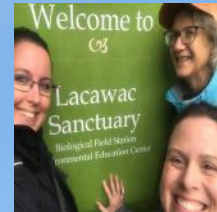




Alumni Spotlight
Carlyn Petrella discusses her conservation work on page 4



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GSOLS Insider

Spring 2019 Vol. 4



RIT

College of Science

**Thomas H. Gosnell
School of
Life Sciences**

RIT's people have always been its greatest asset. Our students, faculty, and staff come to RIT because they are looking for something different in a university—a place where they can exercise their multiple talents, satisfy their thirst for learning and for doing, and experiment freely across borders. To realize our ambitious strategic vision, we must extend and intensify our call for imaginative, innovative, and collaborative people—for students, faculty, and staff who are eager to learn, practice, and teach transformative innovation.

**- Greatness Through
Difference Strategic Plan
2018-2025**



Dear Students, Staff, Alumni and Friends of GSoLS,

"Congratulations" to everyone in Gosnell School of Life Sciences! We successfully completed another academic year at RIT. During our graduation celebrations we recognized our talented students during awards ceremonies and cheered as they walked across the stage to collect their diplomas.

Although we are sad to see our graduates leave our classrooms and laboratories, we are happy and proud of their accomplishments and look forward to learning about their new and exciting adventures as RIT alumni!

As we gear up for another busy and productive summer, I want to highlight the recent research accomplishments of our GSoLS colleagues. Between January and June of 2019 our GSoLS faculty have published 20 peer-reviewed papers, many of which include undergraduate (or former undergraduate) research student co-authors! As you will see from the publication list, our faculty research interests span exciting areas of Developmental Biology, Genomics, Virology, Structural Biochemistry, Microbiology, Bioinformatics, Environmental Sciences, Ecology and Education Research. I am proud to be part of such a dynamic and productive group. Congratulations everyone!

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What's New

Environmental
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experience on page 18



Welcome

GSoLS welcomes
new Advisory Board
member on page 19

Did you know?

Follow us on Twitter and
Facebook: @RITGSOLS and
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Email: lifesciences@rit.edu
Phone: 585-475-7577

2102 Thomas H Gosnell Hall
RIT College of Science
84 Lomb Memorial Drive
Rochester, NY 14623

-The College of Science launched its new website in May. Stop by our new site at www.rit.edu/science/ and check out all the new stuff! Any questions about the new website, please contact Mary Pryor at mapsse@rit.edu

-GSoLS is excited to introduce its new Biology BS/Environmental Science program starting fall 2019

-The David Lawlor Tree dedication ceremony will be this summer, stay tuned for more information!



The David Lawlor Endowed Service Award has been established in the late Dr. David Lawlor's honor and in order to raise funds for the award, staff and faculty participated in a mini triathlon this March.

Along with his love of youth baseball in his hometown, Dave participated in the RIT Try-a-Tri organized by the RIT Running and Multisport Club, so we did too!

The team consisted of Jennie Liedkie, Elizabeth Hane, André Hudson, Kate Wright, Nicki Bruno, Dawn Carter, Karl Korfmacher, Sandi Connelly, Christie Lutzer, and Shelley Weatherell.



We're very happy to report that our first COS Networking Event was a great success! We had a total of 80 students attend the event and 18 companies with 37 representatives. We look forward to many more COS Networking events in the future!

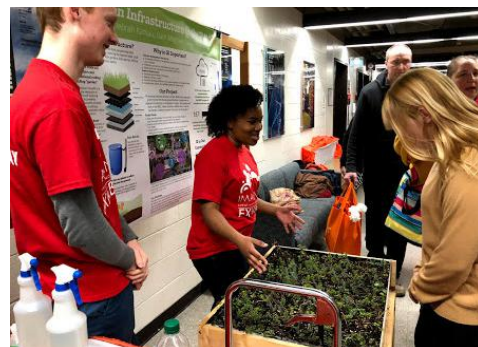


The GSoLS External Advisory Board met for the second time this year to discuss curriculum changes, faculty scholarship, and the new Life Sciences initiative for Genomics. Several students had an open chat about their experiences, and the board members were taken on tours of our newly renovated teaching labs as well as some of the new spaces around campus. The board members will be sending back their advice for us moving forward, which will be incorporated into future requests for resources. The board members include Dr. Sesqui Ramon (Biotechnology '07), Dr. Terry Wright (Biotechnology '90), Travis Money (Environmental Science '04), Dr. Helene McMurray (University of Rochester) and Dr. Toby Bloom (NY Genome Center). We just added a new member, Daniel Boone (Environmental Science, MS '12, Biotechnology '10) (see page 19). Thank you for taking the time to meet with us!



High school students from local BOCES programs came to GSoLS for BOCES Innovation Day. While here, they heard presentations about biotechnology, bioinformatics and genomics from RIT faculty and students. The BOCES students were able to view current research projects by our faculty and staff, and this experience really helped the students see what it is like to be a researcher in a lab.

The annual Imagine RIT: Creativity and Innovation Festival was held on April 27. About 35,000 visitors were able to experience the breadth and depth of RIT through interactive presentations, hands-on demonstrations, exhibitions, and research projects set up throughout campus. Life Sciences Faculty and students did a tremendous job on presentations including those on fruit DNA, bird banding, vaccines and Veterinary Medicine. We look forward to continuing this event in future years!





We recently touched base with alumna Carlyn, who opened up to us about her journey after RIT.

“I was doing undergraduate research over the summer and trying to figure out ‘what I wanted to do with my life’. I talked with a career counselor at RIT, and explained where my head was, and she suggested I look into the Peace Corps. As soon as I started looking into it, I knew it was the right choice for me.

