

Message from the Dean



This spring, CSM celebrated more than 800 graduates and is committed to finding new avenues to help future graduates achieve their dreams.

Although many of these graduates entered Rowan as freshmen four years ago, CSM and the School of Health Professions have established several pathways for students to seamlessly complete their bachelor's degrees from Rowan after receiving an associate degree from either Rowan College of Burlington County or Rowan College of Gloucester County. Students may choose from BA and BS options in nine fields.

It is an exciting time for research, too. The number of CSM faculty submitting applications and receiving grants from outside sources, such as the National Science Foundation and the National Institutes of Health, is on the rise. Now, more than ever, students are working alongside nationally-recognized mentors.

In addition to academic and research offerings, hands-on experiences also are increasing. Learning Assistant programs are in place and pre-health initiatives for those interested in health-related careers have been expanded.

We also have developed a program aimed at tech-savvy Rowan students, for whom computer science may not be part of their official degree program. Certificates of Undergraduate Study are available in several areas, helping qualify integral tech skills for the job market.

I am proud that CSM continues to grow and lead Rowan into the future!

Karen Magee-Sauer, Dean
College of Science & Mathematics
School of Health Professions

Rowan receives honor for preparation of tomorrow's physics teachers

Rowan University is among the first class of universities to be recognized as a leader in physics teacher preparation by the Physics Teacher Education Coalition (PhysTEC). The distinguished list, dubbed the "The 5+ Club," acknowledges institutions that graduate five or more physics teachers in a given year. A total of 12 institutions made the list this year.

The United States has a severe, long-term shortage of qualified physics teachers. Of the approximately 1,400 new teachers who are hired to teach physics each year, only 35 percent have a degree in physics or physics education.

The great majority of institutions graduate fewer than two physics teachers a year, and the most common number of graduates is zero. In its 2014 report, the American Association for Employment in Education found that the teacher shortage in physics is number one among 59 education fields. Graduating five or more physics teachers, as Rowan has done, is a significant achievement.



Physics major, Jesse Kosior, works with students at Glassboro High School, as part of the Learning Assistant program in collaboration with PhysTEC at Rowan University.

PhysTEC, a flagship education program of the American Physical Society, aims to improve the education of future physics teachers by transforming physics departments, creating successful models for physics teacher education programs, and disseminating best practices.

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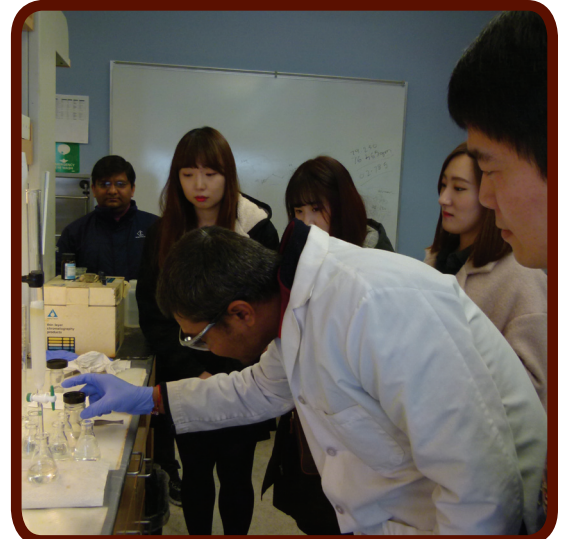
Departments

- Biological Sciences
- Biomedical & Translational Sciences
- Chemistry & Biochemistry
- Computer Science
- Mathematics
- Physics & Astronomy
- Psychology
- School of Health Professions
 - Health & Exercise Science
 - Nursing

Spring 2016 at CSM



First graduating class of Master of Science in Pharmaceutical Sciences.



Rowan University hosts students from Kyungpook National University in South Korea.



Visitors to Rowan University for Philadelphia Science Festival's Explorer Sunday view the sun through a solar telescope.



The Executive Board of the Pre-Health Society celebrates the first annual Make-A-Wish fundraiser.



Keith Johnson, retiring Planetarium Director, receives the Rowan University honor of PROF of the Month for March.



Students from the Department of Health & Exercise Science volunteer with the Make & Move Club during NJ Makers Day.

