

Message from the Dean

The College of Science & Mathematics is excited to highlight some recent activities and achievements of our students and faculty.



As the university's enrollment grows, so does that of CSM. In Fall 2015, departments in CSM and the School of Health Professions were home to over 4,000 undergraduate students (nearly 31% of Rowan's undergraduate enrollment).

In September, CSM welcomed eight new tenure-track faculty. These faculty bring a wealth of experience in teaching and research and were trained in some of the best universities across the country including Johns Hopkins University, Texas A&M University, Virginia Tech, and The Ohio State University.

As Dean, one of my major goals last year was to establish a Summer Undergraduate Research Program. I am happy to report that 135 students participated and were supervised by 35 faculty from every department in CSM and the School of Health Professions. The program provides students with invaluable, hands-on research skills and experience. I am confident the program will be even more successful in Summer 2016.

As we move forward with new research programs, new industrial partnerships, and new faculty, the students of CSM will be more prepared than ever for their future.

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

Summer Research Program for Undergraduates a success

The College of Science & Mathematics began a new initiative for undergraduates in 2015 – the Summer Research Program for Undergraduates. An intensive and competitive offering, the program drew more than 120 students to conduct research in departments as diverse as Chemistry & Biochemistry and Psychology.

While the college has offered research opportunities in the past, this is the first year it has promoted a structured program. The NASA/NJ Space Grant Consortium, as well as the college, departments, and other funders supported the program.

This year's program was a well-rounded experience for those who participated and included speakers from organizations such as the Federal Aviation Administration, Bristol-Myers Squibb, Eurofins Scientific, as well as conversations about preparing for graduate school and furthering careers after graduation.



Kimberly Saint Jean used the summer opportunity to take one step closer to becoming a physician. The 21-year-old biochemistry major spent 10 weeks working on two projects with four other students in the lab of Dr. Gregory Caputo, Department Head of Chemistry & Biochemistry.

For Saint Jean, the research opportunity has been exhilarating. "It's been amazing. It gives me added experience, because I want to do research when I become a physician," said Saint Jean.

In addition to the hands-on work, she gained experience writing research reports, implementing protocols, and connecting with other researchers, all while Caputo mentored her.

continued on page 2

Departments

- Biological Sciences
- Biomedical & Translational Sciences
- Chemistry & Biochemistry
- Computer Science
- Mathematics
- Physics & Astronomy
- Psychology

New York City firm, Perka, Inc., partners with Computer Science Department

A unique partnership is offering computer science students hands-on experience via virtual internships with New York City software company, Perka, Inc., a First Data Company. Joe Stelmach, Perka Chief Technology Officer and Rowan alumnus, reimaged the company's internship program alongside Rowan professors to provide real-world computer skills for college students.

Perka developed an app for smartphones called "Perka," a digital version of a loyalty card that also has an online component for merchants. Working from a lab in Robinson Hall, students have successfully added new features to the app, repaired problems with existing features, and improved its appearance. Liaison to the Rowan team is Perka engineer James Strate, another Rowan computer science alumnus.

The partnership, originally contracted for six months, has been extended to one year based on the success of the students' work.

Perka provides Rowan students and faculty with the same hardware, software, and access privileges of Perka full-time engineers. This enables the Rowan team to be highly productive and contribute software for use by Perka customers in several countries.

Dr. Andrea Lobo and Dr. Ganesh Baliga run the on-campus Perka lab and supervise the students. Lobo said, "This lab provides an innovative and productive way for Rowan computer science students to get involved in real-world work." She added Stelmach and Strate hope to build a lasting program that benefits both Perka and students.

The Perka internship at Rowan began with three students and recently expanded to seven: John Bucknam, Kevin Dittmar, William Ezekiel, Kyle Hershey, Samantha Holloway Simonds, James Ortiz, and Joe Proleika.

Dittmar says his experience with Perka is rewarding. He noted each student is 100 percent involved with the company. Dittmar said, "The work we do is real. It is not 'fake-make' work. It has value. We are all here because we are good at what we do."



Rowan University student software engineer Samantha Holloway Simonds and James Strate, Perka engineer and Rowan alumnus.