My placement was as a math and science teacher in a rural secondary school in Kenya. I learned so much from my students. The Peace Corps changed my entire perspective on life. Being so completely immersed in a culture that is so vastly different from your own really connects you with this over-arching sense of humanity, and an understanding that every person is unique, yet we are all so similar when it comes down to what we actually need to survive.

One of the benefits of Peace Corps service is you have a year of non-competitive eligibility (NCE) to be hired into the federal government. I went to a career fair in DC that was

Being so completely immersed in a culture that is so vastly different from your own really connects you with this over-arching sense of humanity, and an understanding that every person is unique yet we are all so similar when it comes down to what we actually need to survive.

specifically looking to hire people with NCE, and ultimately ended up at the EPA. I was there for just about 5 years as a biologist in the Office of Pesticide Programs. Our office is the regulatory body in charge of all things pesticides. We evaluated agricultural pesticides, structural pesticides, mosquitocides. Plus all cat and dog spot on treatments, rodent bait traps, all sorts of things.

My role was to coordinate risk assessment review, and make regulatory decisions based on final risk assessment reports. It was really interesting, and I learned a ton, but I ultimately decided working in the regulatory world wasn’t where I was meant to stay.

It was difficult being a scientist in a science-based agency and having all decisions come down to “policy calls”. I received a Coverdell Fellowship to study at Carnegie Mellon and I applied to the Heinz College of Information Systems and Public Policy at CMU, hoping to gain the skills necessary to have an impact on policy.

Heinz College is a data focused policy school, teaching us to form policy by looking through an analytical lens. The program fits well with the technical background I have from RIT.

I’m focusing on Environmental Policy, specifically with sustainable energy. I want to be an advocate for the environment. Ultimately, I’d like to work within the realm of corporate social consciousness and responsibility. Corporations have such power in the US, and I want to work with them to make more impactful decisions when it comes to environmental protection and sustainability issues.”

Carlyn also shared with us her role in a non-profit organization in Kenya called the Polkadot Library. Here she explains:

“The Polkadot Library is a non-profit started by a woman I served with in the Peace Corps. She has partnered with the local government in Kenya to support the project with an agreement that she’ll stay for five years to get the project on firm footing. We met a few times in there, but formed a friendship playing Bridge back in Washington D.C. .

The library provides access to books, but also has structured lessons. The students participate in art classes, computer lessons, and reading. They also have a garden that is used as a teaching tool, and to generate funds for the library. I serve on the executive board as Secretary.

I haven’t been back to Kenya since my service ended, but I hope to go back soon! I’m sure it will be emotionally overwhelming, but also fun and joyful.”



Here, Carlyn is pictured with her friend Abigail, in front of the house that Carlyn lived in during her time in the Peace Corps.

Kristen Denniger Snyder, Environmental Science, 2010



Photos by RIT News

“When people are invested in and support conservation efforts, we have the best chance at success”
-Kristen Denniger Snyder

Story adapted by Felicia Swartzenberg, RIT News

Kristen Denninger Snyder ’10 (Environmental Science) will be heading a newly formed research center, The Research and Innovation for the Serengeti Ecosystem (RISE) in Tanzania that focuses on wildlife conservation. Denniger Snyder has had multiple internships, volunteer experiences, and research focused on animal conservation. She completed her doctoral degree at the University of California, Davis, and is currently at Colorado State University pursuing a post-doc in collaboration with the Grumeti Fund, a not-for-profit organization in Tanzania with similar goals. Once she returns to Tanzania, Denniger Snyder states, “The center will develop and support research initiatives that provide tangible solutions to benefit the people and wildlife of the Serengeti ecosystem and beyond. Inclusive conservation that creates opportunities for women and youth is fundamental to our objectives”



Alumni Spotlights

Afnan Nasaruddin, Biotechnology, 2011

Afnan (Biotechnology '11) is a Ph.D. candidate from Rawang, Malaysia studying potato plant bacterial diseases at Colorado State University, Bioagricultural Sciences & Pest Management. Specifically, he is researching blackleg and tuber soft rot which are caused mainly by two genera of bacteria, *Dickeya* and *Pectobacterium*. Originally a student at University of Wisconsin-Madison, Afnan was involved in testing potato seeds to detect *Dickeya dianthicola*, the bacterium responsible for multiple blackleg disease outbreaks in the United States in 2015. Afnan made the move to CSU part-way through his studies alongside his research advisor which according to Afnan, was an easy decision to make as they worked so well together. Recently, Afnan was chosen as a VPR Fellow following a 3-minute challenge initiated by the Office of the Vice President for Research to promote cross-college collaborations. According to the CSU website, "the concept is that students are asked to consolidate their thesis ideas, major findings and significance to three minute presentation suitable for a general audience". Thirty-nine competitors were chosen as top communicators from 360+ graduate students who participated in the Graduate Student Showcase at CSU in November. Of those competitors, 15 winners were chosen who will each receive up to \$4000 in scholarship, travel, and professional development funds. Afnan said that winning the VPR Fellowship inspired him to continue communicating his science to the public. For example, he participated in CSU Speaks event in April, and plans to participate in outreach to elementary and high school students through the What's Eating My Plants? (WEMP) plant pathology outreach group. Through WEMP, he can share with the public how plant diseases and plant pathology research affect their everyday life. He is hoping this will open up the possibility for a career path in science communication. You can check out Afnan's 3 minute presentation at: <https://www.youtube.com/watch?v=hz4um49d4CM&feature=youtu.be>



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Coming Soon..

