

RIT RISE Newsletter

2019 -2020



RIT's academically rigorous programs and emphasis on communication and critical thinking skills make our graduates excellent candidates for top science programs.



Program Director's Message

Dr. Vince Samar

RIT-RISE is thrilled to be in its third year of funding by the National Institute of General Medical Sciences (NIGMS). Our original program director, Dr. Scott Smith, left RIT in December 2018, and I succeeded him as program director on January 1, 2019. We wish Scott the best in his future endeavors, and I look forward to directing the continued growth of the RIT-RISE program.

This year we added two new eligible RIT degree programs. These are the Web and Mobile Computing program and the Criminal Justice program,

bringing our total number of eligible degree programs for RIT RISE Scholars to 16. The full list of eligible degree programs is available on the RIT RISE website (www.ntid.rit.edu/rise)

In May 2019 Co-director Dr. Paul Craig led our effort to recruit two outstanding new RIT deaf and hard-of-hearing students to become RIT-RISE Scholars, bringing our total of active scholars to four. All of our scholars have been busy doing research during the past summer and the current academic year. They have regularly shared their research at the Annual Biomedical Research Conference for Minority Students (ABRCMS) and several other national and local conferences. Several RIT-RISE team members, scholars, and mentors participated in ABRCMS this past November in Anaheim, California, and

our scholars will continue to present their ongoing research throughout the year at various professional conferences. We expect to recruit new scholars this year to bring our trainee roster to six, the maximum number allowed by our NIGMS award.

Our faculty partners continued to enthusiastically develop, refine, and teach new courses and workshops to enhance students' essential scientific competencies, improve career awareness, promote understanding of the responsible conduct of research, and stress the value of rigor, reproducibility, diversity and inclusion in the scientific enterprise. We also had an opportunity to formally train more sign language interpreters to interpret in research settings through the Interpreting Research Settings course developed by RISE team members and offered through the NTID Department of American Sign Language and Interpreting Education. Our course and workshop curriculum development efforts are informed by the NIGMS diversity training program educational priorities for enhancing and diversifying the scientific workforce.

During spring 2018-19 and fall 2019-20, RIT-RISE sponsored several co-curricular events, including our annual Spring Symposium and seven Scientist-in-Training Series (SITS) presentations and workshops. These events provided RIT-RISE Scholars with professional skill development, training in the responsible conduct of research, and networking opportunities. During spring 2019-20, we will program new events for professional skill development, sponsor presentations

RIT

National Technical Institute for the Deaf

Research Initiative for Scientific Enhancement

**The Rochester Institute of Technology Research
Initiative for Scientific Enhancement (RIT-RISE)
Scientists-in-Training Program for Deaf and
Hard-of-Hearing Undergraduates**

by leading scientists on current “hot-topic” research in a variety of disciplines, and bring deaf and hard-of-hearing biomedical scientist role models to campus to share their current research and personal journeys in becoming successful scientists. You can see the full list of past and upcoming cocurricular events at www.ntid.rit.edu/rise.

RIT-RISE also undertook exciting best-practices projects this year designed to enhance the benefit of our program to its scholars, faculty mentors, the broader RIT community, and academic communities outside of RIT. These initiatives tap the experiences and expertise of deaf and hard-of-hearing students, and the faculty and advisors who work with them, to identify best practices in a variety of skill areas, including preparation for graduate school admission, scientific writing instruction, research communication access, and mentoring. The results will help us develop evidence-based training activities in the near future, which we will disseminate to other campuses and settings that support mixed teams of deaf, hard-of-hearing, and hearing students, scientists, and mentors.

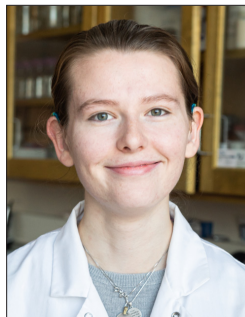
The progress the RIT-RISE program has made this year is in large measure due to the constant and proactive support of our RIT and external mentors, RIT and external program advisors, grant administrators in the NTID Office of the Associate Dean for Research, and RIT Sponsored Research Services, who work collaboratively to provide the resources that keep our program vital, accountable, and responsive to the needs of our deaf and hard-of-hearing scholars. The RIT-RISE team is proud to be working with such a dedicated network of professionals to contribute to the nations’ long-term goal of enhancing and diversifying the biomedical workforce.

