2014 LSMCE Conference

Roadmap to Action: LSAMP Principles for Broadening Participation in STEM

October 24-26
Chicago, Illinois

Supported by the National Science Foundation award HRD 1202563
http://www.lsmceconference.org/

The Louis Stokes Midwest Center of Excellence (LSMCE) 2014 Conference, Roadmap to Action: LSAMP Principles for Broadening Participation in STEM, is supported by the National Science Foundation award #1202563.

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25 October 2014

Dear Conference Attendees,

On behalf of Chicago State University, Indiana University Purdue University at Indianapolis and Argonne National Laboratory, we welcome you to the Louis Stokes Midwest Center of Excellence (LSMCE) second annual conference. This year, we bring you to Chicago to celebrate a Roadmap to Action: LSAMP Principles for Broadening Participation in STEM.

As we convene this weekend, we acknowledge the mission of LSMCE and honor our commitment to expand the talent pool of underrepresented minorities (URM’s) in the areas of Science, Technology, Engineering and Mathematics (STEM). Our program and invited speakers bring valuable insight into promoting STEM programming and providing quality opportunities for students and faculty. The conference also presents students with a platform to showcase their research; gaining confidence and experience along with high quality assessments from leaders in the field. We are honored to host such a wide range of diverse STEM talent!

We thank the National Science Foundation (NSF) directors, who provide unwavering support of this conference through their broadening participation initiatives. The NSF, through the LSAMP program and its ongoing funding of initiatives and programming, provide needed sustenance to our institutions as they produce new leaders in the global science community. From the esteemed scientists, educators and researchers, to the students still maneuvering toward their chosen scientific path, I thank you for your participation. Your acceptance of our invitation serves as a warm reminder that we work in collaboration – to recruit, retain, graduate and embrace underrepresented minorities in the STEM fields.

Welcome to Chicago and our Roadmap to Action!

Sincerely,

LeRoy Jones II, Ph.D.
Co-Principal Investigator
Greetings!

As Governor of the State of Illinois, I am pleased to welcome everyone gathered for the 2nd Annual Conference introducing LSAMP Best Practices to non-ILSAMP academic institutions, hosted by the Louis Stokes Midwest Center of Excellence. The theme for this year is Roadmap to Action: LSAMP Principles for Broadening Participation in STEM.

It is very important that we, as a state, work towards ensuring that everyone, regardless of race, ethnicity or gender, has access to the same opportunities for success. LSMCE is committed to increasing the number of minority scholars earning degrees in the areas of science, technology, engineering and mathematics. This two-day conference will serve to spread the admirable practices of LSAMP schools to promote diversity in those fields, as well as to facilitate productive discussion on education practices throughout the region.

I commend LSMCE and the LSAMP participants for your dedication to equality and excellence in education, and I encourage all conference participants to take this opportunity to engage with and learn from one another.

On behalf of the people of Illinois, I offer my best wishes for an enjoyable and rewarding conference.

Sincerely,

Pat Quinn
Governor
October 24, 2014

Dear Conference Participants,

I am honored to attend the 2nd Annual Louis Stokes Midwest Center of Excellence (LSMCE) Conference, Roadmap to Action: LSAMP Principles for Broadening Participation in STEM. One of my first tasks as Congresswoman was to form the 2nd Congressional District STEM Council, whose goals correlate directly with those of the LSMCE Conference — to further the participation of underrepresented minorities in the STEM fields. By bringing together innovators, educators and leaders in our community, the STEM Council also ensures my commitment to educating, training and supporting a vibrant and diverse STEM workforce.

Further, the 2nd District STEM Academy, a product of the Council, works directly with local K-12 students, exposing them to careers in the STEM fields. As part of this initiative, we have begun “Boot Camps” where STEM professionals travel to schools within the district to lead interactive workshops and conduct presentations in the various STEM disciplines. We provide networking and mentoring opportunities called “The House STEM App Challenge,” as well as bring executives from leading technological companies such as Google, Grub Hub and Groupon to share their various internships, apprenticeships and employment opportunities. Our goal is to create an increasingly talented pool of STEM professionals who are prepared to compete within the global marketplace.

I applaud all the panelists, educators, institutions — including Chicago State University, Indiana University, Purdue University at Indianapolis, and Argonne National Laboratory — as well as the students for your dedication to preparing tomorrow’s workforce for STEM careers.

Sincerely,

Robin L. Kelly
Member of Congress

RLK/mp
October 24, 2014

Welcome Conference Guests:

As President of Chicago State University, I welcome you to the 2nd Annual Louis Stokes Midwest Center of Excellence (LSMCE) Conference, Roadmap to Action: LSAMP Principles for Broadening Participation in STEM. We are excited to come together in partnership again with Indiana University, Purdue University Indianapolis, and Argonne National Laboratory to further the goal of increasing the number of underrepresented minorities in the STEM fields.

Chicago State University continues to support initiatives that allow our students to engage with professionals, mentors and institutions that increase their opportunity for future success in their chosen field. For our STEM students, this LSMCE conference presents a unique chance to interact with STEM professionals, institutions and students from all over the nation in a supportive environment that exemplifies commitment to their success. It is through events such as this – that highlight collaboration, mutual respect, national and global awareness – that we will realize a truly diverse STEM workforce.

On behalf of Chicago State University, I thank the dedicated individuals that have traveled to Chicago to share in our mission. Your support of students and programming that further increase the number of underrepresented minorities in the STEM fields will be the catalyst for a nation of diverse STEM workers. Thank you for your commitment to your institution and your students.

Welcome to Chicago!

Sincerely,

[Signature]

Wayne D. Watson
24 October 2014

Welcome Conference Guests,

I am delighted to welcome you to Chicago for the 2nd Annual Louis Stokes Midwest Center of Excellence Conference, Roadmap to Action: LSAMP Principles for Broadening Participation in STEM. This conference, presented by Chicago State University, Argonne National Laboratory and Indiana University Purdue University Indianapolis serves to illustrate the positive effects of collaboration on expanding the talent base for underrepresented minorities in Science, Technology, Engineering and Mathematics (STEM) fields.

As Principal Investigator for the Louis Stokes Midwest Center of Excellence, I am proud to support this conference as it provides an occasion for further engagement in STEM for our students through poster and oral presentations, lecture, panel discussion and individual networking opportunities. I encourage you to take advantage of the knowledge gifted to you by the illustrious group of panelists, speakers and guests gathered at this LSMCE conference. Their presence here cements their commitment to the expansion of a diverse talent base in the growing STEM fields and furthers all our institutional goals. Through collaborative, educational and networking opportunities such as these, we encourage the continuation of STEM programs in colleges and universities and support STEM faculty nationwide.

Thank you to the Louis Stokes Midwest Center of Excellence for presenting such an opportunity for growth, education and motivation to a diverse representation of students and faculty. I congratulate them and all the participants of this conference for their dedication to broadening participation in the STEM fields throughout the country.

Best Regards,

[Signature]

Dr. Angela M. Henderson
Chicago State University
Interim Provost and Senior Vice President for Academic Affairs
Conference Location:
Chicago Marriott Schaumburg
50 N Martingdale Road
Schaumburg Illinois 60173
847-240-0100
Join us for Breakfast!

Served October 25 and 26 from 6:30 – 8:30 AM

2014 LSMCE Conference attendees should present their name badge at the restaurant for a complimentary breakfast ticket.

BlueFire Grille
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Welcome to the 2014 LSMCE Conference!

Roadmap to Action:
LSAMP Principles for Broadening Participation in STEM

Friday Afternoon

Pre-conference Registration and Check-in Open  
4:00 - 6:00 p.m.

Welcome Reception (Garden Marquis Room)  
4:30 - 6:00 p.m.

Registration will reopen on Saturday at 8:00 a.m.
6:30– 8:30 a.m.  Breakfast— See packet flyer for details.

8:00 - noon  Registration

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<th>Saturday Morning Session</th>
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| 8:30– 8:45 a.m.  Opening Remarks | LeRoy Jones II & Angela Henderson  (Garden Marquis)
Chicago State University |
| 8:45– 8:55 a.m.  Welcome | Congresswoman Robin Kelly
Illinois 2nd District |

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<td>9:00– 9:30 a.m.  Opening Keynote</td>
<td>Building Tomorrow’s Diverse STEM Workforce: Lessons and Challenges</td>
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The National Science Foundation (NSF) supports basic research in science, engineering, and education. The NSF has had a long-standing commitment to prepare the next generation of scientists and engineers, going back to the earliest years of the NSF. Each year the NSF supports hundreds of thousands of researchers, postdoctoral fellows, trainees, teachers and students in all fields of science engineering. I will discuss key lessons and challenges for broadening participation and enhancing diversity in the STEM fields for tomorrow’s innovative and global workforce.

