermittent PTH treatment resulted in a significantly greater increase in BV/TV in PJag1 hind limbs compared to WT. These findings demonstrate a critical role of osteolineage Jagged1 in bone homeostasis, where Jagged1 maintains the transition of OP to maturing osteoblasts. This novel role of Jagged1 not only identifies a regulatory loop maintaining appropriate populations of osteolineage cells, but also provides a novel approach to increase trabecular bone mass, particularly in combination with PTH, through modulation of Jagged1. © 2017 American Society for Bone and Mineral Research.

© 2017 American Society for Bone and Mineral Research.

**KEYWORDS:** GENETIC ANIMAL MODELS; NOTCH; OSTEOBLAST; PARATHYROID HORMONE; STROMAL/STEM CELL

PMID: 28277610 DOI: [10.1002/jbmr.3106](https://doi.org/10.1002/jbmr.3106)

**Grayce Behnke** and **Jordan Martinez**, Marshall, received awards from the Marshall University Chemistry Department.



## Chemistry

### Awards and Scholarships

Each year outstanding undergraduate and graduate students are presented with awards of distinction administered by the Department of Chemistry. Many students in the Department of Chemistry are also honored with financial awards through scholarships and fellowships. You can view the awards, scholarships, and fellowships presented annually using the links listed below.

#### Outstanding Graduating Chemist

*Sponsored by the Central Ohio Valley Section of the American Chemical Society*

Grayce Behnke



#### Hypercube Scholar

*Sponsored by Hypercube, Inc.*

Jordan Martinez



**Trevor Claiborn** was featured and interviewed several times throughout the year by various media including a session on WKYT, November 11, 2016.



**Trevor Claiborn "Farmer Brown" - KSU Agriculture Education**

# Farmer Brown entertains, educates next generation of farmers

Posted: Dec 04, 2016 9:35 AM EST <em class="wnDate">Sunday, December 4, 2016 9:35 AM EST</em>

Updated: Dec 04, 2016 10:56 AM EST <em class="wnDate">Sunday, December 4, 2016 10:56 AM EST</em>

By Kate Springer, WDRB.com



FRANKFORT, Ky. (WDRB) -- Planting corn and feeding cows aren't typical topics in hip-hop, but one Kentucky State University student is taking on agriculture to grow the next generation of farmers.

Most mornings at 6 a.m., Trevor Claiborn starts his rounds on Kentucky State University's research farm. "If you asked me 10 years ago what I would be, I would assume I'd be an entertainer. I definitely wouldn't have seen myself on a farm," he said.

The Lexington native was once part of a hip-hop music group that performed throughout Kentucky. He followed his music career to Atlanta, before returning home to pursue an education, eventually finding himself in the agriculture department.

"He was like 'Trevor do you realize that two out of every 100 farmers in America are African-American?' I didn't know that," Claiborn said.

He will graduate from Kentucky State University in the spring with his degree, but he hasn't quite given up his music career. Claiborn now performs as "Farmer Brown Tha MC."

"If you can picture a mix between Reading Rainbow, Sesame Street and Snoop Dog wrapped in one," said Claiborn.

Complete with overalls, straw hat and John Deere styled shoes, Farmer Brown raps about everything from tilling to fertilizer in his music videos and in the classroom to break down stereotypes. "You don't want them to think of farmers as someone missing a tooth, chewing on a corn cob. It's a cool character, a culturally identifiable character to make this cool to the child," said Claiborn. "A kid that listens to hip-hop, fresh off listening to Drake or Lil' Wayne, you're not going to resonate well with banjos," said Claiborn.

The character started as a research project, but has grown into a full-time gig. Farmer Brown's traveled as far away as Chicago to perform at elementary schools. He wants to reach all kids, particularly those in urban areas and minorities.

"If I can get you to think about this early, you might not focus so much on jump shots or swag," said Claiborn.

While the catchy rhymes entertain and educate, Farmer Brown is focused on the future. "I don't expect them to wake up tomorrow and want to be scientists or farmers, but if they have the concept of farming positively early, then as they get older, 'Hey, I remember that little cooky song I used to hear.' I might do this when recruiters come to their school," said Claiborn.

Claiborn says he plans to continue his research and produce a nine-part series to plant a seed to grow the next crop of farmers.

