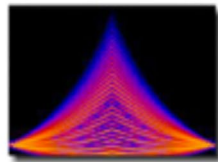


THE UNIVERSITY OF NORTH CAROLINA
GREENSBORO



RISE Network
Promoting research and instruction in STEM education

ANNUAL REPORT

2018-2019

*Supporting STEM Education at UNCG by facilitating faculty networking,
public outreach, curriculum innovation, and program grants.*



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To Our Stakeholders

STRATEGIC HIGHLIGHTS

In our ninth year, the RISE Network continues to host inspiring speakers, productive faculty networking events, popular public outreach programs, grant proposal support and program management.

The RISE Network hosted three nationally recognized STEM Education experts for the speaker series and held five productive networking events for faculty from The College of Arts and Sciences, School of Health and Human Sciences, School of Education, and Joint School of Nanoscience and Nanoengineering.

Our fifth annual Science Everywhere event was a huge success, attracting more than 3000 participants and involving hundreds of faculty and student volunteers.

RISE Network leadership continues to be highly active in grant oversight and grantsmanship activities.

FINANCIAL HIGHLIGHTS

In 2018-19 the Provost's office supported the RISE Graduate Assistant and The Vice Chancellor for ORE provided funds to support operational costs. The Provost's Office also provided funds for a graduate assistant for the STAMPS program and supported a graduate assistant position for the facilitation of the campus wetlands. The College of Arts and Sciences Dean's office is also supporting summer salary for the Assistant Director. The Deans of CAS and the School of Education supported the Speaker series in 2018-19. In 2018-19, the STEM departments were not asked to contribute to RISE's operation funds. However, this may change in 2019-20. Departments participating members on the RISE advisory board include Biology, Teacher Ed/Higher Ed, Mathematics, Physics, Geography, Chemistry, JSNN, Computer Science, and Kinesiology.

For 2019-20 with leadership changes, the Provost will again fund the RISE Graduate Assistant, as well as graduate students for STAMPS and the Wetlands. In addition, the Provost's Office will support part of the new Director's role. ORE will support the remaining release time for the Director and part of the Assistant Director's summer funds.

OPERATING HIGHLIGHTS

RISE seeks funding to support many activities: The UNCG Science Festival was supported by the NC Challenge grant as well as generous donations and support from several offices on campus. Best Logistics and LabCorp also provided funds. The Provost's Office also supports the project.

STAMPS: In 2015-16, RISE took on a leadership role for STAMPS (Science, Technology, and Math Preparation Scholarships) program. In 2016-17, Enrollment Management supported 21 new to UNCG students, and the College of Arts and Sciences is awarding small scholarships to continuing students. In 2017, UNCG received funding from the National Science Foundation for a new STAMPS program which was the FIRST RISE Network NSF proposal to be submitted to the National Science Foundation and FUNDED (5 years of funding Drs. Faeth, Patton, Sametz, Phillip, Taub, \$999,953.00.). Dr. Boyce replaced Dr. Taub on the grant. When Dr. Faeth retired, Dr. Schug became a co-PI. The new funding supported 20 new to UNCG students for 2017-18; 18 in 2018-19, and 15 students were admitted for 2019-20. Enrollment Management is identified students who met the criteria for STAMPS: new to UNCG, 3.0 or better, 1100 SAT or ACT equivalent. All potential STAMPS students submit an application to the PIs. RISE is the Advisory Board for the new program. The Provost's office supports two GA and administration of the program.

Our research and evaluation will help us to understand whether or not we are meeting our goals and objectives and how to revise the project over time. What we learn will be shared with our University and will have lasting impact on how we recruit, retain, and mentor STEM students as well as other students. Findings will also be shared broadly.

In 2018-19, RISE facilitated two NSF proposals. In November we submitted a \$5million grant for a Louis Stokes Minority Participation project. The Mountain to Sea North Carolina Louis Stokes Alliance for Minority Participation program (M2S NC LSAMP) will be a new alliance among six, four-year, mid-sized universities

that enroll students from across the geographic range of North Carolina led by University of North Carolina Greensboro and including faculty and students from Appalachian State University, East Carolina University, University of North Carolina Asheville, University of North Carolina Wilmington, and Western Carolina University. The geographic range encompasses mid-sized regional universities across NC, from the Appalachian Mountains, to the Piedmont region, then the Coastal Plains, and finally, the Carolina coastline.

In March, we submitted a new S-STEM program: Clear Pathways (\$1,000,000). The focus of Clear Pathways is to ensure the successful transition of STEM transfer students from Community Colleges to the University.

LOOKING AHEAD

The RISE Network had a highly successful year, inspiring the leadership and members to think even more creatively about the impact their scholarly activities may have on STEM education at UNCG and generate new and exciting ideas that move UNCG into the forefront of innovative STEM education programs. We intend to continue and improve our successful programs.

After dedicating numerous years of work to the RISE Network, Malcolm D. Shug and Lynn Sametz have decided to step down from their roles of co-directors. The RISE leadership positions will be filled with a new organizational structure. Christopher K. Rhea, Kinesiology is the incoming director of RISE and Tracey Howell, Mathematics will be the associate director.

Leaders and members will continue focusing attention on improving retention and success of undergraduate STEM majors, particularly those in underrepresented groups. They also intend to explore active approaches to in recruiting, and retaining quality STEM faculty across various departments.

Directors

Malcolm D. Schug, Ph.D. and Lynn Sametz, Ph.D.

New Directors

Director: Christopher K. Rhea, Ph.D.

Associate Director: Tracey H. Howell, Ph.D.

July 1, 2019

The RISE Network Speaker Series

The goal of the speaker series is to bring nationally recognized experts in STEM research and instruction to UNCG. This speaker series:

1. Brings new ideas to the UNCG faculty that will stimulate the conversation and generate new ideas around teaching and learning in the STEM areas, and especially secondary mathematics and science education.
2. Reaches a broad audience, including faculty involved in STEM research and instruction, as well as faculty who are interested in other areas of research and teaching, and graduate students in STEM areas and education.
3. Continues to evolve into a regular speaker series that is offered each year.

The series is supported by the College of Arts and Sciences, the School of Education, and the School of Health and Human Sciences. We are grateful for this support. We can see the impact of the series at UNCG and the potential to produce multiple ripple effects through other disciplines on campus. On behalf of the RISE Network, we would like to thank all of the funders for making the 2018-19 RISE Network Speaker Series a success.

Charles Ichoku

NASA

September 5th, 2018

The Wonders of Wildfires

Charles Ichoku talked about the climatic influences of wildfires, their patterns, and their effect on agriculture in the northern Africa region. He discussed innovative remote sensing approaches to characterize fires and their smoke emissions. The discourse expanded to the impacts on the environment and climate of the atmospheric aerosols caused by fires. In particular, trying to understand if the fires, most of which were lit by farmers and herders, might be contributing directly or indirectly to changing rainfall patterns within the region.



Iris Wagstaff

American Association for the Advancement of Science (AAAS)

November 8th, 2018

Innovations in STEM: Broadening Participation and Pathways to Success

Dr. Iris Wagstaff spoke about the future of the STEM workforce and the need to increase educational and career pathways for underrepresented groups. She offered a three-pronged foci approach which included scientific literacy, broadening participation in STEM and developing the STEM workforce. The presentation emphasized best practices and models for cultivating a diverse cadre of STEM professionals at the intersection of science, education, and policy.



Jenny Dauer

*Assistant Professor of Science Literacy in the School of
Natural Resources at the University of Nebraska*
March 25th, 2019

A Framework for Decision-Making to Promote Science Literacy in Large Enrollment Undergraduate STEM classes

Dr. Jenny Dauer deliberated the need to prepare students to make effective and quality decisions grounded in STEM and for complex, real-world challenges. She argued that teaching science content knowledge isn't enough to develop science-informed decision-making skills.



Networking Events



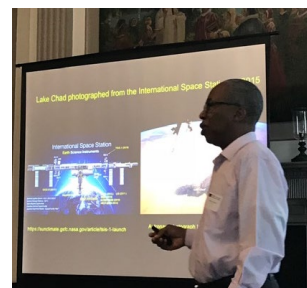
Charles Ichoku

NASA

September 6th, 2018

The Past and Future of Lake Chad: Africa's Great Lake

This networking lunch engaged twenty-three guest in a set of conversations about Lake Chad, a water sources shared by four countries and over 30 million inhabitants, which is currently facing severe drought. Dr. Ichoku spoke candidly about difficulties in studying the causes and the future of the lake. He further recommended possible scientific approaches to mitigate adverse impacts on the populations.



Iris Wagstaff

*STEM Program Director at the American
Association for the Advancement
of Science (AAAS)*
November 8th, 2018

NexGenSTEM: Cultivating Tomorrow's Diverse Global Workforce

This networking event spurred an informative conversation about the underrepresentation of groups in STEM. Iris Wagstaff highlighted some educational and professional development efforts, as well as shared evidence-based practices and models at the undergraduate and graduate levels to expand opportunities for underrepresented students. Thirty guests, both students and faculty, attended the RISE luncheon and participated in a lively conversation about broadening participation for underrepresented groups in STEM.



Jenny Dauer

Assistant Professor of Science Literacy in the School of
Natural Resources at the University of Nebraska

March 25th, 2019

Navigating a Pathway from Teaching and Science to Science Education Research

This networking lunch engaged the audience in a conversation about improving students' science literacy and decision-making for real-world challenges. Jenny Dauer suggested supporting theories and practices in improving and preparing students about complex socio-scientific issues. She further explained the differences between fast thinking or informal decision-making and slow thinking or structure decision-making and their ability to optimize cognition.



Hidden No More

February 27th, 2019

STEM Women of Color

This networking event spurred a conversation between the panel of speakers, Ann Vaughan Hammond, Peggy Vaughan, Crystal Harden, Drs. Jamila Simpson and Stephani Page, and the 100 + audience members. They brought attention to the considerable challenges faced by women of color when pursuing careers in science, technology, engineering, and mathematics. As women of color who have made significant contributions in their field, the speakers discussed what it is like to be a leader within their respective fields and how we can help expand diversity in STEM education.

RISE and Office of Sponsored Programs Networking Lunch

January 30th, 2019

Networking across Boundaries: Meet a New Collaborator

This popular networking event lead by Aubrey Turner and Julie Voorhees, Office of Sponsored Programs, was attended by 30 faculty representing CAS, HHS, SOE, and JSNN. Faculty facilitators used keywords and word cloud to connect faculty with similar backgrounds of research and interests. The event was an excellent opportunity for faculty and staff to network with researchers across campus and has led to multidisciplinary research and STEM education projects.



Science Everywhere

UNCG Science Everywhere Day – April 13th, 2019: The Fifth Annual Science Everywhere was an amazing success. University staff, students, and faculty from across campus volunteered their time and energy to present over 100 hands-on science activities to the community. We had over 3000 participants come to the festival, even on a rainy day!

Over 120 STEM professionals, including faculty, graduate students, and undergraduates helped to present science to the community. In addition, we had 300 volunteers, including undergraduate and graduate students, UNCG Middle College students and preservice teachers, as well as 30 students from Welborn Middle School helped make the festival a success. Spanish interpreters and American Sign Language interpreters were available for non-English speaking and deaf communities, respectively.



- The entire Campus was filled with children, parents and grandparents, all of whom were actively engaged in Science.
- This year’s NC Science Festival theme was “Made in NC”.
- Pre-service education students led activities in the School of Education for learners of all ages. These future teachers shared what they are learning with a diverse audience.
- Sullivan Science Building, Petty Science Building, The School of Education Building, and the Coleman building housed all the other events that included petting reptiles and amphibians, programming a robot, K-9s and hands-on science from every discipline.
- The Joint School of Nanoscience and Nanoengineering joined the fun and brought their traveling educational NanoBus to the event.
- The School of Health and Human Performance was involved and many guests were able to experience the science of human movement and the science behind emotions.
- UNCG’s Planetarium provided three star-gazing shows.



Again, our STEM undergraduate and graduate students shared their knowledge, communicated their research to a broad audience, and collaborated with STEM oriented organizations from the Triad community.

Our guests: All attendees were given a passport/brochure, a tote bag and a t-shirt at the welcome tables. Children and youth received stamps at each station and when they left the event, they received prizes and a Junior Scientist Certificate—children of all ages enjoyed the festival from preschool age to high school students. This was a great day for UNCG, creating a fun and engaging learning environment for adults, teens, and kids alike. The adults were amazed by all of the things we do at UNCG. Science was everywhere. With over 100 activities on campus, from 3-D printing to making liquid nitrogen ice cream, there was something for everyone. Our only complaint was I couldn't get to everything. Our response join us again next year April 25, 2020.



The RISE Network in partnership with the University of North Carolina Greensboro's Offices of New Student Transitions & First Year Experience, University Events Team, University Communications, Intercultural Engagement, and the School of Education planned and implemented the Fifth Annual Science Everywhere Festival on April 13, 2019. Sponsors included the NC Science Festival, Best Logistics Group, WFMY News, LabCorp, UNCG Self Design Studio, and the National Science Foundation (NSF).

(See attached Appendix 3: UNCG Science Everywhere Day)



The UNCG Wetlands Project

Summary of the UNCG Wetlands Project

The UNCG Wetlands Project was initiated in 2016 and continues to be a productive and important focal point of campus activity in STEM Education. The Wetlands Committee is chaired by Drs. Malcolm Schug and Lynn Sametz, and has an appointed Graduate Assistant, Kristina Morales, who completed her second year as a Wetlands GA. This academic year, the committee chairs, and past chair, Dr. Parke Rublee (retired), wrote an op-ed for the Greensboro News and Record titled “UNCG Saves water resources as a community” highlighting the link between UNCG and the larger campus and city community that are involved in the UNCG Wetlands Project.



Faculty continue to use the UNCG Wetlands as an environmental educational resource in their courses in biology, chemistry, geography, social work, and community and therapeutic recreation departments. Some examples are class activities that explore wetland diversity in BIO 105 Major Concepts of Biology for non-biology majors, BIO 112 Introduction to Biology for majors, BIO 315 Ecology and Evolution laboratory for majors, BIO 522 Landscape Ecology, and BIO 549 Scientific Writing. Our new faculty member in Geography, Environment, and Sustainability, Sarah

Praskievicz is developing course-based projects that align with her research in hydrology fluvial geomorphology and water resources.

Dr. Matina Kalcounis-Rueppell taught a scientific writing course for graduate students and senior undergraduates focused on analyzing acoustic monitoring data at the wetlands and two control sites similar to the wetlands to assess bat activity and diversity. The course culminated in a manuscript that is now published in the international journal “Wetlands”.

This year has been a year of expanding our education, outreach, and beginning research projects.

Hundreds of students have used the wetlands as a learning experience.



Dr. Gideon Wasserberg conducting research with students on infectious diseases and mosquito populations.

Drs. Heidi Carlone and Sara Heredia have integrated the wetlands into research on science identity and environmental curriculum as part of their NSF SSTEM – BRIDGES funded project.

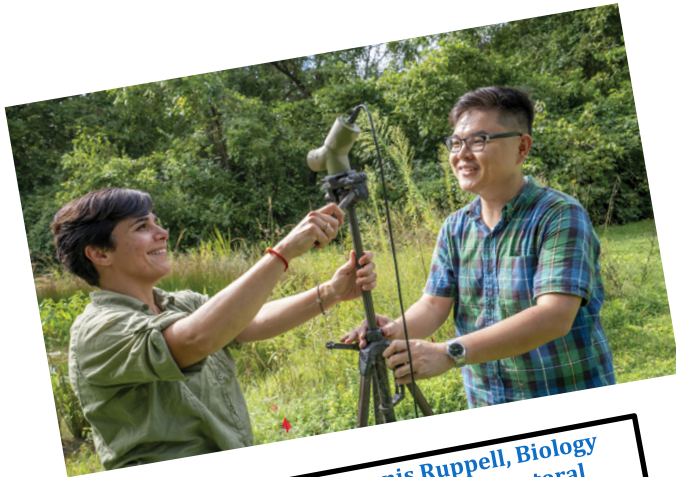
Dr. Martin Tsui and his doctoral student, Kristina Morales, also the wetlands graduate assistant, have continued study of methyl mercury production in urban wetland environments and are seeking external funding to support the research and outreach efforts.

Dr. Gideon Wasserberg has ongoing research on mosquito ecology focusing, in part on the campus wetlands.

The UNCG wetlands have become a focus of courses in undergraduate research (CUR) as part of the NSF funded CUR Transformation Project of which the Biology and Chemistry Departments are investigators. The PI's on the project are Drs. Igluka Pavlova, Malcolm Schug, Jerry Walsh, and Terry Niles. As part of this project, national experts in CUR integration in biology and chemistry curriculum visit UNCG annually and have emphasized the opportunities that the UNCG wetlands provide for being a national model for using an outdoor living laboratory as a mechanism for hands-on research experiences for undergraduate education.

We have formed a formal partnership with the Greensboro Science Center as they initiate renovation on their own wetland bordering Country Park. The GSC Summer Camp has developed a wetland activity that is focusing on comparing the GSC and UNCG wetland water chemistry and biodiversity. Middle school and high school aged campers will visit both sites in summer of 2019 as part of their field experience.

The wetlands have attracted visitors from Grimsley High School and other local middle and high schools. They were featured as events in the Greensboro Tech Savvy Event sponsored by the AAUW and were popular activities in Science Everywhere. Dr. Malcolm Schug represents the Wetlands Project as a Sustainability Faculty Fellow and routinely gives presentations about the UNCG wetlands. The local Audubon Society released their UNCG Wetlands bird count data and invited Schug, Sametz, and Rublee to give a talk to the local chapter. They also participated in the Science Everywhere festival to teach participants about birds in Peabody Park and the UNCG wetlands.



