

CSAM NEWSLETTER

COLLEGE OF SCIENCE AND MATHEMATICS: A SPECTRUM OF POSSIBILITIES

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The CSAM Newsletter is published semi-annually by the College of Science and Mathematics
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Back issues are available at:
<http://www.montclair.edu/csam/about-us/newsletters/>.

Send your comments and news to
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PSEG Funds Institute for Sustainability Studies

The PSEG Foundation has awarded a \$1 million grant to the PSEG Institute for Sustainability Studies to support future research activities and collaborative educational programs that are directed at fostering a sustainable and resilient New Jersey.

The three-year award will support the PSEG Institute for Sustainability Studies in pursuing leading-edge research that cuts across academic disciplines to address current sustainability issues. It will also fund an array of environmental education and outreach programs for the larger community.

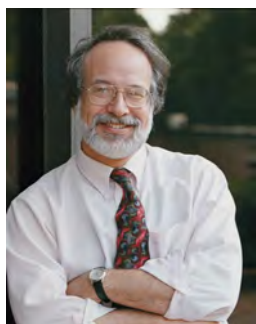
It will continue to provide resources for students and faculty who are increasingly broadening their knowledge of the relationship between the environment, businesses and economy, and social equality. "This award will help move the PSEG Institute for Sustainability Studies into a key position to better advocate on behalf of sustainability practices," says College of Science and Mathematics Dean Robert Prezant.

According to Dean Prezant, "The Institute will work with our government, industry, community and academic partners to create a more resilient and environmentally healthy New Jersey in the midst of a rapidly changing global environment."

Collaborative partnerships with the University's Passaic River Institute, the Center for Environmental Management and Analysis and the doctoral program in Environmental Management all support the Institute's mission as a center for innovation in sustainability and environmental management.

The PSEG Institute for Sustainability Studies was established in 2009 with a \$470,000 three year grant from PSEG Foundation. It is dedicated to achieving a better understanding of how New Jersey can work to balance a clean environment with economic growth and social justice. An early task in the grant was hosting a major international symposium on sustainability science and related subjects. Held in October 2010, leading international scientists, policy makers and decision makers addressed the sustainability challenge in seven thematic areas: Managing the Earth's Life Support systems; The Emergence of Sustainability Science; Balancing Ecology and Economy; The Value of Natural Capital and the Quality of Life; From Science to Policy; Ecosystem-Based Management and the Coastal Continuum; The Coastal Commons and the Ecology of Cities; Restoring and Rehabilitating Ecosystems: Return from the Precipice; and Achieving the Sustainability Transition: Social Responsibility and Social Learning; Where do we go from Here? ♦

From Dean Prezant



As they say on NPR's Marketplace, "let's do the numbers": Today the College of Science and Mathematics has 465 graduate students (we had 358 in 2005) and 2,300 undergraduates (1,410 in 2005) spread across our five departments and numerous majors and programs. For both undergraduate and graduate programs this represents, respectively, about 30% and 63% growth. At the same time we have grown from 85 to 108 tenured and tenure track faculty and, very importantly, recently added several Instructional Specialists plus essential technicians and program directors. About 70% of the total faculty is new in the past decade. When our new Center for Environmental and Life Sciences opens this summer we'll increase our physical floor space by 107,000 square feet, more than doubling our available research space. And supporting the research activities of our faculty and students are external awards that have grown from \$1,500,00 in the 12 months of FY 2005 to \$4,100,000 just in the first three months of FY 2015.