Rowan receives accolades, grant from PhysTEC

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As part of this mission, PhysTEC granted Rowan \$300,000 for implementation this past academic year. Funding is immediately producing results - Rowan already has a physics education candidate placed as a “Learning Assistant” at local Glassboro High School. The university also is preparing a new program that will allow undergraduates to pursue physics for four years, and then pursue a teaching certification at the master’s level at Rowan.

In addition to the LA at GHS, Rowan also has 14 LAs placed in university classes to encourage physics students remain within the major and see the course through to fruition. This is part of an effort to increase the number of candidates available for teaching certification. According to Patrick Chestnut, teacher-in-residence for the PhysTEC program at Rowan, students who serve as LAs tend to pursue physics education because the role allows them to experience being a teacher in the field.

Next year, Rowan anticipates 30 of these LAs to occupy introductory physics courses.

Jesse Kosior, a 2016 physics major, served as the LA at GHS this past spring. Kosior is pursuing a master’s degree in education this fall.

Kosior’s assistantship in Mr. Reiner Schmidt’s Conceptual Physics class at GHS was an eye-opening experience. Kosior assisted students in lab experiments, explained core concepts and principles, and observed education-in-action.

“I am lucky to be able to see what it is like to be a teacher, in the classroom aspect, and learn from Mr. Schmidt. This is a great experience that has reinforced my decision to become a physics teacher and has provided valuable insight as to what it will be like,” Kosior said.

Rowan is one of four new sites funded at five universities to develop their physics teacher education programs into national models. Texas State University, West Virginia University, and the University of Northern Colorado/Colorado School of Mines join Rowan in receiving funding.

“We have a shortage of physics teachers in this country,” said Dr. Karen Magee-Sauer, dean of Rowan’s College of Science & Mathematics and the grant’s principal investigator. “School districts consistently rank physics as the highest need area with regard to teacher shortages. Only about half of teachers who teach physics actually have a degree in physics. We need qualified physics teachers to prepare our future engineers and others entering technology fields.”

PhysTEC has funded 45 sites to build physics teacher education programs since it began in 2001, and those institutions have doubled the number of high school physics teachers graduating from their programs, according to the organization. It cited Rowan for “a thriving undergraduate physics program that offers a strong foundation for the PhysTEC program.”



Rowan receives 5+ Award. Pictured, left to right: Trevor Smith, Assistant Professor in Physics & Astronomy; Monika Plisch, PhysTEC Principal Investigator/Project Director; Dr. Karen Magee-Sauer, Dean; Patrick Chestnut, Teacher-in-Residence; and Philip LaPorta, Instructor in Physics & Astronomy.



Mr. Reiner Schmidt’s Conceptual Physics class participates in an experiment.

Dean's Outstanding Senior Awards Ceremony

Dean Karen Magee-Sauer and Assistant Dean Eve Sledjeski welcomed students, family, friends, and faculty to the annual Dean's Outstanding Senior Award ceremony, honoring 11 students from all departments within the college for their achievements in academics and research.

Dr. Carolyn Giordano, director of the Office of Institutional Research at Thomas Jefferson University and proud Rowan University alum, was invited as keynote speaker for the 2016 ceremony.

Giordano's address reflected on her journey to stay true to her passion. After accepting a position with the National Board of Medical Examiners, Giordano realized that what she loved most was being in academia. Giordano reminded the seniors that there is not just one correct way to accomplish a task. To achieve one's goals, one must forge a path that is not necessarily the original path intended.

Awards for outstanding seniors are determined from several factors including: academic excellence, research opportunities, extra-curricular activities, campus involvement, and additional academic participation both inside and outside their field of interest. In addition to the Dean's Outstanding Senior Award, Olivia Fiebig was presented with the 2016 Rowan University Award for Excellence in Undergraduate Research, which is awarded by the Office of Research.



The honorees are pictured above, along with their faculty mentors. Sitting, left to right (students): Kyron Johnson, Olivia Fiebig, Winston Cheong, Maxwell Rambow, Julianne Thornton, Erica Avery, John Bucknam, Paul D'Ortona, Maureen Sessa, Tanya Hunter. Standing, left to right (mentors): Eddie Guerra, Timothy Vaden, Hieu Nguyen, Peter Rattigan, Mark Hickman, Vasil Hnatyshin, Matt Bealor, Meredith Joppa, D.J. Angelone, Rebecca Mathers-Lowery.