Dr. Matina Kalcounis Ruppell, Biology Professor and Han Li, postdoctoral researcher capturing bat calls in Wetlands.



Dr. Heidi Carlone works with middle school students in "Saturday Academies" at the Wetlands

Proposed Action Items for 2019-2020

Through Network meetings and other activities, the RISE Network continues to serve as a catalyst for grant opportunities and programs, as well as a conduit for connecting “STEM” faculty and mentoring new faculty in STEM related activities.

In 2019-2020, RISE will have new leadership. Therefore, as a Network, we will:

- a) Transition in leadership
- b) Analyze our goals and objectives leading into 5-year plan

Recruitment and Retention of Faculty and Students

We will advocate for the recruitment and retention of quality STEM (related) faculty and provide mechanisms for enabling this to happen such as:

- c) Advocate for and facilitate the recruitment of joint hires of new faculty in the area of science education
- d) Support new STEM faculty through encouraging their involvement in grant opportunities, networking activities, mentoring and linkages to other STEM related faculty.
- e) Support submission of grant proposals that increase our ability to attract and retain quality STEM and STEM Education students, particularly women and underrepresented groups.
- f) Serve as Advisory Board for funded activities promoting STEM Education such as the NSF STAMPS program.
- g) Facilitate UNCG’s STEM funded programs such as MARCU, ITEST and INCLUDES
- h) Develop a five-year plan for RISE

Research and Education

Identify UNCG employees at all levels and graduate students who are actively interested in pedagogical reform in STEM disciplines and encourage them to participate in RISE activities.

We will continue to work with the Office of Sponsored Programs and other UNCG entities to identify and submit proposals for funding opportunities that will strengthen STEM research and instruction on campus and provide other avenues for showcasing RISE issues. These include:

- a) The preparation of interdisciplinary NSF, DOD, NIH, DOE, and foundation grant applications.
- b) The continuation of the RISE speaker series with speakers that span RISE issue areas.
- c) The continuation of RISE networking events/meetings to showcase RISE issues through speakers and coordinated topics that allow faculty, the UNCG community, community partners, k-12, LEA’s, and local universities to share information and build upon common resources and bring together faculty with common research interests around funding opportunities.
- d) The enhancement of the RISE webpage and social media.

University and Community Collaborations

We will work cooperatively with other UNCG networks and units, with local and statewide organizations and agencies, and with the business community to promote STEM research and instruction within UNCG and our community. RISE does not house ongoing projects, but instead facilitates programs and projects initially and find more permanent homes for them as appropriate. For example:

- a) Outreach Events and Festivals
 - i. Facilitate the Science aspect of the sixth Annual Science Everywhere (April 25, 2020).
 - ii. Promote Tech Savvy and IT for Girls (with AAUW)
- b) Campus outreach support
 - i. Transition the UNCG Wetland Committee Meetings and support sustainable wetlands on campus.
 - ii. Facilitate trainings and conferences with STEM departments to encourage faculty and staff to learn new ways to communicate their science and to present STEM research and findings to reach a diverse range of audiences.
 - iii. Build collaborations and partnerships between RISE and Advancement to promote RISE issues and increase collaboration and support.

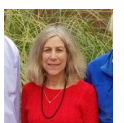
State and National Outreach Support

- a) Identify opportunities to collaborate with local businesses, community and state networks, JSNN, Gateway, and NC A&T to create STEM research and education and outreach to K-12 partners; and identify leadership opportunities for UNCG in STEM research and education.
- b) Provide additional connections to our Alumni for the purposes of highlighting STEM and STEM education at UNCG, making connections for internships, and promoting campus activities.
- c) Facilitate the North Carolina PKAL meeting (March 2020).

The RISE Network Advisory Board



Malcolm Schug, Faculty co-director for the RISE Network and Associate Head, Department of Biology, College of Arts and Sciences



Lynn Sametz, co-director of the RISE Network and Project Director for UNCG's STAMPS NSF program



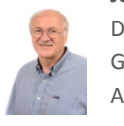
Vicki Jacobs, Yopp Distinguished Professor of Mathematics Education, Department of Teacher Education & Higher Education, School of Education



Stephen Tate, Head and Professor Department of Computer Science, College of Arts and Sciences



Jerry Walsh, Professor Department of Chemistry and Biochemistry, College of Arts and Sciences



Jeff Patton, Professor Department of Geography, College of Arts and Sciences



Matina Kalcounis-Rueppell, Head and Professor Department of Biology, College of Arts and Sciences



Promod Pratap, Associate Professor Department of Physics, College of Arts and Sciences



Ang Chen, Professor Kinesiology Department, School of Health and Human Sciences



Dan Herr, Professor and Nanoscience Department Chair, Joint School of Nanoscience and Nanoengineering



Edna Tan, Associate Professor of Teacher Education and Higher Education, School of Education



Heidi Carlone, Professor of Teacher Education and Higher Education, School of Education



Robert Anemone, Department Head, and Professor of Anthropology, College of Arts and Sciences



Lee Phyllips, Director Undergraduate Research and Creativity Office



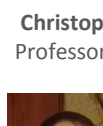
Esther Leerkes, Associate Dean of Research, HHS



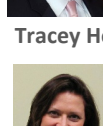
Troy Sadler, Associate Dean Research, School of Education



Talia Fernos, Associate Professor Department of Mathematics, College of Arts and Sciences



Christopher K. Rhea, Associate Professor & Associate Department Chair for Research Kinesiology Department, School of Health and Human Sciences



Tracey Howell, Senior Academic Professional, Department of Mathematics and Statistics, College of Arts and Science

RISE Network Member Grant Activity

Federal:

- Adams, W.M. (2019). Principal Investigator." Inter-Association Task Force Meeting on Preseason Heat Safety in Secondary School Athletics". Sponsored by National Athletic Trainers' Association. \$6000.
- Adams, W.M. Principal Investigator. Association of habitual fluid intake on physical activity, sleep, mood disposition, and stress in college-aged men and women" Sponsored by National Athletics Trainers' Association. \$23,000. Pending.
- Boyce, A. S. (submitted March 2019). "Strengthening Pre-college Programs as a Mechanism to Promote Equitable Access to University Admissions and Persistence in STEM." National Science Foundation INCLUDES Alliance, Sub-Contract from the University of Pittsburg, External Evaluator, (UNCG Budget: \$499,886; Total Budget: \$11,243,948).
- Boyce, A. S., & Willse, J. (submitted December 2018). "Midwest Big Data Hub." National Science Foundation Big Data Regional Innovation Hubs, Sub-Contract from the University of Illinois at Urbana-Champaign, External Evaluator, (UNCG Budget: \$98,000).
- Boyce, A. S. (submitted December 2018). "Collaborative Research: Grand Challenges in Algorithms and Machine Learning for Emerging Genomics." National Science Foundation Expeditions in Computing Program, Sub-Contract from the University of Illinois at Urbana-Champaign, External Evaluator, (UNCG Budget: \$139,486; Total Budget: \$3,400,000).
- Boyce, A. S. (submitted November 2018-second attempt). "Computational Thinking Assessment and Training for Older Adults." National Science Foundation: Advancing Informal STEM Learning. Sub-Contract from Michigan Technical University, External Evaluator/Senior Personnel, (UNCG budget: \$157,443; Total Budget: \$1,423,803).
- Carlone, H. B. (Principal), "BRIDGES for socio-environmental good: BRoadening Identities for Diverse Groups Engaging with STEM," Sponsored by National Science Foundation (NSF), \$1,079,385.00. (August 2017 - August 2020). (Co-PIs: Sara Heredia & Lakshmi Iyer).
- Chen, A. (Principal), Haldeman, L. A. (Co-Investigator), Rhea, C. K. (Co-Investigator), "The Science of Essential Balance," Sponsored by National Institutes of Health, Federal, \$1,246,118 (October 2018 - July 2023).
- Croatt, M. P. (Principal), "TAK1 Inhibition by (5Z)-7-Oxozeaenol Analogues for Anticancer Leads," Sponsored by National Institutes of Health (NIH R15; \$423,987 requested). Submit 2/25/19. Under Review.
- Croatt, M. P. (Principal), "Synthesis of Ambuic Acid Analogues to Obtain a Lead Target for the Treatment of MRSA," Sponsored by National Institutes of Health (NIH R21; \$393,300 requested). Submit February 16, 2019. Under Review.
- Croatt, M. P. (Investigator), "Hyaluronidase Inhibition as a New Anti-Infective Strategy Against Multi-Drug Resistant Gram-positive pathogens," Sponsored by National Institutes of Health (NIH R21; \$411,901 requested). Submit February 16, 2019. Under Review.
- Croatt, M. P. (Principal), "Palladium-Catalyzed Reactions Enabled by Alkenes and Dienes," Sponsored by National Science Foundation (NSF; \$468,401 requested). Submit October 15, 2018. Under Review.
- Croatt, M. P. (Principal), "Exploration of the Palladium-Catalyzed Direct Deoxygenation of Allylic Alcohols," Sponsored by American Chemical Society Petroleum Research Fund (ACS PRF; \$110,000 requested). Submit October 19, 2018. Not Funded.
- Croatt, M. P. (Principal), "(5Z)-7-Oxozeaenol Analogues as Anticancer Leads," Sponsored by National Institutes of Health (NIH R15; \$423,987 requested). Submit June 25, 2019. Not Funded.
- Empson, S. B. (PI), Jacobs, V. R. (Co-PI). (2013–2020). Theorizing and Advancing Teachers' Responsive Decision Making in the Domain of Rational Numbers. National Science Foundation (Discovery Research K–12 (DRK–12) Program) (\$2,980,973) Gerace, W. (Principal); Beatty, I. D. (Co-Principal); Sedberry-Carrino, S. (Co-Principal); Kane, M. J. (Co-Principal); "Self-efficacy Intervention to Improve STEM Performance," Sponsored by National Science Foundation, \$299,937.00. (July 1, 2016 - June 30, 2019).

Kalcounis-Rueppell, M.C. (co-PI). (2017-2021). National Institutes of Health Grant. NIH. UNC Greensboro MARC USTAR Engage, Sustain, and Prepare. Role: PI 25% (other PIs Dan Herr, Lee Phillips both of UNCG; Joseph Graves NCAT).

Kalcounis-Rueppell, M.C. (co-PI). (2014-2018). "The effect of testosterone pulses and conditioned place preferences on social behavior in wild and laboratory *Peromyscus* mice". National Science Foundation (NSF). GRANT NSF-1355163. Role: PI at UNCG (sub contract to PI Cathy Marler, University of Wisconsin, Madison). Amount to UNCG: 360000.00

Kalcounis-Rueppell, M.C. (2017-2019). North Carolina Wildlife Resources Commission (NCWRC). Acoustic monitoring of bats in North Carolina. PI. \$241,297.

Koerner, S.E. (Lead PI) USDA AFRI - 2019-2022; Assessing impacts of patch-burn grazing management on sustainability of multiple agroecosystem services (\$288,456 for UNCG). Not Funded.

Koerner, S.E. (Co-PI). NSF MRA - 2020-2023; Collaborative Proposal: MRA: Understanding heterogeneity of responses to nitrogen additions across the grassland macrosystem. \$196,057 to UNCG. Pending.

Koerner, S.E. (Co-PI). NSF MRA - 2020-2023; Collaborative Proposal: MRA: Estimating dark diversity in space and time to understand long-term vegetation dynamics at grassland NEON sites. \$185,771 to UNCG. Pending.

Koerner, S.E. (Co-PI). NSF DEB - Ecosystems - 2019-2022; Collaborative Research: Exploring Continental Patterns of function and stability by using NEON data to quantify linkages among local ecosystem components. \$161,011 to UNCG. Not Funded.

Koerner, S.E. (Co-PI). NSF MRI - 2020-2024; Lead PI Raymann,. Mid-scale RI-1 (M1:DP): UNCG's Plant and Pollinator Center for genes to ecosystem studies – enhancing research for environmental sustainability in the face of anthropogenic change. \$4,203,825 for UNCG. Not Funded.

LoJacono, C.T. (Student)., Rhea, C. K. (Principal), " Motor learning and transfer of functional gait and balance skills developed in a 6-week immersive virtual reality training program," Graduate Student Research Grant Sponsored by North American Society for the Psychology of Sport and Physical Activity (NASPSA), \$2,000 (June 2018 – May 2019).

Tsui, M., Terui, A., Praskievicz, S. Mechanistic understanding of mercury pollution in restored urban wetlands in North Carolina. Submitted to NC WRRI.

McGuirt, J. T. (Principal), Rhea, C. K. (Co-Investigator), Dyson, O. L. (Co-Investigator), "Virtual Avatar Coaching to Improve Access to Health Promotion Programs for Low-Income Children and Families," Sponsored by HRSA, Federal, \$10,000 (January 2019 – September 2019).

Praskievicz, S. J. (Principal), "Large woody debris in low-gradient floodplain rivers: Spatial distribution, physical controls, and geomorphic effects," Sponsored by National Science Foundation (NSF). Not Funded.

Patton, J., Sametz, L, Schug, M., Boyce, A., Phillips, L. "Science, Technology, and Math Preparation Scholarships. Sponsored by National Science Foundation (NSF) \$999,995.

Rathnayake, H. P. (Principal), "Nano Mosaic - A Novel Nano-Framework for Lithium," Sponsored by National Science Foundation (NSF I -Corps), \$50,000. (Recommended and award will be announced soon).

Rathnayake, H. P. (Senior Personnel), "MRI: Acquisition of a Cryogenic High-Resolution Transmission Electron Microscope for Multi-disciplinary Research and Teaching at a Leading R-2 Research Institution," Sponsored by National Science Foundation (NSF), \$678,000.00, Declined.

Rathnayake, H. P. (Principal), "IGE: Nanotechnology Interactive Communication Commons (NICC)," Sponsored by National Science Foundation (NSF), \$300,000.00, Declined.

Rathnayake, H. P. (Principal), "DOD HBCUMI Instrumentation: Acquisition of a High-Resolution Transmission Electron Microscope for Interdisciplinary Graduate Research and Educational Training," Sponsored by Department of Defense (DOD), \$600,000 (Pending).

Rathnayake, H. P. (Principal), "Metal-biopolymer conjugates for sub-5 nm patterning and Functional Diversification on Useful Platforms," Sponsored by National Science Foundation (NSF), \$300,000.00, Declined.

Rhea, C. K. (Principal), Ross, S.E. (Co-Investigator) " TBI Assessment of Readiness using a Gait Evaluation Test (TARGET): Development of a portable mTBI screening device". Sponsored by Department of Defense, Congressionally Directed Medical Research Program, \$941,639 (May 2015 – April 2019). Continuing.

Raisbeck, L. D. (Principal), Rhea, C.K. (Co-Investigator), Labban, J.D. (Co-Investigator), "Merging attentional focus and balance training to reduce fall risk in older adults". Sponsored by National Institutes of Health, Federal, \$345,472 (November 2017-October 2020). Continuing.

Rhea, C. K. (Principal), Ross, S.E. (Co-Investigator), "Investigating training associated blast pathology (INVICTA)," Sponsored by Henry M Jackson Foundation for the Advancement of Military Medicine, submitted on April 23, 2018, duration if funded: 5 years, award if funded: \$1,017,201 . Under Review.

Rhea, C. K. (Principal), Ross, S.E., "Rehabilitation Evaluation of TBI Function prior to Return-to-full-duty (RETURN Study)," . Sponsored by Department of Defense, Congressionally Directed Medical Research Program (CDMRP), Complex Traumatic Brain Injury Rehabilitation Research Clinical Research Award, Submitted on December 14, 2018, duration if funded: 3 years, award if funded: \$2,000,000. Under Review.

Rhea, C. K. (Principal), Ross, S.E., (Co-Investigator), "A Primary Passive Screening Tool to Identify Neurological Dysfunction After Repeated Sub-Concussive Head Trauma: The Gauging Ambulation In Training (GAIT) Study," .Sponsored by Department of Defense, Congressionally Directed Medical Research Program, Accelerating Innovation in Military Medicine, submitted on December 20, 2018, duration if funded: 1.5 years, award if funded: \$350,000. Under Review.

Schug, M. (Principal), From the Mountains to the Sea. (Submitted November 2018). National Science Foundation.

Schug, M., Patton, J., McGowan, B., Petersen, K. & Sametz, L. (submitted March 2019). "UNCG Clear Pathways." National Science Foundation S-STEM Program, Boyce is Senior Personnel, \$999,943.

Schug, M. D. (Principal), "EMERGE in STEM - Education for Minorities to Effectively Raise Graduation and Employment in STEM," Sponsored by North Carolina Agricultural and Technical State University (NCAT), \$39,981.00

Walsh, Jerry, John Lepri, Sara Heredia, Christina O'Connor. "Transforming Teaching through Technology". STEM Guide Program. Funding: Department of Education. 2018-Continuing.

Wingate, L., Perk, E., Boyce, A. S., & Harnar, M. (2019, January). "EvaluATE: Transforming ATE Evaluation." National Science Foundation Advanced Technological Education Program, Sub-Contract from Western Michigan University, Co-PI: Research Lead, UNCG Budget: \$253,062; Total Funded, \$4,973,312.

State:

Adams, W. 2017. NCAA Soccer Periodization Study-Phase II. National Collegiate Athletics Association, Sub-award contract from University of Connecticut. \$5,000. Funded.

Rhea, C. 2017. UNC System Collaboration to use Virtual Reality to address Human Health Challenges. University of North Carolina General Administration. Inter-institutional Planning Grant (IPG) Program. \$22,500. Funded.

Sametz, L., Schug, M. D. (Investigator), (2019, January). "UNCG's Science Festival Expands! Science Everywhere, Moss Street Event, The Nanobus," Sponsored by University of North Carolina System Office (UNC SysOff), \$4,000.00.