Vincent J. Samar, PhD
Professor and
RIT RISE Program Director



Dr. Paul Craig
Program Co-director

The heart of RIT-RISE is our scholars. We have four active scholars, including two who are newly appointed, but have already hit the ground running by starting research projects in their mentors’ labs this past summer.



Holly Elder (‘22) is a sophomore majoring in biomedical science. She is from Pittsburg, PA. and can play several musical instruments. She is most skilled playing viola and cello.

Elder started her research in summer 2019 with Dr. Robert Osgood, in RIT’s biomedical science program, where she studied biofilm production of *Streptococcus mucans* when it is exposed to various diabetic-friendly artificial sweeteners. In Dr. Osgood’s lab, she learned basic microbiology laboratory techniques, including spectroscopy, microscopy, and gram staining.

In the spring semester, Elder will transition to a cognitive neuroscience laboratory to pursue her interest in studying neurodegenerative diseases, such as Alzheimer’s and Parkinson’s, using neuroimaging techniques such as Electroencephalography (EEG) and Functional Magnetic Resonance Imaging (fMRI.) Elder attended ABRCMS in November.



Stephen Dahlstrom (‘21) is a junior, majoring in criminal justice with an immersion in psychology. He is from Southborough, Massachusetts. Dahlstrom loves strategy games, including board games such as chess, backgammon, and risk.

Dahlstrom was selected as an RIT-RISE scholar in spring 2019. His research interests lie at the intersection of criminal behavior and mental health. To meet his interests, Dahlstrom has two research co-mentors. He started his research with Dr. Rebecca Houston, RIT Department of Psychology, in summer 2019, contributing to ongoing lab studies of relationships among drug use, impulsivity and aggression. In Houston’s lab, Dahlstrom has gained basic skills in experimental psychology laboratory techniques, including administration of neuropsychological assessments and collection of event-related brain potential data.

In the fall, Dahlstrom began to work with Dr. Irshad Altheimer in RIT’s Center for Public Safety Initiatives (CPSI), learning basic community survey-research techniques. In November, Dahlstrom attended ABRCMS to present the results of an innovative survey study that combines research techniques from both criminal justice and psychology disciplines to investigate the associations among impulsivity, self-control, and delinquency.

Dahlstrom’s future public-health research interests include examining the root causes of crime in different areas and developing policies to reduce crime rates by understanding the dynamics of different networks. He is also interested in crime and intelligence analysis.



Rowan Christie ('21) is a junior majoring in bioinformatics/computational biology from Eugene, OR. Christie is a huge fan of improv, and has done several shows as part of a comedy club.

Christie's research is focused on environmental drivers of insect populations and communities across large temporal and spatial gradients. Christie is currently part of a collaboration between RIT (under Dr. Kaitlin Stack Whitney) and Kent State University (under Dr. Christine Bahlai), examining population stability trends in deer tick (*Ixodes scapularis*) populations, which are the main vector of the Lyme disease pathogen. Understanding how tick populations are changing over time, using long term datasets collected using different sampling methods, can help contextualize risks to human health and inform public health policy.

Christie is also continuing research started in summer 2018 with Whitney

on patterns of freshwater aquatic macroinvertebrates across North America. Macroinvertebrates are considered critical bioindicators of water quality and ecosystem health. They examined associations of the density of 28 taxa and five functional groups with water temperature, elevation, canopy cover, land use, and soil imperviousness. The results thus far indicate a possible correlation between functional group diversity and land cover.

In the past year, Christie presented research at meetings on campus (RIT Undergraduate Research Symposium; RIT Research Spotlights: Health and Life Sciences, NTID Research Fair), locally (Rochester Academy of Sciences Fall Scientific Paper Session at SUNY Geneseo), and nationally (Entomology Society of America, Deaf-Engaged Academic Forum). Christie presented at ABRCMS in November, and will present this year at campus and local conferences.

In the future, Christie aims to pursue bioinformatics work using various software tools such as R, Python, and ArcGIS to conduct analyses of ecological data. They would also like to become more involved in fieldwork and data collection.



Xinbei Liu ('20) is a senior majoring in biochemistry. She is from New York City. Liu has a passion for golf and has participated in several tournaments.

