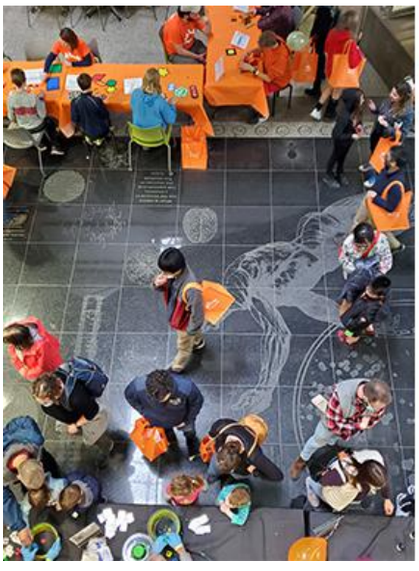
RIT | College of Science

DEAN'S BULLETIN

April/May 2022 in Review



R: The Bruce and Nora James Atrium hosted several popular exhibits during Imagine RIT.

Photo credit: Mary Pryor

L: Students gather to celebrate College of Science Commencement.

Photo credit: Jonathan Leung

Message from the Dean

It was a busy but exciting end to the spring semester with two back-to-back celebrations of the RIT community.

Spring was in the air during the Imagine RIT: Creativity and Innovation Festival at the end of April. After going virtual for 2021, thousands of people came to the RIT campus for an in-person event. College of Science students, faculty, and staff participated in the festival with 21 STEM exhibits located in Gosnell Hall and the Carlson Building.

In May, we celebrated the Class of 2022 at RIT's Convocation and COS's Commencement events. What an adventure these years have been for the Class of 2022. They have shown incredible resilience to complete their degree programs in the face of the pandemic, and they succeeded!

It was an honor to share the commencement stage with two outstanding student delegates. Our Undergraduate Delegate, **Quinn Kolt**, is graduating with a double major: a BS in applied mathematics and a BS in computer science, with a minor in applied statistics, and an immersion in psychology. After graduation, Quinn will pursue a Ph.D. in mathematics, with plans to become a professor and help students learn about themselves and their passions.

Graduate Delegate **Rema Amawi** is graduating with her Ph.D. in color science. She is the first RIT doctoral student to graduate with a primary residency at the RIT Dubai campus, where she began her career as a faculty member teaching chemistry and biology. Her dissertation was on the Effects of Pill Colors on Human Perception and Expectation of Drugs' Efficacy. Rema looks forward to continuing her career at RIT Dubai.

At this time of year, we're excited to share stories about awards and promotions and other changes within our college. Of particular note, the New York State Department of Education approved two new programs: a BS in Neuroscience and a Ph.D. in Cognitive Science! Both of these programs are a collaboration between the Integrated Sciences Academy and the College of Liberal Arts; the College of Science will administer the Neuroscience program and the College of Liberal Arts will administer the Cognitive Science program. We are especially grateful to **Elena Fedrovskaya**, who led the effort, and **Larry Buckley**, who helped shepherd the Neuroscience proposal through the complicated approval process.

I hope you enjoy reading about the exciting happenings around our college and have a wonderful summer.
SOPHIA MAGGELAKIS

Dean, RIT College of Science

Student & Alumni News

RIT prepares graduates for advanced degrees

RIT graduating seniors **Victoria Kwasinski**, left, and **Cassidy Johnston** took different paths to Cornell University's College of Veterinary Medicine.

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From Student Support to Student Success in

Chemistry MS

Kaitlyn Clark chose RIT for its access services and began as a mathematics major. With the support from multiple faculty members, she discovered chemistry and is now an MS graduate.

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Computational Mathematics and a Future in Cryptography

Keegan Kresge loves math and programming, making him the perfect fit for cryptography. After completing his degree in computational mathematics, he plans to work at the Department of Defense.

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From RIT to Unilever: The Learning Journey Continues

Shin Lutondo '18 took advantage of all RIT had to offer - research, co-ops, MOCHA, intramural sports. Today he applies that diverse learning experience to the Research & Development community at Unilever.

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Dadgar works to make medicine personal

Sherry Dadgar '08 MS (**bioinformatics**) wants the future of medicine to empower patients. Dadgar, a clinical assistant professor of medicine at George Washington University, launched her company, **Personalized Medicine Care Diagnostics** (PMCDx), in 2020 with a goal of delivering advanced clinical genomic diagnostic testing to patients and their physicians.

