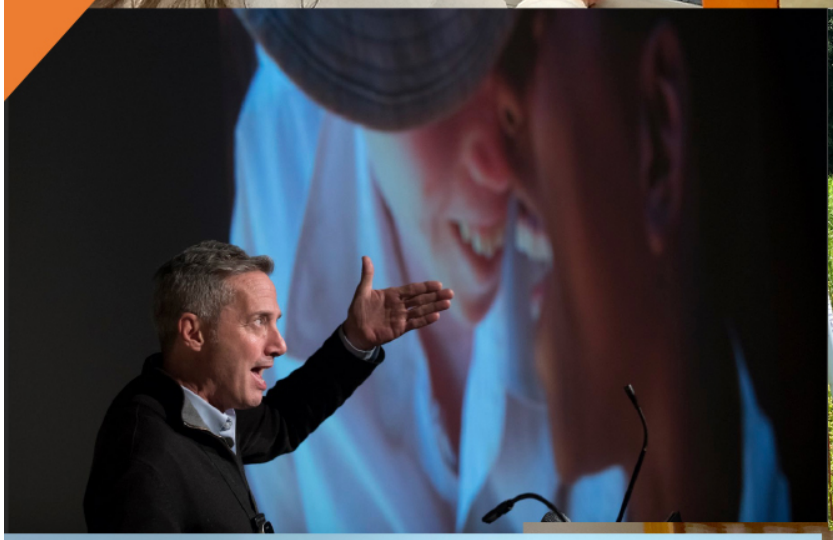
2019-2020 CASTLE Annual Report

RIT | College of Science
Center for Advancing STEM Teaching Learning and Evaluation



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AY 9/1/19 – 8/31/20

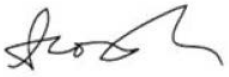
A Message From the Director
Scott Franklin

2019-20 was certainly a challenging year! The tremendous disruptions brought about by the coronavirus and social unrest that swept the country made each day after March a frenetic blur of zoom calls, changed plans, and chaos. That we managed to finish the year at all is a success worth celebrating, and yet we have much more to recognize.

A defining feature of our center is that we maintain close relationships and collaborations despite our increasingly broad range of expertise. Our scholarship capabilities expanded considerably with new connections in the Kate Gleeson College of Engineering and the Golisano College of Computing and Information Science and a William T. Grant Scholars proposal by Tony Wong that adds mathematics education research. An exciting challenge for the coming year is developing truly interdisciplinary research that draws on this dizzying array of disciplinary expertise. The wildly successful remote REU program that the Science & Mathematics Education Research Collaborative conducted in Spring and Summer revealed new ways to work together, and these lessons can be applied to our growing community.

Programmatically, the addition of Emily Mehlman as Learning Assistant Program Coordinator is a big step forward in the institutionalization of this core program. Similar progress was seen in the Inclusive Excellence initiative, where Rita Margarida Quiñones de Magalhães assumed the position of IE Program Coordinator. Together, Emily and Rita clarify the interface between CASTLE programs and the faculty at large, increasing accessibility and impact and reducing confusion about our mission and activities.

I'm truly excited to think about the possibilities of the coming year: new research and scholarship, new partnerships and colleagues with whom to discuss ideas and opportunities, and programs that grow into indispensable parts of the RIT landscape. None of this would be possible without your work, so to all the faculty, students and staff that make CASTLE the success it is: THANK YOU!



Mission Statement

The Center for Advancing STEM Teaching, Learning and Evaluation fosters rigorous, discipline-based STEM education research, providing infrastructure and opportunities for interdisciplinary collaboration. It supports the scholarship of pedagogy and teaching & learning, including transformational STEM educational practices, and broadens participation in STEM through outreach, research and programmatic innovations.

Vision Statement

CASTLE strives to create a vibrant community of discipline-based STEM education researchers in Schools and Colleges across RIT, working together to address issues of critical regional and national importance. CASTLE seeks to model interdisciplinary collaboration, developing partnerships across the disciplines necessary to address complex issues of inclusion in today's educational landscape. Above all, CASTLE embodies the aspiration of a community, supporting each other in all members' scholarship endeavors.

RESEARCH INITIATIVES

Science & Mathematics Education Research Collaborative (SMERC)
Dr. Dina Newman (Director)

SMERC consists of a multidisciplinary group of Discipline Based Education Researchers (DBER), who study how students learn the STEM disciplines, apply science to problem solving, and become enculturated as scientists. This research advances fundamental knowledge of how people learn, and develops general theory that can be applied in practice. Individual projects include biology education, physics education, chemistry education, engineering education, and science/math communication. SMERC is the overarching team of researchers leading the following areas of research:

I. Photonics and Optics Workforce Education Research (POWER)
Drs. Ben Zwickl and Kelly Norris-Martin

POWER is a project led by Dr. Ben Zwickl. POWER unites higher education, discipline-based education research, and workforce development in order to investigate core aspects of typical undergraduate STEM programs: scientific content, mathematics, and communication. This project is funded through a National Science Foundation Education & Human Resources Core Research (ECR) grant DGE-1432578. In the Photonics Careers Project, the early careers of technicians, engineers, and researchers are being studied to better understand the transition from school to jobs. With perspectives drawn from employees and managers, PhD students and their supervisors, researchers are identifying key math, physics, technical and communication skills that are essential for success. This foundational research supports stronger bridges between school and work and between the industry advocates for workforce development and the academic communities focused on education research. The Photonics Careers Project is providing additional research-based clarity that informs national discussion and policy around STEM workforce preparation. Findings have highlighted the importance of cross occupational communication (rhetorical/situational flexibility with groups distinct in background, training, and occupational role) in the optics and photonics workforce and now a replication study is being conducted with EMPOWER data to validate whether or not views about competent communication varies by industry.

II. Molecular Biology Education Group (MBER)
Drs. Dina Newman and Kate Wright

MBER is a collaborative research lab co-led by Dr. Dina Newman and Dr. Kate Wright, faculty in the Gosnell School of Life Sciences at RIT. The team studies how students think about molecular biology concepts and develops tools for improving biology education. This year's projects focused on visual literacy in molecular biology and developing tools to improve student learning outcomes. Highlights are listed below.

1. Last year the group built on their novel DNA Triangle framework to develop a new activity to help students understand the molecular basis of crossing over in meiosis; results from testing in class this year indicate that it is very effective (Cortez, Newman, and Wright, poster presented at SABER West in Irvine, CA, Jan 18, 2020; Wright, Cortez, Franzen and Newman, *Biochemistry and Molecular Biology Education* (2020) *manuscript in review*).

2. MBER continued to analyze data from course implementation of interactive video vignettes they previously developed, and published papers on the ability of IVVs to help students with core topics which resulted in two publications (Newman, Cardinale, Wright, *CourseSource*, 2020; Cardinale, Newman and Wright, *Journal of Biology and Microbiology Education*, 2020).

3. To continue the IVV project and improve on it, Newman and Wright submitted a $600K IUSE grant proposal to NSF that would involve a collaboration with RIT's MAGIC center as well as the College of William and Mary and Alfred University. Unfortunately, this proposal was declined, but the reviews were very positive. The group has also been approached by a major textbook publisher about a collaboration—this is still in early stages.

4. MBER developed a novel card sorting task based on different types of visual representations of DNA involved in molecular biology processes. Novices and experts perform the task differently, with novices using more surface features while experts focus on conceptual information. Students move toward expert-like behavior with more instruction, but visual literacy is clearly problematic, especially at the lower levels (Newman, Spector, Trumpore, Neuenschwander, and Wright, talk given at Virtual SABER National Meeting, July 10, 2020). Over the summer, cards were revised and will be tested at external institutions in AY20-21.

5. The group is also working on a new framework of classification for visual representations of DNA that takes into account scale and level of abstraction. Students have examined >2000 figures in 12 textbooks. A manuscript is in preparation. Other students have conducted dozens of interviews with both students and faculty; fascinating differences in how they think about "genes" and "gene expression" have emerged (Coakley, Link, Wright and Newman, poster presented at Virtual SABER National Meeting, July 31, 2020).

III. Research Experience for Undergraduates (REU)
Dr. Dina Newman and Dr. Kate Wright

DBER REU is a program that brings students from all over the U.S. to learn about DBER and undertake cutting edge projects in the field (https://www.rit.edu/science/smerc/reu). SMERC members Kate Wright (PI) and Dina Newman (Co-PI) led the fifth cohort of participants of the NSF funded REU program: **Research Experiences for Undergraduates in Model-based Reasoning in STEM Education at the Rochester Institute of Technology** (DUE 1757477). Due to the COVID pandemic, the Spring/Summer 2020 program session was led virtually with 11 students from around the country:

- Jesús A. Botello (Esquivel University of Texas)
- Ryleigh Fleming (University of Alabama)
- Molly Griston (University of Rochester)
- Daisy Haas (Chapman University)
- Deondre Henry (Hendrix College)
- Sophia Jeon (Cornell University)
- Aidan Link (University of Arkansas)
- Anna Miller (College of St. Benedicts)
- Korinne Mills (Florida Southern College)
- Hannah Spector (Rochester Institute of Technology)
- Pujan Thaker (Embry-Riddle Aeronautical University)

Each of these students presented their research at the Virtual DBER REU Symposium hosted by SMERC on July 30, 2020. New elements were added to the program, including a weekly reflection session for students, and deliberate inclusion of discussions about racism and equity in STEM. Feedback from students (via the external evaluator) indicated that the virtual REU was highly successful. Most mentors were also very pleased with the experience and felt that research productivity was high.