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**Trevor Claiborn** was selected as the Kentucky Association for Environmental Education’s Outstanding Rising Star for Excellence in Environmental Education.



LSAMP was featured in a Centre College news release



### Centre faculty and students collaborate through LSAMP research

Posted by Centre News in Academics, Biochemistry & Molecular Biology, Biology, Chemistry, Computer Science, News, Research

A number of Centre College students and faculty members are collaborating on research this summer, across disciplines and studying a variety of subjects. The research of some of these pairs is funded by the Louis Stokes Alliances for Minority Participation (LSAMP), a program supported by the National Science Foundation (NSF).

"The LSAMP program provides research opportunities to students from groups who are underrepresented in Science, Technology, Engineering and Mathematics (STEM) fields," says John Wilson, H.W. Stodghill, Jr. and Adele H. Stodghill Professor of Mathematics. "By giving students an early opportunity to conduct actual research, we believe students are more likely to declare science majors.

"The goal is to increase the diversity of students, graduates and eventually professionals in these fields who can go on to be leaders and role models for others to follow," Wilson continues.

Two of the students participating in this year's LSAMP program haven't even taken their first classes at Centre yet, as they are both incoming first-years. Cruz Avendano Dreyfuss '20, also a [Brown Fellow](#), is part of a team of undergraduate researchers creating a computer game with Associate Professor of Computer Science Michael Bradshaw. The game, called "Cyber Knight," incorporates content students receive in introductory computer science courses.

Dreyfuss' fellow incoming first-year, Ana Gabriela Mira '20, is conducting research with Assistant Professor of Chemistry Leonard Demoranville (*pictured below, right*). Their studies are aimed at developing techniques that will detect and identify small amounts of pesticides on food.

Emmely Ovalle '19, one of Centre's first [Grissom Scholars](#), is exploring electroencephalogram (EEG) scans alongside Associate Professor of Behavioral Neuroscience KatieAnn Skogsberg. By comparing the EEG scans of volunteers' brains before and after using a mental training app called Versus, Ovalle and Skogsberg hope to understand more about the effects of mental focusing.

For the second summer in a row, JeColya Moore '19 is completing LSAMP research with Assistant Professor of Biology Jessica Wooten. Moore is classifying the different species of salamander found in the Southern Appalachian mountain range. Taylor Walker-Smith '18 (*pictured above*), who has completed [two summers](#) of LSAMP research, is also collaborating with Wooten thanks to a grant from KY





For the second summer in a row, JeCoiya Moore '19 is completing LSAMP research with Assistant Professor of Biology Jessica Wooten. Moore is classifying the different species of salamander found in the Southern Appalachian mountain range. Taylor Walker-Smith '18 (*pictured above*), who has completed *two summers of LSAMP research*, is also collaborating with Wooten thanks to a grant from KY NSF EPSCoR, Kentucky's chapter of the National Science Foundation's Experimental Program to Stimulate Competitive Research.



Centre first received funding from LSAMP from 2006 to 2012, and a second round of funding from the NSF came in 2013 in the form of a \$140,430 award from the Kentucky-West Virginia LSAMP Alliance, based at the University of Kentucky. The award money will be implemented each summer through 2018 to support all aspects of student-faculty research. The opportunity to complete research projects such as these or an internship is guaranteed to all Centre students through the [Centre Commitment](#), along with the chance to study abroad and to graduate in four years.

To learn more about LSAMP, visit their [official website](#) or the website specifically for the [Kentucky-West Virginia Alliance](#).

*by Elizabeth Trollinger  
July 29, 2016*

*Group photo above, first row: Emmely Ovalle '19, Taylor Walker-Smith '18, Professor of Mathematics John Wilson, Ana Gabriela Mira '20. Second row: Associate Professor of Computer Science Michael Bradshaw, JeCoiya Moore '19, Cruz Avendano Dreyfuss '20, Assistant Professor of Biology Jessica Wooten, Assistant Professor of Chemistry Leonard Demoranville*



