BOARD # 392: LSAMP: A roadmap for institution collaboration during Louis Stokes Alliances for Minority Partnerships (LSAMP) program development

Dr. Ashleigh Wright, University of Illinois Urbana-Champaign

Ashleigh R. Wright, PhD is the Associate Director of the Institute for Inclusion, Diversity, Equity, and Access and Assistant Teaching Professor in the Department of Materials Science and Engineering at the Grainger College of Engineering. She is responsible for collaborating with college and departmental leaders and stakeholders to identify needs and priorities, developing and implementing evidence-based strategies, and measuring progress and effectiveness quantitatively against key metrics that promote diversity, equity, inclusion, and access to the undergraduate and graduate student communities. She also conducts research that analyzes trends, driving factors, barriers, and best practices to educate others and support organizational improvement. Prior to joining the University, Ashleigh managed and directed many training and pathway programs that support students from underrepresented backgrounds in STEM, and facilitated workshops that enhance the academic, personal, and professional development of students at North Carolina State University and Louisiana State University. She is a member of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) and Delta Sigma Theta Sorority, Inc. She holds degrees in chemistry from Wofford College (B.S.), North Carolina Agricultural and Technical State University (M.S.), and Louisiana State University (Ph.D.).

Prof. Holly M Golecki, University of Illinois at Urbana - Champaign

Dr. Holly Golecki (she/her) is a Teaching Assistant Professor in Bioengineering at the University of Illinois Urbana-Champaign and an Associate in the John A Paulson School of Engineering and Applied Sciences at Harvard University. She holds an appointment at the Carle-Illinois College of Medicine in the Department of Biomedical and Translational Sciences. She is also a core faculty member at the Institute for Inclusion, Diversity, Equity, and Access in the College of Engineering. Holly studies biomaterials and soft robotics and their applications in the university classroom, in undergraduate research and in engaging K12 students in STEM. Holly received her BS/MS in Materials Science and Engineering from Drexel University and her PhD in Engineering Sciences from Harvard University.

Dr. Jacqueline Henderson, Bradley University

Dr. Jacqueline Henderson is an Associate Professor of Mechanical Engineering at Bradley University where she teaches courses in mechanical and biomedical engineering courses. Her research interests connect students to the medical field through research of musicians, musculoskeletal biomechanics and human resting muscle tone through engineering application. Additionally, the development of a course integrating human centered design principles and biomedical engineering has provided an opportunity for students to interact with professionals, organizations or users with cognitive or physical limitations who are looking for product designs. As a faculty, she remembers the mentorship and support as a participant in the MI-LSAMP Alliance and Bridge to Doctorate activities while a graduate student at Wayne State University. Dr. Henderson has served as the Faculty Champion in the Louis Stokes Midwest Regional Center of Excellence (LSMRCE). She has encouraged students that she has mentored in research along with other underrepresented students who participated in REUs or are conducting research with her colleagues to present their work at LSMRCE conferences. She is currently an NSF LSAMP Institutional Coordinator and looks to provide positive opportunities for students which will impact their educational and professional goals. Dr. Henderson also serves as the Director of the Bradley University/Detroit Area Pre-College Engineering (DAPCEP) STEM Program which offers STEM inspired and college preparation courses to local 4th-12th grade students and the Director of the Bradley University Aviation Careers Education (ACE) Academy for 9th – 12th grade students.

Rebekka Darner, Illinois State University

Rebekka Darner, PhD, is the Director of the Center for Mathematics, Science, and Technology (CeMaST) at Illinois State University (ISU). As the leader of CeMaST, her work involves immobilizing broader

impacts of ISU scholars' research to extend the benefits of scholarship to the public, enabling evidence-based STEM teaching methods across the K-16 continuum and in informal learning spaces, and supporting broad representation of many perspectives within STEM disciplines. Her research focuses on fostering non-STEM majors' motivation toward informed decision-making, iteratively developing instructional methods that foster critical evaluation of evidence, and fostering STEM majors' motivation toward scientific civic action. Rebekka advises graduate students in these areas of inquiry through ISU's School of Biological Sciences, where she holds tenure. Beyond her professional career, Rebekka enjoys practicing and teaching yoga, teaching childbirth education, gardening, hiking, and traveling with her family to seemingly random locales to support her marathon-running partner.