Life Sciences is excited to announce renovations to the Environmental Science and Intro Bio labs are almost complete! New tables, cabinets and hoods will greet our incoming freshmen students. Look for more updates this fall!



Student Spotlights



Robert Moakley is the 2019 recipient of the Bruce R. James Distinguished Public Service Award. Moakley is a fourth year, Environmental Science major. He serves as the President of RIT's Student Government and has been an avid participant in leadership and community service projects. Recently, he took part in RIT's Alternative Spring Break where his group provided disaster relief to those affected by Hurricane Michael and helped with coastline reparations. On campus, Moakley is an Orientation Leader, Peer Advisor and Program Director of Into the Roc, which helps RIT students connect with community service opportunities in the Rochester area. The service award includes a \$1000 donation to a nonprofit on behalf of the recipient, which Moakley plans to designate to the Ibero-American Development Corporation, an organization that renovates and manages buildings and affordable homes in Rochester.

Milky Abajorga Biomedical Sciences/Biotechnology

Milky is one of this year's RIT Outstanding Undergraduate Scholars. Nominated for her demonstrated exceptionality in academics and research, this award is well-deserved!

Milky hails from Addis Ababa, Ethiopia. She came to RIT as a transfer student from UMass Medical into the Biomedical Sciences program in the College of Health Sciences and Technology (CHST). In her first semester, she took Cellular and Molecular Biology and realized she was more interested in discovery than application, so she added Biotechnology as her second major.

Milky's research with Dr. Julie Thomas mostly involves identifying all the essential genes of the Salmonella virus, SPN3US. Being a member of the Thomas Lab was really transformative for her, and she feels that Dr. Thomas has been a great and inspiring mentor.

"Until I joined her lab, I did not believe that I was capable of pursuing a graduate program. Dr. Thomas, not only introduced me and reinforced my critical thinking and molecular biology skills, but she also helped me recognize that I have the skillset to do graduate research," says Milky.

After RIT, Milky plans to attend the Graduate School of Biomedical Sciences at UMass Medical School where she hopes to join the Immunology and Microbiology Program.



Photo by Jaime Huynh



Photo by Jaime Huynh

2019 David M. Baldwin Memorial Scholarship Recipients

From left: Trevor Penix (Biotechnology), Spencer Richman (Bioinformatics), Kaylee Steiner (Biotechnology), Amanda Weiss (Biotechnology), Guy Azriel (Biotechnology/Biomedical Sciences), and Nicole Cavanaugh (Biotechnology). All students exemplified what it means to serve their communities at RIT and beyond, having also achieved strong success in the classroom and research. Each student shared with us their personal stories, and we are so proud of their accomplishments!

2019 Research Scholars Awards

Milky Abajorga, Guy Azriel, Molly Border, Meghan Buldo, Nicolas Burns, Briana Burt, Adriana Coll De Pena, Katherine Hensel, Gretchen Horst, Jeremy Kane, Adeline Maykish, Sydney Van Winkle, Amanda Weiss, and Zexuan Maria Jia

Guy Azriel (Biotechnology and Biomedical Sciences) and Maryah Glover (Biology)

Guy Azriel and Maryah Glover each received The Excellence in Student Life Award in May. The award was created to celebrate students who engage in student activities, scholarship, and leadership.



Julia Faraone Biotechnology

Julia is the recipient of a 2018-2019 WISE Student Travel Award.

She is also a Chemistry and Materials Science Research Scholar, on a project titled, "Elucidating the Intermolecular Interactions of a Cataract-Causing Protein: γ B Crystallin" with Dr. Lea Michel.

Trevor Penix Biotechnology

Trevor Penix received The John Wiley Jones Outstanding Students in Science Award which honors student's contributions in the RIT community and a distinguished academic record



Faraone and Penix pictures by Jamie Huynh

Faculty Spotlights



Professor of Biological Sciences, Expert Witness and Forensic Scientist

Dr. Gary Skuse spends some of his time outside of RIT working with criminal defense attorneys. Not as their client but as a consultant who helps them interpret laboratory reports that result from the analysis of DNA, intoxicants or firearms that are recovered during criminal investigations. This work is an extension of his lifelong work as an educator.

Almost 20 years ago Dr. Skuse presented a workshop at RIT that was attended by local attorneys and judges. That led to one attorney asking him for help interpreting DNA test results which in turn led to Dr. Skuse working on more than 250 cases so far and serving as an expert witness nearly 30 times. The attorneys he works with are located throughout New York State, some work in the federal courts and one is in New Jersey.

While many aspects of this work are interesting, perhaps the most interesting is the task of figuring out what happened. It is very much like solving a puzzle. Dr. Skuse is given laboratory reports, associated notes, police reports and anything else the attorney thinks is relevant. He then ingests all the information he is given and works with the defense attorney to develop what is termed a defense strategy, hopefully a winning one.

Very much unlike a research laboratory, the courtroom is an adversarial venue in which the two opponents, the government, represented by the prosecutor, and the defense argue their cases. The goal of each side is to convince the jury that their story is more believable than the other's. In a criminal trial the jury must be convinced beyond a reasonable doubt that the defendant is guilty, otherwise he or she retains their freedom.

When biological evidence is involved, the prosecution often brings in a technician from the crime laboratory that performed the analyses. It is Dr. Skuse's job to interpret their findings and provide alternative interpretations that may help the defense. He typically enjoys this because he is not there to argue with anyone but rather to educate the jury and anyone else in the courtroom who is listening.

Dr. Skuse finds this work immensely satisfying because it not only truly recognizes our fundamental constitutional rights but it gives him an opportunity to expand his role as an educator.