Joan Ferrini-Mundy
Assistant Director, Directorate for Education and Human Resources
National Science Foundation

9:30– 10:15 a.m.  Morning Keynote | Equity through Diversity: The NSF LSAMP Program |

This 2014-2015 school year K-12 schools throughout the nation are expected to hit a major milestone: for the first time, they will enroll more racial and ethnic minority students than majority or non-Hispanic white students. This milestone has been much anticipated by educators, policymakers, advocates, and researchers, as the nation’s changing demographics pushes them to consider the opportunities available to groups traditionally underserved and underrepresented in key areas of the U.S. economy—and in particular in mathematics, science, technology, and engineering (STEM). Today, minorities continue to be underrepresented in STEM—both in higher education and in the workforce. The NSF has been at the forefront of efforts to address this problem. Dr. Cosentino will discuss the evolution of the LSAMP program, release new findings from the BD evaluation completed in 2014, and discuss their policy and program implications in the context of national efforts to grow and diversify the STEM workforce. At a time when the nation focuses on change and innovation, particularly in STEM, Dr. Cosentino’s presentation will highlight new evidence from LSAMP on how best to serve and retain minorities in STEM and on how programs can adapt to respond to new knowledge and changing national priorities.

Clemencia Cosentino
Senior Researcher and STEM Area Leader
Mathematica Policy Research

Sponsored by the National Science Foundation award 1202563
Clemencia Cosentino (Ph.D., Sociology, Princeton University), a Senior Researcher and STEM Area Leader at Mathematica Policy Research, is the former director of the Program for Evaluation and Equity Research at the Urban Institute. A recognized leader in the study of factors that influence educational attainment, much of her work centers on large scale evaluations of efforts to improve the participation of underrepresented groups in education and in the scientific workforce. Findings from her work have provided rigorous evidence of effectiveness as well as formative feedback to guide decision making at public and private foundations, including the National Science Foundation (NSF) and the Lumina Foundation for Education. She has been invited by these and other funders and organizations—such as the National Academies, the Committee on Equal Opportunities in Science and Engineering of National Science Foundation, and the National and Aeronautics Space Administration—to present evaluation findings and discuss their implications and potential uses. Dr. Cosentino has studied the Louis Stokes Alliances for Participation (LSAMP) Program for more than a decade, through the national evaluation of LSAMP (released in 2005) and the recent evaluation of the LSAMP Bridge to the Doctorate (BD).

Joan Ferrini-Mundy

Dr. Joan Ferrini-Mundy is the Assistant Director of the National Science Foundation (NSF) for Education and Human Resources (EHR), a position she has held since 2011. Previously at the NSF she served as the inaugural division director of the Division of Research on Learning in Formal and Informal Settings (2007-2010). Dr. Ferrini-Mundy served as an ex officio member of the U.S. President’s National Mathematics Advisory Panel, and co-chaired its Instructional Practices Task Group (2007-2009). She was a member of the Mathematics Expert Group of the Programme for International Student Assessment (2009-2012). Currently Dr. Ferrini-Mundy is co-chair of the White House National Science and Technology Council’s Federal Coordination in Science, Technology, Engineering and Mathematics Education Task Force. Prior to coming to the NSF, she was a University Distinguished Professor of Mathematics Education at Michigan State University. Dr. Ferrini-Mundy holds a Ph.D. in mathematics education from the University of New Hampshire. She was elected a fellow of the American Association for the Advancement of Science (2011), and a member of the Executive Committee of the Association of Women in Mathematics (2013). She began her career as a high school mathematics teacher. Her research interests are in calculus learning, mathematics teacher knowledge, and K-12 STEM education policy.
Photo courtesy of Fermilab
Pictured: (l-r): David Schmitz, Ph.D. & Marcelle Soares-Santos, Ph.D.
The conference poster session will be in the foyer from 10:30 a.m. to approximately 11:40 a.m.

Undergraduate student STEM research posters will be on display. Students will be available to answer questions over their research. Photos of students and their research posters will be taken at the event.

*ATTENTION STUDENTS*

LSMCE Student Professional Development Series schedule is listed on page 10 and is located in Salon B/C/D.

See map on page 35 for the location of all conference events.

2014 LSMCE Conference Invited Student Oral Presentation

Awardees:

Adil Afridi
SUNY College at Old Westbury

Maya Navarro
DePaul University

Darryl Watkins
Indiana University Purdue University Indianapolis

Abstracts are available on page 28

Supported by Fermilab
Saturday Luncheon Keynote

Engineering Research Centers (ERCs): Linking Discovery to Innovation

Moderator

Brooke Coley
Directorate for Engineering
Engineering Education and Centers Division
National Science Foundation

Panelists

Enrique (Rick) Ainsworth
Nanosystems Engineering Research Center for Translational Applications of Nanoscale Multiferroic Systems (TANMS)
(2012)
University of California Los Angeles (UCLA)

Krishna S. Athreya
ERC for Biorenewable Chemicals (CBiRC)
(2008)
Iowa State University

Shelly Renee Brown
Quality of Life Technology ERC (QOLT)
(2006)
Carnegie Mellon University

Alyssa A. Burger
Center for Compact and Efficient Fluid Power (CCEFP)
(2006)
University of Minnesota

Delia Saenz
ERC for Quantum Energy and Sustainable Solar Technologies (QESST)
(2011)
Arizona State University

(Sponsored by the National Science Foundation award 1202563)
Linking Discovery to Innovation

The 2014 LSMCE conference will host the inaugural Engineering Research Centers (ERCs) panel presentation, *Linking Discovery to Innovation*. The panel offers an opportunity to connect potential researchers with the ERC approach to state-of-the-art STEM research and technology transfer.

This pilot panel presentation will build national awareness of opportunities for research engagement through ERCs especially the social relevance of STEM research and the emphasis on converting the fruits of the research to socially useful products and processes. Emphasis on the collaborative nature of the research process can increase the appeal of a STEM research career for potential researchers who actively seek social context and value to community in their career choices.

Dr. Brooke Coley from the National Science Foundation (NSF), Division of Engineering Education and Centers, will moderate the panel. Five representatives from ERCs across the country will join Dr. Coley. The panel will underscore the ERC approach to research and development agendas, briefly describe how their ERC achieves the NSF mission, share unique opportunities for prospective and current students, and include successes and challenges at their ERC.

The goal of the ERCs is to “provide the intellectual foundation for industry to collaborate with faculty and students on resolving generic, long-range challenges, producing the knowledge base needed for steady advances in technology and their speedy transition to the marketplace.”

<table>
<thead>
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<th>Participating Panel ERCs</th>
<th>Website:</th>
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<td><strong>TANMS</strong></td>
<td><strong>Website:</strong>&lt;br&gt;<a href="http://www.tanms-erc.org/">http://www.tanms-erc.org/</a></td>
</tr>
<tr>
<td>TANMS works to engineer a revolution in miniature electromagnetic electronics through development of a new class of nanoscale multiferroic materials.</td>
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<tr>
<td><strong>CBiRC</strong></td>
<td><strong>Website:</strong>&lt;br&gt;<a href="http://www.cbirc.iastate.edu/">http://www.cbirc.iastate.edu/</a></td>
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<tr>
<td>CBiRC will develop the fundamental knowledge and technology and the academic and industrial partnerships needed to provide a foundation for industrial chemical production to be transformed from a petroleum-based industry to a renewable resource-based industry.</td>
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<tr>
<td><strong>QOLT</strong></td>
<td><strong>Website:</strong>&lt;br&gt;<a href="http://www.cmu.edu/qolt/AboutQoLTCenter/">http://www.cmu.edu/qolt/AboutQoLTCenter/</a></td>
</tr>
<tr>
<td>QOLT addresses the needs and activities of everyday living by prototyping personal assistive robots, cognitive and behavioral coaches, human awareness and driver assistance technologies.</td>
<td></td>
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<tr>
<td><strong>CCEFP</strong></td>
<td><strong>Website:</strong>&lt;br&gt;<a href="http://www.ccefp.org/">http://www.ccefp.org/</a></td>
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<tr>
<td>CCEFP is a network of researchers, educators, students and industry working together to transform the fluid power industry—how it is researched, applied and studied.</td>
<td></td>
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<tr>
<td><strong>QESST</strong></td>
<td><strong>Website:</strong>&lt;br&gt;<a href="http://qesst.asu.edu/">http://qesst.asu.edu/</a></td>
</tr>
<tr>
<td>QESST is capitalizing on one of the greatest scientific advances of the 20th century, quantum mechanics, to develop photovoltaics (PV) and advanced energy converters that will revolutionize electricity generation.</td>
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Moderator

Brooke Coley, Directorate for Engineering, Engineering Education and Centers Division, National Science Foundation

Dr. Brooke Coley came to the National Science Foundation (NSF) as an American Association for the Advancement of Science (AAAS), Science & Technology Policy Fellow in 2011. She is now an Engineering Analyst in the Engineering Education and Centers Division of the Directorate for Engineering. Her current portfolio focuses on issues of diversity and workforce development in the NSF Engineering Research Centers (ERCs).