Dr. Nafisa A Ibrahim, The University of Illinois Urbana-Champaign

Nafisa Ibrahim, PhD, is a Career Exploration Fellow with the Graduate College, where she supports the launch and coordination of the Southern and Central Illinois Louis Stokes Alliance for Minority Participation (SCI-LSAMP) program at the Institute for Inclusion, Diversity, Equity, and Access at the University of Illinois Urbana-Champaign. In this role, she helps students navigate their research journeys, connecting them with faculty mentors, and creating spaces for meaningful professional development. Nafisa earned her Ph.D. in Chemistry from the University of Illinois Urbana-Champaign in March 2025, where her dissertation focused on designing, synthesizing, and characterizing redox-active polymers with tunable electrochemical properties for use in sustainable, bio-integrated redox flow batteries. As a National Science Foundation Graduate Research Fellow and Graduate College Fellow, she advanced materials chemistry research to improve energy storage technologies for more efficient and adaptable power systems. She is also completing a Master of Education in Curriculum and Instruction, focusing on science education and policy. Originally from Minnesota and a first-generation college graduate, Nafisa has a strong commitment to mentorship and community-building. She has been active in organizations like National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) and the Alfred P. Sloan Foundation University Center for Exemplary Mentoring (UCEM) community and has found purpose in helping students access the same kind of support that shaped her own path.

Prof. Brenda Anne Wilson, University of Illinois at Urbana - Champaign

Brenda Anne Wilson, PhD, is currently Professor of Microbiology and Associate Director of Undergraduate Education in the School of Molecular & Cellular Biology, College of Liberal Arts and Sciences; Inaugural Professor of Biomedical and Translational Sciences in the Carle Illinois College of Medicine; Professor of Pathobiology in the College of Veterinary Medicine; and Senior Faculty Fellow for National Labs in the Office of the Vice Chancellor for Research and Innovation at the University of Illinois at Urbana-Champaign. She is a Fellow of the American Academy of Microbiology (AAM) and a member of the AAM Selection Committee, and an American Society for Microbiology (ASM) Distinguished Lecturer. She earned her BA degree in Biochemistry and German from Barnard College. She was a DAAD graduate exchange Fellow in Biochemistry at Ludwig-Maximilians Universität München, Germany. As an AAUW doctoral fellow studying antibiotic biosynthesis, she earned her MA-PhD degrees in Chemistry from Johns Hopkins University. She then undertook her NIH postdoctoral fellowship training in Microbiology at Harvard Medical School, where she began her studies on bacterial protein toxins. Her first tenured faculty appointment was in Biochemistry at Wright State University School of Medicine, Dayton, Ohio. Her current research work focuses on the host-microbe interface, bacterial pathogenesis, microbiomes and their roles in health and disease. She served for 10 years on the Executive Committee of the Great Lakes Regional Center for Excellence in Biodefense and Emerging Infectious Diseases. As Co-Director of the UIUC Center for Zoonoses Research, she fosters cross-campus interactions aimed at promoting the One-Health Initiative and training DVM students in research through summer training experiences. For 20 years she has served as Biosecurity Leader of the Executive Committee of the UIUC Program in Arms Control, Domestic and International Security (ACDIS), engaging in numerous efforts and events promoting scientific literacy and bridging the gap between scientists and educators, policy makers, government officials, and the public. As Director for Undergraduate Education in the School of MCB at UIUC, she oversees the

MCB undergraduate and MS graduate programs that deliver education annually to over 14,000 students, including 2,000 MCB majors, 300 Biochemistry majors, 150 Neuroscience majors, and 15 MS in MCB students. In this role, she is a strong advocate for promoting a diverse and welcoming academic community. As the Senior Faculty Fellow in the Office of the Vice-Chancellor for Research and Innovation at UIUC, she fosters research collaborations in STEM disciplines including building workforce pipelines between scientists at UIUC and the National Labs.