Dr. Gregory Babbitt has been awarded a professional leave for 2019-2020. His project is titled: Discovering Biomolecular Function and Evolution Through Comparative Molecular Dynamics.



Dr. André Hudson received the Faculty Beacon Award, which honors contributions to those who impact diversity at RIT.



Dr. Kaitlin Stack Whitney was selected as a Mozilla Open Leader for Spring 2019. Mozilla Open leader is a competitive global program for people who are recognized as leaders in "open" research proactives and provides them mentoring on projects

Seminars

Photo by Jaime Huynh

Dr. Beronda Montgomery came to the College of Science as our John Wiley Jones Distinguished Speaker during the spring semester. She is a foundation professor in the Plant Research Lab at Michigan State University teaching biochemistry, molecular biology and microbiology in the Department of Energy Plant Research Laboratory. Dr. Montgomery gave a presentation on “Seeing the Light: Plant Color Vision and Developmental Acclimation” looking at light mediation and plant growth.

In addition to her research, Dr. Montgomery led an Inclusive Excellence seminar on faculty mentoring and development by using the lessons that have emerged from examining how immobile organisms adapt to their environment to address mentoring and professional development intervention strategies.



Dr. Andrew Samuelson, a Research Associate Professor from the Department of Biomedical Genetics at The University of Rochester Medical Center, came to the Life Sciences department to give a fascinating seminar on “Transcriptional Regulation of Proteostasis During Aging”. Dr. Samuelson discussed aging and how it is characterized by a gradual decline of the function and folding of the proteome, referred to as protein homeostasis, or proteostasis. Why proteostasis fails in the course of aging is poorly understood, but is a massive clinical problem as it underlies the development of many protein misfolding diseases, including Alzheimer’s Disease.

Dr. Sherri Mason, a Sustainability Coordinator with Penn State Behrend gave a talk entitled “The Perils of Plastics”. The work examined plastic pollution in freshwater systems, specifically in the Great Lakes. Thus far, her research group has found that Lake Erie has the highest microplastic concentration of any body of water on Earth, with alarmingly high concentrations in the neighboring Great Lakes as well. The results have since gained the attention of U.S. lawmakers and others around the world, leading to the passage of legislation banning the use of plastic microbeads in personal care products.



J. Nick Fisk (Bioinformatics, 2015), a Ph.D. student from Yale University returned to his alma mater in April and gave a presentation entitled “Application and Development of Evolutionary Methods in the Biomedical Sciences” which discussed how to leverage models originally developed to explain species evolution to answer questions about phenomena occurring at the individual human level. Nick is pursuing a doctorate degree in Computational Biology and Bioinformatics in the lab of Dr. Jeffrey Townsend within the Yale School of Public Health.

Look for the Georgia Gosnell Seminar Series beginning this fall. We will be hosting multiple speakers in the Life Sciences areas. Schedule coming soon!

Presentations

1 Dr. Sandi Connelly and Dr. Jeffrey Mills presented at the COS Science and Math Day on April 27th. Their presentation was entitled, “From seed to seed: Phenotypic and biochemical analyses of the effects of near space conditions on the growth and development of plants”

Dr. Gary Skuse gave a seminar in Buffalo, NY entitled “Nuts and Bolts of DNA & What You Need to Know About Firearms”. That seminar was sponsored by the Erie County Assigned Counsel Program and was attended by criminal defense lawyers who earned continuing legal education credits.

Dr. Sandy Connelly brought a group of faculty and instructional designers from Arizona State University to RIT March 7-8, 2019 to discuss online programs and collaborative initiatives to enhance online learning in STEM.

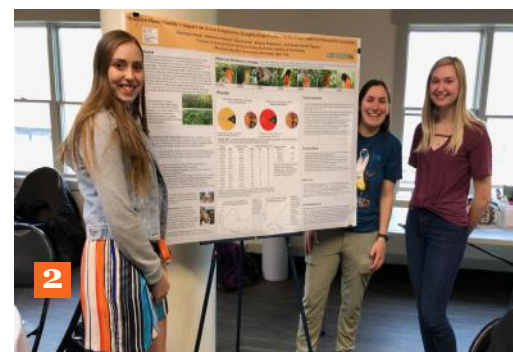
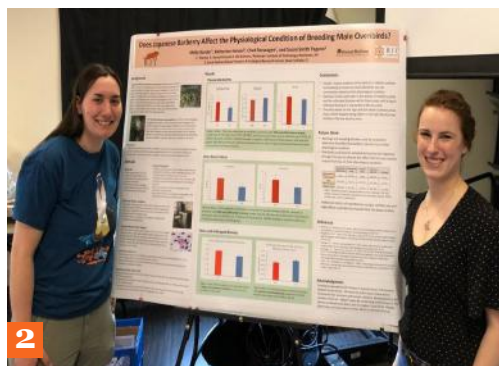
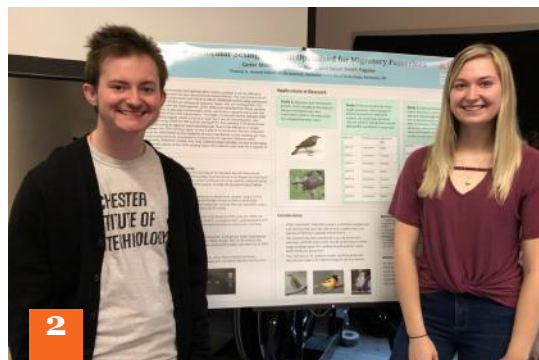
Dr. Jeffrey Lodge presented “Using microalgae for cleaning of wastewater and river pondwater for drinking water” at the Global Health Initiative on February 22 at RIT, hosted by College of Health Sciences and Technology

3 Lily Adams (Bioinformatics, 2019), presented a poster at the joint American Society for Biochemistry and Molecular Biology (ASBMB) and Experimental Biology (EB) meeting in April. Her talk focused on the application of molecular dynamics simulations in small molecule inhibitor analyses (targeted toward antibiotic/drug design).