Often, when the "outside world" hears about CSAM and MSU there is a look of amazement and a comment of "I didn't know!" However change is in the air. Recently I've spent a good deal of time off campus visiting collaborators, partner institutions, supportive companies, alumni and donors and am pleased to hear that there is a perception (and quite an appropriate perception) that the College of Science and Mathematics is both adaptive and responsive. Looking back it is clear that our programs, departments and faculty have adapted to a changing national and global environment. We see changes in disciplinary trends and employment patterns and CSAM responds by creating and nurturing programs in pharmaceutical sciences, infor-

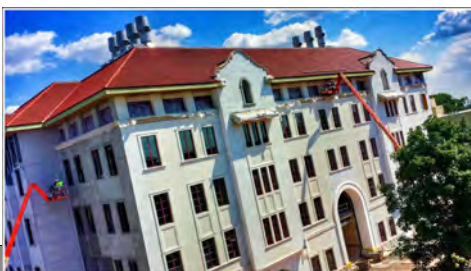
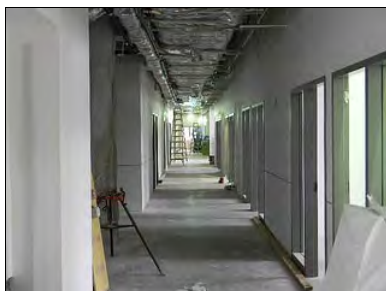
mation technology, marine biology, financial mathematics, astrophysics, math education, and many more. As the needs of potential employers became clear and demonstrate a need for growth in interdisciplinary programs that insure a graduates well prepared for the emerging "work force" we see our faculty create programs in environmental management, sustainability, science informatics etc. and recently Professional Science Masters that offer students curriculum that specifically enhances "real-world" skills.

The opportunities for insuring "real-world" and adaptive approaches to several of our sciences will soon be extended as we enter move-in phase to the new Center for Environmental and Life Sciences (CELS). The vision of CELS, while long in the making, has quickly taken shape as the bricks and mortar consolidate, walls and windows are put in place, fixed equipment is connected, and a June 2015 move-in date is anticipated. During the summer we will move people and mobile equipment and supplies into CELS and offer our first classes and have research programs fully functional in September 2015.

As we celebrate growth the ongoing issue that hangs over us remains the same. With the exception of last year's bond issue (which helps fund 75% of the facility) that opened the gate for construction of the long-planned CELS building, the state has continued to offer either a decreased or flat budget to higher education in New Jersey. The hard work, innovation, responsiveness, and adaptive nature of our faculty remain the primary reason for CSAM's success and in turn the opportunities that exist for our students. If you'd like to help extend those opportunities for our students, you can through a donation to CELS, student research or any other program that helps CSAM continue to insure our student success. To contribute see: <http://www.montclair.edu/csam/giving>. ♦

CELS: Update

No, these are not an architectural rendering of the new Center for Environmental Life Sciences (CELS)! Construction is proceeding at a steady pace and according to schedule. Interior walls are erected, windows are installed, mechanical and plumbing work is completed and lab case-work have arrived. We look forward to a projected summer 2015 occupancy.

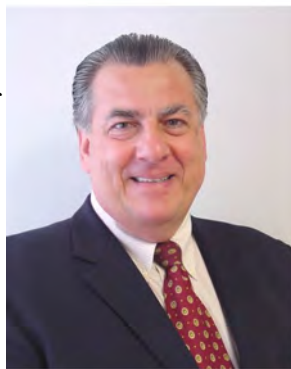


Photos by A. Wiese



Advisory Council — Member Profile

Mario M. Casabona is an Entrepreneur and active Angel Investor. He has been a member of the Montclair State University College of Science and Mathematics (CSAM) Advisory Council since August 2011 and a sponsor of the TechLaunch Future Scientist competition at CSAM.



In 2012 he founded TechLaunch LLC, NJ's Technology Accelerator which provides seed capital, co-working space, business training, mentors, and access to investors for aspiring technology oriented entrepreneurs. TechLaunch is proudly and successfully hosted at Montclair State University. In less than 3 years of operation the TechLaunch team has launched 26 new Companies and mentored over 65 entrepreneurs with 55 participating interns. Startups include Social Media, WebTech, EdTech, eCommerce, HealthIt, Machine to Machine, and Machine to Internet type Companies.