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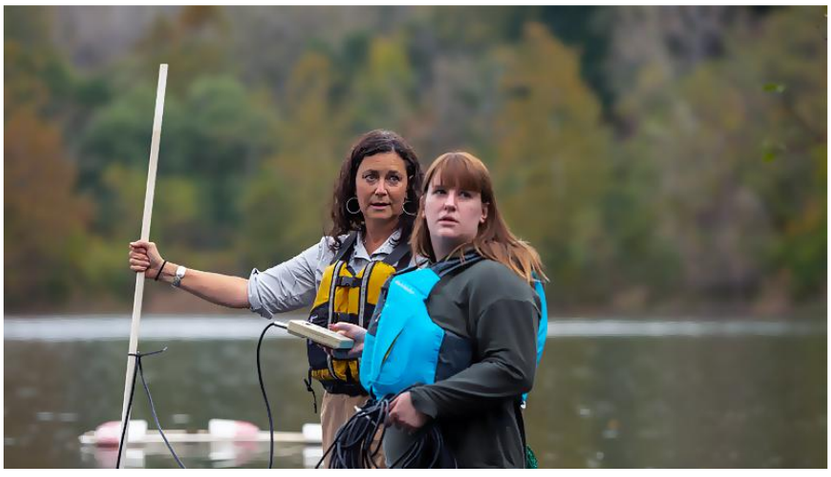

Climate Change Course: Complex Teams Solving Complex Problems

RIT students from all majors learn creative and interdisciplinary problem-solving through the perspectives of a diverse set of faculty members.

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Prepared for Med School

Safiya Gazali is graduating with a Biology degree, research experience, and community service experience - a strong combination to stand out in med school applications.

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From RIT to Communicating with Satellites as a Spacecraft Operator

Mike Ortiz chose RIT for its research options and campus location. Today, he works as a spacecraft operator at Terran Orbital, a global leader in small satellites.

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RIT Imaging Science: One Major, Countless Careers

Students graduating from the RIT Imaging Science program describe the unique major, research opportunities available and diverse careers after graduation.

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Student Awards

Community Impact Awards

Many outstanding RIT students were presented with awards for campus engagement and community involvement. The following **Community Impact Awards** are presented to students who are recognized as “change-makers” on the RIT campus, by making improvements to the campus and being involved in club activities.

Alfred L. and Ruby C. Davis Scholarship, given to students who have demonstrated significant effort toward the improvement and quality of campus, was awarded to:

- **Zoë LaLena**, third-year imaging science major
- **Anna Kasper**, third-year biology major

Joseph T. Ferraro Memorial Scholarship, awarded to students in good academic standing who have demonstrated an interest in and ability to build bridges among people of diverse backgrounds was awarded to **Anna Kasper**, third-year biology major.

Excellence in Student Life Awards honor students who were able to find the balance between academic success and student engagement. Students were selected for this award based upon having GPAs over 3.4 and holding significant leadership positions within RIT-related activities.

- **Keegan Kresge '22**, BS computational mathematics
- **Ashley Martsen '22**, BS physics
- **Katie O'Neill-Knasick '22**, BS biochemistry
- **Alec Vent**, third-year chemistry major

The H. Preston Herring Award is awarded to a Resident Advisor that has balanced their responsibilities within and outside the role and made personal efforts to provide a unique and significant contribution to the Center for Residence Life: Congrats to **Sakinah Abdul-Khaliq '22**, BS biotechnology and molecular bioscience, our COS award recipient!

Norman A. Miles Award for Academic Excellence in Study and Teaching

Physics major, **Ashley Lasko** is the 2022-2023 winner of the Norman A. Miles Award for Academic Excellence in Study. This award is given to a student who began their studies as a first year student at RIT and is entering their last year of undergraduate student with the highest grade point across the university. A second component of this Award allows the student to select a faculty member to be given the Norman A. Miles Award for Academic Excellence in Teaching. Ashley has requested that this award be given to **Moumita Das**, associate professor in the School of Physics and Astronomy.

NSF Graduate Research Fellowship

AST-PhD candidate **Olivia Young** has been awarded a National Science Foundation Graduate Research Fellowship. This prestigious and highly competitive scholarship is the first to be awarded to an AST student at RIT. As the oldest graduate fellowship of its kind,

the GRFP has a long history of selecting recipients who achieve high levels of success in their future academic and professional careers. The reputation of the GRFP follows recipients and often helps them become life-long leaders that contribute significantly to both scientific innovation and teaching.

