

THE SCOPE

THE OFFICIAL NEWSLETTER OF THE COLLEGE OF SCIENCE & MATHEMATICS / SCHOOL OF HEALTH PROFESSIONS

Message from the Dean

Creating opportunities for our students outside of the classroom is central to the College of Science & Mathematics and School of Health Professions mission. Whether it is inviting top professionals to campus to present latest research, providing networking/mentoring events, creating pathways to future careers, or inspiring our students to experience excellence beyond the Rowan horizon, CSM/SHP continues to drive our students to new heights.



When you read about what a select group of CSM/SHP students did in the summer of 2017, I know you will be impressed! Their achievements speak for themselves. While the students deserve credit, behind every student, there is always a strong, excellent faculty mentor(s) that helped that student earn that opportunity. This is key to the excellence of our CSM/SHP academic programs.

I am excited to have you read about our amazing student and faculty achievements in this Fall's issue of the *The Scope*!

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

Rachel Moskowitz Leads the Way for Future STEM Scholars While Creating Her Own Career Path Through Research

Rowan University sophomore Rachel Moskowitz was named a 2018 Governor's STEM Scholar. Moskowitz is the only Rowan student to earn the honor in 2018 and one of only 16 college students in New Jersey. The remaining scholars are high school students in the state. As part of the program, she is leading a team of high school students in research.

Developed in 2013, the goal of the Governor's STEM Scholars program is to give promising STEM students a thorough introduction to the state's STEM economy through conferences, field trips, and research opportunities. "At the heart of the Governor's STEM Scholars program is its efforts to leverage the resources of its STEM professionals and institutions," commented David Hodges, Director of the Governor's STEM Scholars.

Moskowitz, a native of Fleming, NJ, is majoring in bioinformatics and biochemistry and is also in the Thomas N. Bantivoglio Honors Concentration. Moskowitz decided to attend Rowan because of the bioinformatics program. "When I found Rowan's bioinformatics major, I instantly got excited because the program is incredibly interdisciplinary and combines many of my favorite subjects, including computer science and biology, into one," explained Moskowitz.

She has a passion for bioinformatics and knows that excelling in bioinformatics can prepare her to reach all of her goals. "I get to take some of the coolest classes," exclaimed Moskowitz. "From biology, to chemistry, to physics, to computer science, to bioinformatics, to statistics. Bioinformatics majors really get it all."

Moskowitz is planning on pursuing a career in research, but is still deciding on the academic or industrial route. She currently is doing research with Dr. Mark Hickman who is the bioinformatics program coordinator. "Rachel has been performing bioinformatics research with me, studying how gene expression changes over time," commented Hickman. "She has been a great addition to my lab and is working with high school students to develop an algorithm for identifying genes that exhibit significant changes."



Rachel Moskowitz Leads the Way for Future STEM Scholars While Creating Her Own Career Path Through Research

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“Doing research with Dr. Hickman and leading my own project through the NJ Governor’s STEM Scholars program has really confirmed my career aspirations,” said Moskowitz.

Moskowitz is teaching the students the R programming language as well as advanced bioinformatics. These students will benefit tremendously by working with Moskowitz. With her course and research experience, she has become extremely well-versed in computer programming, molecular biology and statistics.

College leaders in the program meet throughout the year with a driven group of high school students, who also applied and were accepted to the program, on a research project of their choice. “I love the leadership component of the program, because no matter what your major is or what your goals are post-graduation, leadership skills are skills that will follow you throughout your entire life, and will definitely make a big impact in any situation,” explained Moskowitz. “On top of that, being a leader also means being a mentor, and I love talking to high school students about my academic pursuits and discussing different ideas for their futures with them.”

Moskowitz loves the challenge of working alongside professors and peers on real issues and real questions, as opposed to only simulated ones in the classroom. Following her undergraduate career at Rowan, she will be applying to graduate programs to pursue a higher degree in bioinformatics, which will even further her opportunities to continue doing research and to take even more in-depth and interesting courses.

CSM Panel Program Explores Opportunities in Data Analytics

The field of data mining is hot, and on Sept. 25 CSM hosted a panel discussion and networking program to explore just how hot it is.