Last summer, Liu received a competitive University of Rochester Summer Scholars Program award to do mentored research in Dr. Michelle Dziejman's microbiology lab at the University of Rochester Medical Center. Dziejman's lab researches cholera, a severe gastrointestinal illness, which is caused by infection with the Gram-negative bacterium *Vibrio cholerae*. Liu's project focused on strains of *V. cholerae* that cause sporadic diseases and utilize a unique "needle-like" mechanism to inject bacterial proteins into host cells during infections. Liu learned many new lab techniques such as Gateway cloning technology to recombine genetic sequences of interest into a plasmid.

During the academic year 2018-19 and continuing into 2019-20, Liu worked in Dr. Lea Michel's lab. Her research there focuses on understanding the structure-function relationship of peptidoglycan-associated lipoprotein (Pal) and its role in the clinical condition of sepsis, which is one of the leading causes of death in the United States. Throughout the year, Liu learned how to conduct Pal release experiments with Pal mutants, which she enjoyed because it was easy to see changes from the Pal-peptidoglycan interaction. This year, Liu presented her research at ABRCMS and the American Society for Biochemistry and Molecular Biology (ASBMB). She will present at ASBMB again in April 2020.

Liu is currently applying to PhD programs. She aims to do future research related to diseases and/or viruses. This is Liu's advice to future RIT-RISE scholars: "Be open minded to any opportunity given to you because you never know if someday you might need it. For instance, if you are given an opportunity to work in a lab outside of RIT, take it. That way you have more experience for your future."



RIT-RISE Sponsored Courses and Workshops

The RIT-RISE grant includes funding to develop courses and workshops that reinforce essential skills and career awareness for deaf, hard-of-hearing and hearing students on biomedical, biobehavioral, and clinical research career paths. Our grant also includes funding to train interpreting students to work in research settings with mixed teams of deaf, hard-of-hearing and hearing students and scientists. These courses and workshops are one important way in which the RIT-RISE program sponsors educational and cultural change within the broader RIT community.



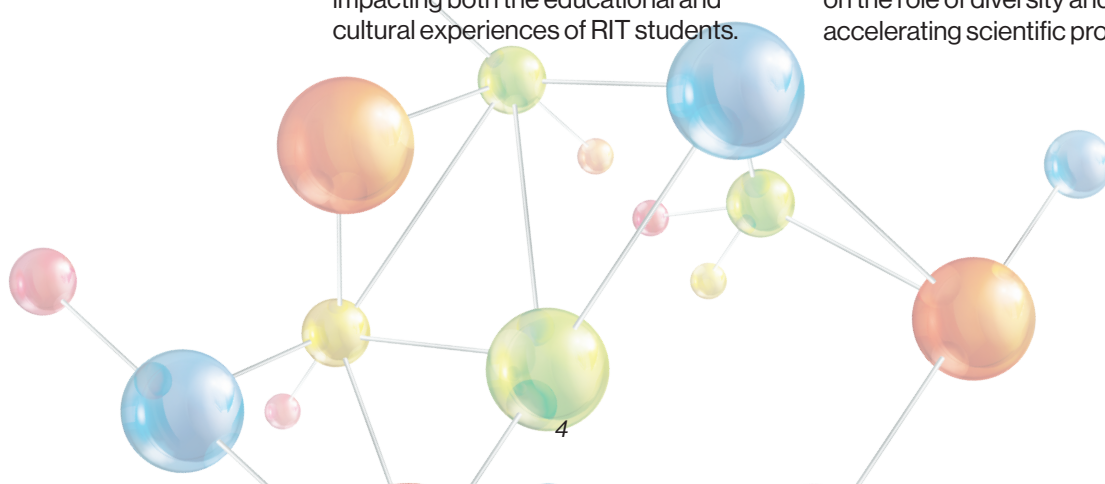
Dr. Robert Osgood developed **Introduction to Biomedical, Biobehavioral, and Clinical Research** (MEDS 101) and taught it for the first time in Fall 2018-19 and again in Fall 2019-20. It will continue to be offered annually in the fall. This course introduces students to contemporary areas of biomedical sciences. It gives students an overview of biomedical science career opportunities through lectures, lab tours, guest lectures, videos, and faculty- and student-led discussion. The course also introduces students to key topics related to the responsible conduct of research, rigor, and reproducibility. The course is designed to be highly interactive, informative and enlightening at the same time. To date, 21 undergraduate students have successfully completed this RISE-sponsored course, exemplifying the extended educational benefit that the RIT RISE program provides to the broader RIT student body. Students evaluated this course as particularly helpful for understanding the generous diversity of career possibilities in biomedical science.