Elaina Stafford

Matt Law

Emily Reilly

ASBMB Honor Society

Three RIT students, **Matt Law** '22 BS (biochemistry), **Emily Reilly**, a 3rd year biochemistry major, and **Elaina Stafford**, a 3rd year biotechnology and molecular bioscience major are part of the 2022 cohort of the **American Society of Biochemistry and Molecular Biology (ASBMB) Honor Society XΩΛ**, a select group of students from across the entire United States. The students were recognized for their scholarly achievements, research accomplishments, outreach activities, and involvement in their ASBMB Student Chapter. All three honorees have excelled in each of these areas. RIT has had 26 ASBMB XΩΛ Honor Society inductees since its inception in 2011.

International Student Wins Award

Nidhi Baindur, a second-year computational mathematics major, was awarded the International Student Outstanding Service Award for outstanding service to the RIT community.

Our Stories

Science and law class culminates in mock trial

"Almost everything involves science," according to **Gary R. Skuse**, a professor in the **Thomas H. Gosnell School of Life Sciences** and co-teacher of Honors Science and the Law: Biological, Ethical and Legal Perspectives. Throughout the course, he emphasizes how science permeates the profession of law and ends the course with a mock trial, giving students the opportunity to use scientific evidence like cell phone triangulation, medical assessments, and crash reconstruction in the context of a real case.

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Experiential learning is at the heart of Eisenhart Award winner Jan van Aardt's teaching style

Jan van Aardt is a strong believer in the power of experiential learning. When teaching classes about remote sensing and other topics, the **Chester F. Carlson Center for Imaging Science** professor uses collaborative projects and hands-on assignments to show his students the beauty of his field and help them build skills they can use for culminating experiences like their capstone projects.

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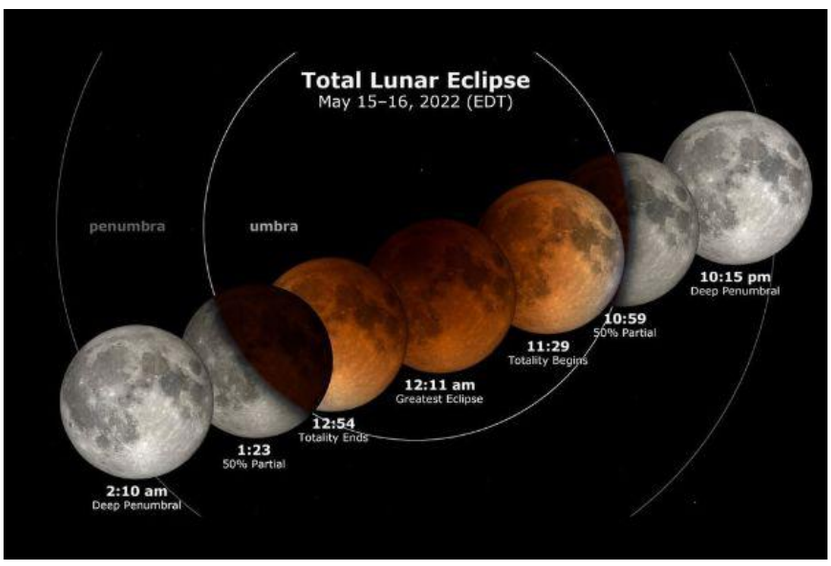

Rochester community invited to observe total lunar eclipse at RIT Observatory on May 15

The moon will play hide-and-seek with the sun during a total lunar eclipse on Sunday, May 15, and Rochester Institute of Technology is inviting the community to come watch the moon as it tries to hide in the Earth's shadow. The **RIT Observatory will host an open house** from 10 p.m. to 12:30 a.m. on May 15 that is free and open to the public.

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Honors, Recognitions, and Awards

Announcing Tenure Awards

We congratulate the COS faculty who earned Tenure this year on achieving this major milestone in their careers! This achievement also earns a **promotion to the rank of Associate Professor**. We are grateful for their contributions to the mission of our college and RIT.