Local:

Adams, W.M. 2019. Principal Investigator. Department of Kinesiology One Time Funding Request. Sponsored by UNCG Department of Kinesiology. \$1,380. Internal.

Adams, W.M. Maher, JP., McGuirt, JT. Co-Principal Investigators. "Physical Activity, sedentary behavior, and dietary intake behavior among African American college freshman: A within-person approach". Sponsored by UNCG School of Health and Human Science. \$6,799. 2019. Internal.

Adams, W.M. Wideman, L. Co-Principal Investigators. "Habitual Fluid Intake on Health and Wellness in College-aged Men and Women". Sponsored by UNCG Office of Research and Engagement. \$9000. 2019-2020. Internal.

Echeverría, S.E. Principal Investigator. Enhancing diabetes care and self-management in Latino workers. University of North Carolina, Greensboro: School of Health & Human Sciences, Office of Research, \$5,000. (April 1, 2019- March 31, 2020). Internal.

Echeverría, S.E. Principal Investigator. Assessing social determinants of diabetes care in local patient populations using electronic health records (EHR). Summer Fellowship for Doctoral Student (T Alam). University of North Carolina, Greensboro: Office of Research. \$2,000. (June 1, 2019-August, 31, 2020). Internal.

Echeverría, S.E. Principal Investigator. Identifying community-clinical linkages to promote physical activity among Latinos at risk of diabetes complications. University of North Carolina, Greensboro. Globally Engaged Undergraduate Research and Creativity Award. \$1,500. Spring 2019. Internal.

Loreth, J., Muir, B., Shaw, J., Walsh, J. Science Olympiad. Funding: North Carolina Science Olympiad, College of Arts and Sciences, School of Education, School of Health and Human Sciences. 2019. Internal.

Pavlova, I. V., Horton, M., Schug, M., Tomlin. Intentional, Notable, and Valued Teaching Experiences (INNOVATE) Research funds. Office of the Provost, UNCG. "Evaluating the impact of integrating undergraduate research into the introductory biology curriculum on student learning, STEM retention, and student success". \$13,000. 2018-2019. Internal.

Pavlova, I.V., Walsh, J., Horton, M., Russell,S., Badreddine, Z. RISE Network small grant. "In-lab observations of teaching assistants in introductory biology and chemistry to understand productive instructor-student interactions and to create video materials for instructor training". \$10,000. February-June 2019. Internal.

"STEM Teacher Leader Collaborative: Gift from Summit Rotary" (Complete). (March 1, 2019). \$2000 Gift from Summit Rotary Club of Greensboro for the STEM TLC. Involves Community Engagement.

Smyth, C. D. (Co-Principal), Wasserberg, G. (Co-Principal), Schug, M. D. (Co-Principal), Kalcounis-Rueppell, M. (Co-Principal), "Characterization of Lyme disease spread from Virginia into North Carolina: The role of topographic corridors and anthropogenic forest fragmentation," Sponsored by UNCG, The University of North Carolina at Greensboro, \$25,000.00. (January 2018 - December 2018). Internal

Foundation:

Adams, W.M. Principal Investigator. "Efficacy of Thermal Rehab Machine on Body Cooling in Hyperthermic Individuals". Sponsored by Statim Technologies, LLC., \$21,128. 2018-2019.

Adams, W.M. Principal Investigator. "Efficacy of the Polar Breeze Thermal Rehabilitation Machine in cooling recreationally active males and females following exercise-induced hyperthermia". Sponsored by Statim Technologies, LLC., \$27,805. Pending.

Adams, W.M. Principal Investigator. "Habitual Fluid Intake on Health and Wellness in College-Aged Hispanic Men and Women". Sponsored by American College of Sports Medicine. \$10,000. Pending.

Carlone, H. B. (Principal), "UNCG STEM Teacher Leader Collaborative," Sponsored by The UNCG Excellence Foundation, Inc (Duke Energy Foundation), \$30,000.00.

Carlone, H. B. (Principal), "STEM Teacher Leader Collaborative: Empowering Teachers. Nurturing STEM Equity" Sponsored by Duke Energy Foundation, \$37,000.00. Focused on pedagogical topics/innovations. Involves Community Engagement.

Carlone, H. B. (Principal), "STEM Adventure Club (STAC)," Sponsored by Burroughs Wellcome Fund, \$180,000 (with Heather Moorefield-Lang, LIS and Ben Dyson, HHS, to fund an after-school STEM club at Moss Street Partnership School).

Howell, T. Yasaki, D. Co-Principal Investigators. Moving the Metric: Calculus Corequisite Pilot. \$8,489.78. 2018-2019

Kalcounis-Rueppell, M.C. (PI).2019-20121. North Carolina Wildlife Resources Commission (NCWRC) Carolinas Regional Acoustic Bat Survey. Amount to UNCG: \$166 492. (Renewal for next 2 years).

Kalcounis-Rueppell, M.C., Wasserberg, Smythe, and Schug. Giant Steps Grant to work on Lymes Disease in Virginia and North Carolina. \$25000.

Pavlova, I.V., Walsh, J., Horton, M., Russell,S., Badreddine, Z. RISE Network small grant. "In-lab observations of teaching assistants in introductory biology and chemistry to understand productive instructor-student interactions and to create video materials for instructor training". \$10,000. February-June 2019. Internal.

Praskievicz, S.J. (Principal), "Tropical cyclones and their impacts on inundation from storm surge, rainfall, and riverine flooding on the North Carolina Coastal Plain," Sponsored by North Carolina Sea Grant. Under Review.

Praskievicz, S. J. (Principal), "Combined coastal-riverine flooding during tropical cyclones: A case study of Hurricane Florence, North Carolina," Sponsored by University Corporation for Atmospheric Research (UCAR). Under Review.

Praskievicz, S. J. (Principal), "Creating a participatory process for restoration projects to enhance resilience for fishers and their communities," Sponsored by Auburn University. Under Review.

Praskievicz, S. J. (Principal), "Biogenically mediated sediment dynamics: Do mussels help determine channel morphology in rivers?," Sponsored by University of Alabama. Not Funded.

Rathnayake, H. P. (Principal), "A novel heterocyclic ionic plastic crystal and its conformational dynamics," Sponsored by ACS Petroleum Research, \$110,000.00, Declined.

Rathnayake, H. P. (Co-Principal), "Acquisition of high resolution, multimode AFM for local characterization of nanoscale materials.," Sponsored by North Carolina Biotechnology Center (NCBC), Declined .

Rathnayake, H. P., "Materials Innovation Platform with NCSU," Sponsored by North Carolina State University (NCSU), Pending.

Rathnayake, H. P. (Principal), "Development of titanium based novel oxide and oxynitride thin film systems for photovoltaic solar cells with high power conversion efficiency (PCE)," Sponsored by North Carolina Agricultural and Technical State University (NCAT), \$250,000, Declined.

Remington, D.L., Pavlova, I.V. Moving the Metrics: Student Success (MMSS) grant. Office of the Provost, UNCG.
"Reducing barriers of academic progress through course redesign: Assessing implementation of high-impact practices in introductory biology courses for students underrepresented in the sciences". \$5,000 with \$1,500 CAS match for ERM GRA. January-June 2019.

Schug, M. D. (Principal), "A collaborative proposal between chemistry and biology to scaffold undergraduate research across the curriculum at UNCG," Sponsored by University of San Diego, \$805.78.

RISE Network Member Publications (*UNCG Students)

- Abu Deiab, G. I.; Croatt, M. P. (2019). "Synthetic Approaches to Isocarbacyclin and Analogues as Potential Neuroprotective Agents Against Ischemic Stroke" *Bioorganic & Medicinal Chemistry*, 27, 338-342.
- Adams, W.M. (2019). Exertional Heat Stroke in Secondary School Athletics. *Curr Sports Med Rep.*;18(4):149-153.
- Adams, W.M., Hosokawa Y, Belval LN. Factors involved in the onsite management and are of exertional heat stroke in secondary school athletics. *Athletic Training and Sports Health Care*. Accepted July 2018.
- Adams, W.M., Scarneo, S.E., Casa D.J. (2018). Assessment of Evidence-Based Health and Safety Policies on Sudden Death and Concussion Management in Secondary School Athletics. *J Athlet Train.*; 53(8):756-767.
- Adams, W.M., Belval, L.N., Hosokawa, Y., Grundstein, A.J., Casa, D.J. (2019). Heat Stress During American Football. In: Periard J, Racinais S eds. *Heat Stress in Sport and Exercise: Thermophysiology of Health and Performance*. Springer Nature. 203-218.
- Ahmed, S., Shabbir, J., Gupta, S. (2018). Predictive Estimation of Population Mean in Ranked Set Sampling. To appear in *REVSTAT*.
- Al-Huniti, M. H.; Perez, M. A.; Garr, M. K.; Croatt, M. P. (2018). "Palladium-Catalyzed Chemoselective Protodecarboxylation of Polyenoic Acids" *Organic Letters*, 23, 7375-7379.
- Al-Huniti, M. H.; Rivera-Chávez, J.; Colón, K. L.; Stanley, J. L.; Burdette, J. E.; Pearce, C. J.; Oberlies, N. H.; Croatt, M. P. (2018). "Development and Utilization of a Palladium-Catalyzed Dehydration of Primary Amides To Form Nitriles" *Organic Letters*, 20, 6046-6050.
- Ananthakrishnan, S. J., Share, S., Strain, J., Venkataramana, M., Rathnayake, H. (2018). Precise control in photovoltaic response of Poly(3- hexylthiophene): Fullerene solar cells via accelerated-solvent vapor annealing. *Science Advances Today*, 4(25279), 1-6. www.lognor.com/scienceadvances2019. Anemone, R.L. (2019). *Race and Human Diversity: A Biocultural Approach*. London: Routledge. Second edition. <https://doi.org/10.4324/9781315179940>
- Anemone, R.L., Conroy, G.C. (2018) *New Geospatial Approaches to the Anthropological Sciences*. University of New Mexico Press/SAR Press, Albuquerque, NM. ISBN 9780826359674.
- Anemone, R.L., Emerson, C.W., Jones, T.W., Liu, J., Henderson, C. (2018). Taking virtual anthropology to the field: Developing three dimensional digital outcrop models (3D-DOMs) of fossil localities. IN: *New Geospatial Approaches to the Anthropological Sciences*, RL Anemone and GC Conroy (eds.), University of New Mexico Press/SAR Press, Albuquerque and Santa Fe, NM, pp. 81-99.
- Anemone, R.L., Conroy, G.C. (2018). Geospatial Anthropology: Integrating remote sensing and geographic information sciences into anthropological fieldwork and analysis. IN: *New Geospatial Approaches to the Anthropological Sciences*, RL Anemone and GC Conroy (eds.), University of New Mexico Press/SAR Press, Albuquerque and Santa Fe, NM, pp. 1-20.
- *Avent, C., Boyce, A. S., LaBennett, R., & Taylor, D. (2018). Increasing Chemistry Content Engagement by Implementing Polymer Infusion into Gatekeeper Chemistry Courses. *Journal of Chemical Education*, 95 (12), 2164–2171.
- *Avent, C., Boyce, A. S., Servance, L., DeStefano, L., Nerem, R., & Platt, M. (2018). Implementation and evaluation of a biomedical engineering research experience for African-American high school students at a tier one research university. *Journal of Biomechanical Engineering*, 40(8), 084701-8.
- Baker, K., Jessup, N. A., Jacobs, V. R., Empson, S. B., Case, J. (in press). Productive struggle in action. *Mathematics Teacher: Learning and Teaching PK-12*.
- Benjamin, C.L., Adams, W.M., Curtis, R.M., Sekiguchi, Y., Giersch, G.E.W., Casa, D.J. Early morning training on sleep in NCAA Division I cross country runners. *Women Sport Phys Activ J*. Accepted May, 2019.
- Boyce, A. S. (2019). A re-imagining of evaluation as social justice: A discussion of the Education Justice Project. *Critical Education*, 10(1), 1-19.
- Boyce, A. S., & McGowan, B. L. (2019). An exploration of two novice evaluation educators' experiences developing and implementing introduction to evaluation courses. *American Journal of Evaluation*, 40(1), 119-136.

- Boyce, A. S., *Avent, C., *Adetogun, A., Servance, L., DeStefano, L., Nerem, R., & Platt, M. (2019). Lessons learned from the implementation and evaluation of a science and engineering research experience for African-American high school students. *Evaluation and Program Planning*, 72, 162-169.
- Calabrese Barton, A., & Tan, E. (2018). *STEM-rich Maker Learning: Designing for Equity with Youth of Color*. Teachers College Press.
- Calabrese Barton, A., & Tan, E. (2019). Social justice as political movement and a theory of learning: Moving the learning sciences towards more critical equity-oriented approaches. In Roth, WM. (Ed.) *Encyclopedia of Educational Philosophy & Theory*. Springer.
- Calabrese Barton, A., Tan, E. (2019). Designing for Rightful Presence in STEM: The Role of Making Present Practices. *Journal of the Learning Sciences*, 1--43.
- Calabrese Barton, A., Tan, E. (2018). A longitudinal study of equity-oriented STEM-rich making among youth from historically marginalized communities. *American Educational Research Journal*, 55(4), 761--800.
- Calabrese Barton, A., Tan, E. (2018). *STEM-Rich Maker Learning: Designing for Equity with Youth of Color*. Teachers College Press.
- Calabrese Barton, A., Tan, E. Beyond Inclusion: Equity as Establishing Rightful Presence. Manuscript under review, *Educational Researcher*.
- Calabrese Barton, A., Tan, E., & Birmingham, D. (Revise & Resubmit) *Equitable & Consequential Teaching & Learning: Towards Dismantling Systemic Injustices with New High Leverage Practices*. Manuscript under review, *Journal of Teacher Education*.
- Carlone, H. B., Hegedus, T., Benavides, A., Huffling, L., Ash, M., Matthews, C. (under review). Being smart and being me: Diverse youths' identity positioning during an informal field science summer enrichment program. *International Journal of Science Education*.
- Cohen, S., Praskievicz, S. J., Maidment, D. (2018). Featured Collection Introduction: National Water Model. *Journal of the American Water Resources Association*, 54, 767-769.
- Collins, S.L., M.L. Avolio, C. Gries, L.M. Hallett, S.E. Koerner, K.J. La Pierre, A.L. Rypel, E.R. Sokol, S.B. Fey, D.F.B. Flynn, S.K. Jones, L.M. Ladwig, J. Ripplinger, M.B. Jones. 2018. Temporal heterogeneity increases with spatial heterogeneity in ecological communities. *Ecology*. 99(4):858-865. DOI: 10.1002/ecy.2154.
- Conroy, G.C., Chew, A., Rose, K.D., Bown, T.M., Anemone, R.L., Gunnell, G.F. (2018). Assessing unsupervised image classification as an aid in paleoanthropological explorations. IN: *New Geospatial Approaches to the Anthropological Sciences*, RL Anemone and GC Conroy (eds.), University of New Mexico Press/SAR Press, Albuquerque and Santa Fe, NM, pp. 59-79.
- Dawood, S., Yarbrough, R., Davis, K., Rathnayake, H. (2019). Self-assembly and optoelectronic properties of isorecticular MOF nanocrystals. *Synthetic Metals*, 252, 107-112. <http://www.elsevier.com/locate/synmet>
- Diekfuss, J. A., Rhea, C. K., Schmitz, R., Grooms, D. R., Wilkins, R. W., Slutsky, A. B., Raisbeck, L. D. (2019). The influence of attentional focus on balance control over seven days of training. *Journal of Motor Behavior*, 51(3), 281-292.
- Divney, A, Murillo, R., Rodriguez, F., Mirzayi, C., Tsui, E., Echeverria, S.E.†. Diabetes Prevalence by Leisure, Transportation and Occupation-Based Physical Activity in Racially/ Ethnically Diverse U.S. Adults. Accepted-*Diabetes Care*.
- Divney, A., Echeverria, S.E.†, Islam, N., Thorpe, L., Trinh-Shevrin, C. (2019, Jan). Hypertension prevalence jointly influenced by acculturation and gender in U.S. immigrant groups. *Am J Hypertens.*; 32(1):104-11
- Duggan, A., Jacobs, V. (2018, September). Project CMApSS II Final Evaluation. (North Carolina Quality Educators through Staff Development and Training [NC Quest]: Improving Teacher Quality Grants—PIs: Holt Wilson, Carol Seaman, and Rodney Shotwell).
- Echeverría, S.E., Divney, A., Rodriguez, F., Sterling, M., Vasquez, E., Murillo, R., Lopez, L. (2019 Jan). Nativity and occupational status as determinants of physical activity participation among Latinos in the United States. *Am J Prev Med.*; 56(1):84-92.
- Echeverría, S.E. (2018, Oct 2). Debunking paradoxes: integrating complexity in CVD research among Latinos. Editorial to 'County-level Hispanic Ethnicity Density and Cardiovascular Disease Mortality'. *Journal of the American Heart Association.*; 7(19).
- Emerson, C.W., Anemone, R.L. (2018). Ongoing developments in geospatial data, software, and hardware with prospects for anthropological applications. IN: *New Geospatial Approaches to the Anthropological Sciences*,