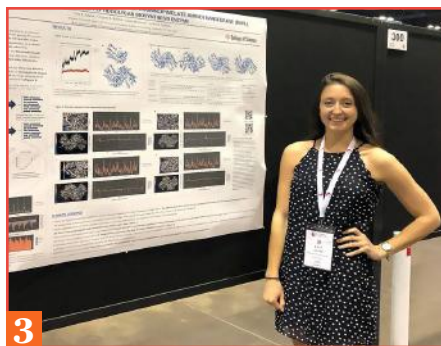
2 Carter Moleski (Biotech), Gretchen Horst (Biology), Katherine Hensel (Biology), Molly Border (Biology), Erica Delles (Biology) presented research posters at the Eastern Bird Banding Association 2019 Annual Meeting that was recently held here in Rochester, NY on April 13th

5 Tony Zheng (Environmental Science), Zack Prokocki-Loomis (Environmental Science), Sydney VanWinkle (Environmental Science), Bobby Moakley (Environmental Science) provided a training session on iMapInvasives for the Conesus Lake Association.

Dr. Dawn Carter, Dr. Dina Newman, Dr. Elizabeth Hane and Dr. Mary-Anne Courtney attended the PKAL Upstate meeting on Inclusive Excellence in STEM at Rochester Institute of Technology on April 13, 2019



4 Karl Brylow (Biotech) presented a poster at the 6th Annual Symposium on RNA Science and Its Applications at the University at Albany and the annual ASBMB meeting in Orlando, FL



Dr. Sandi Connelly organized and screened the film, “Unlikely” (<https://www.unlikelyfilm.com>) for the Administrative/Student Affairs group on March 15th and the RIT Community on March 29th to begin dialogue surrounding students who are failed by the higher education system, and what our role could be to decrease those instances.

Dr. Karl Korfmacher gave a presentation at the GIS/SIS 28th Annual Conference on April 9, 2019 with Robert Buetner (Hobart William Smith). The workshop explored ArcGIS Online and walked through the basics of creating a simple Story Map. Nine Environmental students also participated in the map contests.

The annual RIT Research Spotlights: Health and Life Sciences occurred on April 3, 2019

The following Life Sciences students gave presentations on:

Meghan Buldo- “Investigating the toxicity of run-off from crumb rubber-based turf fields”

Sophie Christie- “Modeling Macroinvertebrate Communities and Ecological Health”

Adeline Maykish- “The Growth and Survival of E. coli in Beverages”

Maryah Glover- “Glucose and Time Constraints on Biofilm Formation in Enterobacteriaceae Pathogens”

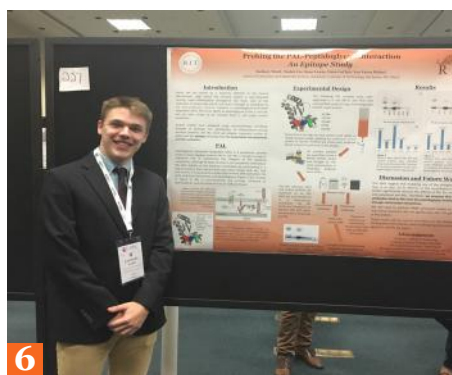
This Spring, Dr. André Hudson gave a talk at the Pittsford Barnes And Noble Science Cafe Event. He spoke to the public about the uses of antibiotic resistance, stewardship, policy, research, and development

Dr. Elizabeth Hane attended The American Society for Engineering Education CoNECD conference (Collaborative Network for Engineering and Computing Diversity) in Washington DC. The conference is dedicated to improving diversity in engineering. She gave a paper that was published in the conference proceedings.

Dr. Hane was also invited to give a talk at Whitworth College in Spokane, WA about using metacognition to improve retention of underrepresented students in STEM.

**Spread a little Kindness!
Watch for Kindness Rocks
this fall!**

**Life Sciences students
look for rocks decorated
by your favorite professors.
Bring them back to the
owner once you find them!**



6 Zachary Ward presented a paper entitled, “Probing the PAL-Peptidoglycan Interaction An Epitope Study” at the American Society of Molecular Biology and Biochemistry (ASBMS). The project’s goal was to find the region on a protein know to be found on the outside of Gram-negative bacteria(Peptidoglycan Associated Lipoprotein) where it binds to antibodies(mouse). Learning more about how the body interacts with this protein believed to play a large role in the inflammation mechanism of sepsis we might be able to lessen the effects associated with sepsis.

Grants and Awards

Every year, College of Science hosts an Annual Honors, Awards and Recognition Ceremony. Life Sciences would like to congratulate all of our winners!



Women in Science (College of Science) were awarded the Rochester Museum and Science Center STEM Higher Education Award

College of Science Lifetime Achievement Award- Dr. Robert Rothman
Distinguished Administration Awards- André Hudson
Distinguished Scholarship- Dr. Dina Newman

Congratulations Dr. Sandra Connelly!

Dr. Sandra Connelly received a Faculty Career Development grant from RIT's Wallace Center for the project entitled: "Changing Biology- A little bit faster than the rate of evolution!-bring the general education biology curriculum in to the 21st Century". The funding will be used to support the restructuring of the General Biology course this summer

Dr. Sandra Connelly also received the Lecturers' Professional Development Grant sponsored by the Provost's Office and Faculty Career Development to present the work on online class development at the 2019 World Conference on Online Learning in Dublin, Ireland.