Prof. Pam Conley taught **Science Writing** (ENGL 281) for the first time in spring 2018-19. This course will be offered again in the Fall of 2020-21. English 281 not only teaches universal principles of professional scientific writing, but also raises students' awareness of the substantial, sometimes conflicting discipline-specific writing conventions they are likely to encounter as future members of cross-disciplinary scientific teams. This class is unique in that Conley is a Deaf Professor of English, and her first class included 17 hearing students, most of whom had never interacted with a Deaf professor or with interpreters before. Effective collaboration between Conley, the students, and a team of interpreters was integral for navigating the unique communication dynamics of this class. Her students praised Conley for her knowledge of scientific writing and for providing them with a well planned, thought provoking course. Conley was also credited with giving them "great insight into the Deaf community". Conley's course is one way that the RIT RISE program is positively impacting both the educational and cultural experiences of RIT students.



The **Responsible Conduct of Research** (RCR) workshop was offered by **Dr. Beth Van Winkle** as a one-day workshop in summer 2018 and expanded to a two-day workshop in summer 2019. Van Winkle provided a combination of guest lecturers, lab tours, and student-led discussions. Students were introduced to different models of scientific discovery, ethical and accountable research practices, and issues related to rigor and reproducibility in scientific research. The last summer workshop had 16 attendees, most of whom were non-RISE undergraduate students involved in summer research programs with a broad range of scientific majors. Van Winkle is currently developing three one-credit online courses to expand the content scope and opportunity for RCR instruction for RIT science students. This three-course sequence will reinforce critical thinking about challenging scientific ethical issues, and examine the similarities and differences in standards for the responsible conduct of research across disciplines. A major goal of these courses is to provide enhanced focus on the role of diversity and inclusion in accelerating scientific progress.





One goal of RIT-RISE is to increase the number of interpreters who are prepared to work with deaf and hard-of-hearing scientists. With that goal, **Dr. Jason Listman** and **Kat Womack** developed the **Interpreting Research Settings** course (INTP 510) for ASLIE interpreting students to learn more about the unique challenges and vocabulary in scientific research settings. The course content is evidence-based, having been developed

based on interviews and narratives from deaf and hard-of-hearing scientists, interpreters, and faculty mentors. This course was offered for the first time in spring 2018-19 at nearly full capacity. The student feedback was overwhelmingly positive and Listman is excited to teach it again in spring 2019-20.

Co-curricular Events

During spring 2018-19 and fall 2019-20, RIT-RISE sponsored the Scientist-in-Training Series (SITS) events shown below and an annual Spring Research Symposium. These events were open to the entire campus and provided students with professional development, information about cutting-edge research in a variety of scientific disciplines, and professional networking opportunities. In spring 2019-20, RIT RISE will bring nationally known biomedical scientists to campus to present on cutting-edge research of interest to our RISE Scholars. We also plan to bring well known deaf and hard-of-hearing scientists to campus to present about their personal journeys in becoming biomedical scientists. A complete listing of past and upcoming SITS presentations is available on the RIT RISE website (www.ntid.rit.edu/riase)

Scientist-in-Training Series:

- The Four Styles of Communication: How to Make Them Work for You in Your Education and Career (February 11, 2019 and September 17, 2019). Dr. Meghan Fox, clinical psychologist, presented this professional development seminar with tips on how to manage personal and professional discourse.
- RIT-RISE Fall Kick-off Social Hour (September 3rd, 2019). This networking event provided an opportunity for new and returning RIT-RISE Scholars, faculty mentors, and faculty and staff who support the RIT-RISE program to meet and share experiences about their summer research and social activities.
- Getting the Most Out of a Professional Scientific Meeting (October 29, 2019). Annual Biomedical Research Conference for Minority Students (ABRCMS) webinar with tips for students on how to navigate and maximize their experience attending and presenting at ABRCMS.
- Radioactive Oatmeal: Scientific Ethics and the Abuse of Human Subjects in Research (March 25, 2019). Dr. Kirsten Condry, RIT Department of Psychology, presented this seminar on the responsible conduct of research. Condry covered a number of ethically problematic cases in the history of scientific research and described laws and regulations that have been passed to ensure responsible conduct and oversight on scientific experiments.
- Giving Effective Scientific Presentations (October 1, 2019). Dr. John Edlund and Dr. Nick DiFonzo, RIT Department of Psychology, presented this professional development seminar with tips and guidelines for doing different types of presentations, such as platform, poster, and keynote presentations.
- Mini Grad School Bootcamp. (November 19, 2019). Dr. Lea Michel, RIT School of Chemistry and Materials Science, presented this one-hour professional development bootcamp to introduce RIT-RISE Scholars and attendees to essential procedures for securing entrance to a graduate program, such as graduate school application procedures, developing an effective personal statement, and asking for a letter of reference.