- R.L. Anemone and G.C. Conroy (eds.), University of New Mexico Press/SAR Press, Albuquerque and Santa Fe, NM, pp. 21-37.
- Endres, B., Kerr, Z.Y., Stearns, R.L., Adams, W.M., Hosokawa, Y., Huggins, R.A., Kucera, K.L., Casa, D.J. Epidemiology of Sudden Death in American Youth Sports. *J Athlet Train.* 2019; 54(4).
- Florez, K., Katic, B., López-Cevallos, D., Murillo, R., Cancel-Tirado, D., Aponte-Soto, L., Echeverria, S.E. (Accepted 2019). The Double Burden of Food Insecurity and Obesity Among Latino Youth: Understanding the Role of Generational Status. *Pediatric Obesity.*
- Glass, S. M., Rhea, C. K., Wittstein, M. W., Ross, S. E., Florian, J. P., Haran, F. J. (2018). Changes in posture following a single session of long-duration water immersion. *Journal of Applied Biomechanics*, 34, 435-441.
- Glass, S. M., Rhea, C. K., Schmitz, R. J., Ross, S. E. (2019). Potential mediators of load-related changes in complexity in young, healthy adults. *Journal of Athletic Training*, 54(1), 70-80.
- Glass, S. M., Schmitz, R., Rhea, C. K., Ross, S. E. (2019). Potential mediators of load-related decreases in movement quality in young, healthy adults. *Journal of Athletic Training*, 54(1), 81-89.
- Glass, S. M., Cone, B. L., Rhea, C. K., Duffy, D., Ross, S. E. (in press). Sex-specific dependence of linear and nonlinear postural control metrics on anthropometrics during clinical balance tests in health young adults. *Journal of Sports Rehabilitation.*
- Graham-Bailey, M., Richardson, B. L., Blankenship, B., Stewart, A., Chavous, T. (in press). Examining college students' multiple social identities of gender, race, and socioeconomic status: Implications for intergroup and social justice attitudes. *Journal of Diversity in Higher Education.*
- Greenberg, D., Calabrese Barton, A., Tan, E., & Archer, L. (Revise & Resubmit) Re-humanizing STEM Maker Entrepreneurs: A Case Study. Manuscript under review, *Journal of the Learning Sciences.*
- Gonzalez, M., Calabrese Barton, A., Tan, E., & Schenkel, K. (Accepted, 2019) Engineering for sustainable communities: A Toolkit. *Science Scope.*
- Gupta, S., Mehta, S., Shabbir, J., Khalil, S. (2018): A Unified Measure of Respondent Privacy and Model Efficiency in Quantitative RRT Models. *Journal of Statistical Theory and Practice*, Vol. 12, No. 3, 505-511.
- Gupta, S., Khan, Z., Shabbir, J. (2018): Modified Systematic Sampling with Multiple Random Starts. *REVSTAT.* Vol. 16, No. 2, 187 – 212.
- Hosokawa, Y, Adams. W.M., Belval. L.N., Davis R, Huggins, R.A., Jardine J, Katch RK, Stearns RL, Casa DJ. Exertional heat illness incidence and on-site medical team preparedness in warm weather. *Int J Biometeor.* 2018;62(7):1147-1153.
- Hawkins, M., Saha, S., Ravindran, E., Rathnayake, H. P. (2019). A sol–gel polymerization method for creating nanoporous polyimide silsesquioxane nanostructures as soft dielectric materials. *Journal of Polymer Science, Part A: Polymer Chemistry*, 57(4), 562-571.
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- Huffling, L. D., Benavides, A. W., Matthews, C. E., Compton, M. V., Kurtts, S. A., Carlone, H. B. (2018). Learning Frog Calls When You Can't Hear: Fieldwork with High School Students Who Are Deaf and Hard-of-Hearing. *Towards Inclusion of All Learners through Science Teacher Education* (pp. 165-173).
- Huffling, L. D., Benavides, A. W., Matthews, C. E., Compton, M. V., Kurtts, S. A., Carlone, H. B. (2018). 15. Learning Frog Calls When You Can't Hear. *Towards Inclusion of All Learners through Science Teacher Education*, 165.
- Hurley, L., Kalcounis-Rueppell, M.C. (2018). State and Context in Vocal Communication in Rodents. Chapter in *Springer Handbook in Auditory Research.*
- Jacobs, V. R., Empson, S. B., Pynes, D., Hewitt, A., Jessup, N., Krause, G. (in press). The responsive teaching in elementary mathematics project. In P. Sztajn & P. H. Wilson (Eds.), *Designing professional development for mathematics learning trajectories.* New York: Teachers College Press.
- Jacobs, V. R., Philipp, R. A., Sherin, M. G. (2018). Noticing of mathematics teachers. In S. Lerman (Ed.), *Encyclopedia of mathematics education: Springerreference* (2nd Edition). doi:10.1007/978-3-319-77487-9_120-4

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- Kalcounis-Rueppell, M.C., Pultorak, J., and Marler, C. (2018). Ultrasonic Vocalizations of Young Mice in the Genus *Peromyscus*. Chapter 5.3 in Brudzynski: Handbook of Ultrasonic Vocalizations. Elsevier.
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- Khalil, S., Gupta, S., Hanif, M. (2018). Estimation of Finite Population Mean in Stratified Sampling Using Scrambled Responses in The Presence of Measurement Errors. To appear in *Communications in Statistics - Theory and Methods*. <https://doi.org/10.1080/03610926.2018.1435817>
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- Larsen, A.L., Homyack, J.A., Wigley, T.B., Miller, D.A., Kalcounis-Rueppell, M.C. (2018). New eastern geographic distribution records of *Reithrodontomys fulvescens* (Fulvous Harvest Mouse). *Southeastern Naturalist*.
- LoJacono, C.T., MacPherson, R.P., Kuznetsov, N.A., Raisbeck, L.D., Ross, S.E., Rhea, C.K. (2018). Obstacle crossing in a virtual environment transfers to a real environment. *Journal of Motor Learning and Development*, 6(2), 234-249.
- Mercier, A., Metzger, S. R., Carlone, H. B., Blankmann, D. (in press). "Can I build on that?" Student-engaged talk stems from teachers' epistemological messages. *Science & Children*.
- Metzger, S. R., Mercier, A., Carlone, H. B. (in press). "It's like a rock puzzle in a wall": Multiliteracies and design practices in first-grade engineering. *The Literacies of Design: Studies of Equity and Imagination in Engineering and Making*.
- McPherson, K. E.; Croatt, M. P.; Morehead, Jr. A. T.; Sargent, A. L. (2018). "DFT Mechanistic Investigation of an Enantioselective Tsuji-Trost Allylation Reaction" *Organometallics*, 37, 3791-3802.
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- Praskievicz, S. J., Luo, C. (2019). Unsupervised hydrologic classification of rivers: Watershed controls on natural and anthropogenic flow regimes, Alabama, USA. *Hydrological Processes*, 33(8), 1231-1244.
- Praskievicz, S. J., Luo, C., Bearden, B., Ernest, A. (2018). Evaluation of low-flow metrics as environmental instream flow standards during long-term average and 2016 drought conditions: Tombigbee River basin, Alabama and Mississippi, USA. *Water Policy*, 20(6), 1240-1255.
- Pryor, J.L., Adams, W.M., Huggins, R.A., Belval, L.N., Pryor, R.R., Casa, D.J. (2018). Pacing Strategy of a Full Ironman Overall Female Winner on a Course with Major Elevation Changes. *J Strength Cond Res.*; 32(11):3080-3087
- Rhea, C. K., Diekfuss, J. A., Fairbrother, J. T., Raisbeck, L. D. (2019). Postural control entropy is increased when adopting an external focus of attention. *Motor Control*, 23, 230-242.
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- Rhea, C.K., Felsberg, D.T., & Maher, J.P. (2018). Towards evidence-based smartphone apps to enhance human health: Adoption of behavior change techniques. *American Journal of Health Education*, 49(4), 210-213.
- Rhea, C. K., Schleich, K. N., Washington, L., Glass, S. M., Ross, S. E., Etnier, J. L., Wright, W. G., Goble, D. J., Duffy, D. (in press). Neuromotor and neurocognitive performance in female American football players relative to previously published data. *Athletic Training & Sports Health Care*.
- Richardson, K., Miller, S., Reinhardt, J. (in press). Professional development as an ongoing partnership: The sum is greater than its parts. *School-University Partnerships Furthering the Education Profession: Partnerships in Action*.
- Rodriguez, F., Echeverría, S.E., Amadi, C., Pentakota, S.R., Hastings, K., Palaniappan, L. Language spoken at home and cardiovascular health factors in Latino and Asian American immigrants. *Eth&Dis*. Accepted
- Schenkel, K., Barton, A. C., Tan, E., Nazar, C. R., Flores, Marcos D Gonzalez D (2019). Framing equity through a closer examination of critical science agency. *Cultural Studies of Science Education*, 1--17.
- Schenkel, K., Calabrese Barton, A, & Tan, E. (2019). An Engineering Funds of Knowledge Framework. *Science and Children*.
- Schenkel, K., Calabrese Barton, A., & Tan, E. (2019, Forthcoming). *Teacher Toolkit: Community Ethnography as Pedagogy*. *Science Scope*.
- Sekiguchi, Y., Adams, W.M., Benjamin, C.L., Curtis, R.M., Giersch, G.E.W., Casa, D.J. (2019). Relationship between resting heart rate, heart rate variability, and sleep characteristics in collegiate cross country runners. *J Sleep Res.*; e12836.
- Sekiguchi, Y., Adams, W.M., Curtis, R.M., Benjamin, C.L., Casa, D.J. (2018). Factors influencing hydration status during a NCAA Division I Soccer Preseason. *J Sci Med Sport*. Accepted December 2018.
- Sekiguchi, Y., Huggins, R.A., Looney, D.P., Curtis, R.M., West, C.A., Adams, W.M., Benjamin, C.L., Casa, D.J. (2018). Relationship between heart rate variability and acute:chronic ratio throughout a season in NCAA D1 Men's Soccer Players. *J Strength Cond Res*. Accepted August 2018.
- Shabbir, J. Gupta, S., Ahmed, S. (2018): A Generalized Class of Estimators under Two-Phase Stratified Sampling for Non-Response. To appear in *Communications in Statistics - Theory and Methods*.
- Suarez, D., Gupta, S., Johnson, E., and Manthena, P. (2018): Variations of the Greenberg Unrelated Question Model - a Field Test. To appear in the *Journal of Interdisciplinary Mathematics*.

- Sun, J., Oualkacha, K., Greenwood, C., Lakhal-Chaieb, L. (2019). Multivariate association test for rare variants controlling for cryptic and family relatedness. *Canadian Journal of Statistics*. Volume47, Issue1, Pages 90-107.
- Tan, E., Calabrese Barton, A. (2019). Youth claiming a rightful presence in STEM: The Role of Critical Identity Science Artifacts. In Holbert, N., Berland, M., & Kafai, Y. (Eds). *Constructionism in Context: The Art, Theory & Practice in Learning Design*. MIT Press.
- Tan, E., Calabrese Barton, A., Benavides, A. (2019). Engineering for sustainable communities: Epistemic tools in support of equitable and consequential middle school engineering. *Science Education*. Early. View, <https://doi.org/10.1002/sce.21515>
- Tan, E., Calabrese Barton, A. (2019, Forthcoming). Hacking a path in and through STEM: Exploring how youth build connecting pathways between STEM-related landscapes. *Teachers College Record*.
- Tan, E., Calabrese Barton, A. (2018). Towards Critical Justice: Exploring Intersectionality in Community based STEM-rich Making with Youth from Non-dominant Communities. *Equity & Excellence in Education*, 51(1), 48--61.
- *Timonin, M.A., Kalcounis-Rueppell, M.C., Marler, C. (2018). Testosterone pulses at the nest site modify ultrasonic vocalization types in a monogamous and territorial mouse. *Ethology* 124:804-815 DOI: 10.1111/eth.12812
- Vásquez, E, Murillo, R., Echeverria, S.E. (2019, Accepted). Neighborhood social cohesion and walking limitations in a nationally representative sample of older Latinos. *Eth & Dis*.
- Węgiel, A., Grzywiński, W., Ciechanowski, M., Jaros, R., Kalcounis-Rueppell, M., Kmieciak, A., Kmieciak, P., Węgiel, J. (2019). The foraging activity of bats in managed pine forests of different ages. *European Journal of Forestry*. <https://doi.org/10.1007/s10342-019-01174-6>. Online 9 March 2019.
- Wittstein, M., Starobin, W., Schmitz, J. M., Shultz, R., Haran S. J., Rhea, C. K. (2019). Cardiac and gait rhythms in healthy younger and older adults during treadmill walking tasks. *Aging Clinical and Experimental Research*, 31(3), 367-375.
- Yadav, S., Gupta, S., Misra, S. (2018). Population Mean Estimation when Median of the Study Variable is Known. *Statistics and Applications*, Vol. 16, No. 1, 339-350.
- Yang, W., Barber-Foss, K. D., Dudley, J., Thomas, S., Galloway, R., DiCesare, C., Leach, J., Schiefele, P., Farina, M., Valencia, G., Smith, D., Altaye, M., Rhea, C. K., Talavage, T., Myer, G. D. (2019). The impact of low-level blast exposure on brain function after a one-day tactile training and the ameliorating effect of a jugular vein compression neck collar device. *Journal of Neurotrauma*, 36, 234-249.
- Young, A., Gupta, S., Parks, R. (2019). A Binary Unrelated Question RRT Model Accounting for Untruthful Responding. Accepted in *Involve*.
- Zaleski, A.L., Panza, G.A., Ballard, K.D., Adams, W.M., Hosokawa, Y., Pescatello, L.S., Thompson, P.D., Taylor, B.A. (2018). The Influence of Compression Socks During a Marathon on Exercise-Associated Muscle Damage. *J Sport Rehab*. Accepted July 2018.
- Zatezao, T., Gupta, S., Yadav, S., Shabbir, J. (2018). Assessing the Adequacy of First Order Approximations in Ratio Type Estimators. To appear in the *Journal of Interdisciplinary Mathematics*.
- Zhang, Q., Gupta, S., Kalucha, G, Khalil, S. (2019). Ratio Estimation of the Mean under RRT Models. *Journal of Statistics and Management Systems*, Vol. 22, No. 1, 97-113.

RISE Network Member Presentations

National:

- *Abee, Michele. (2018). How a Good Projection Goes Bad: The Case of the Mercator Projection. Annual meeting of the Southeastern Division of the American Association of Geographers, Johnson City, TN.
- *Abee, Michele. (2019). How Mercator's projection went bad. Annual meeting American Association of Geographers National Conference, Washington D.C., 2019.
- *Acree, J., *Adetogun, A., *Arias, G., *Avent, C., Boyce, A. S., Chouinard, J.C., *Moller, J., Smith, T., *Sunnassee, E., & *Zemaitis, J. (2018, November). Graduate Students Speak Their Truth About Power: Using Photovoice to Capture a Diversity of Novice Evaluator Perspectives. Panel (Presidential Strand) presented at the meeting for the American Evaluation Association, Cleveland, OH.
- Adams, W.M. (2018, May). Integration of Evidence-Based Medicine for the Prevention, Recognition, Management and Care of Exertional Heat Stroke, Mid Atlantic Athletics Trainers' Association Annual Meeting, Ocean City, MD. Invited.
- Adams, W.M. (2018, May). Evidence Based Medicine in the Realm of Sudden Death: From Evidence to Practice. Southern Conference Sports Medicine Society Annual Meeting. Greenville, SC. Invited.
- Adams, W.M., Curtis, R.M., Benjamin, C.L., Colburn, A.T., Lopez, V., Lee, E.C., Casa, D.J. Hormonal, Steroidal and Inflammatory Responses in Collegiate Male Soccer Players and Female Cross-Country Runners. American College of Sports Medicine Annual Meeting. Minneapolis, MN. Med Sci Sport Exerc. 2018; 50(5S): XX
- Adams, W.M. *Glenn, G.S., *Haskins, M.L., *Hevel, D.J., *Huntsinger, A., *Karras, E.M., Maher, J.P., McGuirt, J.T., Walton, S.L. Racial Differences in 24 Hour Urinary Hydration Markers. American College of Sports Medicine Annual Meeting, Orlando, FL. Med Sci Sport Exerc. 2019; 51(5 Suppl).
- Adams, W.M. Vandermark, L.W., Scarneo, S.E., Belval, L.N., Lee, E.C., DiStefano, L.J., Armstrong, L.E., Casa, D.J. (2018). Influence of graded dehydration on neuromuscular control during prolonged exercise in the heat. National Athletic Trainers' Association Annual Meeting, New Orleans, LA. J Athl Train.; 53(6 Supplement)
- Adams, W.M., *Haskins, M.L., *Huntsinger, A., *Karras, E.M., Walton, S.L. (2019, February). Racial and Ethnic Differences in 24 Hour Urinary Hydration Markers. Southeast Chapter American College of Sports Medicine Annual Meeting, Greenville, CS.
- *Adetogun, A., *Moller, J., *Avent, C., *Reid, A., Boyce, A. S. (2018, November). When powerbrokers speak truth: Advice from prominent evaluators. Roundtable presented at the meeting for the American Evaluation Association, Cleveland, OH.
- Avolio, M.L., La Pierre, K.J., Collins, S.L., Grman, E., Houseman, G.R., Koerner, S.E., Smith, M.D., Tredennick, A., Wilcox, K.R. (2018, August). Reordering is the dominant process driving community responses to global change drivers. ESA 103rd Meeting. New Orleans, Louisiana.
- Bailie, J. M., Wiri, S., Waliiko, T., Babakhanyan, I., Rhea, C. K., Graves, W., Hoyt, G., Schneider, E. B., Sargent, P., Duckworth, J. L., (2018, August). Military Health System Research Symposium, "Relationship to blast overexposure to the posterior head and changes in neurobehavioral health," (Non-Academic), Kissimmee, FL, United States of America. Accepted.
- Banton, R. J., Rhea, C. K., Bauman, R., Duckworth, J. D., (2018, August). Military Health System Research Symposium, "Development of an effective primary passive screening process to identify individual at risk of blasé exposure vulnerability: Gauging Ambulation In Training (GAIT)," Dr. (Non-Academic), Kissimmee, FL, United States of America. Accepted.
- Benjamin, C.L., Adams, W.M., Curtis, R.M., Sekiguchi, Y., Giersch, G.E.W., Mulholland, Casa, D.J. (2018). Sleep patterns of NCAA D1 collegiate athletes: a sex comparison. American College of Sports Medicine Annual Meeting. Minneapolis, MN. Med Sci Sport Exerc.; 50(5S): XX.
- Benjamin, C.L., Adams, W.M., Curtis, R.M., Sekiguchi, Y., Casa, D.J. (2018). Effects of early morning training on sleep in NCAA division I female cross-country runners. National Strength and Conditioning Association Annual Meeting, Indianapolis, IN. J Strength Cond Res.
- Benjamin, C.L., Curtis, R.M., Huggins, R.A., Sekiguchi, Y., Adams, W.M., Arent, S.M., Jain, R.K., Miller, S.J., Armwald, B.C., Pullara, J.M., Casa, D.J. (2019). Sleep Quality Effects Mood, Anxiety and Disablement in