College of Science Service Award Recipients

Nicoletta Bruno- 30 years
Dr. Michael Osier- 15 years
Dr. Michael Savka- 20 years
Rosanne Klinger- 30 years
Robert Rothman 35 years

In Memorium



It is with sadness that College of Science announce the passing of Professor Emeritus James Aumer.

Jim was born and raised in Buffalo, NY. He attended Erie County Technical Institute (ECTI) and Michigan Technological University. Jim began his career as a medical technologist at Mercy Hospital in Buffalo, NY and then joined RIT as a faculty member in the Medical Technology (MT) Program in 1976. He soon became program director of the MT program and later he also assumed the role of program director for the graduate program in Clinical Chemistry. He remained program director until the discontinuance of each program. Jim was an active member of the American Society for

Clinical Lab Science (ASCLS) and ASCLS – New York. In ASCLS- NY, Jim served in various elected offices and on the meeting planning committee whenever the annual meetings were held in Rochester.

In addition to his interest in the clinical laboratories, Jim was an avid gardener and had a keen interest in medicinal plants. These interests resulted in Jim spending his 2003 sabbatical in the rain forests of Costa Rica and Venezuela. In his continual quest for knowledge, he would take a course nearly every year, and over the years earned 192 credit hours. Over the years, Jim taught a variety of courses, provided oversight for MT students interning at NACLS approved clinical programs, was the thesis advisor for clinical chemistry students and served on many committees. He retired in 2012 after 36 years at RIT.

Jim was a true professional – committed to his field, thorough in the carrying out of responsibility, diligent about his work, and always willing to accept new challenges and provide assistance wherever he could. Jim was a kind and reserved individual with a good sense of humor; he will be greatly missed by all those who knew him.

Staff Spotlights



Nicoletta (Nicki) Bruno Staff Assistant, retired from the School of Life Sciences in May 2019. Nicki's employment at RIT spanned 30 years. She began her career at RIT in the Human Resources department as a Benefits Compensation Assistant for 15 years. She then moved from HR to become a staff member in the College of Science, School of Life Sciences. During her time here in the School of Life Sciences, she served as an advisor to the undergraduate Environmental Science and Bioinformatics students and eventually transitioned to a role as a Staff Assistant providing support to current and incoming students, and planning special events for the school.



Larissa Barresi accepted the COS academic advisor position offer in spring 2019.

Larissa joins us from Malden, MA and began, April 15, 2019. She holds a Bachelor of Arts in Theatre Arts from SUNY New Paltz, and a Master of Arts in Higher and Postsecondary Education from Columbia University. Larissa's previous professional roles include many years in higher education admissions as an external application reader, admissions counselor, and STEPS program coordinator at the University of Vermont in Burlington, VA.

She will be advising students in chemistry and environmental sciences. We are so excited to welcome this new member to the team!



Narayan Wong celebrated his one year work anniversary as a Research Technician with College of Science in April. Narayan focuses on genetic sequencing. He comes to College of Science from the University of Rochester.



Allison Healy won a Distinguished Staff Support Award at the annual College of Science Award Ceremony in April 2019. This award honors staff who provide exemplary support to ensure that tasks are completed and the college continues to run smoothly.

Leaving Life Sciences

Alisha Balkum accepted an Assistant Program Director position with RIT's Arthur O. Eve Higher Education Opportunity Program with Diversity and Inclusion

Jenn Santoru accepted a Financial Assistant position with Rochester Institute of Technology's Human Resources Department. Jenn worked for College of Science for 13 years.

Coming Soon

Biology without Walls

Story by Sandra J. Connelly, PhD

The students of GSOLS are invited to embark on a journey beyond the bricks of RIT in May 2020 and join three GSOLS faculty – Dr. Sandi Connelly, Dr. Dawn Carter, and Mrs. Michelle Weatherell – as they explore 510 acres of second growth forest, a 52-acre pristine glacial lake, and 8 miles of hiking trails in a new course – Biology Without Walls!

This new course is being designed as an experiential learning, immersive field course at Lacawac Sanctuary in Northeastern Pennsylvania (<https://www.lacawac.org/>). It will be a full course offered in 8 days as a “study abroad” feel without the significant costs often associated with a true study abroad – and without the need for passports and airports!

Biology Without Walls will focus on botany (Carter), vertebrate zoology and genotyping (Weatherell), and aquatic ecology / evolution (Connelly). The students will be collecting data/samples, processing samples in Lacawac’s new wet-lab space, and gathering together to discuss the results in the Historic Lodge built in 1903. Not only will the students be investigating this “pristine” environment, they will also be comparing that space to the very highly used public space of Lake Wallenpaupack – which borders one side of the Sanctuary.

The course will culminate in a Research Symposium at the Lacawac Lodge, to which the public will be invited. With Lacawac’s large volunteer cohort and public connections in the Delaware Water Gap, this will be a terrific opportunity for the students to present what they have found to interested members of the community, and really provide them the opportunity for true outreach and science communication.

We are pleased to announce that GSOLS will join the Lacawac Consortium in 2020 – one of only five Institutions – to begin what is seen as a long-term research and education collaboration. This will open paths for all GSOLS faculty and students to engage in research in this amazing preserved natural space, and decrease costs for the students who enroll in the Biology Without Walls course – making this unique opportunity even more accessible to our students.

As the course develops, we will also be looking for GSOLS Alumni in the region to join us at Lacawac for the course itself (experts in the field – literally!) and the research symposium. Please contact Dr. Sandi Connelly (sjcsbi@rit.edu) if this is something that you would be interested in being a part of going forward!