Successful Summer Research Program for Undergraduates

continued from page 1

Elsewhere in the college, students studied diverse topics ranging from the development and evolution of the sensory system in a three-spine stickleback, to yeast and its potential impact on diseases such as cancer. Also examined were the behaviors in young mothers' romantic relationships, including developing interventions to reduce their risk of dating violence, STIs/HIV and rapid repeat pregnancy, to comparing parental treatments for autism versus typical services provided in the community.

"The college is giving our students an opportunity to conduct research that is meaningful. That work is going to give them skills to get into graduate school and to get industrial positions," said Dean Magee-Sauer, who noted more than 30 professors are working with students on projects. "These are deciding factors — research experience, knowledge of advanced lab techniques, and instrumentation. It's that experience that lands them that seat in grad school, that job in industry."

She added, "relevant skills students get, usually are acquired in research. We know students learn best in a research-rich environment. To get that they need extended periods of uninterrupted time. We can do it best in the summer."

Rowan Team Tackling Autism

Dr. MaryLou Kerwin, Department Head and Professor in the Rowan University Department of Psychology, and her colleague, Dr. Michelle Soreth, an Associate Professor of psychology, are conducting research focused on improving the social communication skills of the very youngest of individuals with autism.

Under a \$398,050 two-year grant from the New Jersey Governor's Council for Medical Research and Treatment of



Autism, they are working on "Using SMART Treatment Design to Evaluate Applied Behavior Analysis Interventions on Communication in Preschool Children with Autism."

In the study, South Jersey parents will bring their two to five-year-old children to Rowan to work with the professors, six graduate psychology students, and 10 to 12 undergraduates.

The Rowan team will evaluate what is called an adaptive treatment design, assessing how children respond or do not respond to treatment.

Kerwin, who also has an appointment in the Department of Biomedical Sciences at Cooper Medical School of Rowan University and Director of Rowan's Center for Behavior Analysis, hopes to accept 44 children into the study, taking referrals from pediatricians, school districts, early intervention agencies, and Autism New Jersey.

This is not the first ASD research conducted by Kerwin. From 2012 to 2015, she, Soreth, and their students researched parent-implemented treatment for autism in young children under a \$395,000 grant, also from the New Jersey Governor's Council for Medical Research and Treatment of Autism. Through that grant, Kerwin and her team provided clinical services to 51 South Jersey families.

CSM Senior Receives \$100,000 to develop fitness app

Senior Nicholas Dennis and alum Daniel Read have a great idea. Thanks to the Rowan University Innovation Venture Fund, they now have \$100,000 to help bring that idea to life.

The \$5-million Fund, under the auspices of the Rowan University Foundation, awarded the team one of its first investments after evaluating approximately 50 proposals last winter.

Dennis, 22, a senior mathematics major with a minor in business administration and concentration in statistics, is the founder and CEO of fitDEGREE.

Dubbed "The Social Network for the Fitness Community," fitDEGREE uses social media applications to connect users to potential exercise partners and fitness groups in the area to help them reach fitness goals.

A two-year employee of the Rowan Student Recreation Center, Dennis was inspired to create fitDEGREE through a discussion to increase foot traffic in the facility. He realized his friends were highly active in the gym when they were with fitness partners; however, once he was unable to continue, their interest and motivation plummeted.

"Most people are more inclined to get active when they have a friend, either because it's a fun, social experience, or it motivates them and keeps them accountable," said Dennis, whose firm's first market is colleges.

"This process has been stressful, yet exhilarating. I was forced to learn quickly, but between the experience of the Business Plan Competition hosted by the Rohrer College of Business and the guidance of Rowan faculty such as Steve Kozachyn and Dr. Dan McFarland, I was able to not only learn, but thrive," Dennis said. "The Rowan Venture Fund is giving me life to let my dream come true, and I could not be more grateful."



The fitDegree team with Rowan administrators (left to right): Christian Marin, Ryan Schreck, Howard Lubert, Nick Dennis (co-founder and CEO), Rowan University President Dr. Ali Houshmand, Daniel Read (co-founder and lead android developer), Tony Calabrese, and Taylor Feldschneider.

Speakers advocate for community and global change



Eban Goodstein, director of both the Center for Environmental Study and the MBA in Sustainability at Bard College.