In 2007 he founded Casabona Ventures, providing Executive Coaching, Strategic Planning, and early-stage Private

Equity financing to technology focused companies. He has invested in over 20 start-ups and enjoys participating in New Jersey's start-up ecosystem. Most recently he was named as one of the top 5 New Jersey most influential people in Technology by the Star Ledger.

In 1982 he founded and was CEO of Electro-Radiation Inc. (ERI) until 2004 when ERI was acquired by Honeywell International. ERI was a developer of Radar, Navigation and Communications technology and equipment for the Defense industry. Most recently, in 2014 he was recognized by the NJ Business Incubator Network for his contributions to NJ's business community. In 2013 the New Jersey Technology Council recognized Mario as the Legend of Technology and in 2010 as Financier of the Year. He served as Chairman of Jumpstart New Jersey Angel Network from 2009 to 2013, one of the premier Angel groups in the Mid-Atlantic Region. Mario was also honored as the Man of the Year in 2009 by the Center for Italian and Italian-American Culture. In 2004 Mario was appointed by Gov. McGreevy to the NJ Commission on S&T. In 1998, he was awarded the SBA National Tibbett's Award which recognizes contributions in technology. ♦

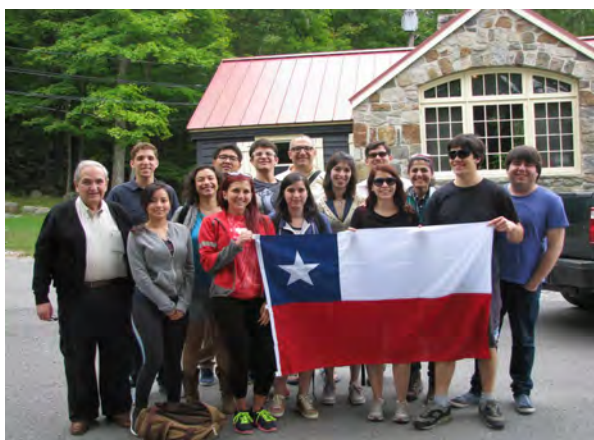
CSAM proudly welcomes Mr. Kevin Boswell, Vice President, Boswell Engineering, and Ms. NiKita Wilson, an MSU alumna and CEO and Co-Founder of Catalyst Cosmetic Development as the newest members of the CSAM Advisory Council. A complete list is available at <http://www.montclair.edu/csam/about-us/advisory-council/>

MSU Receives 100,000 Strong in the Americas Grant

By Zareen Rhaman, PhD Candidate—Math Education

During September 5 to September 17, 2014, Montclair State University hosted a delegation of Chilean

Obama's *100,000 Strong in the Americas* innovation grant. The goal of this grant is to achieve 100,000 student exchanges a year between the United States and other countries of the Western Hemisphere by 2020. The grants sponsored by the Santander Universities division of Santander Bank, N.A. provide \$1 million over four years to support the exchange initiative that is implemented by State Department partner, Partners of the Americas.



Chilean delegation at the NJSOC

students and their mentors (pictured above) as part of an exchange program created through president

The U.S. Department of State, Partners of the Americas and NAFSA: Association of International Educators named Montclair State as one of nine universities se-

lected to receive a *100,000 Strong in the Americas* innovation grant to expand study abroad exchanges in the Americas. This is an honor for MSU, as Marina Cunningham, executive director of Montclair State's Global Education Center explains, "There were over 150 proposals and only nine were chosen in this round of awards. It shows we have a strong academic and global potential for creating unique programs for both students and faculty."