Dr. Dawn Carter



Dr. Michelle Weatherell

In the News

High school students publish paper with RIT scientists analyzing rare bacterium



Three Rochester Prep High School seniors make scientific contribution

Text by Susan Gawlowicz. Adapted from RIT News.
Photos by A. Sue Weisler.

Three high school students working in a science lab for the first time made a surprising discovery with a Rochester Institute of Technology professor, Dr. Andre Hudson. Now, the young women are co-authors on a scientific paper announcing a rare bacterium that kills e-coli.

Atlantis Aziz-Dickerson, Joyceline Dweh and D'Asia Buchanan—seniors at Uncommon Schools' Rochester Prep High School—isolated, identified and genetically sequenced the genome of a Yimella bacterium in the RIT Genomics Lab with faculty mentor André Hudson, head of RIT's Thomas H. Gosnell School of Life Sciences. The species of Yimella produces antibiotic compounds that inhibit at least two kinds of bacteria, Escherichia and Bacillus, both of which contain species pathogenic to humans.

Their findings appeared in the April 25 issue of The American Society for Microbiology's Microbiology Resource Announcements. The paper, "Isolation, whole-genome sequencing and annotation of Yimella sp. RIT 621, a strain that produces antibiotic compounds against Escherichia coli ATCC 25922 and Bacillus subtilis BGSC 168," lists the high school students alongside lead author Anutthaman Parthasarathy, RIT postdoctoral researcher; Narayan Wong, Genomics Lab technician; and Nicholas Burns, a fourth-year biotechnology and molecular bioscience major, and RIT faculty Michael Savka and Hudson.

Working in the RIT Genomics Lab throughout the fall semester, the students isolated, extracted and sequenced the whole genome of the bacterium—3.2 million base pairs—using an advanced sequencing platform, the Illumina MiSeq Next Generation Sequencer. The team annotated the genomic information and analyzed the genome of the bacterium to reveal the organism's unique properties.

"We all worked on it together," Buchanan said. "Knowing that I was a part of this finding was really exciting for me because not everybody has the same opportunities and, being that we come from a place where we don't have a lot of opportunities to be published and to be in this situation, it was very rewarding."

Aziz-Dickerson isolated the bacterium from the door handle leading to a lecture hall in RIT's College of Science building, or Gosnell Hall. The high school senior plans to study biomedical sciences and biology at college.

"Antibiotic resistance is a growing factor in our world," Aziz-Dickerson said. "We swabbed a door handle, one of the bathroom hand dryers and a cell phone, and we isolated three different bacteria. We didn't know the genera or species of the bacteria we isolated. We found out it inhibits the growth of two different types of bacteria."

Antibiotic and antifungal resistance is a growing concern around the world, and pharmaceutical companies are racing to make up for lost time in developing new drugs to treat infections. The overuse and lack of stewardship of antibiotics, along with the hurdles of the drug approval process, are to blame, Hudson said.

Nearly 20 students from Rochester Prep visited RIT during the fall and winter to work with professors on a variety of projects in science, biomedical sciences, sustainability, game design, photojournalism and sociology. Many of the Rochester Prep students will be among the first in their family to attend college. Experiential learning opportunities like the capstone program give them a glimpse of the culture and pace of college.

"I've never been in a lab before," Dweh said. "I already have the knowledge of what to expect when I go to college now that I have this experience. Doing this capstone project took me out of my comfort zone, and I think it will help me in the future."

The capstone program grew out of a unique relationship between the charter high school and the university. Rochester Prep High School, a member of award-winning charter management organization Uncommon Schools, opened in 2014 with a strong partnership with RIT already in place, through a donation from RIT Trustee Ron Zarella.

In the News

Student Spotlight: Showing the artistic side of science

Deirdre Cannon, first-year biotechnology and molecular bioscience student

Story and photo by Felicia Swartzenberg. Entire interview can be viewed in the RIT News story with same title

Deirdre Cannon is a first-year biotechnology and molecular bioscience student from Norfolk, Mass., who loves drawing. Cannon enjoys creating with all types of mediums, from oil painting to digital media to chalk. Recently, Cannon was able to combine her love for art and science to create “biology graffiti” to be used as a poster backdrop for RIT’s Howard Hughes Medical Institute (HHMI) Inclusive Excellence initiative.

RIT’s HHMI Inclusive Excellence initiative was made possible by a \$1 million grant from the Howard Hughes Medical Institute, is a five-year plan set forth by College of Science faculty, staff and students. The goal is to “foster a more inclusive environment across the college” through involvement with this initiative. Community Strand Lead Jennifer Connelly and faculty liaisons Dawn Carter and Beth VanWinkle from the College of Science are using art as a means of expression, inclusion, and communication. Professor Carter and Professor VanWinkle asked Deirdre to be their first featured artistic scientist. As the initiative continues to grow, they will invite other students to create science-related art to use for decoration throughout the halls of the College of Science.



What’s New

Story by Gary Skuse

This spring Dr. Skuse taught an environmental genomics course that provided students with authentic research experiences that ranged from collecting soil samples to isolating bacteria in the laboratory to sequencing their ribosomal DNA and determining the species isolated using bioinformatics tools. Of course, since this is Rochester they had to dig through the January snow on campus in order to access the soil but the hardy group of students did so with smiles on their faces.



This course was taught as part of an NSF funded partnership that includes five other institutions located in the snow free southern US. At each school, students isolate bacteria that are able to degrade organophosphate pesticides. Bacteria with that ability not only serve as biosensors for the presence of those pesticides in the soil, but they have the potential to be used as bioremediators for pesticide contaminated soils in the future. RIT is a great location for this study because our campus was a farm until the Henrietta campus was dedicated in 1968.