Dr. Loralyn Cozy, Illinois Wesleyan University

Dr. Loralyn Cozy received her BS in Biology from Western Washington University and her PhD in Microbiology from Indiana University - Bloomington. After completing an NSF Postdoctoral Research Fellowship in Biology at the University of Hawaii – Manoa, she joined the faculty at Illinois Wesleyan University where she is now an Associate Professor of Biology. She teaches and advises undergraduates at all levels and maintains a research lab focused on the discovery of secondary metabolites from environmental bacteria and fungi. Currently she is also the PI for a Robert Noyce Teacher Scholarship Program award at IWU.

Brian J. Bellott, Western Illinois University
Dr. Mahua Biswas, Illinois State University

Dr. Mahua Biswas is an Associate Professor of Physics at Illinois State University. She earned her Ph.D. in Physics from Dublin City University, Ireland, and subsequently conducted postdoctoral research at the New Jersey Institute of Technology, New Jersey, USA and Argonne National Laboratory, IL, USA. Dr. Biswas's research focuses on nanopatterning inorganic materials for microelectronic and optoelectronic applications. Her work emphasizes spectroscopic characterization techniques to gain mechanistic insights into material growth and properties. She has been the recipient of multiple grants from the National Science Foundation, including the LSAMP award. A strong advocate for STEM education, Dr. Biswas is deeply committed to mentoring and inspiring students in scientific research and academic pursuits.

Prof. Alejandro Lleras, University of Illinois Urbana-Champaign

Alejandro Lleras is the Associate Dean for Inclusive Excellence in the College of Liberal Arts & Sciences at the University of Illinois, Urbana-Champaign. He is a Professor in the Department of Psychology and the Beckman Institute for Advanced Science and Technology. He is a standing member of the US National Committee for Psychological Science, and a US delegate to the International Union for Psychological Science. He is a founder and governing board member of the Spark Society, a non-profit to increase the participation and visibility of historically-excluded minorities in the cognitive sciences. He received an Early Career Award from the National Science Foundation and a Mid-Career Award from the Psychonomic Society. He is a Fellow in the Association for Psychological Science and in the Psychonomic Society. He received his Ph.D. in psychology from the Pennsylvania State University and was an NSF-funded minority postdoctoral fellow at the University of British Columbia.

Narendra Jaggi
Michelle Edgcomb Friday, Bradley University
Terrance Bishop, Southern Illinois University Carbondale

Terrance Bishop MS is the Director of Success in Engineering Through Excellence and Diversity (SEED) at Southern Illinois University Carbondale. He also serves as a Diversity Faculty Fellow, assisting ADEI with Math Supplemental instruction courses. As SEED director he coordinates the efforts of the Minority Engineering Program, as well as the Engineering Success Center. His efforts focus on enhancing belonging and success rates of all STEM students at SIU. Terrance has Bachelors degrees in biomedical engineering and chemical engineering, and a Master's degree in Bioengineering. He recharges by enjoying the nature in Southern Illinois with his dog Bronte, playing video games, reading and cuddling with his cats Cappuccino and Huxley

Dr. Catherine Lipovsky, Bradley University

Catherine (Kate) Lipovsky, PhD, is an Assistant Professor of Biology at Bradley University. Kate received her BS in Biology from Bradley University and her PhD in Developmental, Regenerative, and Stem Cell Biology from Washington University in St. Louis (WUSTL). During her time as a graduate student, Kate served two years as a Teaching Assistant for undergraduate students from historically underrepresented groups interested in scientific careers in the NIGMS-funded Maximizing Access to Research Careers (MARC) Undergraduate Student Training in Academic Research (U-STAR) Program at WUSTL. After earning her PhD, Kate received an NIH K12 Institutional Research and Academic Career Development Award (IRACDA) and worked as an IRACDA Postdoctoral Scholar at the University of California, San Diego. The IRACDA program combines research-driven postdoctoral research training with mentored teaching experiences, preparing scholars for academic careers while also promoting diversity in the biomedical sciences through partnerships with institutions serving underrepresented students. In her current role, Kate leads an undergraduate-driven research program that uses zebrafish as a model organism to identify potential teratogens and investigate their effects on cardiac development and function, with the broader goal of advancing our understanding of how chemical exposures impact early developmental stages.