MSU leveraged its \$25,000 award to create a reciprocal exchange program and collaborative biotechnology course with Universidad Mayor (UM) in Santiago, Chile. MSU partnered with UM because of the Chilean uni-

Continued on page 5

Update: NOYCE@Montclair

By Erin Krupa, Mathematical Sciences

Did you know there is currently no STEM degree pathway for students who want to become elementary school teachers? Students seeking elementary school certification must major in a degree outside of education. At Montclair State University the top three majors for students that want to teach elementary school are Family and Child Studies, Psychology, and English, and currently there is not a single degree program in the College of Science and Mathematics for students that have a desire to teach in K-6 classrooms. In an effort to change this, Drs. Steven Greenstein, Erin Krupa, and Jennifer Robinson, as part of a \$225,803 Robert Noyce National Science Foundation Capacity Building Grant, are creating an innovative degree program for students who love mathematics and have a passion for teaching children. These faculty members are creating a degree program, and supplemental experiences, for students to earn a mathematics degree with certification to teach in K-6 classrooms.

This Capacity Building grant has provided Drs. Greenstein, Krupa, and Robinson with the time and resources to build the infrastructure that will lead to a larger grant that will provide scholarships for students entering into this novel degree program. What follows is a description of the components of the project that future Noyce Scholars will engage in as part of the anticipated scholarship program beginning in the fall of 2015.

At the heart of the Preparing the Effective Elementary Mathematics Teacher (PE2MT) grant is the creation of a mathematics degree that leads to K-6 certification. The degree consists of the same core mathematics courses all other mathematics majors at MSU receive, while also incorporating the same plan of work that all students seeking elementary school certification take. This degree will produce a graduate who is not only prepared to teach all subjects in a K-6 setting, but who is especially prepared for responsibilities in their schools that mathematics specialists often take on, such as mentoring other teachers, modeling lessons, collaborative planning, conducting professional development, attending and presenting at conferences, and making contributions to the development of curriculum, assessment, or policy.

Four supplemental experiences are being created to enhance the proposed degree program. First is an inquiry-based instruction supplement for students to ensure their steady and successful progression through the “historically difficult” Calculus sequence. This experience will feature weekly workshops led by a peer leader where students engage in group problem solving activities designed to enhance their knowledge of Calculus as well as their ability to teach mathematics through inquiry.

In an effort to provide students with an authentic, inquiry-oriented experience that has the potential to inform their beliefs about the nature of mathematics and mathematical activity, the second supplemental component to the degree program is an undergraduate research experience in either mathematics or mathematics education. This component of the project will have students engage in deep exploration of a research question about either a topic in mathematics or about how children learn mathematics.

Third, this project has students participate in early and ongoing field experiences in K-6 classrooms, beginning in their first semester and continuing with increasing substance throughout their participation in the program. These experiences will give students firsthand experiences in the settings of their future careers and will offer students the kinds of authentic classroom experiences that are unavailable to them on campus.

The final component of the project is induction support to assist MSU graduates in their first two years of public school teaching. This component has the potential to improve teacher retention and to continue to prepare graduates for effective classroom teaching. This will also help to develop the Noyce Scholars as leaders, mentors, and coaches within their own schools. ♦



**Preparing the Effective
Elementary Mathematics Teacher (PE²MT)**

Continued from page 3 - MSU Receives 100,000 Strong in the Americas Grant

versity's strong program in biotechnology. "Their program is a response to steps taken by Chile to incorporate biotechnology into its economy and develop a world-class biotechnology sector," explains Dr. Carlos Molina, who is the grant's project director.

As part of the exchange program the faculty at the two institutes developed and implemented a collaborative course focused on biotechnology for seven MSU and six UM undergraduate STEM students. The pilot program was designed to introduce the students to the biotechnology field in each country and expose them to the possibilities of internships and careers in the industry. The program targets students who have not traditionally had the opportunity to study abroad within biology fields. This is an immense opportunity for CSAM students because according to IIE, the Institute of International Education, only 7% of science and 1% of mathematics major study abroad, as opposed to 20% of students in the social science (IIE, 2014). As part of each visit students enroll in mini-courses on research methods related to biotechnology, visit pharmaceutical companies and meet with representatives of the industry. They also engage in activities that promote communication and teamwork skills and learn about the respective cultures through planned activities.