One Centre College LSAMP alumna saw and responded to the news release

*Hello President Roush,*

*I hope that this email finds you well! I wanted to share some exciting news with you. I recently attended the 41st annual International Herpesvirus Workshop in late July, where I had the opportunity to present my scientific findings that had been generated over the past few years here at Emory University. A group of my peers honored me with the Priscilla Schaffer Outstanding Presentation Award, which is a travel award given to one graduate student and one postdoctoral fellow in recognition of excellent oral and poster presentation(s) at the conference. Priscilla Schaffer was a leader in the field of herpesvirus genetics and had a great impact on the scientific field as well as the numerous students that trained under her and went on to establish this award in her memory after her untimely passing. More information about her legacy can be found here: <http://www.fh.hms.harvard.edu/about-our-faculty/memorial-minutes/s/priscilla-ann-schaffer/>.*

*I recently read an article that highlighted Centre's NSF LSAMP award to support underrepresented minorities in the sciences. I can honestly say that it was my summer research internship opportunity with Dr. Asmus that kick started my path to pursuing biomedical research as a profession and I wouldn't be here today without the support of Centre College. I believe the Priscilla Schaffer award is proof positive that Centre is completely deserving of the LSAMP award and that these initiatives truly have an impact on the participants involved. Additionally, I can personally attest to the fact that my liberal arts background has contributed to my success in scientific research (and it was the x-factor that won the confidence of my current employer upon initial review of my application).*

*Thank you for all of your support over the years and I'm proud to call myself a Centre grad. I look forward to hearing more great things from Centre!*

*Best wishes,  
Shariya*

--

*Shariya L. Terrell, PhD  
Postdoctoral Fellow, Emory University School of Medicine*

KSU and UK Center for Applied Energy Research teamed up to support LSAMP scholars over the summer

## Summer Partnership with UK CAER and Kentucky State University

By [Jenny Wells](#), [Dave Melanson](#)

Jul 22, 2016

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**LEXINGTON, Ky. (July 25, 2016)** — Kazi Javed, associate professor of chemistry at Kentucky State University (KSU), has always been committed to bringing science to life for his students. This summer, he is doing just that thanks to a unique partnership with the [University of Kentucky Center for Applied Energy Research \(CAER\)](#).

Javed, who teaches an analytical instrumentation class at KSU, is volunteering in the [Biofuels and Environmental Catalysis Group](#) at CAER this summer. With a focus in the classroom on instrument design and method development, Javed is bringing KSU students to CAER's lab this summer to introduce and train them on instrumentation not available at KSU.

Joining Javed are four students: Ma'Kaylah Garrett, a biology student from Indianapolis, Indiana; Steven Hall, a mechanical engineering student from Frankfort, Kentucky; Andrew Lentini, a mechanical engineering student from Shelbyville, Kentucky; and Siraj Ramsey, a mechanical engineering student from Hopkinsville, Kentucky. The mechanical engineering students are taking part in KSU and UK's joint program, where the students attend KSU for three years and UK for two years. Participants receive a bachelor's degree in mathematics from KSU and a bachelor's degree in engineering from UK.

This collaborative work was made possible thanks to National Science Foundation grants titled "MRI: Acquisition of a Gas Chromatograph with Dual Detection Capabilities to be Used in Sustainable Energy Research" (award number 1531637) and "SusChEM: Promotion of Nickel Catalysts for the Conversion of Biomass-derived Oils to Fuel-like Hydrocarbons" (award number 1437604).

*UK is the University **for** Kentucky. At UK, we are educating more students, treating more patients with complex illnesses and conducting more research and service than at any time in our 150-year history. To read more about the UK story and how you can support continued investment in your university and the Commonwealth, visit [uky.edu/uk4ky](http://uky.edu/uk4ky). #uk4ky #seeblue*

**MEDIA CONTACT:** Jenny Wells, 859-257-5343; [jenny.wells@uky.edu](mailto:jenny.wells@uky.edu)

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<http://uknow.uky.edu/node/50578>

Noah Ichite was featured on the Marshall University website. The article was also released by the local Huntington paper.



## University Communications

### Exercise science students assist in NASA-funded research

Posted on May 24, 2017

Contact: [Megan Archer](#), University Relations Specialist, 304-696-3916



Marshall University students in the Department of Exercise Science have had the opportunity to explore age and sex differences in skeletal muscles in mice through a NASA-funded grant project that aims to measure energy levels and provide customized care for injury recovery.