IV. Graduate Admission and Retention Research
Dr. Casey Miller

In September 2018, work continued on research studying holistic practices to increase diversity and retention in physics graduate programs. The team has studied current admission and retention across the United States, and offered targeted interventions and tools that aid programs in using more holistic measures. The goal of this project is to increase access to, and retention of, women and excluded identity groups in graduate physics programs.

Holistic Practice for Faculty

Short paper-based modules have been created to train groups of faculty on various holistic practices including: the legal landscape of admissions, how to use GRE-scores, how to create a rubric for evaluation, how to identify non-cognitive qualities in graduate application and induction practices. These modules will be field-tested with groups of faculty in the summer months of 2019.

Non-Cognitive Assessment

We have begun pilot testing of the Non-Cogitative Assessment to establish validity and reliability of the instrument. The NCA has been shared with individual programs and shared through APS conference networks, and we currently have data from 450 graduate student participants. We are expected to begin validity testing in July 2019, once we have viable data from at least 500 graduate students.

Interview Results

From September 2018 through April 2019, interviews were conducted with 2 faculty members and focus groups were conducted with 21 graduate students from over 15 different institutions. The goal of these interviews was to determine faculty and student attitudes towards a variety of recruitment, admissions, and retention practices. Qualitative results from these interviews have been published as a 2018 PERC Proceedings Paper. Additional results are currently being prepared for publication as a 2019 PERC Proceedings Paper and a Physical Review PER publication.

We anticipate additional graduate student focus groups and faculty interviews to occur at the American Physical Society Division of Atomic Molecular and Optical Physics meeting in May 2019.

Presence of Homophily Within and Across Physics Departments

Data regarding educational pathways were collected from 6,104 permanent faculty from 230 physics departments (e.g., physics, astronomy, astrophysics, and applied physics). There is a disproportional representation of faculty among all physics departments whose educational background included an elite institution. The top 20% of physics departments (as ranked by National Research Council scores) produce 70% of all physics faculty, but only 40% of physics PhD graduates. These results are being prepared for presentation at the 2019 American Association of

Physics Teachers conference. This project is funded by NSF-NRT 1633275.

V. Franklin Physics Education Research Lab
Dr. Scott V. Franklin

Dr. Scott Franklin supervises a variety of physics education research projects. Past and current projects include characterizing how physicists embed conceptual meaning in mathematical formalism, visualizing the different routes students take to graduation (academic field switching), studying the interaction of student identities with the physics culture, and developing and characterizing effective mechanisms for bringing about faculty and institutional transformation. Read More

VI. Zwickl Physics Education Research Lab
Dr. Ben Zwickl

The Zwickl PER Group has been very active in quantum education and PER over the past year. Dr. Ben Zwickl is a Co-PI and lead of Education and Workforce Development for RIT's Quantum Leap Challenge Institute Proposal entitled Quantum Photonic Institute (PI Don Figer, Future Photon Initiative). Ben collaborated with Heather Lewandowski and Michael Fox at CU-Boulder to study workforce needs in the quantum industry, a summary of which is posted on the arXiv: https://arxiv.org/abs/2006.16444. Working with graduate student Mike Verostek, Ben interviewed deans, department heads, and faculty in COS, KGCOE, CET, and GCCIS to understand interest in a potential minor in Quantum Information Science and Technology. Mike Verostek presented his findings from that project at the American Association of Physics Teachers 2020 Summer Meeting. Additionally, Ben participated in the Kavli Quantum Smart Workforce meeting at UCLA in November 2020 and co-authored part of the report (submitted in August 2020). Ben is also co-organizing a Focus Session at the 2021 American Physical Society March Meeting in conjunction with the APS Division on Quantum Information entitled "Teaching Quantum Information at All Levels".

In March 2020, at the start of the coronavirus shutdown, Dr. Dina Zohrabi Alaee joined the Zwickl Lab as a postdoc on Ben's NSF CAREER Award studying Learning in Context-Rich Environments. Dina recently completed her PhD in Physics at Kansas State University under Ellie Sayre and has made an immediate impact. She planned and carried out a large multi-week study of physics majors participating in remote NSF-funded REU programs, which is a model both for the depth of data collected, but also in a unique environment forced by coronavirus. Dina conducted weekly interviews (over 70 in all) covering all aspects of the research experience, including how students approach learning within the REU, their mentoring and social network, and the impact of the experience on their career plans. As part of this

work, undergraduate student Micah Campbell assisted in developing a concept mapping assessment to understand how students make connections between their prior knowledge, their current research project, and the larger scale project goals.

VII. Inclusive Excellence Research
Dr. Dina Newman, Dr. Scott V. Franklin

Under the HHMI Inclusive Excellence Initiative, research was conducted on the motivation of faculty to participate in inclusion efforts, the incorporation of inclusive practices both in the classroom and in the lab, and on faculty's perceptions and actual implementation of inclusive practices in the classroom. Read More. Two post-doctoral fellows were employed by the grant:

- Rita Margarida Magalhães
- Brittney Wyatt

Published Paper:
Magalhães RM, Hane EN (2020). Building Inclusive Classroom Practices: A Curriculum for Faculty Learning Communities Based on Metacognition. Journal of Faculty Development, Vol. 34, No. 3, pp.1-7.

VIII. Reformed Experimental Activities (REActivities)
Principal Investigator: Christina Goudreau Collison

Dr. Tina Goudreau Collison leads a collaborative effort focused on a reformed chemistry curriculum for teaching undergraduate laboratories using a scaffolding effect. Reformed Experimental Activities (REActivities) incorporates inclusivity, continuity, and engaged student learning in early chemistry experiences. Read More.

RESEARCH ACTIVITIES

I. Interdisciplinary STEM Education Research Forum (ISERF)

In February of 2018, CASTLE, along with College of Engineering Technology formed an interdisciplinary collaboration forum. Under the direction of the College of Engineering Technology (CET) Associate Dean Dr. Mike Eastman and CASTLE faculty Dr. Dina Newman and Ben Zwickl, STEM education research groups across campus meet to present, share ideas, and further common research goals. Within just two years the campus-wide scholarship community has grown focusing on removing silos of those researching STEM education scholarship. It has connected education research faculty, forming new partnerships, and encouraged working together on research themes and interests. The group is also working to support efforts in graduate education, e.g. the School of Physics and Astronomy's Ph.D. in physics proposal.

RIT Campus Partnering Associations Include:

- Golisano College of Computing & Information Sciences
- Kate Gleason College of Engineering
- College of Engineering Technology
- College of Health Sciences and Technology
- College of Liberal Arts
- National Technical Institute of the Deaf
- College of Science
- School of Individualized Study

Past Topics Include:

- Student Groups & Informal Learning Spaces
- Sharing Research Funding Ideas
- Sharing STEM Ed Research
- Focus on Computing
- DBER Graduate Education

II. SMERC Journal Club

https://www.rit.edu/castle/research/journal-club

The RIT Science and Mathematics Education Research Collaborative (SMERC) runs a weekly journal club open to all, especially faculty interested in incorporating research-based methods and assessment into their classrooms. Twenty-one sessions were held in the AY2019-2020. Run by Dr. Ben Zwickl, readings were selected by the group of regular attendees and came from a variety of discipline areas (life sciences, chemistry, engineering, computer science, physics, social sciences) and journals. Typically, the discussion was facilitated by whoever suggested the article. The articles were announced weekly via a listserv with 65 members, and 7-10 people attended on a typical week.

III. SMERC Seminar Speaker Series

https://www.rit.edu/castle/research/seminar-speaker-series

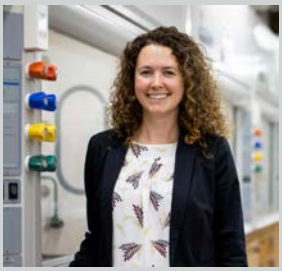
In AY 2019-2020, SMERC hosted six guest seminar speakers. Topics ranged from research on pedagogy and instructor mindsets to evaluation of learning outcomes and student experiences. All COS faculty, staff and students were welcome to attend the seminars and workshops.

2019-20 Seminar Speakers

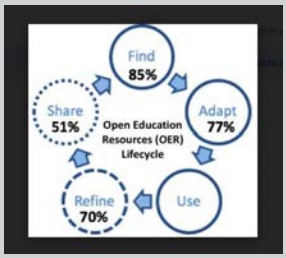
Dr. Marilyne Stains
Associate Professor
University of Virginia
September 18, 2019, 1pm-1:50pm
Unpacking the relationship between our beliefs about teaching and learning and our instructional practices.

Dr. Dina Zohrabi Alaee
Kansas State University
November 1, 2019, 3pm-4pm
Physics Instructors Needs and Undergraduate Student Learning

Dr. Jessica Trussell
Assistant Professor
MS in Secondary Education Program
RIT National Technical Institute for the Deaf
January 24, 2020, 2pm-3pm
Here's How NTID Does Education Research



Dr. Tina Goudreau
Professor
Rochester Institute of Technology
April 10, 2020, 2pm-3pm [Held Zoom]
Our Hands as Skilled Communication Tools for Conveying Organic Chemistry



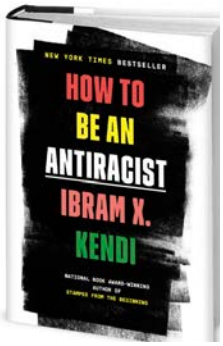
Dr. Kaitlin M. Bonner
Assistant Professor
St. John Fisher College
November 8, 2019, 3:30pm-4:30pm
Perspectives and Practices in Sharing Data-centric Adaptation in the Biology Classroom: How, Why and Where Are Instructors Sharing These High-Impact Pedagogies?