This fall, CSM welcomed two distinct speakers who shared similar messages and perspectives about the future of civilization, and ways that students, as well as global citizens, can get involved in bringing about change.

In conjunction with The Hollybush Institute and the College of Humanities and Social Sciences, CSM presented “New rules for climate protection: student & citizen action to change the future,” by Dr. Eban Goodstein. Goodstein, director of Bard College’s Center for Environmental Study and director of the Bard MBA in Sustainability, led a discussion outlining the biggest threats to modern civilization as a result of global warming.

The two biggest impacts of global warming over the next five to fifteen years will be floods, which will kill thousands, and drought, which will kill millions. In recent history, the Earth has experienced the

worst flooding ever seen on the planet from hurricanes and typhoons, extreme droughts wreaking havoc on food and global supplies, as well as an alarming rise in forest fires.

Goodstein expressed that civilization needs to find alternative energy and value sustainability over profitability. He hopes that scientific facts and challenges will motivate the majority of the world’s population to act, rather than paralyze people for fear of the enormity of the tasks.

As part of the Dean’s Distinguished Speaker Series, Raymond Blum, an executive in Developer Infrastructure with Google, Inc., presented “High Transparency, High Fidelity, High Velocity!” Blum explained how the innovative design process of open source designs will continue to lead the growth of the technology industry.

“Open Sourcing” has allowed for many programs to grow leaps and bounds, while still protecting the creative rights of individuals and fostering an environment of creativity. Current patent law offers government protection for an individual’s right to own the idea for a specified amount of time. This prevents others from possibly stealing and profiting from the work of another person.

With open source technology, mass amounts of people can seamlessly work on coding in their spare time, with sole hopes of making a better product. The creator spends no money, and the end result is a superior product. Many people use open source technology in their daily lives, which, in turn, makes the product more apt to innovation. Open sourcing aims for improving products in efficiency, rather than aiming for profitability.

The Dean’s Distinguished Speakers Series welcomes pre-eminent speakers of all backgrounds to discuss scientific topics on a broad-level, which will appeal to students from multiple disciplines. The presentations often draw students and faculty from different colleges across campus, demonstrating Rowan students’ desire to integrate knowledge throughout the many majors offered at the University. During the Spring semester, CSM will welcome Dr. Debbie Joffe Ellis to discuss Rational Emotive Behavior Therapy on March 10 and Dr. Gayatri Rao, Director the Office of Orphan Drug Development at the US Food and Drug Administration, to speak on April 13. Information on these presentations, as well as other events at CSM, can be found at www.rowan.edu/csm.



Raymond Blum, Developer Infrastructure at Google, Inc.

CSM offers hands-on activities at Homecoming, Family Weekend, and Ciao Philadelphia

During the Fall 2015 semester, CSM participated in a number of Rowan University events and provided hands-on activities for all ages. All of the sciences are ripe with interactive learning opportunities, and CSM faculty and students eagerly shared their knowledge during Homecoming, Family Weekend, and Ciao Philadelphia. Homecoming's outdoor venue in the fall is a natural fit for pumpkin carving and whipping up ice cream with liquid nitrogen. The sunny weather also made it possible for visitors to safely view the sun through filtered telescopes. Other activities included bird demonstrations,



Dr. Tabbetha Dobbins demonstrates a "trick" with a dollar bill in "The magic of science."

robotics, math puzzles, computer games, and fun psychological experiments.

Ciao Philadelphia offered Planetarium Director Keith Johnson an opportunity to create a program showcasing the work of Leonardo DaVinci. The program, *Galileo's Sky*, was an enormous hit and prompted a second showing later in the day. The same weekend, CSM hosted visitors as part of Rowan's Family Weekend. During this event, associate professor Tabbetha Dobbins demonstrated "The magic of science" in two programs of standing-room only crowds.



Dr. Donald Farnelli demonstrates the use of a telescope equipped with a filter that allows safe viewing of the sun to a guest at Homecoming.

Spring Events at Edelman Planetarium and CSM

Moons: Worlds of Mystery
Sundays at 3:00 p.m.
January 24 - March 27

Earth, Moon, and Sun - Family Show
Sunday, February 7 at 2:00 p.m.