Dr. Kumika Toma, principal investigator for the grant and director of the undergraduate exercise science program, said she began this research in 2014 as part of a NASA-funded project in space biology and medicine that measured how microgravity would impact crew members on extended missions.

"I received the first grant (NNX13AN08A) in 2014 and applied for additional funding, which focused on providing educational experiences to high-achieving students interested in STEM areas," Toma said. "These students will finish up their research this summer on sex and age differences in skeletal muscles by conducting experimentation that will measure physical inactivity in mice."

Exercise science students Austin Pinardo, 20, of Beckley; Noah Ichite, 21, of Pickerington, Ohio; Casey Hudock, 22, of Dublin, Ohio; and Ellie Hammond, 23, of Huntington, are the four students who were chosen to work alongside Toma for her research.

"We look at the mice and we examine the muscle – how it's used and how it changes – when we suspend one leg. We take a biopsy of the muscle before the suspension process and after to identify these changes and make recommendations on how the muscle could be affected and improved if we were to apply this same concept to an injured or sedentary person," Hudock said.

Pinardo, a newcomer to the research project, said he's excited to be involved and get hands-on experience in his field.

"I want to see what we discover after obtaining the original measurements and getting the measurements after inactivity," Pinardo said. "The most exciting part is seeing what comes next."

Hammond, the only graduate student in the group, said this experience has allowed her to take her clinical experience to the next level. Hammond will work as a clinical exercise physiologist at O'Bleness Memorial Hospital in Athens, Ohio, beginning next month.

"I currently work in the clinical realm, but I want to eventually work in the field of cardiac and pulmonary rehabilitation and this study gives me the research experience I need to accomplish that," Hammond said.

The students should complete their grant-funded (NNX15AI01H, 9175C-MURC) research in June 2017. Toma said she hopes to apply for additional grant funding to continue her research beyond this summer.

For more information on Toma's research, contact her at [tomak@marshall.edu](mailto:tomak@marshall.edu) or 304-696-2651. For more information on other research initiatives taking place in the College of Health Professions, visit [www.marshall.edu/cohp](http://www.marshall.edu/cohp) online or [www.marshall.edu/murc](http://www.marshall.edu/murc) online.

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*Photo:* (From left to right) Marshall exercise science students Ellie Hammond, Noah Ichite, Austin Pinardo, and Casey Hudock, and director Dr. Kumika Toma, are conducting research on age and sex differences in skeletal muscles through a NASA-funded grant project.

## Marshall exercise science students assist in NASA-funded research

Thursday, May 25, 2017 - 01:45 *Updated 5 days ago*



SPECIAL TO HNN PROVIDED BY MARSHALL UNIVERSITY



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Courtney McKelphin was featured on UK Now

The screenshot shows the UK Now website interface. At the top is the UK Now logo with the text "University of Kentucky News". Below the logo is a navigation bar with tabs for "REVEAL: Research Media", "Video", "Photos", and "Podcast". The main content area features a "Research's Blog" header with a profile picture of a woman and the text "by: Research" and "SHARE:" with social media icons. The featured article is titled "Research Experience Shapes Undergrads" and is dated "Thursday, July 28, 2016". The article text describes a podcast featuring two UK undergraduates, Courtney McKelphin and Ben Childress, who share their research experiences. Courtney McKelphin's story is detailed, mentioning her major in chemical engineering and her work at the Center for Applied Energy Research. Ben Childress's story is also mentioned, focusing on his research in economics. The article concludes with a link to learn more about undergraduate research at the University of Kentucky.

**UK Now**  
University of Kentucky News

REVEAL: Research Media | Video | Photos | Podcast

 Research's Blog  
by: Research  SHARE: 

### Research Experience Shapes Undergrads

Thursday, July 28, 2016

In this podcast we'll meet two UK undergraduates who share their stories of why they got involved in research and what they gained from the experience.


The first student is Courtney McKelphin. She's starting her senior year this fall, majoring in chemical engineering. McKelphin worked at the Center for Applied Energy Research, with faculty mentor Mark Crocker and staff mentor Edwardo Santillan-Jimenez. She built a continuous reactor and looked at ways to optimize diesel fuel production by analyzing reaction rates and kinetics.

"Biggest takeaway: solving problems," McKelphin says. "That's the point of research. Figuring out how to not fall apart when things fall apart. Perseverance, persistence, solving through problems."