The U.S. trip started with a fieldtrip to MSU's School of Conservation in Branchville NJ. The serene surroundings provided a perfect backdrop for the day's activities. Students started the day with archery lessons which served as a great ice

breaker. This was followed by a lesson on water conservation and a hands-on activity about water contamination involving collection of organisms from the streams. The activities allowed the students to reflect upon their current practices and consider their role in the conservation of resources.

In the days that followed, students engaged in workshops, seminars and fieldtrips designed to give them a comprehensive view of current research practices in biotechnology. They learned about the latest techniques and the biotechnology-based research projects in the U.S. but the learning was not limited to Montclair State University. Students were invited to visit several universities including Columbia, Princeton and New York University. They also received first-hand experience on how pharmaceutical companies develop and produce drugs. At Celgene, a pharmaceutical firm in NJ, students learned about the recent discoveries and were surprised to see the efficiency of the techniques used in their labs. The faster equipment allows for several experiments per day and a large number of simultaneous clinical trials.



This was an important trip for the students many of whom plan to become research scientists.

Another important goal of the course is to support students' awareness and appreciation for international collaborations. In the next stage of the program, students will collaborate on research projects under the mentorship of Dr. Molina (MSU) and Dr. Manqué (UM). Four teams composed of both MSU and UM students will work on projects using state-of-the-art gene editing techniques on application for cPlant Biology, Neurobiology, Microbiology and Cancer research. As they work in teams, they will strengthen their communication skills and gain experience in international collaborations. The results of these projects will be presented in January 2015, when MSU students travel to Chile, and submitted for publication in the appropriate peer-reviewed scientific journals. For the students, this program provides a unique opportunity to learn about the merits of international collaborations in both Chile and the U.S. ♦

Continued from page 10 - 8th Annual Student Research Symposium

Contributions to the Stability of the Structures of alpha- and beta-D-Glucopyranose: Energy Versus Geometry for alpha- and beta-D-Glucopyranose in Aqueous Solution." He was presented with a \$1,000 check by Mr. Mario Casabona, CEO of TechLaunch, New Jersey's investor-led

technology accelerator. Ms. Shivani Patel received \$500 second place award for her work on "The Inhibitory Effects of EGCG and EGCG-Stearate on Herpes Simplex Virus 1 (HSV-1) in Cultured Human Epithelial A549 cells." ♦

Ripple Effects

By Gennae Hinson Dean's Office

The Center for Career Services and Cooperative Education at Montclair State University (MSU) hosted the 2014 Outstanding Employer of the Year Award. The purpose of the Outstanding Employer of the Year Award was to recognize employers who had gone above and beyond to assist students in the development of their career goals.

This year, MaryLinda Schumann, MSU alumna and Manager/Recruiter of Technical Support at Chemetall, was the recipient of this year's Award. Chemetall, a global leader in the development and implementation of surface treatments, offers over 1500 specialized products and systems for more than 30 industries including metal fabrication, aerospace, agricultural, appliance, microelectronics, automotive, coil and much more. Interns and student employees at this site participated in varied laboratory and research tasks.



Schumann (L) and Hinson receiving award

MaryLinda's involvement with CSAM has included the following: student recruitment for the cooperative education and internship program, University Career Fairs, mock interviewing, career fair workshops, resume writing and reviewing workshops, career mentoring for students, panelist at PharmFest and so much more.

MaryLinda truly is the embodiment of a remarkable leader. Her dedication to MSU and our CSAM students has been a consistent driving force behind some of our student success stories that earned their start with Chemetall. ♦

Flavors of Partnerships

By Lynn Schneemeyer, Dean's Office

CSAM is building a network of formal relationships that help ease our student's transfer from county/community colleges, build research and outreach relationships with neighboring institutions and create opportunities for scholarship by our students and faculty at other universities.

Complementing the State's NJ Transfer agreement, which grants students transferring from NJ county/community colleges with the AA or AS degrees program to a NJ public four-year institutions Junior status, the College of Science and Mathematics has developed individual articulation agreements with area community colleges. Recently completed agreements with Sussex County Community College and Bergen County Community College aim to provide students with clear information about the courses they will need to have taken before coming to Montclair, as a CSAM major, in order to complete their BS or BA degrees in as timely a fashion

as possible. New agreements with Mercer County Community College and Passaic County Community College are under discussion.