LSAMP: A Roadmap of Institutional Collaboration During the Development of Louis Stokes Alliances for Minority Participation (LSAMP) Program

Abstract

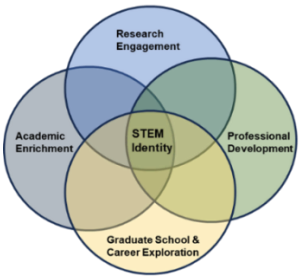
The Louis Stokes Alliances for Minority Partnerships (LSAMP) program funded through the National Science Foundation (NSF) brings together partner institutions of higher education to promote student success. Teams of regional partners build programs to support their students in academic, research, and career achievement. Developing programs that meet the needs of a cooperative alliance composed of institutions of varying sizes and types requires logistical planning and flexibility. This paper presents a summary of factors that were considered as a new alliance, Southern and Central Illinois LSAMP (SCI-LSAMP), established through a multi-year planning process. The goal of the alliance was to create an integrated LSAMP program that facilitates students' growth within their home institutions and builds connections across the alliance's partner institutions. Factors considered to build a cohesive program include existing institutional programming, research infrastructure, administrator and faculty workflow, schedules and needs, and conversations with established LSAMP programs. This paper aims to serve as a roadmap for new alliances to consider as they plan for multi-institution collaborations.

Introduction

The objective of the National Science Foundation (NSF) funded Southern and Central Illinois Louis Stokes Alliance for Minority Participation (SCI-LSAMP) is to recruit, retain, and support students to successful completion of baccalaureate degrees within STEM disciplines in southern and central Illinois. In 2024, this alliance, composed of six institutions, was awarded an LSAMP project grant after multiple years of planning and coordination. The six institutions forming the alliance are Bradley University, Illinois State University, Illinois Wesleyan University, Southern Illinois University Carbondale, University of Illinois Urbana Champaign, and Western Illinois University. The SCI-LSAMP program aims to recruit students for engaged participation in the SCI-LSAMP program, retain students through critical junctures in their educational journey, and foster STEM identity both within and across partner institutions.

Past studies have unveiled obstacles to STEM degree attainment for students underrepresented in these disciplines, including lack of support in competitive environments, ineffective advising, inadequate academic preparation, feelings of isolation, faculty teaching styles, and unwelcoming learning environments.[1], [2], [3] In response, theoretical frameworks [4], [5] and reported "high impact" practices that have been shown to encourage participation and improve the successful completion of STEM degrees have been implemented. [2], [6] Some of these practices, including learning communities, early engagement in research, mentoring, academic support, and professional development [7], which are core to the SCI-LSAMP program. We established a program based on these theoretical frameworks and best practices to facilitate retention of scholars through the completion of their baccalaureate degrees in STEM. The model of the SCI-LSAMP program consists of nested communities of LSAMP scholars at their home institutions and across the alliance, research mentors including faculty and graduate students, and research scholars who participate in the alliance summer research program. Activities of the

alliance target four areas: (i) academic enrichment, (ii) research engagement, (iii) professional development, and (iv) graduate school and career exploration. Examples of these activities are shown in Figure 1. Central to all of the activities and implementation of this program is to increase the STEM identity of the scholars.



Program Features:
Academic enrichment workshops: study skills, time management, metacognition, campus resources, etc.
Professional development: scientific communication, personal branding, networking
Individualized mentoring, peer mentoring
Faculty mentor training
Research training: library resources, data collection and analysis,
Research engagement (community-engaged research & lab-based research opportunities)
SCI-LSAMP Summer Research Program (REU)
Participation at research conferences
Seminar series with internal and external STEM professionals
Career development: career training, internship opportunities
Graduate school preparation

Figure 1. Organizational structure of the SCI-LSAMP programming.