Prior to NSF, Dr. Coley conducted bioengineering biomechanics research as a Ruth L. Kirschstein Fellow in the Human Movement and Balance Laboratory at the University of Pittsburgh. As Principal Investigator for the Adaptive Postural Strategies: Impact of Aging Research Study, she identified postural adaptations acquired through repeated exposures to slipping and tripping perturbations in young and older adults.

Her research interests focus on improving the quality of life in older adults through the promotion of healthy aging and maintenance of independent living. In addition, she is committed to addressing the underrepresentation of minorities in the engineering fields at all levels of research. She is a native of Chesapeake, VA, received her Bachelors of Science in Chemical Engineering as a Meyerhoff Scholar at the University of Maryland, Baltimore County and completed her doctoral degree at the University of Pittsburgh in Bioengineering with a concentration in Biomechanics.

Engineering Research Centers (ERC)

The goal of the ERCs is to “provide the intellectual foundation for industry to collaborate with faculty and students on resolving generic, long-range challenges, producing the knowledge base needed for steady advances in technology and their speedy transition to the marketplace.”

http://erc-assoc.org/
Panelists

**Enrique (Rick) Ainsworth**, Nanosystems Engineering Research Center for Translational Applications of Nanoscale Multiferroic Systems (TANMS), (2012), University of California Los Angeles (UCLA)

Rick Ainsworth is the Director of the Center for Excellence in Engineering and Diversity (CEED) at UCLA since 1989. Mr. Ainsworth has written and served as Co-Principal Investigator for various National Science Foundation, and PI for Corporate and California State projects supporting several undergraduate, graduate, community college and pre-college STEM retention programs. Formerly Co-PI of the 1.8 million dollar NSF STEP-grant, NSF Broadening Participation in Computing (BPC) projects: and currently Co-PI for the NSF SSTEM scholarship grant. Mr. Ainsworth serves as the Director of Outreach, Diversity, and Co-Education director for TANMS led by UCLA with UC Berkeley, Cornell and CSU Northridge. He obtained a B.S. from the University of Southern California in Urban Planning/Administration and completed Graduate work in the USC School of Law.

**Krishna S. Athreya**, ERC for Biorenewable Chemicals (CBiRC), (2008), Iowa State University

Krishna S. Athreya has been leading diversity efforts within CBiRC since 2011. She has spent over two decades working on issues of underrepresentation of women, minorities and people with disabilities in STEM. Her academic training is in physics. She is the co-founder of the non-profit organization, Engineers for a Sustainable World.

**Shelly Renee Brown**, Quality of Life Technology ERC (QOLT), (2006), Carnegie Mellon University

Shelly Renee Brown, M.Ed is an Education and Outreach Coordinator for the Quality of Life Technology Engineering Research Center at the Human Engineering Research Laboratories and the University of Pittsburgh Department of Rehabilitation Science and Technology.

**Alyssa A. Burger**, Center for Compact and Efficient Fluid Power (CCEFP), (2006), University of Minnesota

Alyssa A. Burger, M.Ed, is an Education Outreach Director at the NSF Engineering Research Center for Compact and Efficient Fluid Power. She is responsible for the program vision, strategy, administration and implementation of all workforce development and diversity programs in the CCEFP. Founded in 2006, the CCEFP is changing the way fluid power is researched, applied and taught. Through the network of strong partners, CCEFP places an emphasis on developing new understandings of fluid power and related STEM topics as it reaches out to diverse audiences.

**Delia Saenz**, ERC for Quantum Energy and Sustainable Solar Technologies (QESST), (2011), Arizona State University

Delia Saenz is a professor in Psychology at Arizona State University, where she has served administratively as vice provost for undergraduate education, and as vice provost for international and institutional inclusion. She received her doctorate from Princeton University in 1987. Her research focuses on diversity, tokenism, intergroup processes, inclusion, and acculturation. Often cited for its innovation and contributions to the understanding of diversity in work groups, this research has been funded by NIMH, NSF, the Ford and WT Grant Foundations, and the US Agency for International Development. Her current projects focus on broadening the participation of women and people of color in sustainable technology and renewable energy sectors. Dr. Saenz has been recognized institutionally and nationally for outstanding contributions to the teaching and mentoring programs.
1:15– 2:00 p.m.

Salon B/C/D

Explore the Possibilities! Internship at Argonne National Laboratory

In today’s world, it is important for the next generation of STEM professionals to be well versed in theory and academic knowledge, but they also need to be able to apply their understandings to problems and social issues. Argonne National Laboratory takes on the grand challenges of today to provide a better tomorrow. We strive to find solutions to big social issues, explore the unknown and convene the best and brightest across the science, technology and engineering fields. We offer a number of internship programs for undergraduate, graduate and faculty that provide opportunities to work alongside Argonne scientists and engineers as they work on our grand challenges of today.

Meridith Bruozas & Robert Schuch
Manager of Educational Programs and Outreach
Argonne National Laboratory

2:15– 3:00 p.m.

Salon B/C/D

Fermilab: Overview & Opportunity

Fermilab has been at the forefront of particle physics for more than 40 years. From particle accelerators to the World Wide Web, and from medical imaging techniques to high-performance computing, the bold and innovative ideas and technologies of particle physics have entered the mainstream of society and helped transform the way we live. Postdoctoral researchers, graduate and undergraduate students have the opportunity to work alongside Fermilab scientists and engineers through a number of programs. This session is geared towards students.

Timothy Meyer
Chief Operating Officer
Fermi National Accelerator Laboratory

3:15– 4:00 p.m.

Salon B/C/D

Beyond the GPA

Education is the Combination of Character and Intelligence – In today’s global market STEM careers stretch beyond the cubicle. There are critical skills, techniques, and social navigation required to secure employment. This workshop will highlight industry requirements, both written and non-written, that can illuminate the path to success for future STEM pioneers. Students will be prepared to engage in mock-interviews, elevator speech delivery, and practice necessary verbal and non-verbal do’s and don’ts. This workshop will share valuable insider insight with those on the brink of transitioning into a STEM career. Understanding the interview process and the value of a professional identity will prepare students to enter an interview and sail across the finish line to GREATNESS.

Brian Thomas
Founder/Director
KIPNspire Group

Sponsored by the National Science Foundation award 1202563
The LSMCE Student Professional Development Series is designed to prepare students to successfully enter the STEM workforce. This series introduces students to the steps involved in building a strong STEM career: how to locate and successfully apply for undergraduate internships, how to prepare for interviews, how to prepare applications to graduate programs, and much more.

FERMILAB OPPORTUNITIES

Cooperative Education Program
Undergraduate sophomores majoring in chemistry/chemical engineering, electrical/electronic engineering, mechanical engineering, computer engineering/science, and environment/safety/health and registered in their university’s cooperative education program are encouraged to apply to Fermilab’s Co-Op program. Students typically alternate a minimum of three semesters or four quarters at Fermilab with periods of full-time study at their home institution. Along with a competitive salary (based on academic credits earned and work terms completed), students receive medical, dental and tuition reimbursement benefits. http://wdrs.fnal.gov/employ/coopessay.html

Summer Internships in Science and Technology (SIST)
Since 1970, Fermilab’s Summer Internships in Science and Technology (SIST) program has provided opportunities to undergraduate sophomores and juniors enrolled in four-year colleges and universities in the United States. Internships are available to students majoring in Physics, Electrical Engineering, Mechanical Engineering or Computer Science. Each year approximately fifteen college students to work with Fermilab scientists or engineers on a project within the context of laboratory research. The twelve-week paid internship consists of a work assignment, an academic lecture series, and a final report presented orally and submitted in writing. SIST interns receive a weekly salary based on a 40-hour work week, partially subsidized housing, and fully paid travel expenses. http://sist.fnal.gov/

Ph.D. Fellowship For Minority Students
The Ph.D. Fellowship for Minority Students awards a $5,000 annual stipend for traditionally underrepresented minority students matriculating in physics at a Universities Research Association, Inc. (URA) institution. Fellows must have participated in Fermilab’s Summer Internships in Science & Technology (SIST) program. Financial support may be granted for up to four years. http://wdrs.fnal.gov/eeo/phd_fellowship.html

GEM (The National Consortium for Graduate Degrees for Minorities in Engineering and Science)
As a member of GEM, Fermilab is committed to diversifying participation in engineering and science at the master’s and doctoral levels by providing program fellows with practical multi-year summer work opportunities. https://www.gemfellowship.org/

For all Fermilab physics and engineering fellowships, programs for engineers, awards, and undergraduate research opportunities, visit: http://www.fnal.gov/pub/forphysicists/fellowships/index.html.
1:00– 1:15 p.m.  Break

1:15– 2:00 p.m.  General Breakout Sessions

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<td>Making Your Students and Program Attractive to Industry</td>
<td>Harold Bryant, L’Oréal USA</td>
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<td>Woodfield Room</td>
<td>How to Fund an UGR Program: A Case Study of the IUPUI Diversity Research Scholars</td>
<td>Rafael Bahamonde &amp; Vicki Bonds, Indiana University Purdue University Indianapolis (IUPUI)</td>
</tr>
<tr>
<td>Salon G/H</td>
<td>The CSU-LSAMP Bridge to the Doctorate Program at Cal State LA: A Structured Approach to Student Development and Advancement to the PhD</td>
<td>Lisa Hammersley, California State University</td>
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<tr>
<td>Illinois Room</td>
<td>Upstate LSAMP Alliance Initiatives for Community College Students</td>
<td>Tamara Hamilton, Drake Harrison &amp; Tomicka Wagstaff, Syracuse University</td>
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15 Minute Oral Research Presentations