Dr. Emmett Ientilucci
Chester F. Carlson Center for Imaging Science

Dr. Carmody "Carrie" McCalley
Thomas H. Gosnell School of Life Sciences

Dr. Laura Muñoz
School of Mathematical Sciences

Announcing Promotions

In addition to the new Associate Professors noted above, we congratulate all of the College of Science faculty who received promotions in rank for their years of dedication to our students and for their contributions to their academic unit, our college, and our university.

To the Rank of Senior Lecturer

Dr. Louis McLane
School of Physics and Astronomy

Dr. Sheth Nyibule
School of Physics and Astronomy

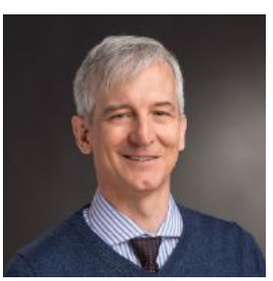
To the Rank of Principal Lecturer

Dr. Joseph Lanzafame
School of Chemistry and Materials Science

To the Rank of Research Professor

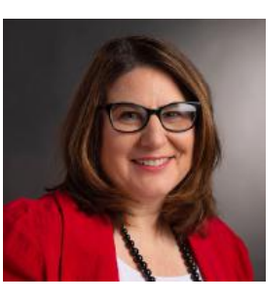
Dr. Hans Schmitthenner
School of Chemistry and Materials Science

To the Rank of Professor



Dr. Charles “Chip” Bachmann
Chester F. Carlson Center for Imaging Science

Dr. Mishkat Bhattacharya
School of Physics and Astronomy



Dr. Dina Newman
Thomas H. Gosnell School of Life Sciences

Dr. Leslie Kate Wright
Thomas H. Gosnell School of Life Sciences

RIT celebrates excellence in teaching and scholarship

The annual Celebration of Teaching and Scholarship recognizes RIT's outstanding faculty, staff, and students for their excellence in innovation, teaching, and developing the next generation of leaders. The 2022 celebration took place April 12 in Ingle Auditorium. Congratulations to the College of Science honorees:

Kaitlyn Clark '22 MS chemistry – Provost's Outstanding Graduate Student Teaching Award
Dr. Jan van Aardt, professor, Chester F. Carlson Center for Imaging Science – Eisenhart Award for Outstanding Teaching
Bioinformatics Master's Program – Excellence in Student Learning Outcomes Award

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Joel Kastner, professor in the Chester F. Carlson Center for Imaging Science, was invited to serve on the James Webb Space Telescope Users Committee, an external advisory board that provides user advice to the observatory as a whole. This committee provides a practical way of ensuring that the observatory operations proceed in a coordinated manner in order to maximize its scientific performance.

Scott Williams, professor and director of materials science and engineering MS program, was awarded the 2022 Allied Professionals Special Recognition Award from the American Institute for Conservation. This award is presented in recognition of the work and contributions from professionals in other fields to the advancement of the conservation profession.

RIT graduate programs rank among best in nation in 'U.S. News & World Report' survey

Rochester Institute of Technology graduate degree programs are among the best in the nation, according to the *U.S. News & World Report* annual statistical survey of graduate programs. RIT graduate degree programs in engineering, science, and business were featured in the *U.S. News & World Report* 2023 edition of Best Graduate Schools, released in March. The full data can be found in the **U.S. News Graduate School Compass**. Of particular note to the College of Science, the

- Tied for 119th in biology, the bioinformatics MS program is offered through the Gosnell School of Life Sciences
- The Physics program, which hosts MS degrees in Physics and Astrophysical Sciences and Technology and a Ph.D. program in Astrophysical Sciences and Technology was tied for 83rd in academic reputation rankings for graduate programs

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College Updates

Celebrating to our 2021-2022 Retirees!

We're not saying goodbye, we're saying "see you later!" to seven loyal COS faculty and staff who have over 150 years of combined experience in our college! We will miss them all and look forward to visiting with them again the next time they're in the area. We wish them all a very happy retirement!

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WISe Leadership Changes

Women in Science (WISe) will have new leaders for AY 2022-23. **Kate Wright**, professor in the Thomas H. Gosnell School of Life Sciences will serve as Chair with Co-Chair **Lishi Mohapatra**, assistant professor in the School of Physics and Astronomy. The WISe program contributes to women's engagement in sciences and mathematics through diverse and unique events and opportunities.