- Division I National Collegiate Athletic Association Men's Soccer Players. American College of Sports Medicine Annual Meeting, Orlando, FL. Med Sci Sport Exerc. 51(5 Suppl).
- Boyce, A. S., *Avent, C., *Arias, G., *Adetogun, A. (2018, November). Challenges in Speaking Truth to Power in Three NSF Evaluation Contexts. Roundtable presented at the meeting for the American Evaluation Association, Cleveland, OH.
- Calabrese Barton, A., Tan, E. (2019). Twinning iterative design with community cultural wealth: Toward a locally grounded, expansive maker culture. Fablearn 2019: Proceedings of the 8th annual conference on Maker Education. NYC, New York.
- Calabrese Barton, A., Tan, E. (2019, March). FAB Learn Conference 2019, "Twinning iterative design with community cultural wealth: Toward a locally-grounded, expansive maker culture." Teachers College, Columbia University, New York City, USA.
- Calabrese Barton, A., Tan, E. (2019, May). Invited Book Talk. TERC, "STEM-Rich Maker Learning: Designing for Equity with Youth of Color." Boston..
- Calabrese Barton, A., Tan, E. (2019, March). Invited Book Talk. University of California, Los Angeles, "STEM-Rich Maker Learning: Designing for Equity with Youth of Color." College of Education, Los Angeles, USA.
- Carlone, H. B., Northern Arizona University Center for Science Teaching and Learning Seminar Series in STEM Education, "Identity as an analytic lens for science education: Critical retrospective and peek at the next horizon," NAU Center for Science Teaching and Learning, Flagstaff, AZ, United States of America. (April 26, 2019).
- Carlone, H. B., Schouweiler, D. J., Mercier, A., Worsley, T., Lancaster, M., Heredia, S. C., NARST annual conference, "Designing for youths' STEM identity work: The STEM Identity Profile Instrument," NARST (Academic), Baltimore, MD. Accepted. (April 1, 2019).
- Carlone, H. B., Mercier, A., Metzger, S. R., Annual meeting of the American Educational Research Association, "First-grade students as epistemic agents in engineering at a high-needs elementary school," AERA (Academic), Toronto, Canada. Accepted. (April 7, 2019).
- Stroupe, D., Carlone, H. B., National Association for Research in Science Teaching, "A good day in the field: Field science disrupting narratives of school science," NARST (Non-Academic), Baltimore, MD, United States of America. Accepted. (April 3, 2019).
- Carlone, H. B., Mercier, A., Metzger, S. R., National Association for Research in Science Teaching (NARST), "First-Grade Students as Epistemic Agents in Engineering in a High-Needs Elementary School," NARST (Academic), Baltimore, MD, United States of America. Accepted. (April 2, 2019). Focused on pedagogical topics/innovations. Involves Directed Professional Activity.
- Carlone, H. B., Iyer, L., STELAR ITEST 2018 Principal Investigator and Evaluator Summit, "Broadening identities for diverse youth in STEM through socioenvironmental problem solving," National Science Foundation (Academic), Alexandria, VA, United States of America. Invited. (May 14, 2018).
- Chouinard, J.A., Boyce, A. S. (2019, March). An Exploration of Intersectionality as a Critical Dimension of Culturally Responsive Practice. Paper presented at the Center for Culturally Responsive Evaluation and Assessment Conference, Chicago, IL.
- Cone, B. L., Lockhart, T. E., Raisbeck, L. D., Ross, S. E., Rhea, C. K. (2018, June 21) North American Society for the Psychology of Sport and Physical Activity, "An investigation into the relationship between locomotor dynamics and overall fall-risk.," (Academic), Denver, CO, United States of America. Accepted..
- Curtis, R.M., Adams, W.M., Benjamin, C.L., Sekiguchi, Y., Huggins, R.A., Casa, D.J. (2018). Sleep distribution and heart-rate derived autonomic nervous system responses to acute training load changes in collegiate soccer players. National Strength and Conditioning Association Annual Meeting, Indianapolis, IN. J Strength Cond Res.
- Curtis, R.M., Adams WM, Benjamin CL, Sekiguchi Y, Casa DJ. (2018). The effect of sleep duration on sleep quality in elite soccer athletes. American College of Sports Medicine Annual Meeting. Minneapolis, MN. Med Science Sport Exercise.; 50(5S): XX
- Dawood, S., Rathnayake, H., PMSE Division, "Metal-organic frameworks (MOFs) for patterning on useful CMOS platforms," American Chemical Society National Meeting (Academic), Boston, Boston, MA, United States of America. Accepted. (August 27, 2018). Focused on pedagogical topics/innovations. Involves Community Engagement. Involves Directed Professional Activity.

- Echeverría, S.E., Huang, T., Strack, R., Green Parker, M. (2019, Feb). Launching physical activity research in community settings: A primer on strategies for recruiting, retaining and applying novel technologies. Lead Organizer and Presenter. Active Living Research Conference, Charleston, SC.
- Echeverría, S.E., Wattenberg, A., Vasquez, E., Murillo, R., Huang, T. (2019, Feb). Understanding the type of walking behaviors Latinos engage in to support walking campaigns. Active Living Research Conference, Charleston, SC.
- Empson, S. B., Franke M. L., Jacobs, V. R. (2019, April). Learning from each other: A conversation around extending 30 years of CGI. Discussion session at the 2019 annual research conference of the National Council of Teachers of Mathematics, San Diego, CA.
- Felsberg, D., Maher, J. P., Rhea, C. K., (2018, June 21). North American Society for the Psychology of Sport and Physical Activity, "The State of Behavior Change Techniques in Virtual Reality Rehabilitation of Neurologic Populations: A Systematic Review.," (Academic), Denver, CO, United States of America. Accepted.
- Gates, E., Gopez, G., Boyce, A. S., Rivera, L., & Garcia, G. (2018, November). To Speak, or Not to Speak: Revealing Cultural & Contextual Dimensions of Speaking Truth to Power Through Skits. Think Tank presented at the meeting for the American Evaluation Association, Cleveland, OH.
- Giersch, G.E.W., Huggins, R.A., Benjamin, C.L., Adams, W.M., Belval, L.N., Curtis, R.M., Sekiguchi, Y., Casa, D.J. (2018). Validity and reliability of shirt-based integrated GPS sensor. American College of Sports Medicine Annual Meeting. Minneapolis, MN. *Med Sci Sport Exerc.*; 50(5S): XX
- Gonzalez, T., Echeverría, S.E. (2019, March). What does intersectoral, community-based physical activity research look like? A feasibility study in New York City. Society of Behav Med, Poster, Washington DC.
- Hawkins, M., Rathnayake, H., Starobin, J., (2018). PMSE Division, "Novel organic-inorganic nanohybrids for FRET Communication network," American Chemical Society National Meeting (Academic), Boston, Boston, MA, United States of America. Accepted. (August 26, 2018). Focused on pedagogical topics/innovations. Involves Community Engagement. Involves Directed Professional Activity.
- Hoover, D.L., M.D. Smith, A.K. Knapp, K.R. Wilcox, K.E. Young, M.L. Avolio, S.E. Koerner, and K.J. La Pierre. August 2018. Ecological responses to extreme climatic events: Linking theory, observations, and experiments. ESA 103rd Meeting. New Orleans, Louisiana.
- Hosokawa, Y., Stearns, R.L., Johnson, E.N., Eason, C.M., Adams, W.M., Vandermark, L.W., Lopez, R.M., Jardine, F.J., Casa, D.J. (2018). Beliefs, knowledge and influence of education regarding optimizing heat safety during summer road race participation. National Athletic Trainers' Association Annual Meeting, New Orleans, LA. *J Athl Train.*; 53(6 Supplement):
- Huggins, R.A., Curtis, R.M., Benjamin, C.L., Sekiguchi, Y., Wasserman, E.B., Klossner, D.A., Adams, W.M., Arent, S.M., Jain, R.K., Miller, S.J., Armistead, M.J., Borchik, S.M., D'Andrea, C., Landry, A.P., Sylvester T., Walker, A.J., Casa, D.J. (2019). The Influence of Multi-Week Game Clustering on Injury Rate and Risk in Collegiate Men's Soccer. American College of Sports Medicine Annual Meeting, Orlando, FL. *Med Sci Sport Exerc.*;51(5 Suppl).
- Jacobs, V. R., Empson, S. B., Brown, D. (2019, April). Building teachers' questioning expertise by calling attention to children's mathematical ideas. Presentation at the 2019 annual meeting of the National Council of Supervisors of Mathematics, San Diego, CA.
- Kirchoff, B., Schwartzman, R. J., Cuny, K., Rathnayake, H. P., (2019, March 29). National Association of Communication Centers (NACC) Annual Conference, "How Communication Centers Can Improve Scientific Communication and Build Bridges between Scientists and the Public," National Association of Communication Centers (NACC) (Academic), UNCG, Greensboro, United States of America. Accepted.
- Kerr, Y.Z., Register-Mihalik, J.K., Pryor, R.R., Piermont, L.A., Scarneo, S.E., Adams, W.M., Marshall, S.W., Kucera, K., Casa, D.J. (2018). The effect of the National Athletic Trainers Association Inter-Association Task Force (NATA-IATF) preseason heat acclimatization guidelines on high school football preseason exertional heat illness rates. National Athletic Trainers' Association Annual Meeting, New Orleans, LA. *J Athl Train.*;53(6 Supplement):
- *Kalcounis-Rueppell, M.C., Petric, R., Marler, C. (2018, May 31). *Peromyscus* as a model for the study of acoustic communication. *Peromyscus Symposium*, Columbia, SC.
- Koerner, S.E., Wilcox, K.R., Borkenhagen, A., Burkpile, D.E., Collins, S.L., Hoffman, A.M., Hoover, D.L., Kirkman, K.P., Knapp, A.K., Lemoine, N.P., Smith, M.D., Thompson, D.. August 2018. The sunnier side of an

- exceptional drought: Transformation of a South African savanna grassland. Ecological Society of American (ESA) 103rd Meeting. New Orleans, Louisiana.
- Koerner, S.E. (2018, September). Context-dependency of herbivore effects on biodiversity: Roles of body size, productivity, and biome. Longterm-Ecological Research All-Scientists Meeting. Alsilomar, California.
- Koerner, S.E. (2019, February). Response to Multiyear Drought: Facilitating Evidence Based Land Management. Invited Speaker in Organized Symposium at American Association for the Advancement of Science (AAAS) Annual Meeting. Washington, D.C.
- Lewis, E., Howell, T. (2019). Designing a corequisite class to increase student success in Calculus I. Paper presented at the 98th meeting of the Southeast Section of the Mathematical Association of America, Cleveland, TN.
- Li, H., Parker, K. A., Kalcounis-Rueppell, M. C. (2019). The luxury effect beyond cities: bats respond to socioeconomic variation across landscapes. The 24th annual meeting of the southeastern bat diversity network and the 29th annual colloquium on the conservation of mammals in the southeastern US, Jacksonville, Florida.
- Li, H., Parker, K. A., Kalcounis-Rueppell, M. C. (2018). Conservation actions are needed for both acute and chronic threats to North American bats. North American Society for Bat Research (NASBR) annual conference, Puerto Vallarta, Mexico.
- Li, H., Parker, K. A., Kalcounis-Rueppell, M. C. (2018). White-nose syndrome management and protection of critical habitats are both important for bat conservation. The 25th annual The Wildlife Society (TWS) conference, Cleveland, Ohio.
- LoJacono, C., Sanchez, A. M., Manzo, J. D., Rhea, C. K., (2018, June 21). North American Society for the Psychology of Sport and Physical Activity, "The effect of feedback within a novel virtual reality obstacle crossing environment," (Academic), Denver, CO, United States of America. Accepted.
- McCall, J. E. D., Schwartzman, R., Cuny, K., Kirchoff, B., Rathnayake, H., (2019, March 29). National Association of Communication Centers, "How Communication Centers Can Improve Scientific Communication and Build Bridges Between Scientists and the Public," (Academic), UNCG, Greensboro, NC, United States of America. Accepted. Involves Directed Professional Activity.
- *Moller, J. R., *Reid, A., *Avent, A., Boyce, A., *Adetogun, A. (2019, March). Constructing a culturally sensitive instrument: Critical reflections and implications for practice. Paper presented at the Center for Culturally Responsive Evaluation and Assessment Conference, Chicago, IL.
- Morales, K., Tsui, M.T.K. (2019). Variations in total- and methyl-mercury levels in two recently restored urban wetlands and nearby streams. Society of Wetland Scientists Annual Meeting. Baltimore, Maryland.
- Morales, K., Tsui, M.T.K. (2018). Seasonal variations of total- and methyl-mercury in restored urban wetlands of different maturity in Piedmont Triad of North Carolina. American Geophysical Union Fall Meeting. Washington, DC.
- Pavlova, I.V., Horton, M. Oral presentation. (2018, July 26-29). "Using the "Attitudes & Actions" Infographic to Engage Students in Metacognitive Reflection and Actions to Improve Learning Strategies." American Society for Microbiology Conference for Undergraduate Educators (ASMcue) National Meeting, Austin, TX.
- Pavlova, I.V., Horton, M. (2018, August 6-8). Round-table discussion, "A visual tool supports learners to test out effective learning strategies." Lilly Conferences on College and University Teaching. Asheville, NC.
- Pavlova, I.V., Hicks J., Wilse J. Poster presentation. "Impact of a Semester with Three Design-and-Improve Lab Modules on Introductory Students' Statistical Reasoning and Experimental Design Skills and Sense of Autonomy." 2018. 25th Annual ASM conference for undergraduate educators (ASMcue). J. Microbiol. Biol. Educ. 19(3): doi:10.1128/jmbe.v19i3.1693
- Payton, E., Echeverria, S., Denzongpa, K., Morrison, S. (2019, February). Examining how neighborhood poverty and violence influence active living in an African American community: A mixed methods study. Active Living Research Conference, Charleston, SC.
- Phillips, Lee. (2018, December). Invited Presentation. NC Environmental Education Lunchtime Discovery Series, NC Museum of Natural Sciences.

- Praskievicz, S. J., (2019, April 4). "Assessment of flow-ecology relationships for determining environmental instream flow standards: A meta-analysis focused on the southeastern United States," American Association of Geographers (Academic), Washington, DC. Accepted.
- Praskievicz, S. J., Carter, S., Dhondia, J., Follum, M., (2018, October 1). Flood Risk Workshop, "Flood-inundation modeling in an operational context: 2016 Alabama/Florida and Texas floods," National Aeronautics and Space Administration (NASA) (Academic), Boulder, CO. Invited.
- Praskievicz, S. J., Carter, S., Dhondia, J., Follum, M., (2018, November 19). "Flood-inundation modeling in an operational context: 2016 Alabama/Florida and Texas floods," Southeastern Division of the American Association of Geographers (SEDAAG) (Academic), Johnson City, TN. Accepted.
- Pratab, Promod. (2019). Single-Molecule Studies Of Atp Binding To The Sodium Pump. 63rd Annual Meeting of the Biophysical Society, Baltimore, MD.
- Rathnayake, H., Letfullina, A., Dawood, S., (2019, April 3). Polymer Materials Science and Engineering (PMSE), "Electrically and Ionically Conductive Microstructures of Metal Organic Frameworks (MOFs)," American Chemical Society National Meeting (Academic), Orlando, Orlando, FL, United States of America. Accepted. Focused on pedagogical topics/innovations. Involves Community Engagement. Involves Directed Professional Activity.
- Rathnayake, H., Pathiraja, G., Herr, D. J., (2019, April 2). PMSE division, "Sub-7 nm patterning platforms through directed self-assembly of metal conjugated biopolymers," American Chemical Society National Meeting (Academic), Orlando, Orlando, FL, United States of America. Accepted. Focused on pedagogical topics/innovations. Involves Community Engagement. Involves Directed Professional Activity.
- Rathnayake, H., Davis, K., (2019, March 31). PMSE division, "Band Gap tunability with transition metal cation exchange for zinc oxide nanostructures morphology, optical properties, and crystallinity studies," American Chemical Society National Meeting (Academic), Orlando, Orlando, FL, United States of America. Accepted. Focused on pedagogical topics/innovations. Involves Community Engagement. Involves Directed Professional Activity.
- Rathnayake, H., Dawood, S., Pathiraja, G., (2018, August 27). PMSE division, "Tunable organic-inorganic frameworks for functional diversification and near atomic-scale dimensional controlled patterning," American Chemical Society National Meeting (Academic), Boston, Boston, MA, United States of America. Accepted. Focused on pedagogical topics/innovations. Involves Community Engagement. Involves Directed Professional Activity.
- Rathnayake, H., Yarbrough, R., (2018, August 1). PMSE division, "Versatile synthesis of novel n-type thermoelectric nanomaterials from binary metal oxides of group IIA and VIB," American Chemical Society National Meeting (Academic), Boston, Boston, MA, United States of America. Accepted. Focused on pedagogical topics/innovations. Involves Community Engagement. Involves Directed Professional Activity.
- *Reid, A., *Moller, J. R., *Avent, A., Boyce, A., *Adetogun, A. (2019, March). Examining Issues Facing Communities of Color Today: The Role of Evaluation to Incite Change. Paper presented within a panel at the Center for Culturally Responsive Evaluation and Assessment Conference, Chicago, IL.
- Rhea, C. K., (2018, November 6). Future of Reality Summit, "Immersive Applications & Possibilities Across Industries," University of North Carolina School of the Arts (Academic), Winston-Salem, NC, United States of America. Invited.
- Rhea, C. K., Kuznetsov, N. A., Jakiela, J. T., Ross, S. E., Wright, G. W., Haran, F. J., Graves, W., Bailie, J. M., Yanagi, M. A., Duckworth, J. L., (2018, August). Military Health System Research Symposium, "Longitudinal tracking of neuromotor performance after repeated sub-concussive blast exposure using a custom smartphone app," Kissimmee, FL, United States of America.
- Schmitz, R., Park, K., Raisbeck, L. D., Wilking, R. W., Grooms, D. R., Rhea, C. K., Shultz, S. J., (2018, June 29). National Athletic Trainers' Association 69th Annual Meeting and Clinical Symposia, "Changes in Brain Function During Knee Extension Exercise Following 8 Weeks of Attentionally Focused Neuromuscular Training," (Academic). Accepted.