Typical of GSOLS students, each week when Dr. Skuse arrived ten minutes early for the twice weekly 2:00pm laboratory sections, his students were already hard at work. At the end of the semester his class was visited by an evaluator from Portland, OR who came to assess whether the activities completed by his students were aligned with the overall goals of the multi-institutional collaboration. She not only concluded that we were doing a great job but she commented repeatedly about the advanced skillsets our students displayed. We have been saying that for a long time but it is still gratifying to hear it confirmed from someone outside of RIT.

In the News

Story and photos by Luke Auburn, RIT News

Rochester Institute of Technology environmental science students turned some heads when they stopped to pick white clover plants near a gas station along New York State Route 33A in October. But little did onlookers know that they were helping to conduct the largest evolution study outside of human genomics.

The students were collecting samples for the Global Urban Evolution Project, a massive study spanning six continents that examines how the ubiquitous white clover plants are evolving differently in urban, suburban and rural ecosystems. While many homeowners view the plant as a weed, scientists say it is an important source of nectar for pollinator insects that we can learn a great deal from.

"Because of urban development, plants or animals evolve differently to adapt to the environments that we have created," said Briana Burt, a fourth-year environmental science student from Madbury, N.H., who is working with four other RIT students on the project for a senior capstone project. "We are interested in studying white clover because it's a pollinator-friendly species that exists on every inhabited continent in the world. Understanding how development is impacting this one species can help us understand if other species are impacted, how they can be impacted and what's causing them to be impacted."

The RIT students collected 650 samples of the plant in 41 urban, suburban and rural locations in October, starting at the center of downtown Rochester and heading southwest along New York State Route 33A to Riga. They then tested the clover samples for a chemical defense called cyanogenesis, which defends against herbivores but causes the plants to be less tolerant to freezing temperatures.

The RIT researchers hypothesized that the urban area will have less cyanogenic clovers compared to the rural sites. They expected rural ecosystems to have more cyanogenic clovers because there are more herbivores and warmer ground temperatures since the snow acts as a blanket to trap heat underground.

When the study's organizers in University of Toronto Mississauga put out a call looking for collaborators in 200 cities on six continents where the plant grows, RIT Visiting Assistant Professor Kaitlin Stack Whitney volunteered RIT to collect samples for Rochester. She said giving students the chance to participate in distributive collaborative science with hundreds of people across the world provided an important learning experience.

"It's a great example of how science is so collaborative," said Stack Whitney. "They're seeing how much more we can learn by being part of this multi-city experiment. They're getting trained on the cutting-edge methods of how big teams who want to answer big questions about our environment do this work together."



Fourth-year environmental science student Aaron Paratore helped collect 650 samples of white clover in the Rochester area in October as part of the Global Urban Evolution Project.

Welcome...

In spring 2019, Life Sciences welcomed a new advisory board member, Daniel Boone (BS Biotechnology, 2011 and MS Environmental Science, 2012). A message from Dan below..

I started my career under contract at Zotos International as a QC Microbiologist. I quickly transitioned to a 2-year contract at Ortho Clinical Diagnostics (subsidiary of Johnson & Johnson) as a R&D Scientist, helping develop a new innovative bioassay technology for detecting sepsis in patients as early as possible. After my contract ended I had a short stint at DuPont Industrial Biosciences as a Microbiology Specialist before I shifted the direction of my career towards agricultural and sustainable Microbiology.

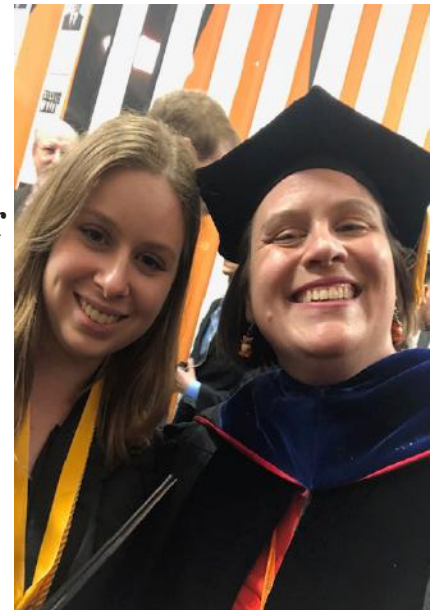
I've spent the last 4 years at BioWorks, starting as a Biopesticide Microbiology Specialist, focused on providing organic, sustainable, natural alternatives to chemical pesticides for growers. I worked my way up to the Process Microbiology Lead, managing the production and quality control of the microbes we produce. I'm also the Quality Department Lead, in charge of expanding our Quality department to keep it aligned with the quickly growing company. I'm a member of the Execution Board, which leads the focus on operational efficiencies of the company, as well as focuses on the execution of the company's key initiatives, brand promise, and long-term goals. My personal long-term goal is to be Director of Operations.

None of that would be possible without my wife Rebecca, whom I've been married to for 12 years, and my son Carter, who is 9 years old in July. I've had the pleasure of mentoring a number of RIT interns, as well as hiring some RIT students for permanent lab positions. I look forward to doing my part to help bring industry knowledge to the team!



Commencement

Life Sciences would like to wish our graduates well on all their endeavors! Thank you to all our family and friends who came to celebrate with us!



Credits:

Cover Photo: Study Abroad, Malmo Sweden. Photo by Elizabeth Hane
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If you'd like to contribute something to the spring newsletter, send an email to lifesciences@rit.edu.