Spring Research Symposium

This three-hour event held in April 2019 featured research poster presentations from 14 current RIT-RISE Scholars, RIT-Bridges Scholars, and RIT faculty mentors. Faculty and students, especially undergraduates, from across campus were invited, as part of our effort to recruit new RIT-RISE Scholars and to facilitate interaction among students interested in research and finding potential faculty mentors.

There are not enough studies that use evidence-based research to develop and document best practices from the perspective and lived experiences of deaf and hard-of-hearing science students and faculty who train them. RIT RISE is funding several projects to develop best practices based on qualitative research about the experiences of deaf and hard-of-hearing scientists and researchers.



PhD Admission Interview Preparation

PhD program admission decisions can hinge on how a student performs during a PhD admissions interview. PhD-bound deaf and hard-of-hearing students may face unique challenges in providing a successful interview, especially when the interviewer has not interacted with deaf and hard-of-hearing people before. **Prof. Mark Rosica** is working with key faculty advisors from a variety of disciplines to develop training for deaf and Hard-of-hearing students on what to expect and how to prepare for PhD interviews in their specific field, with an emphasis on specific activities and things to do prior to, during, and after the PhD interview. This workshop will be offered in spring 2020.



Evidence-based Scientific Writing Instruction

Prof. Pamela Conley and Dr. Kirsten Condry are working to develop a national survey that will collect information about the challenges and successes that deaf and hard-of-hearing students face regarding writing graduate-level papers. To date, no study has documented the experiences of deaf and hard-of-hearing science graduate students as they develop professional scientific writing skills. The immediate project goal is to

elicit reports of such experiences from key informants. The team is interviewing current and former deaf and hard-of-hearing science graduate students and faculty mentors who prepare deaf and hard-of-hearing science students to enter scientific PhD programs. This informant data will then guide the development of an online survey to be distributed nationally to a larger targeted-audience sample. The ultimate goal is to use the resulting interview and survey data to help redefine and focus effective scientific writing instruction at RIT and elsewhere for PhD-bound deaf and hard-of-hearing undergraduate and graduate students.



Research Environment Communication Access

Deaf and hard-of-hearing students need full communication access in their research environments. The Research Environment Communication Access Assessment (RECAA) team (Dr. Jason Listman, Dr. Kim Kurz, and Dr. Amanda Picioli) conduct regular interviews and observations each semester of the RIT-RISE Scholars and their research mentors and colleagues. Their observations occur in various specific research environments for each scholar in order to broadly assess communication quality and identify communication strategies and technologies that will optimize that scholar's communication environment. Dr. Picioli, an audiologist and TOD, was added to the team this year to provide more comprehensive assessment and support for deaf and hard-of-hearing students with diverse communication preferences. The RECAA team also uses these ongoing interviews and observations as qualitative research data to discover and document generalizable