The second student is Ben Childress. He's starting his junior year this fall majoring in economics. Childress worked with Eugenia Toma at the Martin School of Public Policy and Administration. His research projected where charter schools would locate if they were established in Kentucky, and what impact that would have on education in the Commonwealth.

"There's this kind of scary barrier of 'Oh, I have no idea how to do that,'" Childress says. "Sure, it takes work and practice and experience, but research is not necessarily rocket science. And with dedication, it's something that I think is totally accessible to any student with an interest in it."

To learn how to get involved in undergraduate research, visit <http://www.uky.edu/academy/UGResearch>.

  
University of Kentucky Research Media  
Undergrad Research: Courtney Mc...  
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[Cookie policy](#)

**Courtney McKelphin** received recognition at the American Institute of Chemical Engineers (AIChE) Conference



**Courtney McKelphin** received a Student Leadership Award at the Women of Color STEM Conference, Detroit, MI, October 14-15, 2016





Full Length Article

## Extraction, characterization, purification and catalytic upgrading of algae lipids to fuel-like hydrocarbons



Eduardo Santillan-Jimenez<sup>a</sup>, Robert Pace<sup>a</sup>, Sarah Marques<sup>a</sup>, Tonya Morgan<sup>a</sup>, Courtney McKelphin<sup>a</sup>, Justin Mobley<sup>a,b</sup>, Mark Crocker<sup>a,b,\*</sup>

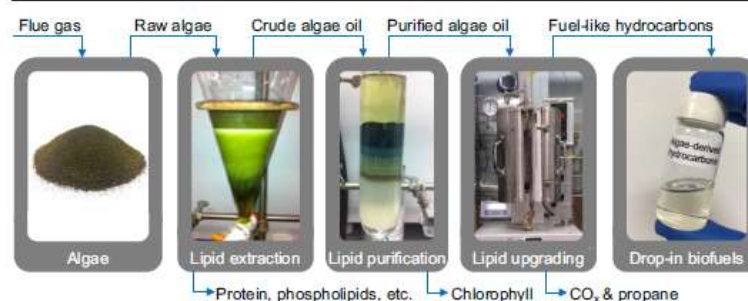
<sup>a</sup>Center for Applied Energy Research, University of Kentucky, 2540 Research Park Drive, Lexington, KY 40511, USA

<sup>b</sup>Department of Chemistry, University of Kentucky, Lexington, KY 40506, USA

### HIGHLIGHTS

- Lipids were extracted from algae grown with flue gas from a coal-fired power plant.
- Extracted lipids were purified via column chromatography using low-cost adsorbents.
- Purified lipids were catalytically deoxygenated to afford fuel-like hydrocarbons.
- Catalyst deactivation due to polyunsaturated lipids in the feed was observed at 260 °C.
- Upgrading at 300 °C resulted in increased catalyst stability and diesel yields >75%.

### GRAPHICAL ABSTRACT



### ARTICLE INFO

#### Article history:

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Received in revised form 1 April 2016

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#### Keywords:

Algae

Lipids

Extraction

Purification

Characterization

Upgrading

### ABSTRACT

The extraction, characterization, purification and upgrading of algal lipids was examined, utilizing *Scenedesmus acutus* microalgae grown with flue gas from a coal-fired power plant. Lipid extraction was achieved using a procedure based on the Bligh–Dyer method, modified so as to utilize a significantly decreased solvent:biomass ratio than the original protocol. Both activated carbon and K10 montmorillonite were found to function as efficient adsorbents for the removal of chlorophyll, phospholipids and sterols from the crude algae oil. The yield of purified lipids using this approach was similar to that obtained by in situ transesterification of the lipids in *S. acutus*, confirming that adsorption is an effective method for the removal of non-esterifiable lipids. During the deoxygenation of the purified algae oil at 260 °C over a Ni–Al layered double hydroxide catalyst, deactivation of the catalyst was observed, attributed to the presence of highly unsaturated lipid chains which can act as poisons by adsorbing strongly to the catalyst surface and/or acting as precursors to coke formation. However, upgrading at 300 °C gave better results, the liquid product consisting of ~99 wt% hydrocarbons, diesel-like (C10–C20) hydrocarbons constituting 76 wt% of the liquid after 4 h on stream.