Perfect Little Planet - Family Show
Sunday, March 6 at 2:00 p.m.

The Last Question
Sundays at 3:00 p.m.
April 3 - May 22

The Secret of the Cardboard Rocket - Family Show
Sunday, April 3 at 2:00 p.m.

The Magic Treehouse: Space Mission - Family Show
Sunday, May 1 at 2:00 p.m.

Dean's Distinguished Speakers Series
March 10 - Dr. Debbie Joffe Ellis

Dean's Outstanding Senior Awards Ceremony
Tuesday, April 12

Dean's Distinguished Speakers Series
April 13 - Dr. Gayatri Rao

42nd Annual Psychology Research Conference
Thursday, April 14

Science, Technology, Engineering & Mathematics (STEM) Student Research Symposium
Friday, April 22

Explorer Sunday
Sunday, April 24

Commencement
Tuesday, May 10

Department of Health and Exercise Science partners with South Jersey schools



Professor Mehmet Uygur works with students from Steinert High School.

The Department of Health and Exercise Science (HES) is encouraging high school students to engage in inter-disciplinary subjects within the Science, Technology, Engineering, Art, and Mathematics (STEAM) communities.

This fall, HES held workshops for Gateway Regional and Steinert High Schools, educating students about STEAM and how it pertains to exercise and health. Professors Gregory Biren and Mehmet Uygur provided hands-on opportunities to motivate students and help them understand how STEAM principles taught in K-12 school systems can be applied to exercise science and human movement.

Students were able to participate in activities such as measuring force production, in which they measured neuromuscular quickness in healthy and unhealthy adults. Research also was conducted in the department's Biomechanics Laboratory, using force plates to measure personal jumping velocities. In the Exercise Physiology Laboratory, students were introduced to VO₂max testing, which assesses how oxygen is used to produce energy during exercise and how the intensity of exercise influences fuel selection.

HES will introduce a new program this fall, Human Performance in Clinical Settings. This program will prepare undergraduate students for careers in sports medicine, strength and conditioning, as well as physical and occupational therapy.

CSM expands programs and welcomes new faculty in 2015



New faculty pictured, left to right: Kimberly Kirby, Georita Frierson, Edward Dougherty, Qian Jia, Mary Ellen Santucci, Ileana Soto, Michelle O'Neal, Babis Papachristou

Rowan University continues to expand and one of the fastest growing areas is the College of Science & Mathematics. Fall 2015 has brought exciting changes to CSM. Two new programs are being offered and eight new faculty members have joined the college. The Psychology Department has added a Bachelor of Science in Psychological Science and a Concentration in Neuroscience to their program offerings. The BS in Psychological Science offers a rigorous program for students who are interested in a research-oriented career. Neuroscience is an increasingly important field of interdisciplinary study of molecular, structural, chemical, cognitive, physiological, and behavioral aspects of the brain, mind, and nervous system.

CSM also is pleased to announce new faculty members that have joined the college this fall: Ileana Soto, Biological Sciences/Biomedical & Translational Science; Edward Dougherty and Babis Papachristou, Mathematics; Michelle O'Neal and Mary Ellen Santucci, Nursing; Georita Frierson and Kimberly Kirby, Psychology; Qian Jia, Health & Exercise Science.

Office of Health Professions offers diverse programs

The Office of Health Professions (OHP) presents seminars throughout the year, including the Medical Speakers Series. Speakers with diverse medical and academic backgrounds inform, advise, and encourage pre-health students as they prepare for their careers.

This series is just one of the many programs and workshops the OHP offers both on and off campus. This semester, OHP sponsored a trip for students to attend the Association of American Medical Colleges Minority Medical Career Fair in Baltimore, Maryland. The office also holds summits, presentations, and strategy sessions for the MCAT. They also host many information sessions such as the one pictured below, where prospective pre-health students can get honest answers and tips about curriculum, stress management and undergraduate preparation from current medical students.



Medical students from Cooper Medical School at Rowan University and Rowan University School of Osteopathic Medicine answer questions from Pre-Health students during a panel in November.