Identifying a Geographic Gap

The SCI-LSAMP project fills a significant geographic gap in providing critically needed opportunities for students in southern and central Illinois. These regions account for two-thirds of the state and are largely characterized by rural communities and farmland. The demographics of southern and central Illinois starkly contrast with the Chicagoland area, which is densely populated, accounting for 65% of the state's overall population.[8] Chicagoland is the most diverse area in the state of Illinois. An overview of the demographic distribution of the college-age population (18-24 year olds) reveals that Chicago has the highest proportion (~80%) of individuals that identify with one of the racial/ethnic groups that are historically under-represented, in comparison to the statewide proportion of 46%. [9] Areas surrounding Chicago, Il, including its collar counties, report populations that are 58% representative of individuals that identify with one of the underrepresented racial/ethnic groups.[9] The remainder of the state outside of the Chicagoland area has the lowest proportion of diversity with approximately 25% representation of individuals from underrepresented groups.[9] It was important to consider these demographics to understand the composition of student bodies at universities that the SCI-LSAMP alliance will service in order to build a STEM ecosystem representative of our local and national demographics. We felt strongly that a structured network through an LSAMP alliance would provide unique experiences to the students at these institutions.

Forming an Alliance

The formation of the alliance began in Fall 2018 when Illinois State University (ISU) submitted a planning proposal to establish a new alliance within this region. This proposal was grounded in an identity framework developed by Platt.[10] Unfortunately, the proposal was not funded. However, original partner institutions continued to collaborate. In 2022, the University of Illinois Urbana-Champaign (UIUC) expressed interest in establishing a new LSAMP alliance with leaders of the Illinois LSAMP, led by Chicago State University, and was referred to ISU. It was

through this discussion that the current SCI-LSAMP began. ISU graciously shared the planning proposal, which led to contacting institutions that were part of that initial LSAMP STEM Pathways Implementation-Only (SPIO) proposal. Eleven (11) universities, including 2 private liberal arts institutions, 3 community colleges, 2 R2, public institutions, 2 public M1 and 1 private M2 institutions, and 1 R1 institution, agreed to participate in the alliance. Many of these institutions were represented by at least 2 individuals, or more, in a few instances. Alliance partners met on a bi-weekly basis to identify their institutional strengths in supporting students in STEM and existing programs of each institution to be leveraged within the alliance. The goals and objectives of the proposed alliance were developed based on these strengths and existing programs. Each institution contributed to the development of the proposal, including gathering the enrollment and degree data, and proposal writing and review. As the submission deadline neared, alliance partners met weekly.

Unfortunately, by the time of submission, 3 institutions had to exit the alliance, including 2 community colleges. Reasons for the exit were an inability to meet set deadlines for contributing to the alliance proposal (such as providing institutional data), lack of time to commit to the alliance partner meetings or implementation of the program, if funded, and one institution did not have an NSF profile to submit subaward documents. Therefore, the proposal was submitted with 8 institutional partners. This proposal, led by UIUC was submitted in 2022 but was not funded. The Alliance resubmitted a revised version for the 2023 competition. The resubmission was challenging because the NSF notification and review panel comments were sent to the PI only, which was not transmitted to the co-PIs. Four weeks remained before the submission deadline by the time reviews were known. Luckily, the alliance partners were on board with adjusting under the abbreviated timeline. In this process, two additional alliance partners exited the alliance including 1 community college and a private, liberal arts institution. These departures were due to institutional personnel changes resulting in uncertainties with leadership for the LSAMP program, and lack of time to provide documents for the proposal due to an overload of teaching obligations. The revised proposal was submitted with 6 institutions, resulting is a funded project in 2024. The multi-year process of establishing this new alliance has offered insight on best practices to form partnerships with different types of institutions.