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\* Corresponding author at: Center for Applied Energy Research, University of Kentucky, 2540 Research Park Drive, Lexington, KY 40511, USA.

E-mail address: [mark.crocker@uky.edu](mailto:mark.crocker@uky.edu) (M. Crocker).

<http://dx.doi.org/10.1016/j.fuel.2016.04.079>

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### 1. Introduction

Microalgae present a variety of advantages over terrestrial plants for the production of renewable fuels and chemicals. Chief among these is the fact that many species of algae exhibit high



## Joseph Wilkins ('11) earns doctorate at St. Louis University

*Dr. Wilkins ('11) earned his Ph.D. from the meteorology program in the Dept. of Earth and Atmospheric Sciences at Saint Louis University.*

The first student to graduate from the University of Louisville's undergraduate program in atmospheric science, Joseph Wilkins ('11), has successfully defended his doctoral thesis and earned his PhD in meteorology from the Dept. of Earth and Atmospheric Sciences, Saint Louis University. Dr. Wilkins has accepted a position at the Environmental Protection Agency in the Research Triangle Park, Raleigh-Durham, North Carolina.

APPENDIX K  
STAFF DEVELOPMENT  
ACTIVITIES



Cherokee College Preparatory Institute  
Rogers State University  
Claremore, Oklahoma  
July 17-22, 2016





SECOND ANNUAL  
**UNIVERSITY  
LEADERSHIP  
FORUM:  
INCLUSIVE  
LEADERSHIP**

Tuesday, October 25

8:30-8:45 a.m.

Opening Remarks

Eli Capilouto

*President, University of Kentucky*

Recital Hall, Singletary Center



**8:45-10 a.m.**

**Recital Hall, Singletary Center**

**OPENING KEYNOTE**

**INCLUSIVE LEADERSHIP: WHY GREAT LEADERSHIP IS BEYOND WORDS**

**Stephen Young**

*Senior Partner, Insight Education Systems*

**10:30 a.m. – noon**

**Woodward Hall, Gatton College of Business & Economics**

**FACULTY PANEL: INCLUSIVE LEADERSHIP IN THE HIRING PROCESS - RECRUITING, HIRING AND RETAINING DIVERSE STUDENTS, STAFF AND FACULTY**

**Dr. Ronald Jay Werner-Wilson, Dr. Debra Harley, Dr. Rich Schein, Dr. Claire Renzetti, Dr. Mitzi Schumacher**

*UK faculty members*



**1:30-4:30 p.m.**

**Woodward Hall, Gatton College of Business & Economics**

**MICROINEQUITIES: THE POWER OF SMALL**

**Stephen Young**

*Senior Partner, Insight Education Systems*

**WEDNESDAY, OCTOBER 26**

**8:30-9:45 a.m.**

**Woodward Hall, Gatton College of Business & Economics**

**BUILDING INCLUSION INTO YOUR ORGANIZATION**

**Dr. Wayne Lewis**

*Associate Professor, Educational Leadership Studies,*

*UK College of Education*

*Affiliated Faculty, African American and Africana Studies Program, UK College of Arts & Sciences*



**10-11:15 a.m.**

**Woodward Hall, Gatton College of Business & Economics**

**MANY COLORS OF THE RAINBOW: MAKING SPACE, SHOWING UP, CREATING CHANGE**

**Lance Poston, MA, Director of LGBTQ\* Resources**

**Dakota Smith, Student Leader, UK College of Agriculture, Food, and Environment**

**Mel Lesch, M.Ed., UK Residence Life**

**Joanne Brown, DNP, APRN, University Health Service**



**1:30-2:45 p.m.**

**Room 311, Gatton College of Business & Economics**

**INCLUSION IN THE CLASSROOM**

**Dr. Deb Castiglione, Dr. Nicole Martin & Ashley Sorrell**

*Center for the Enhancement of Learning & Teaching*

3-5 p.m.



Room 311, Gatton College of Business & Economics  
CULTURAL INTELLIGENCE

**Dr. Patricia Dyk**

*Associate Professor and Director of Graduate Studies, Center for Leader Development, UK College of Agriculture, Food & Environment*

**THURSDAY, OCTOBER 27**

8:30-10 a.m.