Staffing Changes Ahead

We share bittersweet news of the departure of two integral staff members to our College of Science team. **Michael Cross** has accepted a position in the GCCIS Computing Security department. He has held various roles throughout RIT and in the College of Science for the past 29 years, and served most recently as the Senior Staff Specialist for the School of Chemistry and Materials Science since 2014. Mike's last day with SCMS is May 27. **Ginny Gross** is moving from the School of Mathematical Sciences to the KGCOE Department of Chemical Engineering effective May 13. Ginny has served the College of Science since 2014 and has worked at RIT for 25 years.

We wish them both well and hope to bump into them frequently in our little brick city for many years to come!

Peer Reviewed Publications

Dina Zohrabi Alaee, postdoctoral associate in the School of Physics and Astronomy, was the lead author of **"How Physics Textbooks Embed Meaning in the Equals Sign,"** published in the *American Journal of Physics*. This article provides an analysis of the different meanings associated with the equals sign in introductory and upper-level physics textbooks. Co-authors included **Kellianne Kornick** '21 (physics) and **Scott Franklin**, director of CASTLE and professor in the School of Physics and Astronomy.

Madhusudan Rajendran, a bioinformatics MS student, and **Maureen Ferran** and **Gregory Babbitt**, both associate professors in the Thomas H. Gosnell School of Life Sciences, published "Identifying vaccine escape sites via statistical comparisons of short-term molecular dynamics" in the journal *Biophysical Reports*. The team of researchers provided an inexpensive and accurate computational method to monitor hot spots of functional evolution in antibody binding footprints.

Lucia Carichino, assistant professor in the School of Mathematical Sciences, was co-author on an article titled "Physiology-Enhanced Data Analytics to Evaluate the Effect of Altitude on Intraocular Pressure and Ocular Hemodynamics" appearing in the journal *Photonics*. In this paper, a validated mathematical modeling approach is used for a physiology-enhanced analysis of experimental data, estimating the effects of altitude on the human eye.

Presentations & Workshops

NIH Grant-Writing Workshop

In collaboration with the Personalized Healthcare Technology (PHT180) specialized research group, Hans Schmitthenner, research professor in the School of Chemistry and Materials Science, lead a workshop for RIT faculty interested in obtaining research funding through the National Institutes of Health. The event, held on April 14, focused on the R15 mechanism, but the learnings are also applicable to R01, R21 and other related NIH grants.

RIT and SPIE to host Photonics for Quantum event June 6-9

Worldwide experts will soon gather at Rochester Institute of Technology to discuss the central role photonics plays in advancing quantum technologies. RIT and SPIE, the international society for optics and photonics, are partnering to host the **Photonics for**

Quantum 2022 event June 6-9 at the RIT campus.

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Sponsored Research

Gabriel Diaz, CIS, is the PI with co-PI **Reynold Bailey** (GCCIS) and Key Personnel **Alexander Ororbia** (GCCIS) on a $299,555.44 contract from Facebook to support a project titled "SOW2 Diaz FB imporoved Semantic Segmantation with Natural Gaze Dynamics."

Adam Goodenough, CIS, is the PI on a $39,924.00 contract from DOE-Department of Energy / Sandia National Laboratories to support a project titled "OpenVDB Plume Plugin for DIRSIG."

Jeyhan Kartaltepe, SoPA, is the PI on a $718,486.00 grant from NASA-National Aeronautics and Space Administration to support a project titled "Toward a Uniform and Complete Keck Spectroscopic Archive for the COSMOS Legacy Field."

Joel Kastner, CIS, is the PI on a $398,968.00 dollar grant from NASA-National Aeronautics and Space Administration to support a project titled "Understanding Our Nearest Youngest Neighbors: NASA Archival Studies of Young Stars Near the Sun."

Richard O'Shaughnessy, SMS, is the PI on a $90,796.00 grant from Simons Foundation to support a project titled "Preparing for the onslaught of multimessenger and gravitational wave observations."

Jie Qiao, CIS, is the PI on a $56,052.00 grant from NSF-National Science Foundation to support a project titled "(CeFO) General Aperture freeform high-definition metrology using reconfigurable CGH powered by deep learning."

Christy Tyler, GSoLS, is the PI with co-PI **Matthew Hoffman** (SMS) on a $105,302.00 contract from DOC.National Oceanic and Atmospheric Administration / Council for the Great Lakes Region to support a project titled "Great Lakes Plastic Cleanup."