A Memorandum of Understanding, MOU, was signed with the Essex County Environmental Center, ECEC, that gives MSU students access to six miles of the Passaic River for studies that will include water quality and benthic organisms. Students may also work with ECEC to further its educational mission. The work to establish this relationship was spearheaded by Prof. Meiyin Wu, Director of the Passaic River Institute.

An articulation program with Seton Hall University's College of Nursing creates a new 5 year BS/MS program that will allow CSAM students to graduate with a Biology BS degree and an MS degree as a Clinical Nurse Leader (CNL). The CNL degree gives a master's-level qualification in nursing, allowing them to sit for the nursing certification exam, and trains students to operate effectively as

nurses in a multidisciplinary healthcare environment and to provide leadership to their teams. The first two MSU Biology students have entered Seton Hall as part of this program in September, 2014. Ms. Carina Hernandez was the first MSU Biology student accepted into the joint program. Dr. Lisa Hazard, Chair of the Department of Biology and Molecular Biology at MSU, indicates that there has been a lot of interest in this joint nursing program among our Biology undergraduates.

A variety of additional agreements are being worked on for the future, including possible agreements to allow MSU undergraduates to enter engineering programs at NJIT on an accelerated basis and an agreement with the SUNY College of Optometry to ease the transfer of MSU students to their programs. ♦

New Hires

CSAM extends a warm welcome to the following new faculty and staff:



Padmini Das

Post-doctoral Research Associate
Ph.D. Program in Environmental Management
B.S. M.S. University of Pune, India
M.S. University of Texas at San Antonio
Ph.D. Montclair State University



Jinshan Gao

Assistant Professor
Department of Chemistry and Biochemistry
B.S. China Agricultural University
Ph.D. Purdue University



Amir Golnabi

Assistant Professor
Department of Mathematical Sciences
B.S. Montclair State University
Ph.D. Dartmouth College



Andrada E. Ivanescu

Assistant Professor
Department of Mathematical Sciences
B.S. Universitatea de Vest, Romania
M.S., Ph.D. Florida State University, Tallahassee

Jorge Lorenzo Trueba

Assistant Professor
Department of Earth and Environmental Studies
B.E. Technical University of Madrid
M.S., Ph.D. University of Minnesota



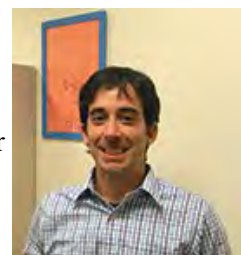
Eileen C. Murray

Assistant Professor
Department of Mathematical Sciences
B.S. Lafayette College
M.S. University of Arizona
M.S. Georgia Institute of Technology
Ph.D. University of Georgia



Mitch Sitnick

Assistant Professor
Department of Biology and Molecular Biology
B.S. The College of New Jersey
Ph.D. University of California - Davis



Retirements

With a combined 180 years of teaching and service to the University and the College of Science and Mathematics, the following faculty retired from the University this June:

- ♦ Dr. Pamela Delaney, Chemistry & Biochemistry
- ♦ Dr. Stephen J. Koepp, Biology & Molecular Biology

Faculty Promotions

Congratulations to our faculty on their recent promotion.

To Professor:

- * Sandra Daise Adams (Biology & Molecular Biology)
- * Sandra Passchier (Earth & Environmental Studies)
- * Meiyin Wu (Biology & Molecular Biology)

To Associate Professor:

- * Yang Deng (Earth & Environmental Studies)
- * Jerry Alan Fails (Computer Science)
- * Haiyan Su (Mathematical Sciences)
- * Ashwin Vaidya (Mathematical Sciences)



- ♦ Dr. John Korky, Biology & Molecular Biology (pictured above with his BIOL440 Anatomy class farewell party)
- ♦ Dr. John Stevens, Mathematical Sciences

Best wishes are extended to them on their new pursuits.