Dr. Claire Meaders
Post-doctoral Researcher
Cornell University
December 6, 2019, 3pm-4pm
Surveying the Landscape: The Student Experience in Introductory Courses

FLAGSHIP PROGRAMS

INCLUSIVE EXCELLENCE INITIATIVE

RESEARCH · COMMUNITY · CLASSROOM



Inclusive Excellence: Year 3 of the 5-Year Project Funded by a $1M grant from Howard Hughes Medical Institute

The Inclusive Excellence 5-Year Project has now completed **three** years of working toward a more inclusive environment across the College of Science, and ultimately across the campus. By the close of AY2019-2020, the program directly involved faculty, staff, and students in one or more cohorts in one of the three areas of focus: **Research**, **Classroom Practice**, or **Community**. To date, **IE has hosted 78 events with more than 700 attendees.** Faculty, staff and students from the College of Science **made up 90% of those attendees.** The events ranged from reading groups, presentations, and panel discussions to internationally acclaimed speakers.

The **IE Research Strand** completed its Faculty Research Mentor Workshop Series, despite the pandemic interrupting the spring semester. We also recruited and identified the 2020 IE Research Student Fellows, most of whom postponed their research experience to 2021, with the exception of one fellow who completed her research fellowship with Dr. Tony Wong this summer. Dr. Britt Wyatt and Dr. Lea Michel were able to present several posters and talks on the research strand accomplishments, and a manuscript describing the faculty mentor workshops has been submitted for publication.

The **IE Classroom Practice Strand** continued to provide support and function as a community of practitioners as we navigated the move to remote learning this spring. Our biweekly workshops continued virtually, and we shared best practice for inclusive teaching in an online environment. Dr. Rita Magalhães and Dr. Elizabeth Hane have written a paper about the faculty development aspects of the Classroom Practice strand that is scheduled to be published in September.

As part of our **IE Community Strand**, we continued to hold a series of workshops utilizing Playback Theatre, a highly acclaimed form of improvisational theatre where participants share personal stories around a common theme that are enacted on the spot by actors and musicians. This format of sharing encourages open conversation about difficult topics through skilled facilitation. Year three opened up the workshops to a blend of all who were interested from the College of Science, as opposed to targeting members of one school at a time.

RIT created a Black Lives Matter statement (left) with a link to "Embracing Diversity and Inclusion – An RIT Conversation on Racism." Supporting this, CASTLE posted a Statement of Solidarity with the Black Community along with helpful resources. IE quickly established a weekly virtual book club, and partnering with the Division of Diversity and Inclusion, additional Playback Theatre workshops to assist in engaging in pertinent discussions.

Black Lives Matter

RIT is engaged in meaningful conversations and actions to reinforce that Black Lives Matter. The university's mission is to cultivate global citizens who will make a positive difference in the world.

National events and protests—a resurgence of the Black Lives Matter movement—were felt across the country, and certainly on our campus, during the COVID-19 pandemic. The IE Initiative quickly put into place a weekly book club, starting with the book *How to be an Antiracist*, by Ibram X. Kendi. Small breakout groups were offered meaningful questions, encouraging discussion, reflection, increased awareness and introspection pertaining to racism, inequity and understanding the daily burden and injustice imposed on all people of color. Additional workshops were added, in collaboration with the Office of Diversity and Inclusion's Division of Diversity and Inclusion, utilizing the improvisational techniques of Playback Theatre in virtual format through Zoom, something not done before at RIT. Through these workshops and discussion groups, members had the chance to reflect on their own experiences, and identify their own prejudices and misconceptions. This introspective experience will contribute to a lasting and systemic change.

The initiative continues to work toward embracing perspectives, strengths and insights from individuals of varied backgrounds, beliefs, economic statuses, nationalities, genders, and other identities. Year three engaged not only individuals from all academic units within the College of Science, but cross-campus partners and individuals from the greater RIT and Rochester communities.

IE, together with multiple schools and departments on campus, sponsored another internationally acclaimed speaker. Collaborating with the Division of Diversity and Inclusion and several others, IE brought Rick Guidotti to campus. The award-winning photographer, transitioned from photographing international models and high-profile clients to photographing those with genetic diseases and defects, rethinking the meaning of beauty and embracing the richness of human diversity. Despite the cold and stormy winter day, he was met with a huge turnout of RIT employees, Rochester families, and even some who drove hours to hear his keynote and meet him.

Seven short events open to faculty, staff and students were presented by the College of Science and hosted by Inclusive Excellence. Panel discussions and guest speakers addressed such topics as “Active Listening: Strategies for Better Communication,” “What Students Wish Faculty Knew,” and “Student Support Services.”

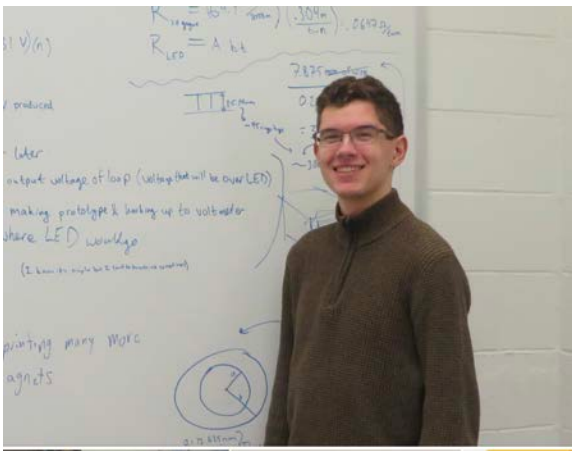
Year **four** plans continue to address the many ways of creating an inclusive and welcoming environment for students in the STEM fields. Strategies are in place to:

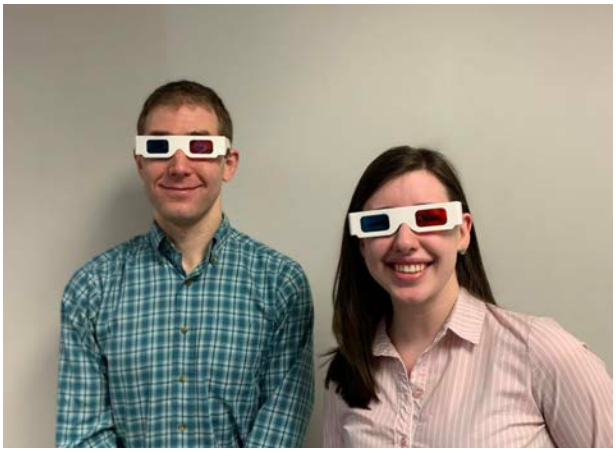
- bridge program activities of the three cohorts (research, teaching practice and community) by means of a dedicated person, newly hired as IE program coordinator, to assure cohesiveness and sustainability.
- summarize and assess a diversity/inclusion question included in all COS 2019 annual evaluations.
- continue Diversity Theater workshops with actors’ improvisational enacting of participants’ personal stories.
- match and support additional pairs of faculty mentors and student mentees from a variety of underrepresented groups.
- create and circulate a strategic marketing communication plan for IE 2020-2022, addressing challenges and suggested solutions for a sustainable program now and beyond 2022. Communicate the College of Science’s continued dedication to inclusiveness and diversity.
- increase support from the university’s President and Provost.
- provide new engaging speakers, discussions, and other opportunities for the community to become educated about inclusivity issues.
- better define our partnership with the Division for Diversity and Inclusion (DDI), modeling a partnership between DDI and IE within a college or discipline.

This program is supported in part by a grant to RIT from the Howard Hughes Medical Institute through the Science Education Program.

Read More
Watch the Video

Learning Assistant (LA) Program
https://www.rit.edu/castle/programs/learning-assistants/overview





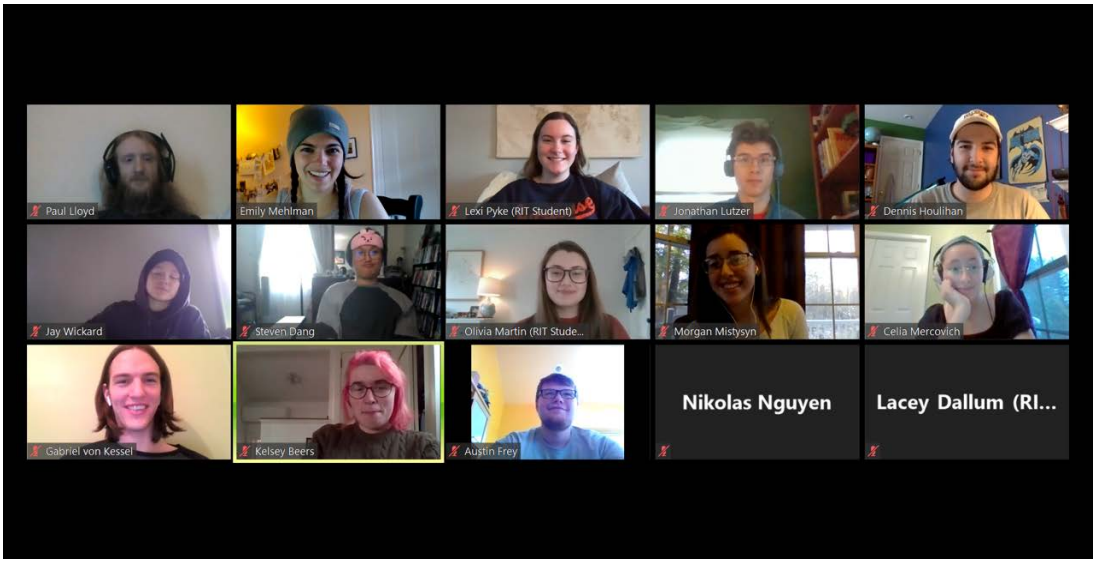
Learning Assistants map out coursework assistance (left). Faculty mentor and LA create interesting classroom activities to illustrate key concepts being taught (right).