First Lady's Room, Boone Center

CLOSING KEYNOTE  
HALLMARKS OF INCLUSIVE LEADERSHIP

**Leslie Traub**

*Partner & Chairperson, Cook Ross*

10:15-11:30 a.m.



First Lady's Room, Boone Center

SERVANT LEADERSHIP: LEADING WITH TRUST, RESPECT  
AND EMPOWERMENT

**Dr. David Blackwell**

*Dean, UK Gatton College of Business & Economics*

Noon – 1 p.m.

Columbia Dining Room, Boone Center  
NETWORKING LUNCH

1:15-3:15 p.m.



First Lady's Room, Boone Center

UNCONSCIOUS BIAS WORKSHOP FOR STAFF

**Marietta Watts**

*Senior Training Specialist, UK Human Resources Training & Development*

2:45-4:15 p.m.

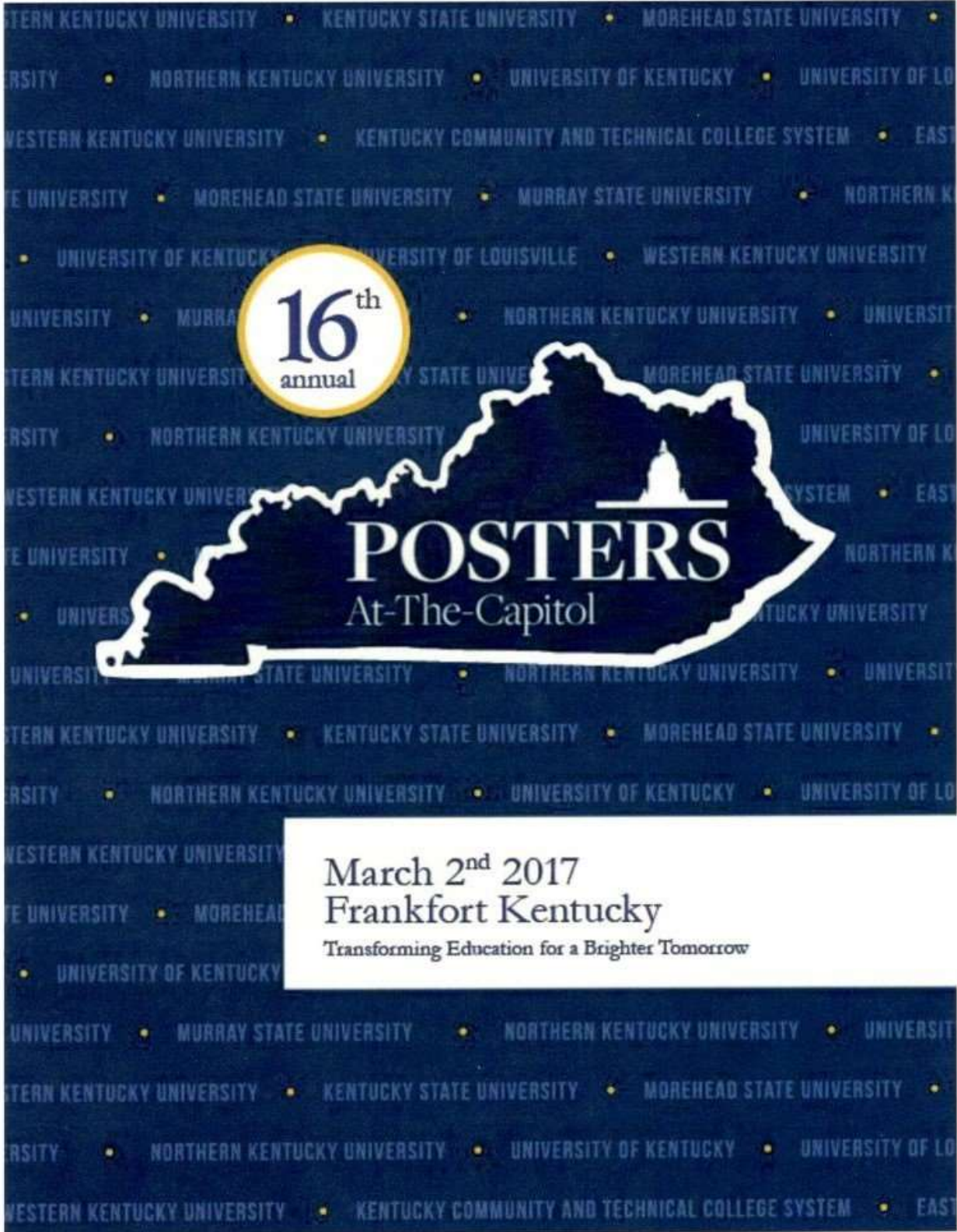


Columbia Dining Room, Boone Center

UNCONSCIOUS BIAS WORKSHOP FOR FACULTY

**Leslie Traub**

*Partner & Chairperson, Cook Ross*





## 2016-17 MOSAIIC

### UNITED WE STAND DIVIDED WE FALL; DETERRING COMMUNICATIONS OF HATE

KY State University Research and Demonstration Farm, Mills Lane, Frankfort, KY

Thursday, 11/3/16

9-10	Registration, Continental Breakfast and Networking
10-10:15	Welcome and Purpose.....Charlene Walker, VP Bluegrass Community & Technical College
10:15-11:15	The History of the "N" word.....Dr. Alicestyne Turley, Berea College
11:15-12:15	INTERACTIVE Group Activity evolving around theme, United We Stand
12-12:45	Lunch
12:45-1:45	Community and Educator Panel, <u>Ain't No Crystal Stair</u>

#### Panel Members

- Tonya Torp, Executive Committee Officer of Kentuckians for the Commonwealth Program  
Director of Step By Step Lexington
- Trevor Clayborn, BCTC Transfer, last year MOSAIIC winner, Farmer Brown Tha MC, Research  
Assistant Kentucky State University High Tunnel, and Research Farm, Author & Community  
Activist
- Jesus Gonzalez, Chair of Central Kentucky Showing Up for Racial Justice – SURJ
- Richard Spaulding aka Devine Carama is a hip hop artist, social activists and through his  
nonprofit, Believing In Forever Inc. and the Youth Services Coordinator at Community Action  
Council