While companies such as Google, Amazon and Facebook are well known for analyzing data to improve profits and customer service, countless companies today mine rich data veins to identify trends, explore opportunities and improve operations. And they’re clamoring for talented professionals who can take raw data and tell them what it means.

“The need for data science professionals has just exploded,” said CSM Dean Karen Magee-Sauer. “Companies collect so much data. The question is, how will they best use data to inform their strategic and operational decisions?”

While the answer to that question varies, representatives from five major corporations – Jingjing Qu of Comcast, Melvin Moore (’02, Finance and Business Administration) of Independence Blue Cross/Blue Shield, Carol Thomas of Inspira Health Network, Chirag Vora of JPMorgan Chase, and Matthew Long (BS ’13, Physics & Astronomy; MS ’17, Data Analytics) of Lockheed Martin – attended the program to explain some of the ways their organizations use data and to encourage students to consider careers in the field.

Addressing more than 180 attendees in the Eynon Ballroom of the Chamberlain Student Center, the speakers said the evolving field of data analytics is producing unprecedented levels of quality information that can be applied in countless ways.

“We make use of extensive predictive modeling to mitigate costs associated with live testing,” said Long, a 2013 Rowan graduate who earned his B.S. in Physics and returned for the first cohort of students in Rowan’s new Master of Science program in data analytics, graduating last May.

Rowan offers degrees, certificates and coursework to ensure that students have the credentials employers are looking for. In addition to the M.S. degree, Rowan offers a new undergraduate minor in data analytics that’s open to all majors as well as Certificates of Graduate Study in Health Data Analytics and Computational Data Analytics. The latter are four-course alternatives to the full Master’s degree in Data Analytics.

Assistant Professor Tony Breitzman, coordinator of the college’s data analytics programs, said the field is still in its infancy and poised for tremendous growth. He noted that employment site Glassdoor.com lists four of the top 10 jobs in America as analytics-based including data scientist (#1), data engineer (#3), analytics manager (#5) and database administrator (#7). “There is a lot of opportunity,” he said, “especially



L to R: Chirag Vora, Jingjing Qu, Melvin Moore, Carol Thomas, and Matthew Long

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CSM Professors Give Presentations at Governor's STEM Scholars Winter Conference

Rowan University hosted the Governor's STEM Scholars Winter Conference on December 9th. The conference included several panelists and speakers that focused on academic careers in STEM. CSM professors Dr. Phil La Porta and Dr. Andrea Lobo gave presentations that were well received.

Developed in 2013, the goal of the Governor's STEM Scholars program is to give promising STEM students a thorough introduction to the state's STEM economy through conferences, field trips, and research opportunities. "At the heart of the Governor's STEM Scholars program is its efforts to leverage the resources of its STEM professionals and institutions," commented David Hodges, Director of the Governor's STEM Scholars.

La Porta, a physics instructor, used his unique perspective as a magician to help inspire the students to improve their communication skills through the use of magic principles. "I chose this topic since, no matter what STEM field these young minds find themselves toiling in, they will need to be good communicators in order to help others understand the importance of their work," said La Porta. He gave a 30-minute presentation to two groups of students. La Porta performed, lectured, and answered questions during and after the performance.

"Dr. La Porta delivered an exceptional presentation that engaged our students in a unique and humorous way that clearly won them over," explained Hodges. "He also devoted time after the class to talk to students. After the conference ended, many students told me how much they learned from him and how they appreciated the time he took to speak with them on a one-on-one basis."

Lobo, a computer science professor, was part of a panel of STEM experts that answered several questions about what it's like being a STEM professional in academia. She also spoke about the benefits to working in academia rather than the public or private sectors and what STEM education is like at Rowan. Finally, she gave the participants information on the skills needed to be successful in a STEM major and career.

"I thought her presence on the panel was exceptional and that the scholars learned a lot," stated Hodges. "It was no exaggeration on my part when I told the panel that it was one of the best we've ever had."



Dr. Andrea Lobo



Dr. Phil La Porta

CSM Panel Program Explores Opportunities in Data Analytics

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in fields like insurance, retail, and banking."

Indeed, many students attending the program said the analytics field is impossible to ignore, especially for those with a passion for science and math.