Two distinguished guests for Speakers' Series

Two speakers from distinct fields of research and development visited campus this spring. Dr. Debbie Joffe Ellis, a licensed psychologist and mental health counselor, and an adjunct professor at Columbia University, led a discussion on the cognitive approach of Rational Emotive Behavioral Therapy (REBT).

Pioneered in 1955 by her late husband, Dr. Albert Ellis, REBT challenged the then-practiced Freudian approach to psychoanalysis. REBT asserts that we create our own emotions according to the way we perceive events and experiences.

Joffe Ellis engaged students with her personal stories and posed common life events in which REBT can be used to examine and change one's feeling of depression or anxiety.

Dr. Gayatri Rao, director of the Office of Orphan Products Development for the FDA, visited CSM for a lively



Dr. Gayatri Rao, director of the Office of Orphan Products Development

presentation outlining the path for drug approval, from research to mass market, and the development of orphan drugs for rare diseases.

The FDA requires several milestones be met before a major medicine that treats a fairly common condition can reach the shelves. Typically, this takes over 15 years when all aspects of research and marketing are conducted properly. For orphan drugs, the process is much different.

Because of small populations, lack of funding, and lack of research for rare diseases, companies are reluctant to create these orphan drugs because the cost does not outweigh the benefit. Before 1983, only one drug per year was created that treated a rare disease. To change this, the FDA instituted new programs, including tax credits, marketing waivers, and other incentives for orphan drug development. In 2015, 43 orphan drugs were produced by industry.

CSM Commencement welcomes more than 800 graduates to University Green

This May, the College of Science & Mathematics and the School of Health professions welcomed more than 800 graduates, their families and loved ones to celebrate Commencement 2016. Included among those graduates were the first graduating classes of master's degree recipients in three programs: Pharmaceutical Sciences, Nursing, and Bioinformatics.

The ceremony was accented with speeches that touched on the status of the University, the successes of the students, and the brightness of and demands on their futures. A ceremony highlight was Commencement Speaker and honorary degree recipient, Derrick Pitts, chief astronomer and director of

the Fels Planetarium at The Franklin Institute of Philadelphia.

During his remarks, Pitts told the crowd, "The job I have wasn't sitting out there waiting for me to jump into . . . I actually forced this job into existence," Pitts said. "I looked for every chance to add value. I jumped on every opportunity to learn more and diversify my skill set. I looked for colleagues who were smarter and more experienced so I could learn from them." He told the graduates, "You should . . . do all you can to write your destiny for yourself."

Dr. Karen Magee-Sauer, dean, noted Rowan's goal to be "the economic engine of South Jersey" and talked about the fuel needed for that engine. "It will be up to your generation to keep the engine running at optimum performance," she said. "The skills you have developed at Rowan will propel you as your fuel is used to combat climate change, find the cure

for diseases that span the globe and work for solutions to complex problems that have yet to be encountered."



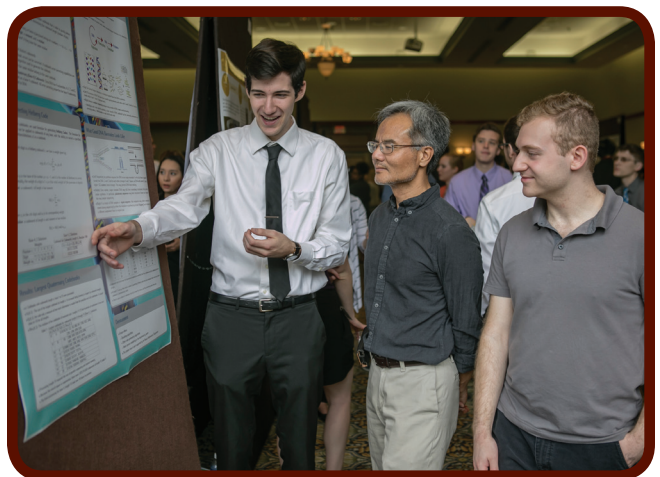
CSM hosts spring conferences

During the month of April, students showcased their knowledge and research at two events – the 19th Annual Rowan University STEM Symposium and the 42nd Annual Psychology Research Conference.