**1:45-2:45 Student**

**Youth Panel, When I get older, I will be stronger, They'll call me freedom, just like a Waving Flag."**

**Panel Members**

- Kevely Dumay, BCTC- ECU transfer
- MaKayla Brown, Freshmen Lafayette High School
- Argelia Fabian, BCTC BLINKS transfer and KSU senior
- Erica Wheeler, BCTC CARNEGIE HALL student and UofL junior

**2:45-4:00**

**Viewing of 13<sup>TH</sup>, powerful and acclaimed 2016 American documentary by director Ava DuVernay.**

Reconvene @ KY State University Student Ballroom 9-3 MOSAIIC luncheon and awards featuring Dr. Dorothy Yancy at noon. Breakout sessions from 9- noon

**Friday, 11/4**

**9AM**

**Registration KSU Student Ballroom**

The Northwest Region of the Kentucky Association of Blacks in Higher Education hosts their regional meeting, in partnership with the Central Kentucky Diversity Consortium "MOSAIC Afternoon". This event will feature various breakout workshops designed to share knowledge, learn new methods and strategies designed to take back to your respective institution, and network with others in the higher education arena.

**"A MOSAIIC AFTERNOON" - 2016 MOSAIIC AWARDS LUNCHEON**

**12:00-12:30**

**KY State University Student Ballroom Frankfort KY**  
Introduction of Central KY Diversity Consortium Members  
Introduction of 2017 MOSAIIC award recipients  
Introduction of Keynote Speaker Mr. Trevor Claiborn

**12: 30-1:15**

**Dr. Dorothy Yancy former Johnson C. Smith University President, "United We Stand, Divided We Fall: "The Survival of HBCUs"**

**MOSAIC** (Multicultural Opportunities, Strategies and Institutional Inclusiveness Consortium) was organized by Charlene Walker, the Vice President of Bluegrass Community and Technical College's Office of Multiculturalism & Inclusion. The Consortium consists of seven Central Kentucky colleges (Bluegrass Community and Technical College, Eastern Kentucky University, Berea College, Georgetown College, Transylvania University, and the University of Kentucky) that support each other in efforts to raise awareness of opportunities and strategies needed to promote inclusive college working and learning environments