Forging Partnerships in South Korea

By Hayley Rosado, MA Geoscience Student

This past summer, Professor Tanya Blacic and I spent a month in South Korea working in Professor Changsoo Shin's geophysical research lab at Seoul National University. The purpose of our trip was to learn about Laplace domain inversion, a technique that Dr. Shin and his students developed for creating smooth background models of sound speed, in the hope that we would be able to apply his work to our own work with marine seismology. In addition, I was curious to learn about work ethic in Korea, and to see a bit of the country.

Marine seismic imaging is a technique that uses seismic data to make 2-D sound speed models of ocean water. These models can then be converted to give temperature profiles of ocean water, highlighting structures such as intrusions, eddies, and underwater wave mixing. In order to significantly reduce computational costs in creating the sound speed models, generally an approximate initial model is needed, which is nowadays obtained by measuring temperature directly and then converting it to sound speed.

In older data sets, however, marine seismic data was often collected with the intent of focusing on the seafloor, so temperature data was not recorded and thus initial sound speed models are unavailable. Dr. Shin's Laplace domain inversion technique is advantageous in that it can create a starting model for inversion for legacy data based on only rudimentary temperature models. By using the Laplace domain inversion to obtain an initial model that can be then inverted to a sound speed model, legacy data can be used to give us information about decades long trends in

ocean water, including changes in temperature and currents, helpful in global climate studies.

In Seoul, we tested the method using synthetic data so that the effectiveness of the method could be measured against a known true model. Thus far, our results have been promising, and we are hoping to continue working with Dr. Shin in the coming months. I will be presenting our findings at the American Geophysical Union's fall meeting this December.

I learned a great deal in Korea about the method and the mathematics behind waveform inversion. Unlike our Korean colleagues, however, we also had evenings and weekends free to explore the city of Seoul. Our host professor, Dr. Shin, was a doting host and made sure that we sampled food from what I'm fairly sure was every restaurant in the entire city. On the weekends, Dr. Blacic and I spent most of our time exploring every one of the many, many palaces that are in and around Seoul, visiting museums we couldn't really comprehend, and ordering unnecessarily spicy food off of menus in a language neither of us could read. We saw museums and temples and people who work a hundred hours a week, and practiced taking the wrong train everywhere. I learned a great deal about waveform inversion, but, thanks to Dr. Blacic, Dr. Shin, and the National Science Foundation's Catalyzing New International Collaborations grant program, I also got to experience Korean culture, Korean food, and to learn about Korean history. All in all, a wonderful experience, for which I am exceptionally grateful. ♦

Upward Bound Project at MSU

By Nelson A. Rodriguez, Upward Bound

The Montclair State University Upward Bound Project delivers educational opportunities for currently enrolled high school students from low level income families and are first-generation college bound. Since 1999, Upward Bound has been committed to enhance each Scholars opportunity to successfully graduate from High School, as well as preparing them to pursue a degree from an institution of higher education. With adequate preparation, guidance, engagement and empowerment, those committed Scholars have excelled in their studies and in every option presented to them. Through educational enrichment, leadership development, and community outreach the Upward Bound Scholars will maximize both their academic and personal potential as well as create an environment that inspires change in their communities. It is the goal of Montclair State University Upward Bound Project to ensure that all our Scholars actualize their full

potential and pursue their lifelong ambitions.

Montclair State University Upward Bound Alumni have graduated from institutions such as Barnard College, the University of Notre Dame, the Pratt Institute, Montclair State University, Kean University, Rutgers University, Ramapo College, Seton Hall University, Stevens Institute of Technology, Syracuse University, The Graduate School at Montclair State University and the Rutgers Medical School. ♦

Visit CSAM at
www.montclair.edu/csam/

Student News

Zeyad Boodoo's and **Pamela Guerron's** "Applications of graph connectivity indices in DNA data analysis" won Second Place Award at the 11th Garden State Undergraduate Mathematics Conference Student Poster Presentation Session.