Jan van Aardt, CIS, is the PI with co-PI **Tania Kleynhans** (CIS) on a $550,875.00 grant from NASA-National Aeronautics and Space Administration to support a project titled "RadSCape: radiative transfer simulation and validation of the dynamic structural and spectral properties of the vegetation of the Cape."

Six projects headed by COS faculty, were awarded **Provost's Learning Innovation Grants for AY 2022-2023**. These grants provide funds for faculty to develop, apply and/or research an innovative mode or model of teaching and learning that directly supports an RIT priority. These funds are for the development, adaptation, application and/or research into a new or different teaching approach, practice, or procedure in a specific area of focus. This year's focus was on two areas; *Active Learning Across Large and Small Format Classes*, and *Student Success and Retention in Gateway Courses*. The award recipients included the following College of Science faculty:

Sandi Connelly, principal lecturer (GSoLS) with collaborators **Emily Coon-Frisch**, adjunct faculty (GSoLS), and **Michelle Weatherell**, lecturer (GSoLS) for the project 'To TA? or Not To TA? – When desperation for classroom help demands a structured approach to TA's in large enrollment active learning classes.'

Paul Craig, professor (SCMS) with collaborators **Hans Schmitthenner**, research professor (SCMS) and **Emily Mehlman**, program manager for Inclusive Excellence for the project 'Lab Report Writing Skill Development with Learning Assistant Teams'

Dina Newman, professor, (GSoLS) with collaborators **Lea Michel**, associate professor (SCMS) and **Emily Mehlman**, program manager for Inclusive Excellence for the project 'Leveraging Learning Assistants to Provide Personalized Feedback to Refocus Student Efforts Toward Learning Objectives.'

Deana Olles, principal lecturer, (SMS) with collaborators **Carrie Lahnovych** and **Olga Tsukernik**, principal lecturers (SMS) for the project 'Teaching Precalculus in a 'Just in Time' Format.'

Kaitlin Stack Whitney, assistant professor (extended faculty in GSoLS) for the project 'Creating an Open Environmental Humanities Activities Book and Resource Hub for Environmental Studies Courses.'

Leslie Kate Wright, professor, (GSoLS) for the project 'Model-based activities to improve learning of the CRISPR-Cas9 Genome Editing System.'

COS in the Media

ASBMBToday – Apr 6
Study: Cultural competence key in mentoring deaf and hard of hearing undergrads
ASBMBToday, a publication of the American Society for Biochemistry and Molecular Biology, features the **RIT-RISE** project.

New York Post – Apr 11
Five mind-blowing Hubble Space Telescope images from the past decade
The *New York Post* features a Hubble Space Telescope image created by an RIT team led by **Joel Kastner**, professor in the Chester F. Carlson Center for Imaging Science.

AAS NOVA – Apr 13
Bringing Supermassive Black Hole Mergers to Light
AAS NOVA reports on research conducted by **Manuela Campanelli**, professor in the School of Mathematical Sciences and director of the Center for Computational Relativity and Gravitation.

WROC-TV – Apr 14
RIT study on prostate cancer treatment underway with $450,000 fund
WROC-TV talks to **Maureen Ferran**, associate professor in the Thomas H. Gosnell School of Life Sciences, about her research on a possible treatment for prostate cancer.

ScienceNews – Apr 25
Gravitational waves gave a new black hole a high-speed 'kick'
ScienceNews talks to **Manuela Campanelli**, professor and director of Center for Computational Relativity and Gravitation, about interpreting gravitational waves.

SIAM News – May 2
A Firsthand Look at the Novel Ph.D. Program in Mathematical Modeling at Rochester Institute of Technology
SIAM News talks to **Nathan Cahill**, associate professor in the School of Mathematical Sciences and director of the mathematical modeling Ph.D. program.

Do you have news you want amplified? Submit the details using the new COS Newsmakers Form, and we'll help you share it. "COS Newsmakers" is a quick and easy way to acknowledge the professional and academic accomplishments of COS faculty, students, and staff for acknowledgement in upcoming monthly newsletters, web and social media, or even RIT news!
Examples of achievements may include:

- publishing an article in a scholarly peer-reviewed journal
- presenting research at a conference
- sponsored research awards
- earning a scholarship
- winning an award
- …and more!

COS Newsmaker Submission Form

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Our mailing address is:
College of Science
84 Lomb Memorial Dr
Rochester NY 14623