The **Learning Assistant (LA) Program** continued to enable student LAs to support the goals of their faculty mentors through peer-to-peer small group facilitation and other activities such as creation of active learning materials and out-of-class peer-learning sessions. LAs utilized skills and training, gained from the pedagogy class, that allowed them to reflect on classroom learning, make meaning from that reflection, and provide insight and ideas to work collaboratively with faculty to improve outcomes. In this way the program is uniquely different from traditional classroom support.

Talented students were recruited, preparing them to assist in the transformation of classrooms, creating environments in which students can interact with one another, engage in collaborative problem solving, and articulate and defend their ideas. Through this process, LAs gained self-confidence and a vehicle to practice professionalism in the work place.

> **Contributing to the knowledge students will use during their careers makes you come back for more.**
>
> **—Learning Assistant, Irtaza Razvi**

This year, CASTLE hired Program Coordinator, Dr. Emily Mehlman. Her targeted efforts working with the Learning Assistant Committee increased participation in the program reaching a large number of faculty and students benefitting from this program. During the Fall Semester 2019, the program had 36 Learning Assistants working with 24 faculty mentors in four College of Science Schools (GSoLS, SCMS, SMS and SoPA) and 2 College of Engineering Technology departments (Manufacturing & Mechanical Engineering Technology, Electrical Engineering Technology). The American Sign Language and Interpreting Education department and Performing Arts Department within NTID (National Institute for the Deaf) also had LAs and mentors in Fall Semester 2019.



Learning Assistants finished their spring semester of their pedagogy class virtually.

The Spring Semester 2020 proved the strong dedication of faculty and students alike as they held a successful semester of this program through the difficult time of the COVID-19 pandemic. The mentors and LAs persevered through the transition to online classrooms and continued to enhance student learning moving to the virtual space. There were 32 learning assistants working with 25 faculty mentors within the same departments, with the additional recruitment of 5 new faculty to the program. Additionally, 2 Learning Assistants were placed in Intro to Performing Arts Department of NTID.

The pedagogy course, an important component of the LA Program, was taught by Liz Bremer in the fall and by Emily Mehlman in the spring. Collectively they provided training to 28 students (15 fall, 13 spring) focusing on helping practice facilitating small group discussion, carry out pedagogical research, and support student engagement in the classroom through active learning. . The program provided a resource to help faculty implement and sustain pedagogical change in their

classrooms, while LAs gained experience teaching, to assess whether this is something they may be interested in pursuing as a career.
Two recruitment fairs were held (on campus in the fall and virtually in the spring) to inform interested mentors and students on the Learning Assistant Program and provide them an opportunity to speak with past and current LAs and mentors about their experiences. Throughout the summer, individual and group meetings continued to be held wherein faculty met with each other and the coordinator, Emily Mehlman, to develop innovative and creative ideas for fall, incorporating plans for multiple modalities of instruction. The LA Program website was updated with clear and precise information for both student LAs and faculty mentors. An Additional Resources Page was added to the Faculty Mentor Information section of the website providing publications, podcasts, videos and website links as resources to support student learning assistants, faculty working with LAs, or anyone interested in learning more about the LA Program or related pedagogies.

Summer Math Applications in Science with Hands-On (SMASH) Experience for Girls

The SMASH Experience for Girls is a summer program designed to increase middle-school girls' engagement and interest in STEM. In the summer of 2019 this unique program brought 36 rising eighth grade girls to RIT's campus from 12 different schools. Forty-seven percent of the participants were awarded need-based scholarships. Participants spent a week working on mathematical modeling projects, designed to show the usefulness of mathematics in everyday life; self-affirmation activities created to build confidence in math; and daily recreational activities. This year the participants spent the week learning about different aspects of climate change.

The experience concluded with a hands-on event involving representatives from local companies demonstrating the role of STEM in their industries, and a parent symposium where participants present a problem plaguing their local community and how mathematics could be used to solve this problem. In preparation for the summer experience, RIT undergraduate and graduate students, with interests in K-12 STEM education, under the mentorship of a local teacher create, test, and then facilitate all SMASH activities.

Professional-development for Emerging Education Researchers (PEER) https://www.rit.edu/castle/programs/peer/about

This year, despite the challenges the pandemic presented, PEER continued serving emerging education researchers interested in expanding their theoretical or methodological expertise, as well as senior faculty looking to transition from traditional disciplinary research into STEM education research.

The PEER Cologne workshop, scheduled to take place during the spring, was held virtually due to COVID-19. The week-long session had participants from around the world. Participants included faculty, postdocs, and graduate students.

Workshops slated for Rochester, NY and Manchester, UK were cancelled and rescheduled for the upcoming year.

A PEER Cologne workshop was held virtually March 25 – April 1, co-led by Scott Franklin, physics professor and CASTLE director. Participants from U.S., Germany, Ecuador, Sri Lanka and Macedonia attended the virtual experience.

The PEER program continues to have an international presence with workshops on research life, ethics, getting started with research design, analysis methods, research communication, teaching, and colloquium-style talks. View available workshop topics here.

PEER Publications and Presentations
A compiled list of publications and presentations by individuals across the PEER host sites is available showing individual and collaborative research. View List Here.

PEER World Locations
Rochester, NY, USA
Cologne, Germany
Kibungo, Rwanda
Monterrey, Mexico
Vancouver, BC

FACULTY, STAFF AND POSTDOCTORAL RESEARCHERS

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College of Liberal Arts

Michael Eastman
Associate Dean for Academic Programs and Continuous Improvement
College of Engineering Technology

Emily Mehlman
LA Program Coordinator
Center for Advancing STEM Teaching, Learning and Evaluation

Scott Franklin
Director, CASTLE
Professor, School of Physics and Astronomy

Dina Newman
Director, SMERC
Associate Professor
Thomas H. Gosnell School of Life Sciences

Debra Jacobson
Marketing Specialist
Center for Advancing STEM Teaching, Learning and Evaluation

Lindsay Owens
Postdoctoral Project Coordinator
School of Chemistry and Material Science

Stephanie Livingston-Heywood
Staff Assistant
RIT Inclusive Excellence Center for Advancing STEM Teaching, Learning and Evaluation

Susan Rothwell
Postdoctoral Researcher
School of Physics and Astronomy

Rita Margarita Almeida Magalhães
Postdoctoral Researcher
RIT Inclusive Excellence Center for Advancing STEM Teaching, Learning and Evaluation

Robert Teese
Research Professor
School of Physics and Astronomy

FACULTY, STAFF AND POSTDOCTORAL RESEARCHERS
(CONTINUED)

Leslie Kate Wright
Associate Professor
Thomas H. Gosnell
School of Life Sciences

Brittney Wyatt
Postdoctoral Researcher
RIT Inclusive Excellence
Center for Advancing
STEM Teaching,
Learning and Evaluation

Benjamin Zwickl
Associate Professor
School of Physics and
Astronomy

Tony Wong
Assistant Professor
School of
Mathematical Sciences

Dina Zohrabi Alaee
Postdoctoral Researcher
School of Physics and
Astronomy

AFFILIATED PERSONNEL

Managing or Contributing to CASTLE Programs or Projects

Tina Chapman DaCosta
Director of
Diversity Theater
Office of Diversity
and Inclusion

Kara Maki
SMASH Director
Associate Professor
School of Mathematical
Sciences

Jeanne Christman
Associate Professor
College of Engineering
Technology

Lea Michel
Associate Professor
School of Chemistry and
Materials Science

Christina Goudreau Collison
Professor
School of Chemistry
and Materials Science

Casey Miller
Associate Dean for Research
and Faculty Affairs
Professor
School of Chemistry and
Materials Science

Paul Craig
Professor
School of Chemistry and
Materials Science

Ifeoma Nwogu
Assistant Professor
Department of Computer
Science

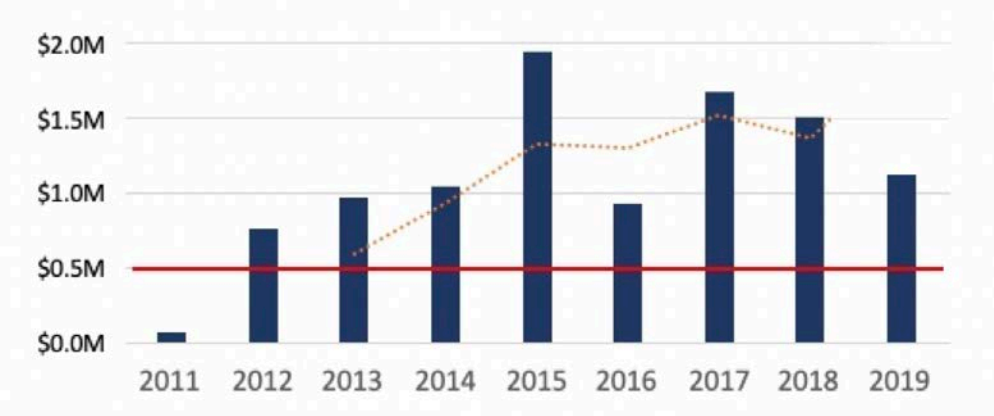
Elizabeth Hane
Associate Professor
Thomas H. Gosnell School
of Life Sciences

Jeyhan Kartaltepe
Women in Science (WISe)
Chair
Assistant Professor
School of Physics and
Astronomy

RESEARCH FUNDING

CASTLE's externally awarded funded has consistently been at or above $1.0M and includes several "signature" awards, including the NSF STEM Talent Expansion Program, HHMI Inclusive Excellence, two NSF CAREER Awards, and an NSF INCLUDES award.