Faculty Achievements

Notable

Dr. Georita Frierson, Director of Clinical Training of the Ph.D. in Clinical Psychology program, has been selected to serve a three-year term on the American Psychological Association's Committee on Accreditation.

Dr. Dexter Whittinghill, Mathematics Department Head, has been appointed to a three-year term as an American Statistical Association (ASA) member of the ASA/MAA (Mathematical Association of America) Joint Committee on Undergraduate Statistics.

Doctors Theresa and Stephen Cone (Health and Exercise Science) were invited to present three sessions on "Teaching Students with Disabilities" at Beijing Sport University in China.

Research

Dr. Jeffrey Hettinger; Johnson Matthey; *Platinum group materials-based thin films and coatings on metallic substrates.*

Faculty Achievements

Research, *continued*

Dr. Vasil Hnatyshin and Dr. Uma Thayasivam; Bristol-Myers Squibb; *Enhancement of EDM software.*

Dr. Mark Hickman and Dr. Nasrine Bendjilali; NIH; *Signaling pathways that mediate the S. cerevisiae response to oxygen levels.*

Dr. Luke Hollbrook; NSF; RUI/SG: *Phylogenetic relationships of archaic ungulates and their implications for the timing and rate of divergence of placental mammal clades.*

Dr. Xiao Hu; Sekisui Chemical Co, Ltd.; *Design multifunctional protein-based film materials for thermal conductivity applications.*

Dr. Subash Jonnalagadda and Dr. Kandalam Ramanujachary; Serenity Enterprise, LLC; *Development of novel formulations of pharmaceutical compounds.*

Dr. Kimberly Kirby; Treatment Research Institute; *Treatment Research Institute PTRC subcontract.*

Dr. Karen Magee-Sauer; PhysTEC Coalition; *PhysTEC comprehensive site at Rowan University.*

Dr. Lark Perez and collaborators at Tufts University; NIH-RO1; chemical signaling in the bacterial pathogen *Vibrio cholerae*.

Dr. Adrian Rusu; Mission Solutions Engineering; *Visualization and Software Engineering Strategies for Tactical Decisions Advances.*

Dr. Leslie Spencer; University of Pennsylvania; MICRO: *Exercise program for persons with Peripheral Arterial Disease.*

Dr. Catherine Yang; Guava Medicine; *Target validation in drug discovery for Anti-Alzheimer Disease.*

Awards

Frances R. Lax Faculty Development Award: Dr. Lisa Abrams and Dr. Meredith Joppa (Psychology), Dr. Thomas Keck (Chemistry & Biochemistry/Biomedical & Translational Science), Dr. Claude Krummenacher (Biological Sciences/Biomedical & Translational Science), and Dr. Trevor Smith (Physics & Astronomy).

CSM student scholarships and program initiatives are made possible by the generosity of individuals and corporations. Please consider a gift and join us in delivering the highest quality education to our students.

www.rowan.edu/csm/giving

Student Spotlight Computer Science '15 Joseph Proleika Lawrence Romano Thomas Sullivan

Senior computer science major Joseph Proleika and his team, comprised of seniors Thomas Sullivan and Lawrence Romano, were recently awarded \$3,000 as the Southern New Jersey Winners of the AT&T Civic App Challenge-NJ. Their app, "Veteran Route Assistance," assists military veterans with memory loss or Post-Traumatic Stress Disorder in finding locations that they might have forgotten.

AT&T developed the challenge, in collaboration with the New Jersey Technology Council, as a tool to connect industry with education and encourage communication between governments and citizens. The focus was to develop a mobile app that would serve the nation's veterans and military families.

The biggest issue with many returning servicemen is mild to severe brain trauma, which can cause memory loss, making what may have once been commonly traveled routes confusing and disorienting.

"We saw the need for an app that helped people find their way to their destination," says Proleika.

"Winning this award has mainly showed us that our idea is worth pursuing in the near future. We have a couple ideas to advance our app further, and this award has definitely given us the drive to build on those ideas."



Pictured, left to right: Thomas Sullivan, Lawrence Romano, Joseph Proleika, Professor Ganesh Baliga, Dean Karen Magee-Sauer, and Computer Science Chairperson Vasil Hnatyshin

The Scope

Fall 2015	
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