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<thead>
<tr>
<th>Location</th>
<th>Title</th>
<th>Presenter(s)</th>
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<tbody>
<tr>
<td>Indiana Room</td>
<td>RISE: Research Inspiring Student Excellence at a Primarily Undergraduate Institution</td>
<td>Andrea Porras-Alfaro, Western Illinois University</td>
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<tr>
<td>1:15– 1:30</td>
<td>Changing Perception: A Summer Research Program for High School Students to Increase Minority Enrollment and Improve STEM Skills</td>
<td>Kristy Wilson, Marian University</td>
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<tr>
<td>1:30– 1:45</td>
<td>NIU Research Pathways for Undergraduates</td>
<td>Julia Spears, Northern Illinois University</td>
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<td>1:45– 2:00</td>
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</table>
2:00– 2:15 p.m.  Break

General Breakout Sessions  2:15– 3:00

Salon I/J  Next Steps for the LSAMP Digital Library
Rebecca Pitkow and Carl Mitchell
Guardians of Honor

Woodfield Room  University of Massachusetts Boston, College of Science and Mathematics: Capitalizing on the LSAMP-Driven Innovation
Andrew Grosovsky
University of Massachusetts Boston

Salon G/H  Role and Support of Faculty Mentors in an Undergraduate Research Program
Rafael Bahamonde
Indiana University Purdue University Indianapolis

Illinois Room  From Sidewalk Chalk to Facebook: Strategies to Market Your Undergraduate Research Program
Julia Spears & Stephanie Zobac
Northern Illinois University

15 Minute Oral Research Presentations

Indiana Room
2:15– 2:30  STEM Agenda at Harris-Stowe State University
Dwyane Smith
Harris-Stowe State University

2:30– 2:45  An Overview of the STEM Outreach Programs at Lincoln University
Donna Stallings
Lincoln University

2:45– 3:00  Outreach in STEM Education at Bradley University: Research Immersion and Engagement Through Hands On Experiences
Sherri Morris
Bradley University

All abstracts and bios are available on the LSMCE conference website: http://www.lsmceconference.org
<table>
<thead>
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<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Presenter</th>
<th>Institution</th>
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<tr>
<td>3:00- 3:15 p.m.</td>
<td>Break</td>
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<tr>
<td>15 Minute Oral Presentations</td>
<td>3:15- 4:00 p.m.</td>
<td><strong>Invited Student Oral Presentation Awardees</strong></td>
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<tr>
<td>3:15 - 3:30</td>
<td>Salon I/J</td>
<td>The Effects of the Ubiquitous Industrial Toxin 4-nonylphenol on the Human Immunoproteasome System</td>
<td>Adil Afridi</td>
<td>SUNY College at Old Westbury</td>
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<tr>
<td>3:30 - 3:45</td>
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<td>Ionizing Radiation Affects Epigenetic Programming in Adolescent Mice</td>
<td>Darryl Watkins</td>
<td>Indiana University Purdue University Indianapolis</td>
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<td>3:45 - 4:00</td>
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<td>Investigation of the Influence of Environmental Factors on Bromeliad Invertebrate Biodiversity</td>
<td>Maya Navarro</td>
<td>DePaul University</td>
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<td>Woodfield Room</td>
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<td>3:15 - 3:30</td>
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<td>The Arkansas LSAMP Model for Best Practices on Retention Through The Pre-First Year Summer Institute</td>
<td>Anissa Evans Buckner</td>
<td>University of Arkansas at Pine Bluff</td>
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<td>3:30 - 3:45</td>
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<td>Improving Social and Academic Integration Among First and Second Year Students in the LSAMP Program at The Ohio State University</td>
<td>J. Tyler Cole</td>
<td>The Ohio State University</td>
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<td>3:45 - 4:00</td>
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<td>CSU-LSAMP: Achieving Success through Combining Collective Goals and Policies with Campus-Specific Programmatic Elements</td>
<td>Nicole Campos</td>
<td>California State University, Sacramento</td>
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<tr>
<td>Salon G/H</td>
<td>3:15 – 3:30</td>
<td>Institutional Collaboration for Successful Application Towards the LSAMP Bridge to the Doctorate</td>
<td>Diana Azurdia</td>
<td>University of California Los Angeles</td>
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<td></td>
<td>3:30 - 3:45</td>
<td>Partnering with SREB Doctoral Scholars Program and the Compact Institute</td>
<td>Robert Belle</td>
<td>Southern Regional Educational Board</td>
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<td></td>
<td>3:45 - 4:00</td>
<td>CSU-LSAMP International Research and Global Awareness Program</td>
<td>Christine Goode</td>
<td>California State University, Fullerton</td>
</tr>
<tr>
<td>Illinois Room</td>
<td>3:15 – 3:30</td>
<td>Fair Play: An Interactive Video Game to Reduce the Influence of Bias on Student Learning</td>
<td>Gail Coover</td>
<td>University of Wisconsin-Madison</td>
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<td>3:30 - 3:45</td>
<td>Applying the LSAMP Model for Recruitment, Mentoring, Retention, and Advancement in a Mathematics Program</td>
<td>Tuncay Aktosun</td>
<td>University of Texas at Arlington</td>
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<td></td>
<td>3:45 - 4:00</td>
<td>Teaching Innovations in Upper-Division Instructional Chemistry Laboratories at Regis University</td>
<td>Surendra Mahapatro</td>
<td>Regis University</td>
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<tr>
<td>Indiana Room</td>
<td>3:15 – 3:30</td>
<td>How Our Historically Black University (#HBCU) Expanded to Offer STEM Degrees</td>
<td>Tommie Turner</td>
<td>Harris-Stowe State University</td>
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<td></td>
<td>3:30 - 3:45</td>
<td>Connecting and Communication with LSMCE – Web-based Resources</td>
<td>Jon Eynon, Meridith Bruozas &amp; Robert Schuch</td>
<td>Louis Stokes Midwest Center of Excellence, Argonne National Laboratory</td>
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</table>
Downtown Shuttle Info
Saturday, October 25

*ATTENTION*
Participants should have previously reserved a seat on the shuttle.

Dinner is on your own.

Shuttle buses will drop off and pick up at:
Water Tower Place, 835 N Michigan Ave
Chicago, IL 60611

<table>
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<tr>
<th>Bus Schedule</th>
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<tr>
<td>5:00 p.m.</td>
<td>Depart Chicago Marriott Schaumburg</td>
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<tr>
<td>6:30 p.m. (ETA)</td>
<td>Arrive at Water Tower Place</td>
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<tr>
<td>10:00 p.m.</td>
<td>Depart Water Tower Place</td>
</tr>
<tr>
<td>11:00 p.m. (ETA)</td>
<td>Arrive at Chicago Marriott Schaumburg</td>
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</table>
Sunday Morning Session 8:15– 9:30 a.m.

8:15– 8:30 a.m.           Opening Announcements

Crystal Porter
Associate Director for Special Projects
Louis Stokes Midwest Center of Excellence

8:30– 9:00 a.m.         Student Research Award Presentation

LeRoy Jones, II
Co– Principal Investigator
Louis Stokes Midwest Center of Excellence

Keynote 9:00– 9:30 a.m.

Young STEM Scholars Point to LSAMP’s Many Faces: A Rich Pool of Diverse STEM Talent

A. James Hicks

Dr. A. James Hicks, Program Director, Louis Stokes Alliances for Minority Participation (LSAMP), National Science Foundation (NSF), Arlington, VA received his B.S. degree in biology from Tougaloo College, earned the Ph.D. in Botany at the University of Illinois-Urbana and received postdoctoral training, at the Missouri Botanical Garden, St. Louis. He acquired administrative training by attending the Institute for Educational Management for College and University Administrators, Harvard University, Cambridge, MA; the Executive Development Seminar for Senior Federal employees at the Western Management Development Center, Denver CO; the Extramural Associates Program at the National Institutes of Health in Bethesda, MD; the Lilly Foundation’s Liberal Arts Program for College Administrators in Colorado, Springs, CO; and the Christian A. Johnson Foundation’s Leadership Program in New York City.

Prior to becoming the LSAMP Program Director, Dr. Hicks served as Chairperson and Professor of Biology from 1977 to 1988, and later Dean of the College of Arts and Sciences from 1988 to 1997 at North Carolina A&T. Under his leadership the research capacity of the Department of Biology was enhanced by the acquisition of major research grants and equipment including two electron microscopes, along with renovations of the facilities to include more research space. As a scientist his research focus has been in the area of plant systematics and he has reported his work at various scientific seminars and in peer review journals. While serving as Dean, major renovations for Physics (Fort Research Building), Chemistry (Hines Hall), and Fine Arts (Crosby Theatre Complex, and Dudley) buildings were completed and plans for a $34 million dollar General Classroom Building were approved. The construction of the latter building was completed and occupied in the fall of 2003.