"Making business decisions based on statistics fascinates me," said Dylan Laureys, 18, a freshman engineering entrepreneurship major from Williamstown. Laureys said that while he's just starting his college career, the timing of the program was perfect. "I thought it would be cool to get some exposure to it early on," he said.

Tori Berntsen, 22, a senior biology major from Toms River, seeks a career in environmental microbiology but sees analytics as an invaluable 21st Century tool. "It's extremely important," she said. My goal is to apply statistics and data mining to my research."



Mahaa Ahmed
Biological Sciences
ReNUWIt
Berkeley, CA

“This summer I was part of the ReNUWIt REU at the University of California, Berkeley. My research project focused on determining the impact of the sanitation intervention arm of the WASH Benefits Trial, by detecting pathogenic E. coli in environmental

samples as the majority of the population has limited access to improved sanitation.”



Brianna Beluh
Psychology
CHOP
Philadelphia, PA

“I worked on an individual research project regarding the influence of emotion regulation on relational aggression perpetration and the respective gender differences that may exist. I am very grateful to have had such a wonderful experience that helped me

expand past my comfort zone and improve upon my research competencies.”



Zachary Downing
Athletic Training
Carolina Panthers
Charlotte, NC

“This internship with the Carolina Panthers was extremely difficult, but I wouldn't trade it for the world. I learned a lot about working in athletic training at the professional level and I learned more about myself.”

Derek Gaffney
Computer Science
Lockheed Martin
Marlton, NJ

“Getting to work at Lockheed Martin was an awesome experience. I spent the summer on their Computer Equipment Engineering Team, testing and configuring AEGIS networking and computing infrastructure. I learned a bunch about network programming, linux administration, and a WHOLE lot of acronyms.”



Justin Gavin
Computer Science
PICS, Inc.
Malvern, PA

“I've been working as an Associate Programmer for PICS, Inc. I've really enjoyed working for a small company. It allows much more freedom and breadth when approaching any task. Individual resourcefulness is highly valued: being able to tackle any problem that should come up. Communication skills are very important; getting your ideas across clearly and succinctly. I've also enjoyed the experience of working with very talented industry veterans.”



Matthew Gladfelter
Biological Sciences
UVA Blandy
Experimental Farm
Boyce, VA

“The Blandy REU program set me up for success the moment I set foot on the property. The fact that it is a public facility allowed me the unique opportunity to interact with the general public on almost a daily basis. Seeing how interested people are in your research really fuels your fire in my opinion.”



Summer All Around the World



John Griffin
Physics
The Centre for
Quantum Technologies
Singapore

“My time working with the Centre for Quantum Technologies is probably the single most valuable experience of my life while I move forward towards even greater challenges.”



Natalie Page
Physics
University of
Nebraska
Lincoln, NE

“This summer I made very good friends, I explored a new part of the country, and I gained a lot of experience working alone in a lab. It was amazing to get paid to do work that I love while making connections and living in a new place

for a summer. I am very glad I had the chance to experience everything, while reaffirming my decision to pursue a PhD in my chosen field.”



Jared Richards
Psychological
Sciences
Amgen Scholars
Program at UCLA
Los Angeles, CA

“Participating in the Amgen Scholars program at UCLA was extremely fun, informative and life changing! I now feel more confident than ever before, that pursuing a career in research is the right choice for me.”

Robert Spicer
Biological Sciences
US Forest Service
Puerto Rico

“While colleagues were enjoying their summer at the beach, I spent the summer tediously collecting data, analyzing endless amounts of numbers, and spending days on drafts just to get rejected. Only after I returned home did I feel bad for my colleagues who spent their summer at the beach.”



Callan Tweedie
Biological Sciences
Marine Science Center
Rostock, Germany

“This summer I worked with harbor seals at a Marine Science Center in Rostock, Germany and helped with cognitive ecology research involving the mechanism of path integration as a method of distance estimation. Overall, I learned such a large array of different things, from research methods to animal training to different medical procedures and examinations. Since I want to go to vet school, my time in Germany was an experience that I’ll treasure forever.”



Catherine Cassidy
Health Promotion and
Wellness Management
Cooper Health Care
Camden, NJ

“Working with patients at the tertiary care level has made me realize how important health promotion can be, at any stage of the disease process. I can definitely see the impact my work has on patients, and I have learned so much about the health care system through this experience.”