Newly received CASTLE awards (external) by year



CASTLE active funding is broadly distributed across multiple RIT Schools and Colleges. (COS-Multi indicates multiple Schools within the College of Science).

CASTLE Active Awards

School or College	2019-20 ($10M)	2020-21 (proj: $8M)
SoPA	$3,503,508	$2,440,327
COS-Multi	$2,472,919	$2,472,919
SMS	$1,674,866	$781,224
CET	$999,889	$999,889
SCMS	$536,051	$555,284
GCCIS	$524,692	$524,692
GSoLS	$336,993	$336,993

CENTER EVENTS

The 7th Annual CASTLE Symposium

The 7th Annual CASTLE Symposium was cancelled due to the COVID-19 pandemic.

"While we cannot come together in person, it is worth taking a moment to reflect on and appreciate the year we have had. The Learning Assistant program continued to expand, partnering students and faculty in the classroom. New faculty Triads worked together to transform Introductory and General Biology Curricula. The Inclusive Excellence program expanded its faculty cohorts to its broadest reach yet. And, underlying it all, was RIT's continued growth and leadership in STEM education research. Thank you for all of your work over the past year, most recently in extremely trying circumstances, and for another truly great year of discovery."

—sent from CASTLE Director, Scott Franklin, to CASTLE members and affiliates, 4/28/20

CASTLE Awards:
During each annual celebration, CASTLE awards are given to a select few who have impacted the growth and success of the Center. This year the following learning assistant students were acknowledged with gratitude for outstanding dedication and service and were mailed their award or certificate of honorable mention.

Recognition of Excellence: Eva Earnest
Honorable Mentions: Kyle Buohl, Morgan Mistysyn, Aleea Wrightstone

2019 – 2020 Undergraduate Learning Assistants:
Kelsey Beers, Lucas Berens, Brandon Bogner, Kyle Buohl, Claire Candelori, Jessica Chellino, Sierra Dacey, Lacey Dallum, Steven Dang, Aniya DeBride, Chris DeNyse, Alicen DiPiano, Erika Doroshenko, Eva Earnest, Eileen Figuroa, Will Fisher, Austin Frey, Victoria Gaeth, Zachary Gazzillo, Ellyson Grant, Justin Haverlick, Dennis Houlihan, Brianna Keller, Maha Khokhar, Bobby Kovach, Andre Lebron, Paul Lloyd, Jonathan Lutzer, Evan Manfreda, Olivia Martin, Celia Mercovich, Terianna Mewborn, Morgan Mistysyn, Kellie Mullaney, Nikolas Nguyen, Natasha Nigam, Paige Norris, Mike Nystoriak, Kristen Patten, Sophia Pizzola, Jaimeson Plesants, Jacob Poirier, Lexi Pyke, Irtaza Razvi, Kory Schimmelpfenning, Hannah Spector, Julia Stelle, Nasheett Usman, Gabriel von Kessel, Jay Wickard, Ryan Wills, Emalee Wrightstone, Aleea Wrightstone

2019 – 2020 Learning Assistant Mentors:
Sandi Connelly, Emily Coon-Frisch, Luane Davis Haggerty, Elizabeth diCesare, Kristina Driscoll, Andrew Ferrante, Scott Franklin, Chad Gratton, Ed Hach, Elizabeth Hane, Andy Head, Premlata Kumar, Charlie Lusignan, Danny Maffia, Aaron McGowan, Michael Pearce, Louis McLane, Howard McLean, Emily Mehlman, Lea Michel, Dina Newman, Sheth Nyibule, Deana Olles, Rob Szalapski, Greg Trayling, Kate Wright, Aditya Yechan Gunja

Learning Assistant Program Fall/Spring Recruitment Fairs
The LA Program hosted two recruitment fairs, one in the Fall semester (October 25, 2019) and one in the Spring semester (March 25, 2020)—the latter done virtually, video recorded, captioned and posted to the CASTLE website.

Both recruitment fairs started with a presentation by the newly hired program coordinator, Emily Mehlman, providing details on the program, including expectations and commitments. After a Q & A session a student panel of current learning assistants spoke about their experiences and the benefits of the program.

PUBLICATIONS

The CASTLE Center had 13 publications by core CASTLE members.
Bold = core CASTLE member, Underline = undergraduate student

Cardinale JA, **Wright LK**, **Newman DL** (2020). An Online Interactive Video Vignette that Helps Students Learn Key Concepts of Fermentation and Respiration. *J Microbiol Biol Educ*, Vol 21(2). doi:10.1128/jmbe.v21i2.1895.

Newman DL, Cardinale JA and **Wright LK** (2020). Interactive Video Vignettes (IVVs) to Help Students Learn Genetics Concepts. *CourseSource*. Vol 7. doi: 10.24918/cs.2020.27

Wright LK, Dy GEC, **Newman DL** (2020). Undergraduate Textbook Representations of Meiosis Neglect Essential Elements. *Am. Biol. Teacher* 82(5):296-305. doi:10.1525/abt.2020.82.5.296

Kota V, Gali GM, **Nwogu I** (2020). A Computational View of the Emotional Regulation of Disgust Using Multimodal Sensors. *IEEE Computer Society Digital Library*. doi: 10.1109/FG47880.2020.00145.

Owens LM, Zwickl BM, Franklin SV, Miller CD (2020) Physics GRE Requirements Create Uneven Playing Field for Graduate Applicants, Proceedings of the 2020 Physics Education Research Conference

Miller CW, **Zwickl BM**, Posselt JR, Silvestrini RT, Hodapp T (2020). Response to comment on "Typical physics Ph.D. admissions criteria limit access to underrepresented groups but fail to predict doctoral completion." *Science Advances*, 6 (23), eaba4647.

Terrell CR, Franzen MA, Herman T, Malapati S, **Newman DL**, **Wright LK** (2019). "Physical Models Support Active Learning as Effective Thinking Tools." Bussey T, Cortes K, Austin R, eds. In *Biochemistry Education: From Theory to Practice,* 43-62. **doi: 10.1021/bk-2019-1337.ch003**

Kim T, **Wright, LK,** Miller, K (2019). An examination of students' perceptions of the Kekulé resonance representation using a perceptual learning theory lens. *Chemistry Education Research and Practice*. **doi: 10.1039/C9RP00009G**

Eastman MG, Miles ML, Yerrick R (2019). Exploring the White and Male Culture: Investigating Individual Perspectives of Equity and Privilege in Engineering Education. *Journal of Engineering Education*. 22. Print.

Eastman MG, Miles ML, Yerrick R (2019). Inclusion Starts with Us. *ASEE Prism*. Print.

Hu D, Chen K, Leak A, Young NT, Santangelo B, **Zwickl B, Norris Martin K**. (2019). Characterizing Mathematical Problem Solving in Physics-related Workplaces using Epistemi Games. Phys. Rev. Phys. Educ. Res. **15**, 020131.

Greenwood L, Indelicato M, Bazdresch M, **Eastman M** (2019). Problem Based Learning: A Tale of Three Courses. *Proceedings of the ASEE Zone 1*. Ed. ASEE. Niagara Falls, NY: ASEE. Web.

Bailey C, Arion D (2019). Teaching physics for tomorrow: Equipping students to change the world, , *Physics Today*, 73 – **Zwickl B**-not listed as co-author, but acknowledged in text as creator of Box 2, 3, 4, and Figure 1.

PRESENTATIONS

The CASTLE Center had 20 presentations by core CASTLE members.
Bold = core CASTLE member, Underline = undergraduate student

Coakley AJ, Link AP, Wright LK, **Newman DL**. Communicating Ideas in Molecular Biology: Novice vs. Expert Representations. Poster presented at the 2020 Virtual SABER National Meeting. (July 31, 2020)

Link AP, Coakley AJ, **Newman DL**, **Wright LK**. Communicating Ideas in Molecular Biology: Novice vs. Expert Representations. Presented at the 2020 Virtual DBER REU Symposium. (July 30, 2020)

Mills K, **Newman DL**, **Wright LK**. Genotype → Phenotype: Students' Understanding of Gene Expression. Presented at the 2020 Virtual DBER REU Symposium. (July 30, 2020)

Spector H, **Wright LK**, **Newman DL**. Using a Card Sorting Task to Capture Student Thinking about Molecular Biology Concepts. Presented at the 2020 Virtual DBER REU Symposium. (July 30, 2020)

Miller A, **Wright LK**, **Newman DL**. Visual Representations as a Tool to Probe Thinking about Molecular Genetics. Presented at the 2020 Virtual DBER REU Symposium. (July 30, 2020)

Zwick B. Challenges and Opportunities for Innovation and Research in Physics Lab Education, Invited presentation to the 2020 Summer Meeting of the American Association of Physics Teachers (July 21, 2020, online).