On the national level, he was an elected official on the Board of Trustees of the Lady Bird Johnson Wildflower Research member of the Task Force on the National Agenda for the Council of Colleges of Arts and Sciences (CCAS), headquarters at Ohio State University, Columbus Ohio, and a trustee of the Charles B. Arzeni Foundation for Tropical Research, headquarters in Anchorage, Alaska. Dr. Hicks has served on several panels of proposal evaluators for the National Academy of Sciences, Washington, D.C; the Directorate for Science and Engineering Education/NSF, Atlanta, GA; the Department of Education/Minority Institutions Science Improvement Program (MISIP), Washington, D.C; the NSF Minority Graduate Fellowship Program, and NSF’s Research Apprenticeship for Minority High School Students Program. In 1995, he was a member of the North Carolina delegation to Baden-Wurttemberg, Germany, which negotiated a Memorandum of Understanding to allow student and faculty exchanges between North Carolina and Germany.
YOUNG STEM SCHOLARS POINT TO LSAMP’S MANY FACES
A RICH POOL OF DIVERSE STEM TALENT

WHO WILL DO
SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS
IN THE FUTURE?

Louis Stokes Alliances for Minority Participation
A. James Pickett, Ph.D., and LSAMP Project Leaders
Morning Panel 9:30 – 10:45 a.m.

Voices of Success: LSAMP Alumni Panel

Moderator

Pamella P. Shaw, D.M.D., M.P.H.
Associate Dean for Diversity, Equity, and Inclusion
Indiana University School of Dentistry

Panelists

Thessicar Antoine, Taylor Miles,
O’Neil Shand, & Cacey Stevens

Bios available on pages 22-23.

10:45 – 11:00 a.m. Break

Student Professional Development Series 11:00 – noon

Rooms as Assigned  Student Internship Mock Interviews

Participants should have previously signed up for an interview.
In your registration packet you will find your interview room assignment.

Professional Networking Workshops 11:00 – noon

The following workshops are designed to connect currently funded members of Louis Stokes Alliances for Minority Participation (LSAMP) with potential grant writers or future program directors interested in creating a program at their university (or as part of an alliance) to broaden the participation of underrepresented minorities in STEM.

Workshop 1  How to Collaborate and Write a Successful URM STEM Program Proposal

Illinois Room

Barbara Fink & Jeffery Cole
OH LSAMP
The Ohio State University

Workshop 2  Strategies to Successfully Manage a URM STEM Program

Indiana Room

Jason Kirkey
OK LSAMP
Oklahoma State University

Workshop 3  How to Sustain and Advance STEM URM Programs

Midway Room

Antonio ("Tony") Garcia
WAESO LSAMP
Arizona State University

Sponsored by the National Science Foundation award 1202563
Closing Remarks

(Garden Marquis)

LeRoy Jones II & Kim Nguyen
Co-Principal Investigators
Louis Stokes Midwest Center of Excellence

Save the Date

2015 LSMCE CONFERENCE

October 23-25, 2015

Wyndham Indianapolis West
Indianapolis, Indiana

Visit the Website!
The conference website will be updated as information becomes available.
Dr. Shaw is currently the Associate Dean for Diversity, Equity, and Inclusion at Indiana University School of Dentistry. This important leadership role includes development of programs and activities to help increase the recruitment and retention of underrepresented minority students, faculty, and staff. She previously served as an Assistant Provost at Purdue University where she directed and managed two multi-campus alliances supported by the National Science Foundation (NSF) Broadening Participation initiative. The Louis Stokes Alliance for Minority Participation (LSAMP) Indiana and the Midwest Crossroads Alliance for Graduate Education and the Professoriate (AGEP) target underrepresented minority students in science, technology, engineering, and mathematics (STEM) disciplines. The programs work to increase student success at the baccalaureate and doctoral levels.

Dr. Shaw serves as a member of the administrative team of the Louis Stokes Midwest Center of Excellence (LSMCE) at Indiana University Purdue University Indianapolis (IUPUI). Her role will help transition students through their baccalaureate programs and prepare them for graduate education and careers in STEM.
Panelists

Thessicar Antoine

Dr. Thessicar Antoine received her PhD from the University of Illinois at Chicago in 2013 in Microbiology and Immunology. During her matriculation at the University of Illinois at Chicago she was awarded several prestigious research fellowships including the Louis Stokes Alliances for Minority Participation Bridge to the Doctorate Fellowship, The Abraham Lincoln Fellowship, and the INRO National Institute of Health Fellowship. Dr. Antoine was offered a post-doctoral research fellowship at Georgia State University, which is home to one of eight bio-safety level 4 laboratories in the nation. Under the mentorship of Dr. Julia Hilliard, Dr. Antoine conducts research and diagnostic procedures in a high-level bio-containment facility where she investigates the usage of a nanoparticle system for directed drug delivery against zoonotic infections. She has patterned her life after a Swahili term, “Sankofa” which means, “never moving forward without looking back” and truly believes that education and exposure to STEM are the best investments you can give to future generations.

Taylor Miles

Taylor is an Applications Analyst with Capgemini in Detroit, Michigan. She received her bachelors in Industrial & Operations Engineering from the University of Michigan, where she was an MSTEM and LSAMP scholar. At Michigan, she was a member of the National Society of Black Engineers. She worked closely with the chapter’s Pre College Initiatives such as ACT Prep Programming, Alternative Spring Break, and Community Service Outreach.

O’Neil Shand

Dr. O’Neil Shand completed his PhD in Microbiology and Immunology at the University of Illinois at Chicago in 2012. His graduate studies focused on the structure and function of Iron Regulatory Protein 1. During his studies he became interested in the clinical application of his research and began to work alongside clinical researchers with similar research interests. After completing graduate school O’Neil set sights on the pharmaceutical industry. His aptitude in basic medical science and exposure to clinical research landed him a position at the MMS Holdings, a pharmaceutical company. He now works one of the lead writers for the multiple sclerosis clinical trials and regulatory affairs team at Novartis pharmaceuticals. He advises current students to set long term goals and stick to them with laser precision.

Cacey Stevens

Cacey is a graduate student in the University of Chicago Department of Physics and works with Professor Sidney Nagel, a soft condensed matter experimentalist. Her research projects have focused on developing a splashing threshold of liquid drop impact, visualizing patterns in performance of Illinois public schools, and studying collective dynamics of repulsive particles. Cacey is a recipient of the GAANN Graduate Teaching Fellowship from the U.S. Department of Education, as well as the NSF Graduate Research Fellowship. She is also involved in outreach activities in the South Side Chicago community and served as a graduate student coordinator of the Physics REU at the University of Chicago. Cacey received her BS in Physics from Southern University and A&M College, where she was a LS-LAMP scholar, and her MS in Physics from the University of Chicago.
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Fermilab is America’s premier particle physics and accelerator laboratory, funded by the U.S. Department of Energy. Collaborating with thousands of scientists and engineers from around the world, our 1,750 employees perform pioneering research, operate world-leading particle accelerators and experiments, and develop technologies for science in support of U.S. industry.

Fermilab offers an inclusive and family-friendly work experience. We are seeking research associates, engineers and information technology professionals committed to lifelong learning, teamwork and of course, cutting edge research. When will you apply and join us?

www.fnal.gov
Breakout Session Abstracts

1:15-2:00 p.m.

Harold Bryant
L’Oreal USA
MAKING YOUR STUDENTS AND PROGRAM ATTRACTION TO INDUSTRY
We will review key factors that attract corporate talent recruitment teams to specific schools and programs. We will also discuss preparation for all industry/student interfaces including: campus visits, career fairs, internships and interviews.

Rafael Bahamonde & Vicki Bonds
Indiana University Purdue University Indianapolis
HOW TO FUND AN UGR PROGRAM: A CASE STUDY OF THE IUPUI DIVERSITY RESEARCH SCHOLARS PROGRAM
The IUPUI Diversity Scholars Research Program (DSRP) was funded in 1996 and has served nearly 200 diverse students, with an outstanding graduation rate of nearly 90%. The student-support program was created to recruit educationally underrepresented minority students to science, engineering and health professions. The long-term goal was to establish a flow of talented diverse students into these disciplines by engaging students in supervised undergraduate research experiences. Despite the program’s start of minimal funding, its proven success has resulted in increased internal funding from IUPUI and continues to serve as a prototype for the development for other internally and federally funded programs such as LSAMP, Ronald E. McNair Post-baccalaureate Program, Olaniyan Scholars, the Bridges to Baccalaureate and other programs within the IUPUI Center for Research and Learning, a division of the Office for Vice Chancellor of Research. DSRP currently funds 35 full-time students with a budget over $250K a year.