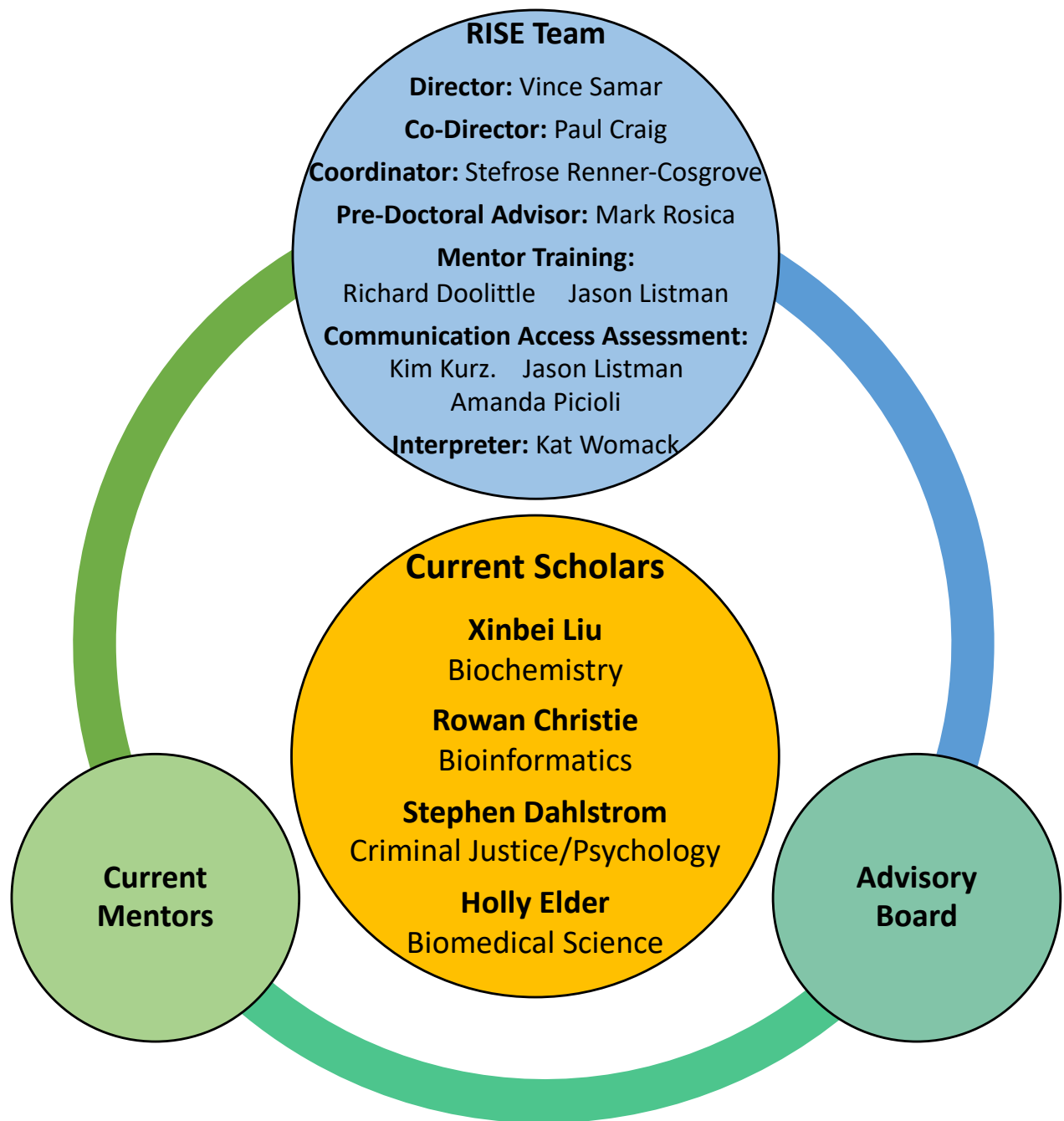
best practices for mixed research groups of deaf and Hard-of-hearing and hearing students and colleagues outside of RIT. The cumulative best-practice recommendations that are emerging from this research will be disseminated by RIT-RISE through presentations and upcoming RIT-RISE website postings.



Mentoring Deaf and Hard-of-Hearing PhD-bound Students

Faculty research advisors should be effective and confident in mentoring deaf and hard-of-hearing students. Dr. Jason Listman (Department of ASL and Interpreting Education) and **Dr. Richard Doolittle** (Vice Dean, College of Health Sciences and Technology) have started work on an evidence-based mentoring instructional package that is intended for faculty who are working with a deaf or hard-of-hearing student for the first time. By interviewing hearing, deaf, and hard-of-hearing science faculty and students, Listman and Doolittle are creating a package of recommendations, resources, and short instructional video narratives to describe the diverse communication preferences of deaf and hard-of-hearing people, Deaf culture, and the unique challenges that PhD-bound deaf and hard-of-hearing students may face in research environments. The mentoring package will be made available online through the RIT-RISE website.

The RIT-RISE Program is supported by the National Institute of General Medical Sciences of the National Institute of Health Under Award R25GM122672".