Verostek M, **Zwickl B**. Creating interdisciplinary pathways into quantum careers: opportunities for physics departments, Contributed presentation to the 2020 Summer Meeting of the American Association of Physics Teachers (July 21, 2020, online)

Owens L, **Zwickl B**, **Miller C**. "Optional" General and Physics GRE Requirements: The Impact on Prospective Graduate Students, Contributed presentation to the 2020 Summer Meeting of the American Association of Physics Teachers (July 21, 2020, online)

Leak A, Williamson K, **Zwickl B**. Dream jobs and desired career paths of physics majors Contributed presentation to the 2020 Summer Meeting of the American Association of Physics Teachers (July 21, 2020, online)

Fox M, **Zwickl B**, Lewandowski H. Preparing for the quantum revolution - the role of higher education, Contributed presentation to the 2020 Summer Meeting of the American Association of Physics Teachers (July 21, 2020, online)

Newman DL, Spector H, Trumpore L, Neuenschwander A, **Wright LK**. Observing Growth in Students' Recognition of DNA-Associated Concepts with a Card-Sorting Task. Talk given at the 2020 Virtual SABER National Meeting. (July 10, 2020)

Cortez P, **Newman DL**, **Wright LK**. Developing and testing a new method to teach meiosis with 3D models. Poster presented at SABER West. Irvine, CA. (January 18, 2020)

Wyatt B, **Magalhães RM**, **Newman D**, **Franklin S**. Motivational factors and barriers to faculty engaging in inclusive mentoring practices. Talk given at SABER West. Irvine, CA. (January 18, 2020)

Williamson K, **Zwickl** B. "Students' Perspectives of Social Impact in the Physics Discipline**"** Research Experiences for Undergraduates Symposium, Council of Undergraduate Research. Oct 27-28, Alexandria, VA (2019)

Owens L, **Zwickl BM**, **Franklin SV**, **Miller CW**. Identifying Qualities of Physics Graduate Students Valued by Faculty. Physics Education Research Conference (2019).

Leak A, **Marti K**, Reiter E, Rocha A, **Zwickl B**. Adapting Measurement and Testing to Integrate Practices within Authentic Contexts. American Association Physics Teachers (AAPT) Physics Education Summer Meeting. Washington, D.C. (2019).

Magalhães RM, **Newman DL**, **Franklin S**. How Inclusion is Communicated (or not) through the Course Syllabus. Talk given at *ACUBE*. Syracuse, NY. (October 26, 2019)

Carter D, DiCesare EW, **Newman DL**, Widmaier C. Collaborative Design of a Tiered Introductory Biology Course to Meet the Needs of a Diverse Student Body. Roundtable discussion at *ACUBE*. Syracuse, NY. (October 26, 2019)

Wyatt BN, **Magalhães RM**, **Newman DL**, **Franklin S**. Motivational Factors and Barriers to Faculty Engaging in Inclusive Mentoring Practices. Talk given at the *Association of College & University Biology Educators* (*ACUBE*). Syracuse, NY. (October 25, 2019)

Newman DL. Models for Teaching and Learning about DNA. Invited talk at the American Society of Human Genetics (ASHG) Annual Meeting. Houston, TX. (October 16, 2019)

STUDENTS MENTORED

The SMERC group plays a large role in mentoring Rochester Institute of Technology undergraduate students, as well as undergraduate students from other universities, to support experiential learning. SMERC members' consistent involvement with student-centered research aligns with RIT's strategic plan of becoming a student-centered research university.

Dina Newman and Kate Wright (Co-mentors)
Hannah Spector (RIT, biotech; REU 2020)
Julia Steele (RIT, biotech)
Lauren Trumpore (RIT, biotech)
Emalee Wrightstone (RIT, biotech)
Aidan Link (REU 2020, University of Arkansas)
Korinne Mills (REU 2020, Florida Southern College)
Anna Miller (REU 2020, College of St. Benedicts)

Scott Franklin
Jason Rackowsky (RIT, physics)
Jacob Was (RIT, physics)
Sophia Jeon (REU 2020, Cornell University)
Deondre Henry (REU 2020, Hendrix College)

Ben Zwickl
Latrell Powell (RIT, physics, class of 2020)
Molly Griston (REU 2020, University of Rochester)
Jesús Botello (REU 2020, University of Texas)
Micah Campbell (RIT, physics, class of 2020)
Jonathan Lutzer (RIT, physics class of 2022)
Pedro Cardona (RIT, physics class of 2021)
Michael Verostek (University of Rochester, non-matriculated RIT graduate student, Zwickl serving as dissertation advisor)

Kelly Martin
Ryleigh Fleming (REU 2020, University of Alabama)
Grace Osytek (RIT School of Communication)
Kaleb Kronimus (RIT School of Communication)

NOTABLE ACHIEVEMENTS

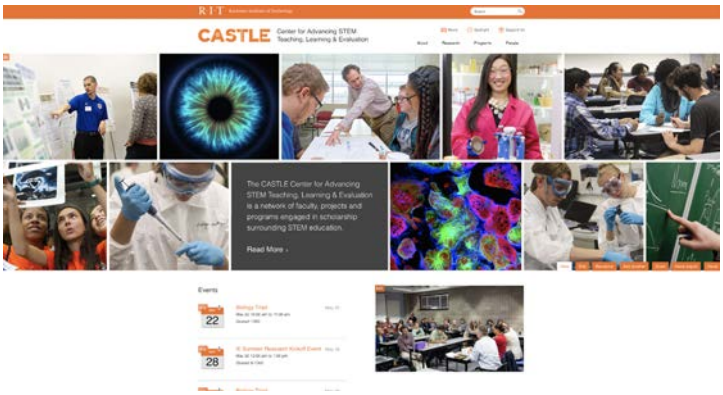
Leslie Kate Wright
2019-present — Research Editor-in-Training for *Journal of Microbiology and Biology Education*

Ben Zwickl
2019-2020 — Co-PI and lead for Education and Workforce Development; Quantum Leap Challenge Institute Conceptualization Grant QLCI-CG: Quantum Photonic Institute, PI: Don Figer, National Science Foundation 1937076, 9/1/2018 – 8/31/2020, Funded $149,214

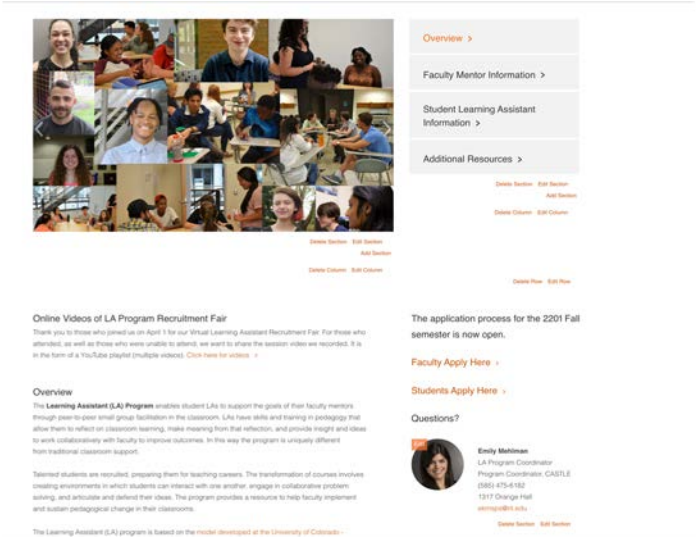
Dina Newman
2019-2020 — Promoting Active Learning and mentoring (PALM) Network Mentor

Jeanne Christman
2020-2025 — Recipient of nearly $1 million from NSF for S-STEM: Self-Determined Critical Mass of Engineering Technology Scholars (SD CoMETS). Funding scholarships for economically disadvantaged and academically-talented students and faculty development toward further enhancing engineering education.

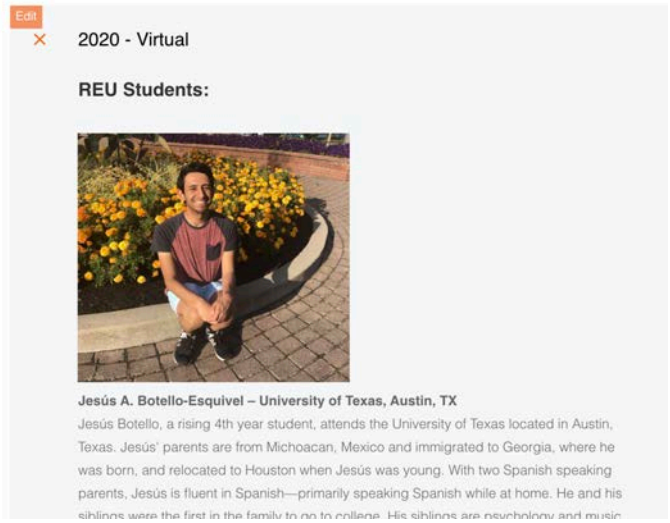
WEBSITE



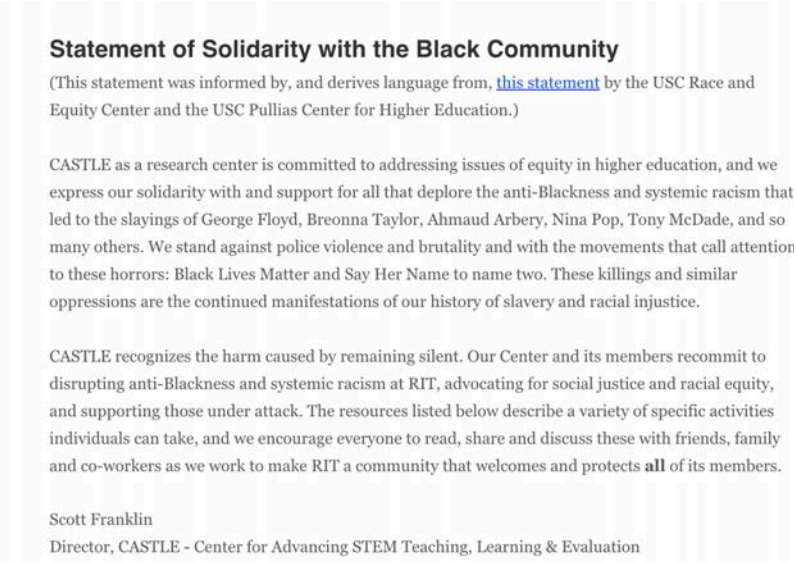
The CASTLE site serves as a home-base for all CASTLE-affiliated programs, research and initiatives.
https://www.rit.edu/castle/