- Springall, B., Li, H., Kalcounis-Rueppell, M. C. (2018). Species specific signatures in the in-flight social calls of insectivorous bats. International Society for Behavioral Ecology biennial conference, Minneapolis, Minnesota.
- Stafford, J. W., Jakiela, J. T., Funk, D. C., Ross, S. E., Raisbeck, L. D., Rhea, C. K., (2018, June 21). North American Society for the Psychology of Sport and Physical Activity, "Effect of fatigue on a smartphone-based measure of dynamic balance control.," (Academic), Denver, CO, United States of America. Accepted.
- Stout, R. D., Carder, W. P., Rhea, C.K., (2018, June). North American Society for the Psychology of Sport and Physical Activity, "Fractal gait training in older adults with auditory and visual cues," (Academic), Denver, CO, United States of America. Accepted.
- Sugimoto, Y. A., Kuznetsov, N. A., Rhea, C. K., Ross, S. E., (2018, June). National Athletic Trainers' Association 69th Annual Meeting and Clinical Symposia, "Stride-to-stride gait variability in individuals with chronic ankle instability, copers, and health controls.," New Orleans, LA.
- Tan, E., (2019, April). Invited Book Talk. University of Illinois, Urbana-Champaign, "STEM-Rich Maker Learning: Designing for Equity with Youth of Color," School of Information Sciences, Illinois, Urbana-Champaign.
- Tan, E., (2019, April). Invited Presentation. UC Irvine, Secondary Science Methods Seminar, "Epistemic tools in support of teaching science for social justice: Community Ethnography as Pedagogy & Students' Engineering funds of knowledge," University of California, Irvine.
- Tan, E., (2019, March). Invited Presentation. FAB Learn Conference 2019, "Making in an age of social unrest," Teachers College, Columbia University, New York City, USA.
- Tan, E. (2019, January). Invited Presentation. Board of Science Education Convening, "Community Ethnography, Mobilities of Criticality & Rightful Presence in STEM," Board of Science Education, National Academy of Sciences, Engineering & Medicine, and Irvine, California.
- Tan, E. (2019, January). Invited Presentation. Teacher Education Equity Workshop, "Community Ethnography as Pedagogy," University of California, Irvine.
- Tan, E. (2019, January). Invited Presentation. Seminar in Science Education, "Equity in K-12 STEM Education," San Jose University.
- Tan, E., (2019, February). Invited Participation. Equity & Digital-based learning platforms, "Equitable and Consequential Making with Youth," National Science Foundation, Tucson, Arizona.
- Tan, E., (2018, December). Invited Participation. NSF Maker Summit 2018, "Equitable and Consequential Making with Youth," National Science Foundation, Alexandria, VA.

State:

- Adams, W.M. (2018, July). Integration of Evidence-Based Medicine for the Prevention, Recognition, Management and Care of Exertional Heat Stroke, Greensboro Orthopedic Athletic Trainer In-service. Greensboro, NC. Invited.
- Adams, W.M., Vandermark, L.W., Belval, L.N., Casa, D.J. (2018). Influence of prescribed versus ad libitum fluid replacement on subjective and objective measures of sleep quality following exercise-induced dehydration. *Annals Nutr Metab*.
- Ambos, Elizabeth L., Peterson, Virginia L., Phillips, Lee, Singer, Jill. (2018). Council on Undergraduate Research Partnerships in the Geosciences, American Geophysical Union Annual Meeting, Washington, DC, December 10-14.
- Berenson-Burke, S. (2019, April). The importance and ideas behind the Common Core State Standards for School Mathematics. NC State Retired Faculty Association.
- Blevins, V., Bailey, L., Ueno, A., DuBois, S., Rhea, C. K., Etnier, J. L., Wideman, L., Duffy, D., (2019, March). "Development of an observation system to monitor head impacts in youth sports," Human Movement Science Research Symposium, Chapel Hill, NC, United States of America. Invited.
- Blevins, V., DuBois, S., Lydia, B., Aiko, U., Rhea, C. K., Etnier, J. L., Gold, L. W., Duffy, D., (2019, March). Elon BrainCARE Symposium, "Development of an observation system to monitor head impacts in youth sports.," Elon University (Academic), Elon, NC, United States of America. Accepted.
- Carlone, H. B., Mercier, A., Ramirez, K., Norman, J., Equity and Excellence in Education Conference, "Engineering for Elementary Students: Exciting and Empowering All Learners," North Carolina A&T State University

- (Non-Academic), North Carolina A&T State University, Greensboro, NC, United States of America. Invited. (April 13, 2019).
- Carlone, H. B., Mercier, A., Daphne, M., Claudia, W., Annual meeting of the National Science Teachers Association, "Empowering Teachers, Nurturing STEM Equity: The UNCG STEM Teacher Leader Collaborative," NSTA (Non-Academic), Charlotte, NC, United States of America. Accepted. (November 30, 2018).
- Carlone, H. B., Lovett, M., Mercier, A., Schouweiler, D., Worsley, T., National Science Teachers Association, "An Integrated STEM Approach to Exploring Stormwater Run-Off: Youth and Teachers as Altruists, Conservationists, Tinkerers, and Analysts," NSTA (Non-Academic), Charlotte, NC, United States of America. Accepted. (November 29, 2018).
- Carlone, H. B., Mercier, A., Schouweiler, D., Worsley, T., Bridging the Gap NC, "Broadening identities for diverse youth in STEM through socioenvironmental problem solving," North Carolina Association for Biomedical Research; Burroughs Wellcome Fund (Non-Academic), Raleigh, NC, United States of America. Accepted. (October 23, 2018).
- Carlone, H. B., UNCG SOE Impact through Innovation Incubator Session, "UNCG STEM Teacher Leader Collaborative," UNCG SOE (Non-Academic), Greensboro, NC, United States of America. Invited. (February 20, 2019).
- *Chamberlain, Sydney., (2019). *Cannibalism in Food Culture: Why Prisons need regulation*. 13th Annual Undergraduate Research and Creativity Expo. UNCG.
- Davis, J., Springall, B. T., Li, H., Kalcounis-Rueppell, M. C. Exploring social call production rate difference among bat species. The University of North Carolina at Greensboro 12th annual Carolyn & Norwood Thomas undergraduate research & creativity expo, Greensboro, North Carolina, 2018
- DuBois, S., Rhea, C. K., Etnier, J. L., Victoria, B., Duffy, D., (2019, March). Human Movement Science Research Symposium, "Assessment of neurocognitive functioning after repeated subconcussive head trauma in female semi-professional tackle football players," UNC Chapel Hill (Academic), Chapel Hill, NC, United States of America. Accepted.
- Duffy, D., Rhea, C. K. (2019, March). Elon BrainCARE Symposium, "What we know and don't know about female athletes and head injuries," Elon University (Academic), Elon, NC, United States of America. Invited.
- Duffy, D., DuBois, S., Berg, A. P., Rhea, C. K., Katherine, W. (2019, March). Elon BrainCARE Symposium, "A case study of the concussion symptoms experienced by female athletes on an NCAA Division I rugby team," Elon University (Academic), Elon, NC, United States of America. Accepted.
- Duffy, D., Adams, W.M. (2018, December). Rugby and. Head injuries: What we know, what we don't know and what we need to know. 2018 Women in Rugby Conference. Queens, University, Charlotte, NC. Invited.
- Dynah, Sutton (2019). *The benefits of ASMR videos*. 13th Annual Undergraduate Research and Creativity Expo. UNCG. Status: OTHER.
- Felsberg, D. T., Higgins, L. Q., Stout, R. D., Yamada, M., Cochran, S. M., Lojaco, C., Barclift, A. D., Palazzolo, J., Labban, J. D., Fairbrother, J. T., Rhea, C.K., (2019, March 22). Human Movement Science and Biomechanics Research Symposium, "Improved dynamic balance after a 12-week attentionally focused balance training intervention: Preliminary data from Functional Gait Assessment (FGA)," (Academic), Chapel Hill, NC, United States of America. Accepted.
- *Frost, M.. S.E. Koerner. (2019, April). Native and Invasive Biodiversity of Mixed Grass Prairies. UNCG Graduate Research and Creativity Expo.
- Haeger, H., Dong, W., Unruh, H., Henderson, J., Phillips, L. (2018). Scaling Up without Watering Down: Increasing Undergraduate Research without Losing the Impact, HIPs in the States Conference Program, p. 23.
- Haeger, H., Dong, W., Phillips, L., King, J., (2019). New Strategies for Assessing the Impact of High-Impact Practices, Annual Meeting of the American Associate of Colleges and Universities, p. 35.
- Hewitt, A., Jacobs, V. (2018, November). Selecting and sequencing student strategies for whole-class discussions. Presentation at the 2018 annual meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- Hooper, C. R., Gold, L. W., Coffman, J. L., Rhea, C. K., Smith, J. M., Payne, C., Carlone, H. B., UNCG Child & Family Research Network "Lunch & Learn" Seminar Series, "Find your way, find your people, find your career path," CFRN (Non-Academic), Greensboro, NC, United States of America. Invited. (February 27, 2019).

- Jacobs, V. R., Heredia, S. C. (2018, August). Listening to children's reasoning in math and science. Presentation at the 2018 Triangle High Five Math Summit, Raleigh, NC. Kress, M. J., LoJacono, C., Rhea, C. K., Human Movement Science and Biomechanics Research Symposium, "Changes in joint angles are correlated with changes in foot clearance after virtual reality obstacle crossing training," (Academic), Chapel Hill, United States of America. Accepted. (March 22, 2019).
- Koerner, S.E. (2018, September). Large Herbivores and the World's Grasslands. Invited Seminar Speaker at Environment, Ecology, and Energy Program at UNC Chapel Hill. Chapel Hill, North Carolina.
- Koerner, S.E. (2019, April). Large Herbivores and the World's Grasslands. Invited Seminar Speaker at Ecology and Evolutionary Biology Program at Wake Forest University. Winston-Salem, North Carolina.
- Li, H., Parker, K.A., Kalcounis-Rueppell, M.C. (2018, November 1). Conservation of threatened and endangered bat species through the NA Bat program in North Carolina. T&E TWS Workshop. Weymouth Woods, Southern Pines, North Carolina.
- Li, H., Parker, K. A., Kalcounis-Rueppell, M. C. (2018). Acoustic monitoring of federal endangered or threatened bat species in North Carolina. The Wildlife Society North Carolina Chapter career workshop, Southern Pine, North Carolina.
- Lojacono, C., Kress, M. J., Rhea, C. K., (2019, March 22). Human Movement Science and Biomechanics Research Symposium, "Joint angles are differentially altered from feedback given during virtual reality obstacle crossing training," (Academic), Chapel Hill, NC. Accepted.
- *Maeder, K. S.E. Koerner. (2019, April). The impacts of grazing on North Carolina Longleaf Pine Savanna grasses. UNCG Thomas Undergraduate Research and Creativity Expo.
- Mercier, A., Carlone, H. B., Blankmann, D., Bridging the Gap Conference, "Supporting STEM in Highly Impacted Schools: The UNCG STEM Teacher Leader Collaborative," North Carolina Association for Biomedical Research/Burroughs Wellcome Fund (Non-Academic), Raleigh, NC, United States of America. Accepted. (October 2018).
- Palazzolo, J., Goble, D. J., Labban, J. D., Ross, S. E., Duffy, D., Rhea, C. K., (2019, March 22). Human Movement Science and Biomechanics Research Symposium, "Pre-season postural control in athletes based on frequency of contact," Dr. (Academic), Chapel Hill. Accepted.
- *Phelps, J., Koerner, S.E. (2019, April). Nitrogen levels for successful wiregrass restoration. UNCG Thomas Undergraduate Research and Creativity Expo.
- Phillips, Lee. Farwell, Mary., Batista, Rebecca., Altman, Joanne. (2018), North Carolina Public and Private Colleges and Universities Converge Around Undergraduate Research, CUR Biennial Conference – Creating Collaborative Connections in and through Undergraduate Research, July 2008, p.74.
- Pavlova, I.V., (2018, September 28). RISE Network. Oral presentation (with co-PIs on RISE 2017-18 Small Grant). "Supporting faculty development as scholarly agents of educational change: Faculty Incubator for Engaging Student Self-regulation (FInESS)". UNCG, Greensboro, NC.
- Pavlova, I.V. (2018, October 29). BioTAP virtual conference. "Graduate teaching assistants' knowledge about teaching methods and classroom teaching practices in inquiry laboratory courses".
- Pavlova, I.V. (2019, February 25). Podcast interview on new diversity module in introductory biology and associated SoTL project (<https://utlc.uncg.edu/podcasts/>). by Peterson, UTLC at UNCG.
- Petric, R., Kalcounis-Rueppell, M.C. (2019, April). The effects of human-made noise on native mice. The University of North Carolina at Greensboro 7th Annual Graduate Research & Creativity Expo, Greensboro, North Carolina.
- Praskievicz, S. J., (2019, March 22). North Carolina Water Resources Conference, "Unsupervised hydrologic classification of rivers: Watershed controls on natural and anthropogenic flow regimes," North Carolina Water Resources Association (Academic), Raleigh, NC. Accepted.
- Pratab, Promod. (2019). The Sodium Pump – Analysis of a Membrane Ion Transporter Using Ensemble and Single-Molecule Techniques. Physics Colloquium, Physics Department, NCA&T State University.
- *Quiroa, Juan (2019). *Enumeration of Remifcaton Polygons of Degree p 2*. 13th Annual Undergraduate Research and Creativity Expo.
- Rhea, C. K., (2018, November 15). Lunch and Learn, "The future of human health assessment and rehabilitation," Kiwanis Club of Greensboro (Non-Academic), Greensboro, NC, United States of America. Invited.

- Rhea, C. K., Kiefer, A. W., (2018, August). Society for Chaos Theory in Psychology & Life Sciences Annual International Conference, "From fractal to behavioral dynamics: Application of nonlinear analyses to probe the control of locomotion,". (Academic), Raleigh, NC, United States of America. Accepted.
- Richardson, K. (2018-19). Offering Professional development to K-5 teachers on whole and rational numbers development. Outreach to Surry and Guilford Counties.
- Rose, A., Li, H., Zarecky, L., Kalcounis-Rueppell, M. C. (2018). Bat species richness and abundance at the Greensboro Science Center. The University of North Carolina at Greensboro 12th annual Carolyn & Norwood Thomas undergraduate research & creativity expo, Greensboro, North Carolina.
- Scarneo, S.E., Adams, W.M., Murata, Y., Stearns, R.L., Casa, D.J. (2019). State-level Implementation of Health and Safety Policies within Secondary School Athletics: 2018 Update. American College of Sports Medicine-Annual Meeting, Orlando, FL. *Med Sci Sport Exerc*; 51(5 Suppl).
- Schwartzman, R. (2019, March). Scientists centering communication: Opportunities and agendas. Presentation at National Association of Communication Centers conference, Greensboro, NC.
- Sekiguchi, S., Curtis, R.M., Huggins, R.A., Benjamin, C.L., Adams, W.M., Arent, S.M., Jain, R.K., Miller, S.J., Casa, D.J. (2019). The effect of acute chronic training load ratio on daily sleep duration and quality in division 1 soccer players. National Strength and Conditioning Association Annual Meeting, Washington DC. *J Strength Cond Res*.
- Sekiguchi, Y., Curtis, R.M., Huggins, R.A., Benjamin, C.L., Adams, W.M., Arent, S.M., Jain, J.K., Miller, S.J., Casa, D.J. (2019). The Effect of Acute Chronic Training Load Ratio on Daily Stress, Fatigue and Soreness Level in NCAA Division I Soccer Players. American College of Sports Medicine Annual Meeting, Orlando, FL. *Med Sci Sport Exerc*.;51(5 Suppl).
- Sekiguchi, Y., Adams, W.M., Benjamin, C.L., Curtis, R.M., Casa, D.J. (2018). Relationships between resting heart rate, heart rate variability, and sleep phases in collegiate cross-country runners. National Strength and Conditioning Association Annual Meeting, Indianapolis, IN. *J Strength Cond Res*.
- Sekiguchi, Y., Adams, W.M., Curtis, R.M., Benjamin, C.L., Casa, D.J. (2018). Factors influencing hydration status during a NCAA division 1 soccer preseason. American College of Sports Medicine Annual Meeting. Minneapolis, MN. *Med Sci Sport Exerc*.;50(5S):XX
- Schug, M., Sametz, L. (2019). *The UNCG RISE Network: Creating Lasting Partnerships in STEM Education*. UNC System Student Success. Chapel Hill NC.
- Schug, M., Sametz, L., Patton, J. (2019). "Project Kaleidoscope," AACU, North Carolina A&T State University, Greensboro, NC, United States of America.
- Stout, R. D., Higgins, L. Q., Raisbeck, L. D., Rhea, C. K., (2019, March 22). Human Movement Science and Biomechanics Research Symposium, "Smartphone-based dynamic balance measurements: An investigation of characteristics for community dwelling adults as compared to younger adults," (Academic), Chapel Hill, NC. Accepted.
- Sugimoto, Y. A., Rhea, C. K., Ross, S., (2019, March 22). Human Movement Science and Biomechanics Research Symposium, "Sagittal plane ankle kinematics and variability during walking and running in individuals with and without CAI.," Chapel Hill, NC, United States of America.
- Sun, J., (2018, October). AISC 2018, "Multivariate association test for rare variants controlling for cryptic and family relatedness," Greensboro, NC, United States of America.
- Tan, E., (2018, November). NSTA Charlotte Area Conference 2018, "Engineering for Sustainable Communities with middle school youth." Charlotte, NC.
- *Young, A., Koerner, S.E. (2019, April). Drivers of Plant Community Biodiversity: Understory Dynamics in Longleaf Pine Savannas of North Carolina. UNCG Graduate Research and Creativity Expo.
- Yova, F., Walkowiak, T., Jacobs, V. R., (2019, February-March). Parents' beliefs in teaching young children mathematics. Poster presentation at the 2019 annual conference of the Research Council on Mathematics Learning, Charlotte, NC.
- Zaleski, A.L., Panza, G.A., Ballard, K.D., Adams, W.M., Hosokawa, Y., Pescatello, L.S., Thompson, P.D., Taylor, B.A. (2018). Use of Compression Socks During a Marathon Does Not Mitigate Exercise-Associated Muscle Damage. American College of Sports Medicine Annual Meeting. Minneapolis, MN.;50(5S).