Motivations for Establishing a New Alliance

The motivation to re-assemble the SCI-LSAMP alliance came from a combination factors. ISU, located in Bloomington, IL and Southern Illinois University in Carbondale, IL were previously partner institutions of another alliance in the Chicagoland area. The distances between Bloomington and Carbondale to Chicago are approximately 135 miles and 332 miles, respectively, often making it challenging to attend in alliance activities and fully engaging with the alliance. Therefore, the motivation of the 2018 planning proposal was to create an alliance in an area of Illinois closer to these two institutions as well as number of other institutions in the region that have thriving STEM programs that can benefit from LSAMP. Additionally, the current alliance director noted upon arriving at the UIUC in 2021 that the institution had no prior involvement in the LSAMP program. There was a personal interest to develop an alliance within this new role. For historical context, attempts were made to include UIUC in an existing alliance within the state. However, those discussions were unsuccessful. Two LSAMP alliances already existed in the state in the Chicagoland area, leaving the opportunity available to establish an

additional alliance to include institutions in untapped regions richly populated with talented students and faculty with extensive experience supporting LSAMP-eligible students. Through discussions with LSAMP leadership and directors of one of the existing alliances resulted in connections with institutions that would be interested in forming a new alliance.

Recommendations for Developing Inter-Institutional Partnerships

1. Lead Institution: Sometimes a change in the lead institution to an alliance member that has expanding capacity is what is best for an alliance. Institutions may want to be the lead because it comes with more indirect costs, but leaders of a functional alliance should prioritize what is best for the alliance, not only what is best for individual institutions. Otherwise, the alliance cannot function like a true alliance.

2. Dedicated staff positions: Having personnel focused on grant writing for centers and multi-institution collaborative efforts make projects like this possible and we believe institutions should view them as a high impact investment that pays off.

3. Leadership team: The SCI-LSAMP leadership team has a wealth of experience in the LSAMP program including a former LSAMP scholar, Bridge to the Doctorate fellow, four Faculty Champions in the Louis Stokes Midwest Regional Center of Excellence, and three former administrators of LSAMP institutional programs. Additionally, three leaders currently administer NSF Scholarships in STEM (S-STEM) programs. Because of this experience, the group was well-positioned to develop and implement this alliance.

4. Include a range of various types of institutions and leverage institutional strengths: The value of having institutions of varying types, sizes, and student demographic populations allows institutions to share resources, understand institutional culture and contexts, and expands the networks and opportunities for students. The central and southern regions of Illinois is rich with community colleges. Through the formation of this alliance, three community colleges had to exit the alliance. All of the current partner institutions have existing collaborations with community colleges and will invite community college students to participate in our professional development workshops, seminars, etc. In the future, we do plan to pursue opportunities to add community colleges to the alliance.

5. Proximity of many alliance institutions: Due to the close proximity of the alliance institutions, there were existing partnerships and collaborations. For example, ISU and IWU collaborate on an S-STEM project that focus on community-engaged research where students engage in research that helps the local community. The SCI-LSAMP program expanded that concept to offer community-engaged research to all SCI-LSAMP scholars. Additionally, institutions and their students can more easily participate in alliance-wide activities. Proximity also allows for full engagement of scholars to engage with alliance activities.

6. Effective communication channels within and across institutions: a strength in the formation and implementation of SCI-LSAMP has been the communication strategy. It is

additionally helpful that most institutions have more than one leader, which allows information to be disseminated to each campus at all times.

7. Proposal submission and communication process: The submission process often causes institutions with less capacity to drop-off of the proposal and thus out of the alliance. We experienced this with losing community college and smaller liberal arts institutions. This is unfortunate because these are the institutions that benefit the most from alliance membership. We have also communicated with NSF to include additional proposal investigators on NSF communications to ensure that messages are transmitted downward. LSAMP projects are required to have an upper-level administrator (Provost, Chancellor, or President) who are managing multiple high level priorities and not involved in the day-to-day implementation of the project. Therefore, it is essential to have multiple investigators on communications related to the project at all phases.

Conclusion

The evolution of the SCI-LSAMP program over seven (7) years has resulted in a wealth of lessons learned. The persistence to maintain collaborations and communication is key to the success of the SCI-LSAMP project. By leveraging existing institutional programming, research infrastructure, administrator and faculty workflow, students' schedules and needs, and conversing with established LSAMP programs, the SCI-LSAMP program was developed to best meet the needs of scholars and institutional partners.

Acknowledgements

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