The Learning Assistant Program pages were expanded with benefits to faculty mentors and student LAs. Additional resources were provided to faculty by newly hired Program Coordinator Emily Mehlman.
https://www.rit.edu/castle/programs/learning-assistants/overview



CASTLE's Science and Mathematics Educational Research Collaborative (SMERC) highlighted 11 REU students created from zoom interviews and photos submitted by each REU research student.
https://www.rit.edu/castle/cohorts



Statement of Solidarity with the Black Community

(This statement was informed by, and derives language from, this statement by the USC Race and Equity Center and the USC Pullias Center for Higher Education.)

CASTLE as a research center is committed to addressing issues of equity in higher education, and we express our solidarity with and support for all that deplore the anti-Blackness and systemic racism that led to the slayings of George Floyd, Breonna Taylor, Ahmaud Arbery, Nina Pop, Tony McDade, and so many others. We stand against police violence and brutality and with the movements that call attention to these horrors: Black Lives Matter and Say Her Name to name two. These killings and similar oppressions are the continued manifestations of our history of slavery and racial injustice.

CASTLE recognizes the harm caused by remaining silent. Our Center and its members recommit to disrupting anti-Blackness and systemic racism at RIT, advocating for social justice and racial equity, and supporting those under attack. The resources listed below describe a variety of specific activities individuals can take, and we encourage everyone to read, share and discuss these with friends, family and co-workers as we work to make RIT a community that welcomes and protects **all** of its members.

Scott Franklin
Director, CASTLE - Center for Advancing STEM Teaching, Learning & Evaluation

CASTLE responded to the national events of riots and social injustice with a web homepage statement of solidarity with the Black Community.
https://www.rit.edu/castle/about

IN THE NEWS

September, 2019
https://www.rit.edu/news/rit-sponsored-research-garners-74-million-funding?source=enewsletter

RIT Sponsored Research garners $74 million in funding: Research expenditures post a record year

Also this fiscal year:

- Ben Zwickl, assistant professor in the School of Physics and Astronomy, and Ifeoma Nwogu, assistant professor in the Department of Computer Science, received CAREER Awards from NSF. The prestigious CAREER Awards are offered to support faculty who are early in their careers and exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. Zwickl's grant will be used to study how lab-based, project-based and work-based learning environments can teach sophisticated problem-solving skills not attainable in lecture courses. And Nwogu was awarded for her proposal, "CAREER: A Computational Approach to the Study of Behavior and Social Interaction."

October, 2019
https://www.rit.edu/news/rit-faculty-earns-nsf-career-award-study-human-behavior-using-machine-learning

RIT faculty earns NSF CAREER award to study human behavior using machine learning

RIT faculty earns NSF CAREER award to study human behavior using machine learning

Study takes computational approach to better understand social interactions

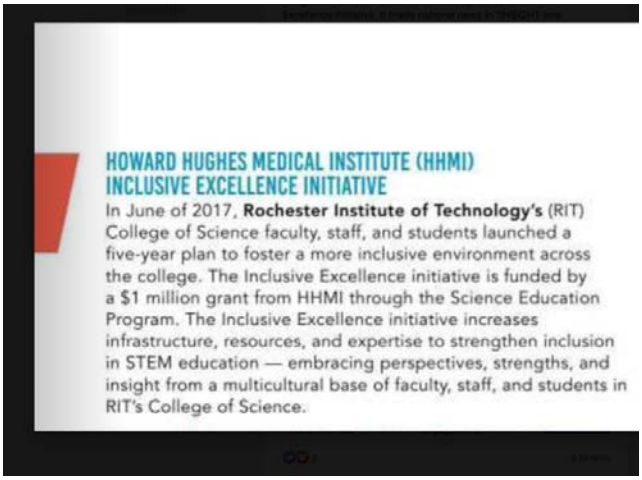
Ifeoma Nwogu, assistant professor computer science, earned a National Science Foundation CAREER award and grant for her research using machine learning to study human behavior.

Inclusive Excellence group hosts workshops

The HHMI sponsored **Inclusive Excellence** group hosted two workshops this month with a focus on **Active Listening** skills on October 11 and **Unconscious Bias & Diversity Awareness** with the **Playback Theater** group on October 25. Faculty, staff, and students developed skills to create a culture of inclusion and acceptance throughout the College of Science using role play, discussion, and storytelling.

November, 2019

RIT HHMI Inclusive Excellence grant work makes INSIGHT publication news.



Science and Mathematics Educational Research Collaborative (SMERC) Seminar

Physics instructors needs and undergraduate student learning

Dina Zohrabi-Alaee
Graduate Research Assistant, Department of Physics
Kansas State University

Friday, November 1, 2019
3:00pm to 4:00pm
1360 Orange Hall

SMERC Seminar

Sharing Data-Centric Adaptations in the Biology Classroom

Dr. Kaitlin M. Bonner
Assistant Professor, Biology Department
St. John Fisher College

Friday, November 8, 2019
3:30pm to 4:30pm
1360 Orange Hall

Inclusive Excellence Seminar

What Students Wish Faculty Knew

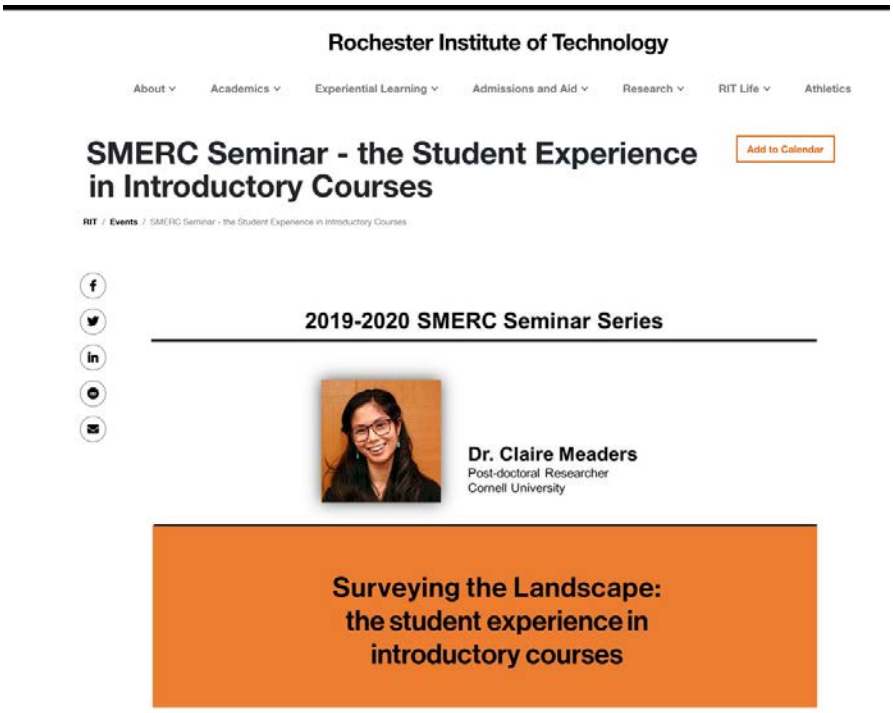
Hear from a panel of COS students about their experiences, opportuntities and challenges at RIT.

Friday, November 8, 2019
1:00pm to 1:50pm
2300 Gosnell Hall

November 15, 2019

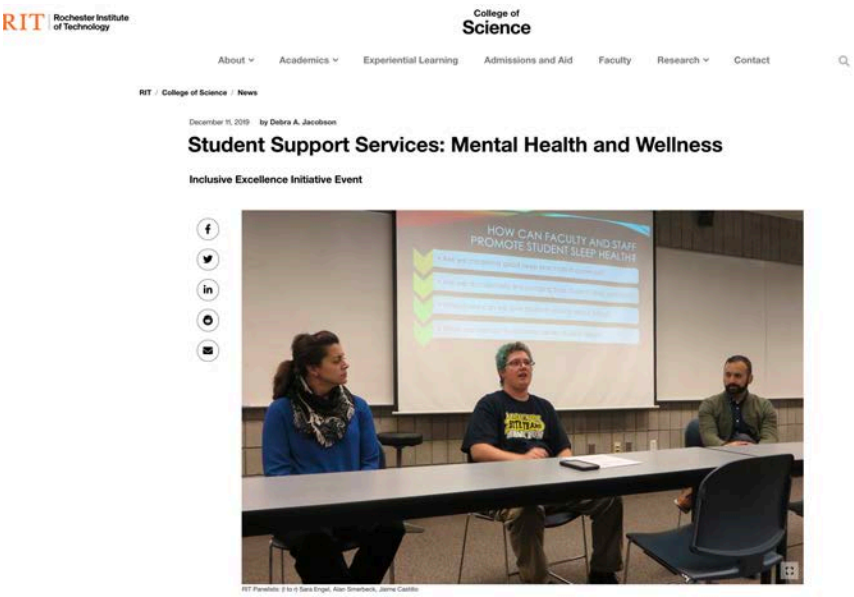
What Students Wish Faculty Knew

A voluntary panel of students facilitated a valuable discussion during the Inclusive Excellence Initiative event, "What Students Wish Faculty Knew."