Lisa Hammersley, Margaret Jefferson, & Katrina Yamazaki
California State University, Sacramento
THE CSU-LSAMP BRIDGE TO THE DOCTORATE PROGRAM AT CAL STATE LA: A STRUCTURED APPROACH TO STUDENT DEVELOPMENT AND ADVANCEMENT TO PH.D.
The Bridge-to-the-Doctorate program at Cal State LA is designed for students who for various reasons may be hesitant or not sufficiently prepared to apply directly to a Ph.D. program. The program helps students develop the confidence and competencies needed for admission to, and success in, competitive Ph.D. programs. In addition to providing financial support, the project includes an integrated set of activities designed to support and advance BD students toward completion of doctoral studies. Activities include regular meetings to monitor progress; a workshop series focused on the tools needed for success in graduate school; writing support; professional seminars; cohort-building activities; connecting with doctoral programs through collaborations; and assistance with applications to Ph.D. programs and fellowships. One of the most effective activities involves a year-long assignment with components due each quarter including identification of Ph.D. programs; communication with potential research mentors; completion of application materials; and improving interview skills. Of the 12 Fellows in the most recently completed BD cohort, 11 received a Master’s degree within two years and 10 students have been accepted into Ph.D. programs with significant funding support. From student feedback it is clear that this success is a result of the highly structured nature of the program.

Tamara Hamilton, Drake Harrison & Tomicka Wagstaff
Syracuse University
ULSAMP ALLIANCE INITIATIVES FOR COMMUNITY COLLEGE STUDENTS
Established in 2007, the Upstate Louis Stokes Alliance for Minority Participation (ULSAMP) is dedicated to recruiting, retaining, and graduating an increasing number of underrepresented minority students in STEM fields and providing research experiences to foster graduate school enrollment. ULSAMP is a partnership between five research institutions and two community colleges in upstate New York. Through our alliance efforts, we have created a pipeline for students at our partner community colleges to make a seamless transfer to four-year studies at our institutions. At the community college, students have opportunities to participate in transfer fairs, summer bridge programs, and academic boot camps. During the summer and academic year, students participate in alliance-wide activities such as research experiences, conference participation, and campus visits. While participating in research experiences, community college students are coached through the entire process from developing their interests, identifying faculty, reviewing applications, and producing a research poster, paper and/or presentation. The campus visits enables students to immerse themselves in the entire culture of the campus including admissions and student life. All of these experiences better position community college students to make an easy and successful transition into the academic atmosphere of four-year institutions.
**Andrea Porras-Alfaro**  
Western Illinois University  
**RISE: RESEARCH INSPIRING STUDENT EXCELLENCE AT A PRIMARILY UNDERGRADUATE INSTITUTION**  
One of the major challenges primarily undergraduate institutions face is retention of undergraduate minority students. Western Illinois University (WIU) is located in rural Illinois, and a large percentage of our student body is first generation and minority students from the Chicago area. Due to multiple factors, minority retention represents a major challenge in the WIU STEM departments, as is at many other institutions. For example, in the Department of Biological Sciences, approximately 50% of a representative freshmen class is composed of minority students. However, retention drops dramatically by the senior year with only 3 to 15% of the respective student body represented by Hispanic and African American students. RISE is a pilot program within the WIU College of Arts and Sciences that provides students with unique research and academic experiences, with the goal of increasing retention of all participating students, including minorities. This program leverages resources already available at our institution and could serve as a model for peer undergraduate institutions. Our program is centered on student research activities, academic support, and professional development. WIU RISE leverages resources already available at our institution, thus we believe it could serve as a model for peer undergraduate institutions hoping to improve minority retention in STEM fields.

**Kristy Wilson**  
Marian University  
**CHANGING PERCEPTION: A SUMMER RESEARCH PROGRAM FOR HIGH SCHOOL STUDENTS TO INCREASE MINORITY ENROLLMENT AND IMPROVE STEM SKILLS**  
Marian University is a small Catholic University that is trying to increase minority enrollment and retention through improving word of mouth marketing. We hosted a summer program for high school students to perform scientific research and build science fair projects to increase interest and preparation of minorities in college STEM degrees. We assessed the students to see how they perceived the process of science, scientific knowledge, and perceptions of Marian University. We have found that by developing and executing a research project that the students understand the process of science better. Interactions with faculty members and undergraduate mentors changed perception of Marian University and have resulted in enrollment of summer program participants as a math major. In addition discussing the data from the summer program, an overview of other efforts to recruit and retain minority STEM students will be provided.

**Julia Spears**  
Northern Illinois University  
**NIU RESEARCH PATHWAYS FOR UNDERGRADUATES**  
This presentation will highlight the various opportunities undergraduate students have to engage in faculty-mentored research at Northern Illinois University (NIU). In the past five years, NIU has created five new programs (Research Rookies, Undergraduate Research Assistantships, Undergraduate Travel Scholarships, Undergraduate Research and Artistry Day, and Summer Research Opportunities Program) to ensure students at any stage in their academic career, whether freshman or senior, have access to a research experience. Special attention has been given to provide students with opportunities to work in a faculty-directed or student-directed research project depending on their knowledge, skills and cognitive abilities. We will also outline the role of peer mentors in supporting undergraduate researchers.

**Rebecca Pitkow & Carl Mitchell**  
Guardians of Honor  
**NEXT STEPS FOR THE LSAMP DIGITAL LIBRARY**  
Founded over 20 years ago, the LSAMP Program and its grantees possess an enormous amount of historical data and best practices that are currently not widely available. The LSAMP Digital Library will make this rich intellectual capital available, contributing to the sustainability of existing Alliances and supporting the expansion and integration of best practices at LSAMP and non-LSAMP institutions. Please join us for an interactive discussion session regarding the LSAMP Digital Library development cycle and LSAMP grantee, stakeholder, and partner needs.

**Andrew Grosovsky & Marshall Milner**  
University of Massachusetts, Boston  
**UMASS BOSTON, COLLEGE OF SCIENCE AND MATHEMATICS: CAPITALIZING ON THE LSAMP-DRIVEN INNOVATION**  
The College of Science and Mathematics (CSM) at UMass Boston is a minority-majority college with large numbers of first generation and low-income students. We have experienced a 400% increase in freshman enrollments during the past six years. To increase the diversity as well as the number of STEM graduates, we revamped advising, academic support, and orientation strategies, and incorporated a major-centered, co-enrollment cohort approach, Freshman...
Success Communities (FSC), as the centerpiece of our overall strategy. The FSC program fully reflects the rich diversity of the college. FSC retention, persistence, and graduation rate indicators are tracking at least 10 points higher than national metrics for STEM students. Thus our program is on track to greatly increase the number of under-represented minority students graduating with STEM degrees. CSM’s Student Success strategy includes innovative and vigorous enrichment and research opportunities. These enhance and leverage the momentum and resources generated by UM-LSAMP. We will describe how CSM has integrated UM-LSAMP resources and practices into a broader college infrastructure, and as a result institutionalize various innovations that were triggered by UM-LSAMP.

**Rafael Bahamonde**  
Indiana University Purdue University Indianapolis  
**ROLE AND SUPPORT OF FACULTY MENTORS IN AN UNDERGRADUATE RESEARCH PROGRAM**  
Mentoring undergraduate students is often different from mentoring graduate students. It is difficult to find good mentors that want to get involved in undergraduate research. In this session we will discuss what makes a good undergraduate research mentor and what support strategies are used to engage faculty mentors.

**Julia Spears & Stephanie Zobac**  
Northern Illinois University  
**FROM SIDEWALK CHALK TO FACEBOOK: STRATEGIES TO MARKET YOUR UNDERGRADUATE RESEARCH PROGRAM**  
This presentation will offer a variety of marketing ideas to ensure students, faculty and staff are informed about undergraduate research programs on your campus. This session will primarily focus on getting the word out to students so they apply for programs, but general outreach methods will also be discussed. We will provide concrete examples through print, web, and other mediums. In addition, we will discuss how to integrate undergraduate research content into the marketing messages of other campus units to extend your reach and broaden pathways. From social media to integrating your message into other offices marketing materials, undergraduate research program administrators will learn about what has worked at NIU, and will leave this session with ideas on how to create a marketing plan for your own campus.

**Dwyane Smith**  
Harris-Stowe State University (HSSU)  
**STEM AGENDA AT HSSU**  
HSSU is an urban HBCU located in St. Louis. It has an ambitious agenda to promote STEM among first generation students. It has been successful over the years in contributing to degree completion in the St. Louis region and in the state of Missouri.

**Donna Stallings**  
Lincoln University  
**AN OVERVIEW OF THE STEM OUTREACH PROGRAMS AT LINCOLN UNIVERSITY**  
This presentation outlines the efforts taken by Lincoln University to increase its enrollment of minority students in STEM disciplines and to enrich their STEM experiences. The annual ‘Math Day for Girls’ event, the NSF grant AMASS (A Model for Achieving Success in Stem) activities, and the activities sponsored by the MSIPP (Minority Serving Institution Partnership Program) are the major driving forces in achieving these efforts.