International:

- Adams, W.M. (2018, October). Strategies for enhancing safety during exercise in the heat. 7th International Meeting of the Physiology and Pharmacology of Temperature Regulation Society. Split, Croatia. Invited.
- Calabrese Barton, A. Tan, E., (2018). Rightful Presence in Equity-oriented Making. Paper presented at the International Conference of the Learning Sciences (ICLS), London, United Kingdom.
- Gupta, S. (2018, November 29). Respondent Privacy, Data Security, and Estimation Quality in Sample Surveys - Invited talk at VNRVJIET, Hyderabad, India.
- Gupta, S. (2018, December 10). Various Shades of Statistical Consulting – Invited talk at IIM Indore, India.
- Gupta, S. (2018, December 27). Evaluating Performance of Mean Estimators of Sensitive Variables under Measurement Errors with Respect to Efficiency and Respondent Privacy – Keynote address at the International Conference on Emerging Innovations in Statistics and Operations Research, MDU Rohtak, India.
- Gupta, S. (2019, January 15). Statistics Spans all Directions – Keynote Address, Seminar on Emerging Challenges and Statistics, Lucknow University, India.
- Gupta, S. (2019, March 25). A Unified Measure of Model Efficiency and Respondent Privacy in Quantitative Randomized Response Models, Invited talk at City University London.
- Gupta, S. (2019, March 29). Using Randomized Response Techniques for Small Area Estimation of Population Total, Invited talk at New Castle University, UK.
- Gupta, S. (2019, April 1). Mean Estimation of Sensitive Variables Under Measurement Errors and Non-Response Using Optional RRT Models, Invited Talk at Durham University, UK.
- Gupta, S. (2019, April 5). Evaluating Performance of Mean Estimators of Sensitive Variables under Measurement Errors with Respect to Efficiency and Respondent Privacy, Invited Talk at University of Edinburgh.
- Gupta, S. (2019, April 8). Advances in Randomized Response Models, Invited Talk at Robert Koch Institute, Berlin.
- Gupta, S. (2019, April 10). A Unified Measure of Model Efficiency and Respondent Privacy in Quantitative Randomized Response Models, Invited talk at Charles University Prague.
- Gupta, S. (2019, April 12). Assessing Quality of Quantitative RRT Models, Invited talk Alfred Renyi Institute Budapest.
- Herr, D. J. C., Rathnayake, H. P., (2019, February 28). SPIE Advanced Lithography, "Novel Patterning Technologies: 10958-36," SPIE (Non-Academic), San Jose Convention Center, San Jose, CA, United States of America. Accepted. Focused on pedagogical topics/innovations. Involves Community Engagement. Involves Directed Professional Activity.
- Morales, K., Tsui, M.T.K. (2019). Investigating seasonal variations in concentrations of mercury levels in two recently restored urban wetlands. 14th International Conference on Mercury as a Global Pollutant. Krakow, Poland.
- Phillips, Lee. (2018, August). Invited Presentation. King Fahd University of Petroleum and Minerals, Saudi Arabia.
- Sedberry-Carrino, S., Gerace, W., Beatty, I. D., Kane, M. J., Strickhouser, J. E., Elobeid, M. A., Hudson, S. L., Bottini, C. (2018, October 11). "SIISP: Self-Efficacy Intervention to Improve STEM Performance," a poster presented at the STEMM Equality Congress, Amsterdam, Netherlands.
- Tan, E., Calabrese Barton, A. (2018). Equity-oriented Making with historically marginalized youth. Paper presented at the International Conference of the Learning Sciences (ICLS), London, United Kingdom.
- Tan, E., Calabrese Barton, A., Benavides, A. (2019, April). AERA 2019, "Engineering for Sustainable Communities: Epistemic Tools in support of Equitable & Consequential Middle School Engineering," Toronto, CA. Accepted.
- Tan, E., Calabrese Barton, A. (2019, April). AERA 2019, "Exploring the Affordances of e-textiles in STEM-rich, community based youth making spaces towards making for new social futures.," (Academic), Toronto, CA.
- Yang, W., Barber-Foss, K. D., Thomas, S., Galloway, R., DiCesare, C., Dudley, J., Leach, J., Scheifele, P., Smith, D., Altaye, M., Rhea, C. K., Talavage, T. M., Myer, G. D., (2018, June). The 24th Annual Meeting of the Organization for Human Brain Mapping, "The impact of blast exposure and the ameliorating effect of a collar device: An fMRI study," (Academic), Singapore. Accepted.

Appendix 1: Networking and Speaker Series Flyers



Public talk: The Wonders of Wildfires:

How do we understand the climatic influences of wildfires, their patterns, and their effects on agriculture?

Dr. Charles Ichoku

Climate and Radiation Laboratory NASA
Goddard Space Flight Center

When: Wednesday, September 5th, 2018 at
4:00pm

Where: Sullivan Science Building
Room 200



Networking Lunch: The past and future of Lake Chad: Africa's Great Lake

When: Thursday, September 6th, 2018 from 11:30-1:15 pm

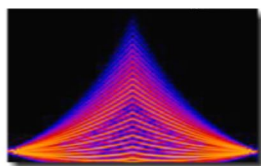
Where: Virginia Dare, Alumni House

RSVP: <https://goo.gl/forms/ZjMhpBuxoZRaggpu2>

by Monday, Sept. 3rd



Lake Chad, located near the center of Africa, is shared by four countries and is the main source of water supply and livelihood for more than 30 million inhabitants. Because of severe droughts along the African Sahel in the 1970s and 1980s, the lake's surface water coverage went down by more than 90%. Scientists have been studying this phenomenon to understand its causes and predict the lake's future, in order to recommend possible scientific approaches to mitigate any adverse impacts on the population that depends on it for survival.



RISE Network

Promoting research and instruction in STEM education

Networking Lunch: NextGenSTEM: Cultivating Tomorrow's Diverse Global Workforce

When: Friday, September 15th, 2017 from 11:30-1:30 pm.

Thursday, November 8th, 2018
from 11:45-1:15 pm

Where: UTLC Faculty Center

RSVP: <https://goo.gl/forms/MutljYvK31ALn2RM2>
by noon on Monday Nov. 5th

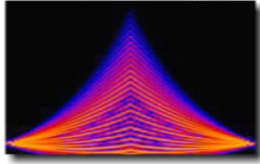


To fully encompass underrepresented groups in STEM, it requires creating education and



career pathways to develop the diverse talent need to advance areas of priority such as health, energy, and national security. The American Association for the Advancement of Science (AAAS) develops and supports STEM education initiatives through its Education and Human Resources Division (EHR) with three-pronged foci of scientific literacy, broadening participation in STEM, and developing the STEM workforce. Dr. Iris Wagstaff will highlight some of these educational and professional development efforts at the undergraduate and graduate levels, as well as, share evidence-based best practices and models for cultivating a diverse cadre of STEM professionals to tackle global problems at the intersections of science, education, and policy.

Meet Iris Wagstaff: Dr. Iris Wagstaff has over 25 years of STEM outreach experience in the community including developing informal science programs, mentoring, and developing strategic partnerships between industry, academia and organizations to enhance science education; particularly for underrepresented students. Her research examines the roles that science self-efficacy and science identity play in encouraging students who have been historically discouraged from the scientific enterprise. She is currently a 2015-2017 AAAS Fellow and is developing a strategic diversity initiative to expand opportunities for peer-reviewers, graduate fellows, and grant applicants to broader audiences.



RISE Network
Promoting research and instruction in STEM education

Public Talk: “A Framework for Decision-Making to Promote Science Literacy in Large Enrollment Undergraduate STEM Classes.”

Date: March 25, 2019

Time: 4:00 pm-5:30 pm

Place: Alumni House: Virginia Dare Room



Networking Lunch: “Navigating a Pathway from Teaching and Science to Science Education Research

Date: March 25, 2019

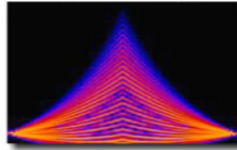
Time: 11:45 am-1:30 pm

Place: Eberhart 310

RSVP: [Registration Link](#)

****First Come, First Serve****

Meet Jenny Dauer: Dr. Dauer is an Assistant Professor of Science Literacy in the School of Natural Resources at the University of Nebraska. Dauer’s research interests include developing and investigating science classroom models to support student decision-making practices and systems thinking. Dauer has a Ph.D. from Oregon State University in Forest Science, an M.S. in Ecology, and a B.S. in Secondary Education from Penn State University.



RISE Network

Promoting research and instruction in STEM education

RISE Network
&
OSP Presents

Free
Lunch
Provided

Network Across Boundaries: Meet a New Collaborator!

Date: January
30th, 2019

Time:
11:45 am-
1:30pm

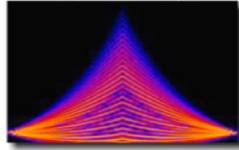
Place:
UTLC Faculty
Center

RSVP: [Click Here](#)

Do you ever wonder what research is happening on campus? Would you like to meet others with shared research interests? Would you like to identify collaborators for pursuing funding? Are you interested in connecting with others who have received research grants? If you are conducting STEM research, providing STEM instruction, or evaluating STEM program outcomes, come participate in this networking event to get acquainted and explore endless possibilities for collaboration.

For questions, please contact: rise@uncg.edu

Having troubling viewing the RSVP link, use the following link: <https://goo.gl/forms/42bPVwUe5Ye88PTL2>



RISE Network

Promoting research and instruction in STEM education

HIDDEN NO MORE: STEM WOMEN OF COLOR

February 27, 2019
4–5:30 p.m.
at UNC Greensboro
Sullivan Science Building, Room 101

Historically, women of color have faced considerable challenges pursuing careers in science, technology, engineering and mathematics. Join us on February 27, to hear from four women, who despite these challenges, have made significant contributions to their fields and are pushing society forward.

Ann Vaughan Hammond and **Peggy Vaughan**, daughter and daughter-in-law of Dorothy Vaughan, who was Langley Research Center's first African American manager; **Dr. Jamila Simpson**, Interim Associate Dean for Academic Affairs for the College of Sciences at N.C. State University; **Dr. Stephani Page**, Molecular Physiologist at Duke Molecular Physiology Institute; and Morehead's own, **Crystal Harden**, Director of Programs and Strategic Initiatives as well as Chief Diversity Officer, will speak in a panel discussion on what it is like to be leaders in their respective fields as well as how we can help expand diversity in STEM education.

FREE!!
Open to the Public

MEET OUR SPEAKERS



ANN VAUGHAN HAMMOND & PEGGY VAUGHAN

Daughter and daughter-in-law of Dorothy Vaughan, one of the first female 'human computers' at NASA and NASA's first African American manager.



DR. JAMILA SIMPSON

Graduated as the first African-American woman to receive a B.S. degree in meteorology from N.C. State University.



DR. STEPHANI PAGE

Creator of #BLACKandSTEM, a community on Twitter dedicated to connecting African-Americans in STEM career paths.



CRYSTAL HARDEN

Director of Programs and Strategic Initiatives, as well as Chief Diversity Officer at Morehead Planetarium and Science Center.



Appendix 2: Departments Represented at RISE Events

Departments

Anthropology

Biology

CAS Dean's Office of Research

Counseling and Educational Development

Chemistry and Biochemistry

Computer Science

Communication Studies

Center of Women's Health and Wellness

Department of Physics

Entrepreneurship Cross-Disciplinary Program

Geography, Environment, and Sustainability

Human Development and Family Studies

Institute for Community and Economic Engagement

Kinesiology

LaunchUNCG

Math & Statistics

NC Entrepreneurship Center

Nanoscience

Office of Research and Engagement

Office of Sponsored Programs

Physics and Astronomy

Public Health

School of Education

SOE Office of Research

Student Success Center

Student Success Initiatives

Teacher Education and Higher Education

Undergraduate Research, Scholarship and Creativity Office

University Communications

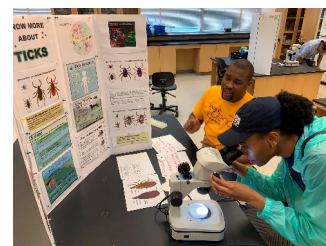
Appendix 3: Science Everywhere One Page Summary



The RISE Network in partnership with the University of North Carolina Greensboro's Offices of New Student Transitions & First Year Experience, University Events Team, University Communications, Intercultural Engagement, and the School of Education planned and implemented the Fifth Annual Science Everywhere Festival on April 13, 2019. Sponsors included the Best Logistics Group, NC Science Festival, WFMY News, LabCorp, UNCG

Self Design Studio and the National Science Foundation (NSF). The Fifth Annual Science Everywhere was an amazing success. University staff, students, and faculty from across campus volunteered their time and energy to present over 100 hands-on science activities to the community. Many facets of STEM at UNCG were showcased for the community. Over 3000 participants came to Campus on a rainy Saturday.

Over 120 STEM professionals, including faculty, grad students, and undergraduates helped to present science to the community. 300 volunteers, including undergraduate and graduate students, UNCG Middle College students, the High Point YWCA, as well as 30 students from Welborn Middle School also attended and helped make the festival a success. Spanish speaking interpreters and American Sign Language interpreters were available for non-English speaking guests and for guests from the deaf community, respectively. The North Carolina Science Festival sent data collectors to assess the demographics and diversity of the festival. The entire campus was filled with young children, parents, and grandparents all of whom were making various science and engineering related projects.



All attendees were given a passport/brochure, a tote bag and t-shirts at the welcome tables. Children and youth received stamps at each station and when they left the event, they received prizes and a Junior Scientist Certificate—children of all ages enjoyed the festival from preschool age to high school students. This was a great day for UNCG, creating a fun and engaging learning environment for adults, teens, and kids alike. The adults were amazed by all the things we do at UNCG. Science was everywhere. With over 100 activities on campus, there was something for everyone. The only complaint heard from the guests was that they couldn't get to everything. Join us again next year on April 25, 2020.



Appendix 4: Third Year Small Grant Report

RISE Small Grant 2017 Awardee REPORT (September 2018)

Building the capacity for implementation and evaluation of inquiry labs in the Biology department.

Iglrika Pavlova, Academic Professional, Biology Department

Background:

The Biology department has initiated a transition from traditional cookbook laboratories toward inquiry instruction in introductory courses. To ensure a high-quality experience for our students, we need to create a sustainable structure for evaluating student learning and attitudes and making instructional improvements based on the evaluation. In a further step, our department is also moving toward revising the biology curriculum toward course-based undergraduate research experiences (CUREs). CUREs have a higher level of research authenticity, student agency and collaboration compared to even inquiry instruction; these elements all require thoughtful implementation based. To support these reforms, we need to build the capacity and recognition for biology education research in our department.

Study purpose:

In the Spring 2017 semester we implemented two inquiry sections of BIO 112 laboratories where students worked in teams to design, implement, analyze, and improve their own experiments for three different experiments. Students were introduced to both the theory and practice of experimental design and statistical testing. This study's goals were to evaluate students' 1) understanding of experimental design and statistical analysis, 2) science learning attitudes, and 3) science research skills relevant to inquiry and CURE formats (e.g., experimental design, data analysis including statistics, presentation and communication of scientific data).

Study design:

Students in the control group (2 sections of BIO 112L with traditional instruction) were compared to students in the experimental group (2 sections of BIO 112L with inquiry instruction). The study has a quasi-experimental design with students having no prior knowledge at registration of the instructional method in the laboratory section. Students in both groups were administered Pre/Post surveys at the start of the semester (before instruction) and at the end of the semester. The Pre/Post surveys incorporated validated instruments for experimental ability (E-EDAT), statistical understanding the context of biology (SRBCI), science learning attitudes (BioCLASS), as well as a self-evaluation of science research skill level. In addition, students in the experimental group completed an end-of-semester assessment and self-reflection.