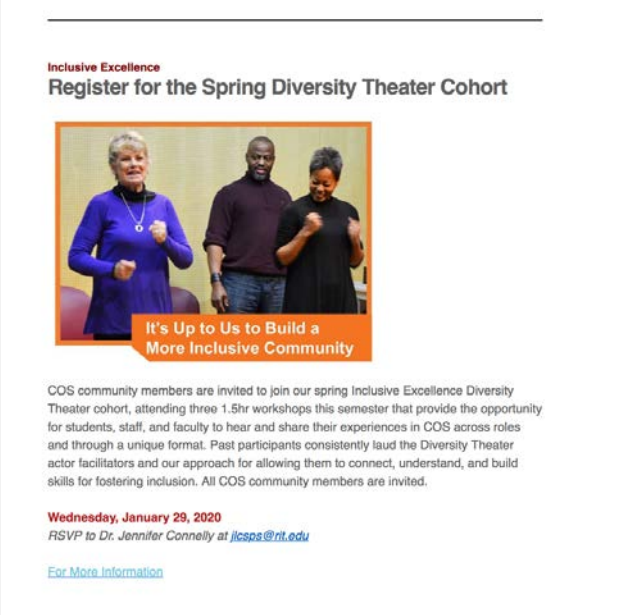
December, 2019
https://www.rit.edu/science/news/student-support-services-mental-health-and-wellness

Student Support Services: Mental Health and Wellness



January, 2020

It's Up to Us to Build a More Inclusive Community



Inclusive Excellence

Register for the Spring Diversity Theater Cohort

COS community members are invited to join our spring Inclusive Excellence Diversity Theater cohort, attending three 1.5hr workshops this semester that provide the opportunity for students, staff, and faculty to hear and share their experiences in COS across roles and through a unique format. Past participants consistently laud the Diversity Theater actor facilitators and our approach for allowing them to connect, understand, and build skills for fostering inclusion. All COS community members are invited.

Wednesday, January 29, 2020

RSVP to Dr. Jennifer Connelly at jlcsps@rit.edu

For More Information

February, 2020

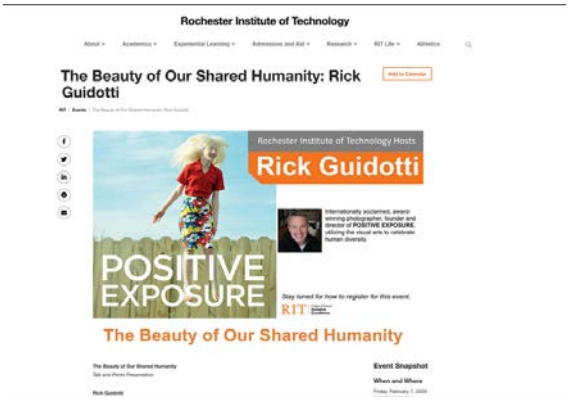
IE Brings Rick Guidotti to RIT Campus - POSITIVE EXPOSURE

Tweet

sue weisler @aswcmp · Feb 10

@RITscience Photographer Rick Guidotti talks about the definitions of beauty—rit.edu/news#lg=10&sli... @RITtigers positiveexposure.org

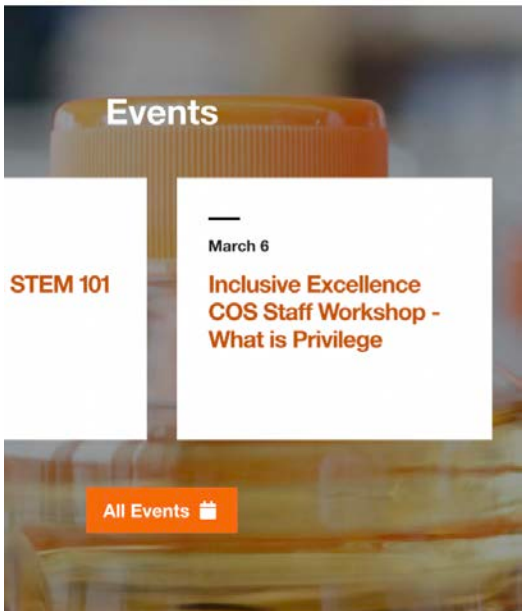
2 4



The **Inclusive Excellence** program hosted two recruitment fairs in January to seek out students from nontraditional or underrepresented groups who are interested in conducting research with College of Science faculty over the summer. More information about the program can be found on the registration page.

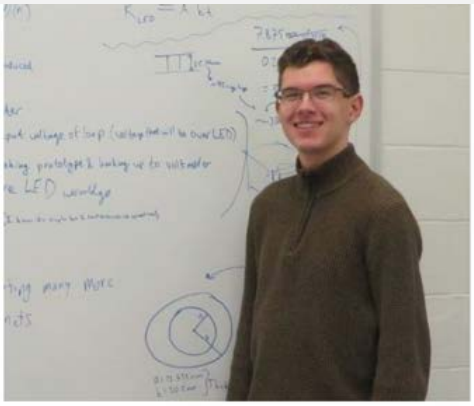
March, 2020

IE Staff Workshop Series Launches



April, 2020

CASTLE hosts LA Recruitment Fair



CASTLE hosts LA Recruitment Fair

The **Center for Advancing STEM Teaching, Learning, & Evaluation (CASTLE)** held a virtual learning assistant recruitment fair for current students interested in joining the Learning Assistant program. The originally advertised date of March 18, was postponed due to the extended spring break. Interested students who missed the rescheduled event on April 1 can still get information on the program by checking out the recording of the Recruitment Fair on the LA website or by reaching out to **Emily Mehlman**, Learning Assistant Program Coordinator.

Read More >

newsmakers

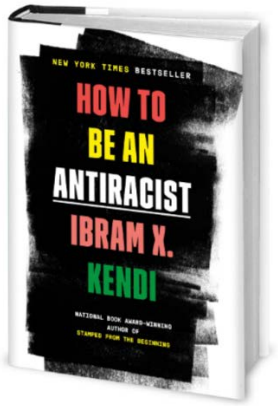
Scott Franklin, professor and director of Center for Advancing STEM Teaching, Learning and Evaluation (CASTLE), recently co-led a workshop as part of the Professional-development for Emerging Education Researchers (PEER) program. PEER is a globally expanding network of peer researchers focused on expanding theoretical and methodological expertise in science pedagogy. The workshop was held virtually from March 25 to April 1 and included participants from the U.S., Germany, Ecuador, Sri Lanka and Macedonia.

May, 2020

IE Virtual Playback Theatre Workshop Series Launched

June, 2020

IE Virtual Playback Theatre Added More Workshops!



Inclusive Excellence group book club

In response to the civil unrest throughout the country this summer, the College of Science Inclusive Excellence Initiative is leading a book club to discuss Ibram X. Kendi's book *How to be an Antiracist*. Small groups of COS employees meet weekly to discuss chapters of the book, the impacts of systemic racism both on us individually and on the community as a whole, and the implications of changing our actions from "not racist" to "anti-racist."

July, 2020

IE Adds Program Coordinator Position

New Inclusive Excellence Program Coordinator appointed

The College of Science is pleased to announce the appointment of **Rita Margarida de Almeida Dias Quiñones de Magalhães** to program coordinator of the Inclusive Excellence Initiative. Magalhães will work with program team members **Scott Franklin, Dina Newman, Lea Michel, Elizabeth Hane, Jennifer Connelly** and **Tina Chapman DaCosta** on programmatic activities and strategic issues for sustainability plans.

Summer News, 2020

REU Program Goes Virtual

Protein structure models by Seth Jones, 3rd year Biochemistry major

Student research continues through summer shutdowns

The College of Science continued to engage undergraduate students in research this summer, though on a much more limited basis than in past years due to the pandemic. Many of the COS summer researchers presented a summary of their research in the online Undergraduate Research Symposium. Presentations are viewable online from July 30-August 6.

- Twelve College of Science students received funding through the **Emerson Summer Undergraduate Fellowship**, and two incoming first-year students participated in the **Fast Forward Summer Research Program** to conduct remote research with COS faculty in the School of Chemistry & Materials Science, School of Mathematical Sciences, School of Physics & Astronomy, and the Thomas H. Gosnell School of Life Sciences.

- **Research Experiences for Undergraduates** (REUs) were offered through the Center for Advancing STEM Teaching, Learning and Evaluation (CASTLE) and the School of Mathematical Sciences to 19 non-RIT students from across the country and 10 RIT students.
    - Students in the CASTLE program were working on projects related to Discipline Based Education Research.
    - The SMS REU students were divided into two groups: One group used **dynamical systems** to analyze the effect of the Amazon rain forest on global climate systems, and the **mathematical biology** group researched methods for stabilizing heart arrhythmias, which are often precursors of a heart attack. They plan to present the results of their research at the 2021 Joint Mathematics Meeting.