Dean's Distinguished Speaker Series Welcomes Two Renowned Scientists



L to R: Dr. Karen Magee-Sauer, Isabelita Marcelo Abele (Board of Trustees), Dr. Rhodora Aldemita

Rhodora Aldemita, Ph.D. Speaks to Students About the Advantages of Biotech Crops

Rhodora Aldemita, Ph.D. gave a presentation about biotechnology, specifically biotech crops, to a group of Rowan University students on Monday, September 18th. The lecture was part of the College of Science & Mathematics (CSM) Dean's Distinguished Speakers Series. Dr. Aldemita is the Senior Program Officer for the International Service for the Acquisition of Agri-biotech Applications (ISAAA) and is currently the editor-in-chief for the Philippine Journal of Crop Science.

Aldemita explained that biotech crop planting is fairly new and was commercialized in 1996. Since its commercialization, the popularity has grown immensely and is being used in 26 countries. Biotech crop planting is considered the fastest growing

crop technology. Genetic engineering shortens the breeding cycles and increases biodiversity.

Biotech crops increased three percent from 2015 to 2016. The United States is the leader with 72.9 million hectares dedicated to biotech crops. In North America, maize, soybean, cotton, canola, sugar beet, alfalfa, papaya, squash, and potato are biotech crops. The potential benefits of biotech crop planting include, environmental friendliness, food production with more nutrients, and an increased yield of crops. Crops are going to last longer, as well as become more resistant to bugs and viruses.

Aldemita also told the students that careers in biotechnology include, researchers, product development, regulatory approval, marketing, and growing the market as a salesman. Employers are in the public and private sector.

NASA Planetary Scientist Geronimo Villanueva Talks to Rowan Community about Mars

Is Mars Alive? NASA Scientist Dr. Geronimo Villanueva helped shed light on that question during his lecture as part of the Rowan University College of Science & Mathematics Dean's Distinguished Speakers Series held Friday, November 10, 2017. Villanueva is a planetary scientist from the NASA-Goddard Space Flight Center who specializes in the search for organic molecules on Mars and on icy bodies. He is the leader for Mars studies for the James Webb Space Telescope (JWST) and scientist for the ExoMars mission. He also serves as Science and Management advisor to several observatories, including Keck, NASA-IRTF and ALMA.

"Right now, most think that Mars is a dead rock, but in the past this was quite different," stated Villanueva. "During a time period roughly 4000 million years ago, known as the Noachian period, the atmosphere was more dense than it is today and possibly warm enough for liquid water to have existed on the surface." While there is no liquid water on the surface of Mars today, the ExoMars 2020 rover will include a drill that will dig below the surface looking for water. It will collect samples at a depth of two meters and analyze them with next-generation instruments in an onboard laboratory.

A 2009 journal article by Dr. Villanueva and his team provided evidence for methane on Mars in from data collected in 2003. Methane is a molecule with a short life in an atmosphere of a planet. Evidence of abundant methane in Mars' atmosphere indicates an active source. "If you find methane on Mars, it could be a sign of life since methane is a biomarker," asserted Villanueva. The results from the ExoMars mission will help explore the methane puzzle on Mars since underground samples are more likely to include biomarkers, since the current day tenuous Martian atmosphere offers little protection from radiation and photochemistry at the surface.

Exploration of Mars will continue, not only on the surface, but from Earth, using telescopes that are getting more and more sophisticated. In the distant future, manned missions to Mars could also be possible. Dr. Villanueva plans to continue to study Mars using ground-based tools as well as space missions to advance what we know about past and future life on Mars.



Dr. Villanueva explains why Mars is Alive

First Cohort of Accelerated Program in Medicine are on Path to Saving Lives

In September of 2016, the first cohort of five students started their journey to becoming doctors in Rowan University's 7-year Accelerated Degree Program in Medicine. The program allows these students to start medical school at Cooper Medical School at Rowan University (CMSRU) or the Rowan School of Osteopathic Medicine (RowanSOM) after successfully completing three years at Rowan. Rowan is only the second school in the nation (Michigan State University) to have two medical schools attached to it and to offer both MD and DO medical programs, whether accelerated or traditional.