Health care (including vaccines, cancer treatments, and neurodegeneration), biology (from honey bees to seagrass to Siamese fighting fish), engineering (joint implants containing antibiotics, contact lenses that deliver drugs, and barcodes for tissue samples), and much more were featured when a record 171 teams of Rowan University undergraduate, graduate, and medical students and professors presented research conducted throughout the academic year in the science, technology, mathematics, engineering, and related fields.

This year's symposium included four clusters: Biomedical Research, Computer Games, Energy Research, and Pharmaceutical Research. STEM also featured presentations from the Biomedical Art and Visualization Program.

The 42nd Annual Psychology Research Conference is an opportunity for graduate and undergraduate psychology students to share their research, present findings, and answer questions as they would in a professional setting. Colleagues, faculty, and family gather for this day-long annual event that includes two rounds of oral presentations, a poster session, and culminates with an awards banquet. At the banquet, students were recognized for leadership roles in two student-run clubs, The Psychology Alliance and the Applied Behavior Analysis Club, and students were inducted into Psi Chi, the National Honor Society in Psychology. Sharanjit Pujji, the Medallion Award winner, and Maureen Sessa, who received the Dean's Outstanding Senior Award, also were recognized.



Rowan University welcomes a chapter of Alpha Epsilon Delta Honor Society



Rowan University recently welcomed a new chapter of Alpha Epsilon Delta to the Glassboro Campus. Established in 1926, Alpha Epsilon Delta is the National Health Pre-professional Honor Society dedicated to the encouragement and recognition of excellence in pre-professional health scholarship. At a ceremony in Robinson Hall, this prestigious honor society inducted both a new board of officers and a class of students committed to academic excellence.

The members of Rowan's new pre-professional honor society are pictured at left. Sitting, left to right: Kayla Green, Alexis Mountes, Johnny Haddad, Yash Patel, Christine Collins, Rahul Tripathi; Standing, left to right: Rachel Heath, Molly Horn, Nicholas Averell, Mark Dittmar, Viren Soni, Yaritza Santana, Salvatore Fazio, Nyasha White, Evan Winslow, Amanda Hughes, Michelle Yensel, Olivia Wojtowicz.

Mark Hickman and Nasrine Bendjilali collaborate on research grant from National Institutes of Health



Mark Hickman, an assistant professor with appointments in both the Biological Sciences and Chemistry & Biochemistry Departments, is working on research funded by a grant from the National Institutes of Health. He is conducting his research, "Signaling pathways that mediate the *S. cerevisiae* response to oxygen levels," in collaboration with Nasrine Bendjilali, an assistant professor in the Mathematics Department.



Reactions in the human body are dependent upon oxygen obtained from the atmosphere. From energy production to synthesis of cellular components, oxygen is a necessary component to the survival of cells and the body as a whole. Under hypoxia – a

condition in which a cell receives a lower-than-normal level of oxygen – cells regulate gene expression (i.e., turn genes on and off) to help cells cope in the new environment. Hickman is studying how cells sense oxygen levels and then transmit the information through multiple signaling pathways to regulate expression of all 6000 genes in a yeast cell. Bendjilali, whose expertise is in statistics, is aiding with the statistical analysis of the large amount of biological data.

For this research, Hickman is using the yeast *S. cerevisiae* as a model for human cells. Yeast are more straightforward to study, because their growth can be controlled and the signaling pathways can be precisely manipulated. Discoveries made in yeast are applicable to human cells, because many of the signaling and metabolic pathways are similar between yeast and humans. Hickman's research will help scientists better understand how cells in the human body react to varying oxygen levels, often observed in diseases like cancer and cardiovascular conditions. Thus, this work has implications for treatment of such diseases.



Make a difference

Gifts to support CSM provide students with enhanced opportunities for growth and success. Scholarships, program initiatives, innovative technologies and more are made possible by the generous support of alumni, friends and corporate partners. To make an impact today, visit giving.rufoundation.org/csm to contribute safely and securely.

CSM graduates head off to graduate school and industry

CSM is proud to have graduated more than 800 students in May 2016. An even prouder accomplishment for the college is to see where graduates will be going once they have their Rowan degrees in-hand.

Many choose to continue their education and research at Rowan, while others branch out to attend some of the finest academic institutions in the country. Some of those schools include: Johns Hopkins University, Massachusetts Institute of Technology, The Ohio State University, and George Washington University.