**Sherri Morris**  
Bradley University  
**OUTREACH IN STEM EDUCATION AT BRADLEY UNIVERSITY: RESEARCH IMMERSION AND ENGAGEMENT THROUGH HANDS-ON EXPERIENCES**  
The Center for STEM Education focuses on engaging students of all ages in hands-on inquiry projects. Our programs focus on in-classroom activities at local schools. Our summer programs for High School students focus specifically on research immersion designed to engage students that are traditionally under-represented in the sciences. The programs are scaffolded in such a way that undergraduate researchers serve as near-peer mentors. The students gain confidence within the research lab and develop a sense of the nature of science from first hand experiences.
Louis Stokes Midwest Center of Excellence congratulates the 2014 oral presentation award winners and extends our gratitude to Fermilab for sponsoring the LSMCE 2014 Student Awards.

Awardees will present on Saturday, 3:15-4:00 p.m., in Salon I/J. Come show your support!

Adil Afridi
SUNY College at Old Westbury
The Effects of the Ubiquitous Industrial Toxin 4-nonylphenol on the Human Immunoproteasome System

With the arrival of the industrial revolution and with the continuous advancement of technology, toxic chemicals have become ubiquitous in today’s society. Scientists have found an alarming presence of 4-nonylphenol (4-np) in our environment and in the products of our homes. 4-nonylphenol is banned by the European Union due to its toxicity but still legally used in the U.S. It is used in the production of surfactants to make plastics, rubbers, cleaning products, cosmetics and other products humans are constantly exposed to. Scientific research has also detected 4-np in our soil, air, major rivers and lakes, bottled water, and in the animals we eat, including fish. Once in the body, 4-nonylphenol functions as a xenoestrogen and binds to estrogen receptors on lymphocytes to evoke an immune response. Previous research has found that embryos exposed to 4-np have developed sexual deformations, birth defects, learning disabilities and neurodegenerative diseases. Lakes with high levels of 4-np has shown increased incidence of hermaphroditism amongst its salmon population. In this project, experimental trials were designed to determine the acute and chronic effects of 4-np on key human immunoproteasome genes and its link to autoimmune diseases. In time-dose dependent trials, U-937 human leukemia cells were treated with 1 nM and 5 nM concentrations of 4-nonylphenol. These samples were incubated for intervals of 24-hours, 48-hours, and 4-days to determine its effect on LMP7, IL-10, and GSK-3 genes. The selected genes play a critical role in the inflammatory response, including immunocyte signaling, antigen presentation, B-cell proliferation, T-cell activation, and proteasomal protein degradation. Upon running DNA samples on 1% SDS-PAGE, DNA analysis of gene expression conveyed that in the 24-hour exposure, LMP7 and IL-10 were down regulated in both the 1 nM and 5 nM treatments. In the 48-hour treatment, LMP7 expression began to rise in the 5 nM treatment. IL-10 and GSK-3 were also upregulated in the 48-hour treatment and continued to rise in the 4 day samples. These results indicate that relatively long exposure to 4-nonylphenol does indeed alter the expression levels of key immunoproteasome genes. Exposure to 4-np upregulated all three genes tested, higher in the 5nm sample for each time interval. This industrial chemical may hyper activate the human immune function and propagate consequent neurodegenerative diseases, such as Alzheimer’s under high-dose and long-term exposure. However, these preliminary results have to be repeated for statistical accuracy.
Maya Navarro  
*DePaul University*  
**Investigation of the Influence of Environmental Factors on Bromeliad Invertebrate Biodiversity**

Bromeliaceae is a family of Neotropical plants that retain water between leaves of a rosette arrangement. Each water-retaining tank is referred to as a phytotelma. This particular system is important to consider in the understanding of biodiversity because it creates an ecosystem of its own, providing a habitat for many invertebrates and larvae. In this study, the relationship between environmental factors such as water quality and the biodiversity of invertebrates in epiphytic bromeliads was examined in two different settings. Sample sizes of ten bromeliads were taken from the primary and secondary forests of the Las Cruces Biological Station in Coto Brus County, Costa Rica and compared. Prior to extraction from the trees, temperatures of the water in the inner phytotelma of the bromeliads were recorded. Parameters including pH and phosphate levels in each bromeliad were then measured using approximately 15 mL of bromeliad water, the Testratest Laborett water kit, and the Hanna Instruments phosphate kit. Trends approaching significance were found between the number of species within the bromeliads and maximum tank volume ($p = 0.06608$) as well as the total number of invertebrates within each bromeliad ($p = 0.06903$). The number of species was however correlated to bromeliad distance from the ground ($p = 0.03215$). The number of invertebrate species in bromeliads of the primary and secondary forest was not correlated with the water temperature ($p = 0.1420$), pH ($p = 0.2826$), or phosphate level ($p = 0.6954$), however, these parameters should still be considered in the analysis of invertebrate biodiversity within bromeliads.

Darryl Watkins  
*Indiana University-Purdue University Indianapolis*  
**Ionizing Radiation Affects Epigenetic Programming in Adolescent Mice**

Humans are exposed to low and mild doses of radiation frequently, ranging from the natural environment to medical procedures like x-ray and CT scans. Ionizing radiation of various doses has been known to potentially cause not only cellular but also genomic changes. Here, we demonstrated that epigenetics is also altered by the radiation. Epigenetics is a chemical coding above the gene, which plays critical roles in brain development, cognitive aberrations and other neurological impairments. How radiation, as an external environmental factor, causes epigenetic change is not understood. DNA methylation, key in epigenetics, including 5-methylcytosine (5M) and 5-hydroxymethylcytosine (5-hmC) have been shown to either suppress or activate gene transcription. To aid in elucidating the role in which radiation affects epigenetic outcomes, we examined the effects of radiation on both epigenetic and phenotypic and transcriptional markers within the hippocampus and cortex. In this study we treated C57BL/6 mice, postnatal day (P) 21 with various doses (2Gy- 4.5Gy) of radiation coupled with varying frequencies (0.5 Gy x 4, 1.5 Gy x 3, or 4.5Gy x 1) during a four week period via x-ray. We used immunohistochemistry staining with cell proliferation, transcription and epigenetic markers. We found loss of 5M and 5hmC as well as a loss of a transcriptional activation marker within regions of the hippocampus and cortex. Furthermore, decreased cell proliferation in the adult neurogenesis in the hippocampus was found. Exposure to ionizing radiation altered the normal epigenetic profile of the mice. Understanding the mechanism by which ionizing radiation affects epigenetic programming will provide insight on how to develop protection against the harmful risk associated with radiation exposure.
The Arkansas Louis Stokes Alliance for Minority Participation (ARK-LSAMP) is a collaborative program among eight institutions including public and private in the state of Arkansas. The colleges and universities share a common vision to help increase the number of well prepared underrepresented minorities (URM) STEM graduates. Formed in 2008, the Alliance by 2011 had increased STEM URM enrollment from 1313 to 2599 collectively. By 2011-2012, STEM graduates of the Alliance have shown a 159% increase from 162 to 420. URM STEM graduate school enrollment increased from 24 to 47, a 96% increase.

ARK-LSAMP builds on the existing STEM networks that are found within the Alliance but brings a new synergistic approach as collaborative shared experience and knowledge in STEM research and education. These shared experiences draw from best practices to plan a focused and shared educational and research program to help increase the number of well qualified underrepresented minority STEM graduates of member institutions. The activities of the alliance address recruitment, retention and graduation that begin with the pre-first year summer institute.

J. Tyler Cole
The Ohio State University

IMPROVING SOCIAL AND ACADEMIC INTEGRATION AMONG FIRST AND SECOND YEAR STUDENTS IN THE LSAMP PROGRAM AT THE OHIO STATE UNIVERSITY

Peer mentoring has a strong connection to persistence and retention of at-risk students, particularly in the earlier years of a student's academic journey. In this round table discussion participants will have the opportunity to review the program model and training offered for peer mentoring at The Ohio State University LSAMP Scholars Program. Participants will gain a more concrete understanding on the rationale for peer mentoring; learn about the best practices for developing a training program for peer mentoring; and identify a network of colleagues to assist in the growth and development of effective peer mentoring and training. Participants will have the opportunity to ask questions about the program and training offered at Ohio State, and be able to survey the audience for guidance on how to tailor the program to fit their institution's and students' needs. Participants will have the opportunity to share their experiences and resources with peer mentoring, both with URM STEM and otherwise. Therefore, participants should plan to bring materials they have about their program and look forward to sharing for the purpose of collective learning.