All data were de-identified before analysis. Statistical analysis was performed by ERM graduate student Juanita Hicks, and biology graduate student Jacob Cleary assisted in coding the written answers from the E-EDAT and the reflections. Both were fully supported by the RISE Small Grant for this research.

Major findings:

The major findings from the pilot study are as follows:

1. There was a statistically significant difference in statistical ability at the end of the semester (as judged by the SRBCI instrument) for students in the experimental, but not the control group; both groups started with similar levels of knowledge on the Pre-test. The SRBCI is a valuable instrument with a good discrimination index to use in future studies.

2. On the E-EDAT, students scored higher on the Pre-test (6.7 average score for both groups) compared to published results (about a 3 average score in Marsan et al, 2016). This suggests that they have a good understanding of some of the fundamentals of experimental design. The higher scores can be at least partially explained by the fact that we administered the test electronically (versus the slower method of writing by hand that is standard administration for the E-EDAT). Students likely reached a ceiling with the relatively short time limit for the test and there was no observed improvement in the control versus experimental group on the E-EDAT. While we are testing the usefulness of the EEDAT in a larger study of all BIO 112 sections in 2017-18, we need to find or develop new ways to capture elements of understanding of scientific process that our students are still in the process of learning.

3. Students in both test groups scored high on the Pre BioCLASS survey (75.8%, control group, 68.2%, experimental group), with prompts targeting areas such as enjoyment of science, persistence in learning, and making connections. While this survey seems to have limited value in our hands for capturing important changes that we were able to document in other ways (via the end-of-class reflections, see below), these data indicate that we do not face big challenges with student attitudes. The results support the notion that overall, our students are open to learning and engaging in the process of science.

4. For students' self-assessment for science research skills there was a statistically significant Pre vs. Post difference for one item (interpreting experimental data) in the control group and seven items in the experimental group. Students in the experimental group report gaining confidence in doing background research, developing their own research question, performing an independent experiment, using Excel, performing statistical analyses, using evidence to develop arguments, and writing lab reports. These results support a favorable difference for inquiry/CURE vs. traditional formats of instruction toward research skills.

5. Rich data were collected in written self-reflections in response to five open-ended prompts regarding aspects of lab that students found 1) most interesting/fun, 2) most valuable, and 3) most difficult, as well as prompting to reflect on changes in their thinking on 4) the process of science and 5) introductory biology labs. The answers were coded using a grounded-theory approach noting emergent themes in respondents' answers, rather than based on the experimenter's pre-conceived notions; the coding was done by JC to limit bias. A notable sense of personal involvement and agency stood out in answers to more than one of the prompts. For example, the most common code for the prompt on what aspect of that semester's labs was most

interesting or fun was that students felt actively involved in the experimental choices, with 61.5% of students scoring in this category.

Quote from answers to the most interesting or fun aspects of labs prompt

- “I absolutely loved the set-up of this lab. Doing multiple replications of experiments and running statistics and then thinking outside the box was awesome and I hope UNCG adopts this style for introductory labs instead of a prefixed prelab, data sheet, and conclusion questions.” Even more strikingly, in prompt to how students feel about the process of science, 84.6% formulated answers – each one different and showing the individual students’ own engagement – on how they understood the scientific process better through their personal experience in experimentation. 35.9% of student answers emphasized that science is complex and requires rigorous process (this was the second most prevalent code for this prompt).

Quotes from answers to “what do you think changed the most about how you think and feel about the process of science

- “I learned that scientific experiments contain many confounding factors that must be accounted for. Designing a good experiment can be difficult and obtaining clear results is even more so. It made me have a greater appreciation for the science field and made me want to take more science course.”
 - “I realized that even the best experimental design can be improved upon. Even though the experimental question that is being investigated is important, it is equally important to examine your design and look for ways to improve the experiment.”
 - “I actually like the process of collecting and interpreting my own results now”
 - “Science can be fun but it’s a lot of work to get data and to make sure your data is correct so that your hypothesis is correct.”
 - “I started to think outside the box more in this lab since we had to worry about confounding factors and other variables where with other experiments being prefixed, we didn’t have to think about much.”

Implications and wider significance Statistical reasoning is a valuable quantitative science skill and this pilot study indicates that it can be developed in introductory science courses, and in our context. Moreover, the inquiry/CURE setting provides an authentic venue for students to apply statistical concepts to their own experiments, which may support both their learning and positive affect needed to develop this difficult, but important, skill. By starting early and in authentic contexts as in our experiment, we can build on our students’ statistical skills over time to help them achieve the mastery they need for STEM careers.

Experimental design is a complex multi-component skill that requires understanding the process of science and that are the focus and expected benefit of inquiry/CURE instruction. Because the promise of the E-EDAT was not captured in this pilot study, we will pursue alternative assessment methods that focus on student written work (such as lab reports), presentations, or answers to more pointed questions that target important aspects of understanding the process of science.

The end-of-class reflection seems to be able to capture students' sense of agency, which the inquiry/CURE intervention in our study particularly targets through instruction toward "mastery experiences", emphasizing process and growth for all students through repeated opportunities for effort and success over the course of the semester. It is very important to be able to capture improvements in students' self-efficacy beliefs as they have been strongly linked to choice of STEM majors and careers. Expanding the self-reflection to all sections of BIO 112 will help not only help us promote introductory students' metacognition more widely, but also determine whether "mastery experiences" in our inquiry/CURE sections can indeed make a difference for the students' sense of self-efficacy.

Summary

Through the RISE Small Grant, our department was able to accomplish the following goals:

1. Complete a pilot study of an instructional method that has new features that we plan to disseminate in the wider science education community.
2. Demonstrate increased learning and improved science attitudes, which have been linked to STEM persistence/STEM career choice using an inquiry/CURE format in introductory biology, BIO 112.
3. Establish the usefulness of different assessment instruments and suggest areas that require further development.
4. Receive valuable advice on study design and analysis (via ERM graduate student Juanita Hicks).
5. Study-specific methods are often needed to capture learning in particular areas of interest as with experimental design ability.
6. Develop biology education research capacity within the department, including the ability of graduate students to engage in the process and demonstrate more widely the value of evidence-based teaching.

Thank you for your support!

Appendix 5: Fourth Year Small Grant Proposal

RISE Small Grant Fall 2018 Awardee Proposal

In-lab observations of teaching assistants in introductory biology and chemistry to understand productive instructor-student interactions and to create video materials for instructor training.

Department of Chemistry & Biochemistry: Jerry Walsh, Professor, and Spencer Russell, Lecturer
Biology Department: Iglia Pavlova, Academic Professional, and Meg Horton, Senior Lecturer

Proposed Project: In both the chemistry and biology departments at UNCG, graduate teaching assistants (GTAs) are central to instruction of undergraduate students in the required large-enrollment introductory level laboratory courses. We seek to involve them more deeply into the wider effort to inspire our diverse student body towards persistence and careers in STEM. We would like to 1) understand the supports that GTAs require to become excellent teachers who can foster engaged critical thinking, and then 2) incorporate what we have learned into our GTA training. The need for improved teaching to support learning is true in both our traditional sections, and also in the inquiry research-based sections that we are transforming under the NSF/CUR (Council of Undergraduate Research) Transformations Project.

We propose to video/audio record instructors and student working groups in laboratory sections of introductory chemistry and biology. A recording will provide data that will be used for both 1) educational purposes (to create GTA training materials) and 2) research purposes (to answer questions about the influence of GTA teaching on student learning). For the videos, the sections will be chosen to showcase teaching by experienced instructors and focus on scenarios where students are actively engaged in thinking, such as when designing an experiment or making inferences from data. For the research, we will address two major questions: A) How do instructors respond to student questions, especially with regard to encouraging further thought? B) How do students respond to instructor prompting, especially with regard to engaging in reasoning? Observations will follow the Laboratory Observation Protocol for Undergraduate STEM (Velasco et al., 2016), with addition of prompts monitoring inquiry instruction from the Teaching Assistant Inquiry Observation Protocol (Miller et al, 2014). Our focus on the nature of interactions between student and instructor can provide direct evidence of the quality of instruction, allowing us to add to the literature which is mostly based on self-reporting. The research will provide additional information that we plan to further use in improving GTA training in both departments.

Dr. Zeynab Badraddine, a qualitative methods science education researcher who specializes in video/audio recorded data, will guide us in data collection and processing. In contrast to isolated earlier attempts to record lab instruction, we think that a focused effort by a team (with a minimum of two faculty per department) guided by an expert will produce materials that are usable for both teaching and research purposes. Iglia Pavlova has also been trained in GTA assessment in the Biology Teaching Assistant Project. Melissa Beck with UNCG IRB has confirmed the feasibility of using an external expert.

Expected Results/Future Funding: 1) Educational component: Create video clips to be used in GTA training, demonstrating productive instructor behaviors. 2) Research component:

Understand instructor behaviors that promote student reasoning and lead to effective student learning, especially in CUR TP environments. The research is expected to be novel and support our application for an NSF IUSE grant.

Proposed Budget: \$5,000 total for 1) \$2,500 – video/audio equipment to produce high quality data from both instructor and student stations that allows study of the relationships between the two. (See separate attachment with approximate budget before any educational discounts). 2) \$2,500 – stipend for consultant who specializes in the collection and processing of video and audio data for educational research.

Appendix 6: LSAMP Proposal

Abstract: The Mountain to Sea North Carolina Louis Stokes Alliance for Minority Participation program (M2S NC LSAMP) will be a new alliance among six, four-year, mid-sized universities that enroll students from across the geographic range of North Carolina led by University of North Carolina Greensboro and including faculty and students from Appalachian State University, East Carolina University, University of North Carolina Asheville, University of North Carolina Wilmington, and Western Carolina University. The geographic range encompasses mid-sized regional universities across NC, from the Appalachian Mountains, to the Piedmont region, then the Coastal Plains, and finally, the Carolina coastline. As is true of the diversity of the famous 1,175 mile Mountains-to-Sea Trail stretching from the North Carolina Smoky Mountains to the coastal Outer Banks region, the institutions in the M2S NC LSAMP enroll a highly diverse student body of approximately 100,000 students, roughly 80,000 of whom are undergraduates and 17% declared STEM majors, and 3.9% URM STEM majors (i.e., LSAMP defined STEM fields). Alliance partners have had a rapid increase in minority enrollment and graduation in STEM disciplines, creating a large pool of URM STEM students eligible for LSAMP support. The alliance is designed around the concept of embracing these changes and expanding our knowledge about URM students to address broader impacts on nation-wide success in STEM education and careers in a changing demographic and cultural landscape. Alliance partners have core similarities in student support programs and student profiles and will work synergistically because they are aligned with the strategic objectives of the UNC System: 1) Access, 2) Affordability and Efficiency, 3) Student Success, 4) Economic Impact and Community Engagement, and 5) Excellent and Diverse Institutions. Each of the system schools has already committed to priorities that are consistent with the system-wide strategic plan, and this will help provide more of a common language across which we can begin to share ideas and work together as an alliance. Finally, the alliance partners span a diverse geographic region in North Carolina and serve a broad diversity of students with a variety of needs, each with their own signature programs and support to meet those needs. Partner institutions are in a unique position to learn from other institutions and provide support that will elevate student opportunities and success.

Intellectual Merit: The M2S Alliance is comprised of six mid-size public universities with rapidly diversifying student populations. We hope to better understand what is required to attract URM STEM majors to these campuses, retain them in STEM degrees, and graduate them into STEM careers and/or higher education opportunities. How do these students develop STEM identities and affiliations? What are the necessary support systems to retain these students at key transition points in their education (entry, transfer, courses)? How do we, as faculty and administrators, increase the probability of successful student outcomes? While the LSAMP focus is on students, we also need to create inclusive campus climates. What are the essential components of “inclusive excellence” on campus? Our faculty are an essential component of creating a welcoming campus and sustaining these initiatives.

Broader Impacts: We hope the combined elements of this Alliance create a model for other LSAMP programs at mid-sized universities and will enable universities to foster URM STEM students in multiple settings. This in turn will help to change the climate at universities so that we all work toward increasing the number of successful URM STEM student outcomes. Our partnerships with business and industry will help to broaden the STEM URM workforce, create role models for URM STEM students, and change future students’ expectation for their personal career outcomes.

Appendix 7: Clear Pathway Proposal

Abstract: *Clear Pathways* is designed to develop and implement a successful transition process for the rapidly increasing number of Community College students who transfer into four-year University STEM programs. Our goal is to provide a process that will facilitate their timely graduation and simultaneously decrease the gap in graduation rates between transfer and traditional students. Our objectives are as follows:

1. Raise awareness and establish clarity of pathways for community college students to aid them in the transition to S-STEM disciplines at four-year universities.
2. Provide financial and academic support for community college students transferring into S-STEM disciplines during the transition period to the university.
3. To develop, implement, and sustain specialized services for transfer students after the transition to University to retain them in STEM disciplines, and graduate them in a timely manner into STEM careers or higher education opportunities.

Clear Pathways will recruit and support three cohorts of 15 transfer students (45 total) by meeting with and providing timely information to potential S-STEM students at local community colleges. Once committed to attending the University, students will be assigned a faculty advisor specializing in transfer students and asked to participate in a summer course designed to create a cohort, familiarize students with campus resources and university coursework expectations and interact with faculty in their selected major. Throughout the program *Clear Pathways* students will have peer and faculty mentoring, enhanced access to undergraduate research opportunities and internships with STEM industry partners, the benefit of an interdisciplinary science seminar series, visits to STEM labs and field locations, and significant financial support.

Qualitative and quantitative data will be collected concurrently to extend the breadth of inquiry and to capture the richness and diversity of *Clear Pathways* participant experiences. Data sources will include observations, participant surveys and S-STEM STAMPS comparison group surveys, focus groups and interviews, and mini-case studies including a photo voice component.

The evaluation will use a mixed method approach for both the formative and summative evaluations. Throughout the evaluator will seek to identify emerging themes and patterns. Questions to be considered are as follows: a) Do themes emerge around specific items in the data? b) How do these patterns (or lack thereof) help to shed light on the broader study question(s)? c) Are there any deviations from these patterns and how can they be explained? d) Do any of the patterns/emergent themes suggest that additional data needs to be collected or study questions need to be revised? e) Whether the patterns that emerge support the findings of other corresponding qualitative analyses or quantitative analyses.

Intellectual Merit: *Clear Pathways* will help to inform the research about how to matriculate, sustain and graduate S-STEM community college transfer students as they develop a sense of belonging, self-efficacy, and science identity. Project findings will add to the research and provide a greater understanding of how a S-STEM cohort affiliation supports transfer students' sense of belonging, self-efficacy and science identify. The project will increase our understanding of critical factors and programming that enable transfer students to succeed at a four-year university. This research will provide greater detail about how cohort and support activities nurture successful students in STEM and whether single activities or a suite of activities are necessary for ensuring that success. This new research will compare *traditional students with transfer students* in S-STEM programs so that we can understand similarities and differences between the two groups and create a successful environment for all S-STEM students

Broader Impacts: This research will help other universities identify activities that they can undertake to increase the likelihood that well-qualified transfer students interested in STEM persist in and graduate as STEM majors. Research is clear that transfer students need to form an affiliation with a faculty mentor upon their arrival at the “host” institution, but creating that relationship is often difficult. We need to change that now. Additionally, we need to understand what the essential support services are needed for transfer students that lead to an environment that facilitates success and graduation into a STEM career. Answering these questions will provide information that other universities can use for developing more successful pathways to support STEM transfer students. The results of this program will add to our understanding as to how to successfully integrate S-STEM transfer students into a four-year university and graduate these students into higher education and the workforce.

Appendix 8: RISE One Page Summary



What is RISE?

The RISE Network is a coalition of educators and researchers involved in STEM (science, technology, engineering, and math) education. The network provides access to STEM funding and research opportunities, promotes working partnerships, offers a monthly lunch series, and sponsors special events such as workshops and guest speakers. Network members include UNCG faculty and researchers, community educators, and grant specialists.

The impetus for the network came from a national push to improve STEM education as well as the work of UNCG's Math-Science Recruitment and Retention Task Force. The task force identified a need at UNCG for better coordination between math and science educators and researchers and increased confidence levels in teaching critical thinking skills and higher levels of math and science. To address these issues and strengthen UNCG's position in STEM education, the RISE Network was created in 2010.

RISE's Mission:

The goal of the RISE Network is to enhance and expand the already strong partnership between research educators and science, mathematics, and technology educators in the community and at UNCG. This is accomplished by developing a network of interested partners to better coordinate STEM education and research across campus. The network enhances UNCG's ability to broaden access to STEM fields by:

Supporting curriculum development through revising STEM courses in order to offer an inquiry-based collaborative method of instruction designed to foster skills in critical thinking, quantitative reasoning, and communication, with the goal of promoting the STEM literacy of our graduates.

Enhancing the extent to which UNCG supports high-quality STEM education in pre-K–12 classrooms by designing research-based projects that generate and disseminate knowledge about STEM content and pedagogy and are responsive to student, teacher, and district needs.

Facilitating collaboration between local community and business leaders and UNCG concerning scientific literacy skills, skills needed for the next generation of the (local) workforce, and instructional policies and programs to meet these needs.

Providing support for faculty and staff who seek external funding to support the efforts listed above.

How can RISE Benefit You?

The RISE Network is designed to benefit individuals from all disciplines and backgrounds. RISE sponsors a STEM research/education speaker series and cross disciplinary networking events that promote new partnerships that may expand research and funding opportunities. RISE has taken the lead on outreach events such as the development of the Wetlands and Science Everywhere. Faculty and staff may apply for our small research grants

Contact Us

You can contact us through the RISE email at rise@uncg.edu or you may contact the co-directors, Lynn Sametz at l_sametz@uncg.edu or Malcolm Schug at mdschug@uncg.edu.