Upon their first completed year at CMSRU or RowanSOM, the students earn their bachelor's degree. The program allows these students the chance to get into the field at an accelerated rate of seven years compared to the typical eight. Students applying to the program can choose to get their bachelor's degree in biochemistry, biological sciences, biomedical engineering, or biophysics.

One of the many benefits that the students are raving about, is not having to deal with the stress of applying to medical school upon graduation. Poyani Bavishi talks about what really makes the program stand out to her, "The main appeal for me was the conditional acceptance to CMSRU. The medical school has a strong mission statement that it stands by in both teaching and in practice." Bavishi is pursuing her BS/MD in biological sciences.

Applicants are required to make a selection in regards to which program they plan on pursuing, whether that be the BS/MD program through CMSRU, or the BS/DO program through RowanSOM. Each program accepts up to three students each. To remain in the program, students must maintain a grade point average of 3.6 or higher throughout their careers and meet other benchmarks for the program.

Another student, Shubh Bhambri, who was accepted into a few different programs in the area, describes what made Rowan stand out. "RowanSOM is an excellent medical school. While I received acceptance to other programs, I chose the seven year at Rowan as it is in association with one of the best osteopathic schools in the United States. Being a part of this program is truly a blessing and a dream come true." It is a rigorous program, but nonetheless the benefits can be considered endless.

All of the students who were accepted into the program had some type of prior experience with medicine early on in their educational careers. This varies from shadowing physicians to working with EMT staff. When asked what exactly he would hope to do in the future after graduation from medical school, Anil Bhatnagar stated, "After medical school, I hope to perform research on diseases and their therapies to further progress in the field. It is important to continue work on innovations to improve the quality of life of our patients while driving the future of medicine."

Bhatnagar also participates in Cooper Medical School's Premedical Urban Leaders Summer Enrichment (PULSE) program and he joined Rowan's EMS to expand his perspective in the medical field, as well as learn new skills he can use later on in his career. The primary goal of PULSE is to provide students from underrepresented and/or educationally and financially disadvantaged backgrounds exposure to medical professions.

The five students who were accepted into this program can describe their relationship with each other as motivational and supportive. Mallika Mendu describes the feeling of being part of Rowan's first ever accelerated medical school cohort as a privilege and an honor. "Not only have I been given a wonderful opportunity to gain a robust undergraduate education and interact with like-minded students having similar goals and aspirations, but I have also been able to interact with and integrate into Rowan's medical community, which has further bolstered my passion for medicine."



Front Row (L to R) - Mallika Mendu, Poyani Bavishi
Back Row (L to R) - Shubh Bhambri,
Anil Bhatnagar, Shyam Handa

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HES Students Participate in Mid-Atlantic Regional NSCA Conference

Rowan Health & Exercise students and faculty had the opportunity to participate in the National Strength and Conditioning Association (NSCA) Mid-Atlantic Region Conference held at Neumann University, on December 1-2, 2017. Rowan University professor Rick Howard is the NSCA Mid-Atlantic Region Coordinator and Chair of the NSCA Regional Committee. One of his main responsibilities is planning the yearly conference held at a university in the Delaware Valley. This year the attendance spiked to over 500, the most ever for any region in the country with the Rowan contingent in full force. Attending the conference was an excellent opportunity for professional development for Rowan students.



In years past the attendance was around 350.

“A perfect storm of great speakers and topics, along with it being a recertification year was the key to higher attendance,” Howard commented. “Rowan was well represented and two of our faculty members did a great presentation.”

Professors Greg Biren and Daniel Freidenreich did a panel titled, Common Nutritional Deficiencies in Athletic Populations. This presentation reviewed the most common nutritional deficiencies in today’s athlete. Topics included the role of each nutrient in performance, the effect on performance, and strategies to correct the deficiencies for the purpose of enhancing performance. Biren and Freidenreich split the interactive presentation, with Freidenreich focused on specific nutrients and Biren on the practical application of getting those nutrients into the athlete’s diet.

The Rowan students also played a role, helping South Jersey Strongman, Arthur Boss, with his Functional Strength Through Strongman Event Training panel. They were instrumental in helping manage the hands-on activities as part of his presentation.

“Rowan’s representation at the conference was amazing, especially since the students have to pay their own way,” commented Howard. “It shows that the program is moving forward and continuing to grow.”