Diana Azurdia
University of California Los Angeles

INSTITUTIONAL COLLABORATION FOR SUCCESSFUL APPLICATION TOWARDS THE LSAMP BRIDGE TO THE DOCTORATE

To date, the University of California Louis Stokes Alliance for Minority Participation Bridge to the Doctorate (BD) activity has supported 93 underrepresented minority graduate students in STEM disciplines. UCLA will host Cohort IX of the UC BD that will support 12 URM STEM Ph.D. students from LSAMP campuses across the nation. A key component for UCLA’s successful application towards BD was paving institutional collaborations and utilizing infrastructure and sup-

Nicole Campos
California State University

CSU-LSAMP: ACHIEVING SUCCESS THROUGH COMBINING COLLECTIVE GOALS AND POLICIES WITH CAMPUS-SPECIFIC PROGRAMMATIC ELEMENTS

CSU-LSAMP consists of individual programs on all 23 campuses of the California State University, each of which maintains a fair degree of autonomy in deciding how their programs should be structured to best serve their students. CSU-LSAMP has contributed to almost tripling the number of STEM BA/BS degrees awarded annually by the CSU to students from underrepresented groups; increased persistence and graduation rates of CSU-LSAMP URM participants; and more than doubling the number of CSU-LSAMP students enrolling in graduate programs.

CSU-LSAMP has adopted an approach that provides campus flexibility in determining the types of activities they offer, but which also ensures overall program coherence and accountability. We achieve this through common sets of alliance-wide goals, policies and procedures, and required program components. Campuses must demonstrate that they are providing one or more activities that support each of the Alliance’s goals, which are to enhance the academic and professional preparation of CSU-LSAMP participants; improve persistence and graduation rates for CSU-LSAMP participants; increase aggregate production of STEM degrees awarded by the CSU to URM students; and increase the number of CSU-LSAMP students who advance to STEM graduate study.

Sponsored by the National Science Foundation award 1202563
**Robert (Bob) Belle, Jr.**
Southern Regional Education Board

**PARTNERING WITH SREB DOCTORAL SCHOLARS PROGRAM AND THE COMPACT INSTITUTE**

The Doctoral Scholars Program provides multiple levels of support including financial, academic/research funding, professional development finds, career counseling, job postings, scholar advocacy, regular contact, mentoring, online scholar directory, recruiting and invitation to the annual Institute on Teaching and Mentoring. The annual Institute is the largest gathering of minority Ph.D. scholars who have an interest in pursuing a career as faculty in postsecondary institutions. Attendees meet annually to share experiences, insights, and survival tips as well as build professional and personal relationships. Scholars and faculty mentors receive the most recent information on college teaching, mentoring, and research; grant writing from nationally recognized experts and professionals.

**Christine Goode**
California State University, Fullerton

**CSU-LSAMP INTERNATIONAL RESEARCH AND GLOBAL AWARENESS PROGRAM**

International activities and involvement in study abroad are now accepted high-impact educational practices that foster student learning and prepare students for opportunities and careers beyond this nation's borders. Recent studies have shown that such experiential learning leads to increased retention and graduation rates particularly for students in our target population. However data shows that participation by minority groups in study abroad is significantly lower than for Caucasians.

CSU-LSAMP has developed an alternative to the traditional study abroad program that combines involvement in research with an international experience. In 2009 a pilot program was offered in Innsbruck, Austria, which was designed to offer a mix of social and cultural activities with scientific research and seminars. In 2010 a second program was offered in Innsbruck that expanded the research focus and intensity. The success of the Innsbruck programs led to a commitment by CSU-LSAMP to provide support for international research experiences. Building on well-established connections with Chiang Mai University in Northern Thailand, CSU Fullerton took the lead to establish the CSU-LSAMP International Research and Global Awareness program which presents a unique opportunity to enhance students’ abilities to work collaboratively with persons of different backgrounds and language, and engage in applied research.

**FAIR PLAY: AN INTERACTIVE VIDEO GAME TO REDUCE THE INFLUENCE OF BIAS ON STUDENT LEARNING**

The Wisconsin Louis Stokes Alliance for Minority Participation (WiscAMP) is implementing an alliance-wide faculty...
This presentation describes Fair Play, a video game developed to coach faculty and staff in implementing strategies to recognize and remove their implicit biases. Fair Play was created with National Institutes of Health (NIH) funds from a Pathfinder grant awarded to Dr. Molly Carnes (WiscAMP Co-PI). In Fair Play, the player takes the role of an African American student who is just beginning his doctoral studies in biology. The game takes the player through encounters with faculty, staff and students that involve a number of bias incidents. The game is experienced in a structured training situation where reactions to the game can be discussed and strategies for decreasing implicit bias or ameliorating its impact can be explored. The workshop applies a train-the-trainer model. WiscAMP will be implementing Fair Play-based workshops at its upcoming annual meeting (November 6) and continue the training through opportunities throughout the alliance in expectation of implementing a train-the-trainer model. Evaluation strategies will be discussed.

Tuncay Aktosun
University of Texas at Arlington
APPLYING THE LSAMP MODEL FOR RECRUITMENT, MENTORING, AND ADVANCEMENT IN A MATHEMATICS PROGRAM
The speaker served as the LSAMP Campus Director during 2009-2014 at the University of Texas at Arlington, which participates in the University of Texas System LSAMP Alliance. He was involved in running the LSAMP undergraduate summer research programs during 2009-2014, the LSAMP Bridge-to-Doctorate Program during 2010-2012, and the University of Texas System Annual LSAMP Conference in 2011 on the campus of the University of Texas at Arlington. The efforts related to the LSAMP program have similarly been applied both at the undergraduate and graduate levels in the Department of Mathematics at the University of Texas at Arlington, where the speaker has been a faculty member since 2005. Such efforts will be presented, their effects on the diversification in the undergraduate and graduate mathematics programs will be described, and the challenges related to recruitment, mentoring, retention, and advancements will be discussed. Such efforts resulted in awarding the Department of Mathematics at the University of Texas at Arlington the 2013 Exemplary Program Award in a Mathematics Department by the American Mathematical Society. However, the dynamic changes in the American higher education system requires constant, continued, and new efforts to sustain the success and to make further improvements. Such challenges and efforts will also be discussed.

Surendra Mahapatro
Regis University
TEACHING INNOVATIONS IN UPPER-DIVISION INSTRUCTIONAL CHEMISTRY LABORATORIES
The problem of failing and withdrawing rates in STEM required courses is a major concern at small liberal colleges and universities. Oftentimes, upper division chemistry / biochemistry laboratories are taught with no apparent connection and relevance. We will present our efforts to integrate upper-division laboratories at Regis University. Our choice of cytochrome c oxidase stemmed from the following reasons: (1) electron transport chain is integral to aerobic life (mitochondrial respiration) and (2) current research has shown a link between neurodegenerative diseases, such as Alzheimer’s and Parkinson’s and a malfunction in the mitochondria, which includes the cytochrome c oxidase. The one-semester biochemistry laboratory involved the isolation, purification and characterization of the membrane-bound enzyme: cytochrome c oxidase. In the synthesis lab, students revisited the synthesis of vanadyl bis-acetylacetonoate complex. The complex was characterized by UV-Vis. spec-
Our efforts have led to both retention and advancement of students. As a result, many URM students have successfully completed graduate studies in chemistry/biochemistry at major universities.

Tommie Turner
Harris-Stowe State University
HARRIS-STOWE STATE UNIVERSITY:
HOW OUR HISTORICALLY BLACK COLLEGE AND UNIVERSITY TRANSFORMED TO OFFER STEM DEGREES
Harris-Stowe State University (HSSU), the only Historically Black College and University (HBCU) in St. Louis, Mo., contributes to the national dialogue to produce underrepresented STEM graduates. In the last six years, HSSU has utilized National Science Foundation (NSF) funding to implement STEM initiatives that have transformed the campus. The university has expanded the degree programs to include biology and mathematics, established undergraduate research opportunities for students and pre-college STEM preparatory experiences for incoming freshmen, and established diverse STEM partnerships in the metropolitan region.

Jon Eynon, Meridith Bruozas, & Robert Schuch
Louis Stokes Midwest Center of Excellence & Argonne National Laboratory
CONNECTING AND COMMUNICATION WITH LSMCE – WEB-BASED RESOURCES
One goal of the Louis Stokes Midwest Center of Excellence is to provide a virtual place for LSAMP and LSMCE partner schools a place to share best practices, network with others and curate STEM related resources. LSMCE recently launched a new website for this purpose. In this session, we will provide a high level overview of the website features for both the LSAMP community and LSMCE partner schools. We will also highlight this year’s LSMCE webinar series and Argonne National Laboratory virtual resources and opportunities.
Things to Know

Conference Location:
Chicago Marriott Schaumburg
50 N Martingdale Road
Schaumburg Illinois 60173
847-240-0100

Conference Room Locations
Conference rooms are located on the main lobby level to the left of the main entrance. Attendees can also enter via the entrance that leads to the ballroom area which is located on the North side of the building.

Restrooms
Guest restrooms are located on the main lobby level and addition restrooms are located in the pool area on the lower level of the hotel.

Lost & Found
Lost & found items would be taken to the front desk from banquet staff if left in a meeting room.

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$9.95 for basic access
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The conference program is accessible on the LSMCE conference program webpage.
[http://lsmceconference.org/program/2014](http://lsmceconference.org/program/2014)

**Conference Reference:**
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advocating for increases of minority success in STEM education

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