Still others choose to leap right into a career in industry. A snapshot of industry leaders where our graduates will be making their mark: Homeland Security, Jefferson University Hospital, Hospital at the University of Pennsylvania, Bancroft NeuroHealth, and Children's Hospital of Philadelphia.



Senior Biochemistry major and Student Trustee,
Kunal Patel.

Faculty Achievements

Awards

Rowan University recently held their first Excellence in Innovation Awards Ceremony. The following CSM faculty were recognized:

Dr. Xiao Hu, Rising Innovator Award.

Dr. Adrian Rusu, Excellence in Innovation.

Dr. Catherine Yang, Director's Pioneer Award.

Dr. Cristina Iftode and Dr. Kandalam Ramanujachary were collaborators on teams that received Collaborative Innovation Awards.

Research

Dr. Jeffrey Hettinger; Johnson Matthey; *Reactively Sputtered Nitride Coatings*.

Dr. Subash Jonnalagadda and Dr. Kandalam Ramanujachary; Avante Pharmaceuticals; *Synthesis of Pharmaceutical compounds*.

Faculty Achievements

Research, *continued*

Dr. Michael Lim; National Science Foundation; *IRE5: Philadelphia-Singapore Optics Research Experience for Undergraduates*.

Dr. Karen Magee-Sauer, New Jersey Space Grant, 2016 *Summer Undergraduate Research Program*.

Dr. Nathaniel Nucci; New Jersey Health Foundation, Inc.; *Novel Approaches for Studying Large Protein Drug Targets: Hypoxia-Inducible Factor Prolyl-Hydroxylases Investigated by High Resolution Nuclear Magnetic Resonance in Reverse Micelles*.

Dr. Lark Perez and Dr. Gregory Caputo; Pegeron, LLC; *Pegeron Process Optimization*.

Dr. Bethany Raiff; National Institutes of Health; *Breathe-free: smartphone video game-based incentives for smoking cessation*.

Dr. Peter Rattigan, James McCall and Dr. Shari Willis; State Farm; *Parent/Teen Driving Orientation Program*.

Dr. Catherine Yang, Dr. Gregory Caputo and Dr. Kingsley Yin; New Jersey Health Foundation, Inc.; *New Generation of Peanut Allergy Vaccines for Delivery System Proven Effective for Poison Ivy*.

SEED Funding Grant Program

The SEED Funding Grant Program provides internal, competitive grants awarded by the Office of Research. These are bestowed upon faculty investigators with the aim of supporting preliminary efforts towards establishing new and innovative research. The following CSM Faculty have received SEED Funding:

Dr. Kimberly Kirby, Psychology.

Dr. Claude Krummenacher, Biology/Biomedical & Translational Sciences.

Dr. Umashanger Thayavisam, Mathematics.

Alumni Spotlight Carolyn Giordano, Psychology '99

This spring's spotlight shines on Dr. Carolyn Giordano, who has explored both research and academic practices, to become the director of the Office of Institutional Research at Thomas Jefferson University.

Giordano is a native of New Jersey, who earned her Bachelor's from Rowan and her Master's in Experimental Psychology from Towson University. She then began a career in medical and healthcare education at the National Board of Medical Examiners in Philadelphia. Giordano began her Ph.D. studies in Educational Psychology at Temple University, while also joining the Center for Collaborative Research at Thomas Jefferson University in 2008. She completed her doctoral degree with a dissertation in the area of teamwork and Interprofessional Education.

Giordano has a special interest in researching Interprofessional education and works closely with the Jefferson Center for Interprofessional Education. She also serves as an evaluator on a funded HRSA grant investigating the integration of Interprofessional teams in a nurse managed care clinic, in a rural community in Godfrey, IL.

Her academic achievements include national and international presentations, and numerous publications, including a 2014 Journal of Allied Health paper that was chosen by the Association of Schools of Allied Health Professions to receive the J. Warren Perry Distinguished Paper award.

In her current role as Director of Institutional Research, Giordano tracks student satisfaction, aids in university initiatives, and serves as a consultant to faculty and students on research projects and other areas of assessment.

Giordano was the keynote speaker for the 2016 CSM Dean's Outstanding Senior Awards.



The Scope

Spring 2016	
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