Current Mentors

RIT

Lea Michel (Xinbei)
Kaitlin Stack Whitney (Rowan)
Irshad Altheimer &
Rebecca Houston (Stephen)
Robert Osgood (Holly)

Extramural Summer

Michelle Dziejman (Xinbei)
(University of Rochester)

Advisory Board

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Tomicka Wagstaff (Asst. VP for Academic Access & Success, RIT)
James Winebrake (Dean, COLA at RIT)



PhD Program Admission

Biomedical Research
Biobehavioral Research
Clinical Research

Institute Culture

INSTITUTIONAL CHANGE

Faculty cultural competence seminars
Best-practices materials & workshops
Interpreter training for research settings
Assessment of faculty awareness and attitudes

OPTIMIZED COMMUNICATION

Ongoing research environment communication access assessments
Interpreting & captioning services
Technology accommodations

Access

INTENSIVE RESEARCH TRAINING

Personal research mentors
Three years paid research
Throughout academic year
One summer at RIT
One summer at external institution
Present at Annual Biomedical Research Conference for Minority Students (ABRCMS)
Present at local and national discipline-specific conferences

CURRICULAR & CO-CURRICULAR PROGRAMS

Career awareness
Scientific writing
Responsible conduct of research (Research culture and ethics)
Seminars & workshops
Cutting-edge science
Deaf-scientist role models
Professional development
Self-efficacy
Leadership skills

Research

Professional Development

Support

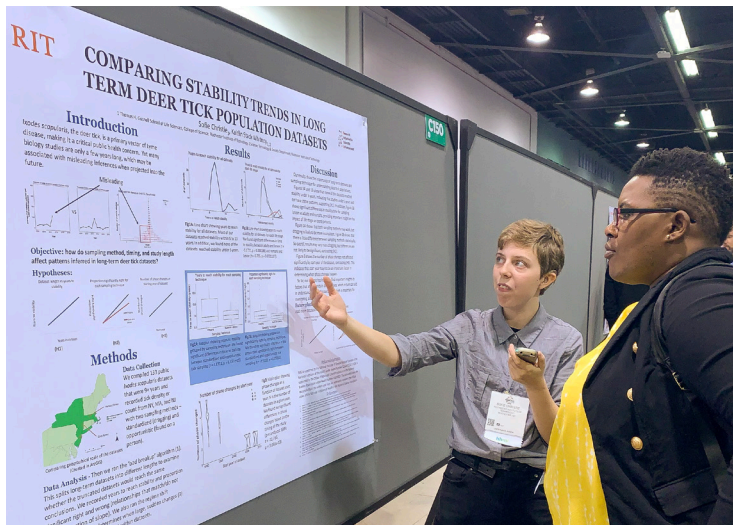
PERSONALIZED ADVISING

Professional competencies evaluations
Doctoral readiness meetings
Individual development plan (IDP)
Predoctoral advising

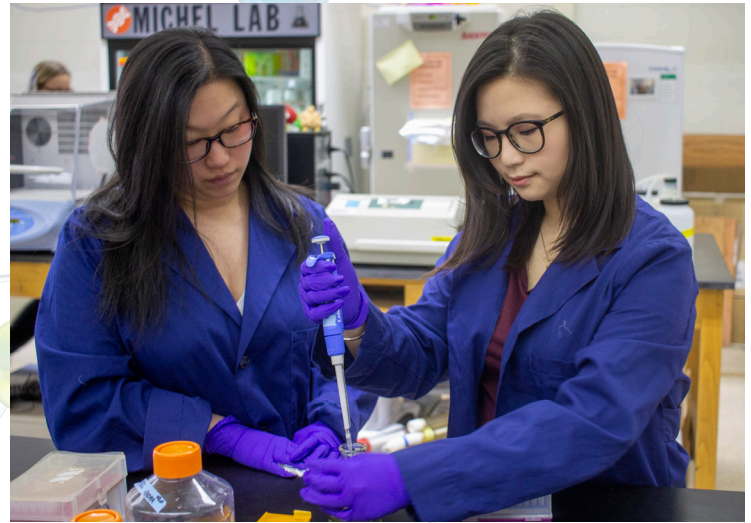
QUALIFIED RIT-RISE SCHOLARS

D/HH undergrads with 3 years until graduation
Overall GPA ≥ 3.0
One of 16 eligible RIT majors
Desire to become a PhD scientist

Recruitment



Rowan Christie presenting their work with RIT-RISE



Dr. Lea Michel and Xinbei Liu Pipetting



Stephen Dahlstrom in EEG lab



The Annual Biomedical Research Conference for Minority Students (ABRCMS)

At RIT, we blend technology, the arts, and design. Together, our kaleidoscope of engaged, socially conscious, and intellectually curious minds uncovers meaningful ways to move the world forward.

RIT | National Technical Institute for the Deaf
Research Initiative for Scientific Enhancement

The RIT-RISE Program is supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number R25GM122672.