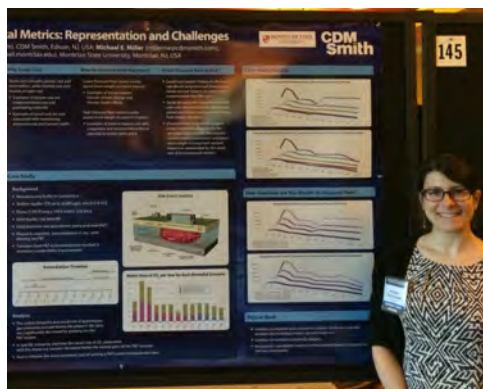
Daniel J. Flores (BS'04 and a participant in the Science Honors Innovation Program (SHIP), mentored by Dr. Sandra Adams, has received a Post-Baccalaureate Intramural Research Training Award from the National Institutes of Health (NIH). Dan has the opportunity to spend 1 or 2 years performing full time research at NIH. He will be working with Dr. Karl Pfeifer focusing on molecular genetics of an imprinted gene cluster on mouse distal chromosome 7.

Daniel J. Flores and **James Stamos**, with Dr. Sandra Adams, participated in the 33rd Annual Meeting of the American Society for Virology at Colorado State University. Flores's and Stamos's research focused on the inhibition of Herpes simplex virus (HSV) infection by polyphenols in cultured cells. Flores presented a poster of his research on the antiviral effects of curcumin on HSV infection in cultured cells while Stamos presented a poster on the effects of epigallocatechin gallate – stearate (EGCG-S) on HSV infection.

Pamela Guerron received a Poster Award at the International Congress of Women Mathematicians 2014 held in Seoul, Korea. It was a joint work with Zeyad Boodoo, Patricia Dorn (Loyola University) and Dr. Aihua Li.

Doctoral student **Melissa Harclerode**, under the supervision of Dr. Pankaj Lal, was an invitee at Green & Sustainable Remediation Roundtable in Washington D.C. The Green & Sustainable Remediation Roundtable, comprise a dynamic and experienced group of public and private sector leaders in environmental remediation,

convene an informed discussion on the current process for implementing Green and Sustainable Remediation (GSR) across the federal and state cleanup programs, and how to begin improving the opportunities for the advancement of GSR concepts. Melissa (pictured below) made an oral presentation titled "Evaluating the triple bottom line of a remediation project's lifecycle using environmental footprint evaluation tools" at the Remediation Renewal Results (RE3) Conference in Philadelphia. At Bat-



telle Remediation of Chlorinated and Recalcitrant Compounds Conference in Monterey, California, she delivered a talk titled "Social Sustainability Evaluation Matrix (SSEM) to quantify social aspects of sustainable remediation" and made a poster presentation titled "Social costs of environmental metrics: Representation and challenges" and "Improving the sustainability of cleanups through conservation and reuse of remediated groundwater: A SURF Initiative."

Michael Little (BS'03) is the recipient of the prestigious 2014 National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) Fellowship. Michael received the award under the Structural Biology division for work titled "Plasmid Conjugation and Teichoic Acid Biosynthesis in *Staphylococcus aureus*." Michael is currently a student in the Ph.D. program in the Department of Chemistry at North Carolina University, where he is working on characterizing a protein called Splunc1.

SHIP student **Blake Moore** presented a poster on "Secular gravitational-wave phasing to 3PN order for low-eccentricity inspiraling binaries" both at the Numerical and Analytical Relativity and Data Analysis (NARDA) meeting at Cal State Fullerton and at the LIGO-Virgo Collaboration meeting at Stanford University.

Students **Nadeem Obaydou** and **Rehnuma Rashid**, with Dr. Sandra Adams, attended the Howard Hughes Medical Institute (HHMI) 6th Annual Symposium of the Science Education Alliance – Phage Hunters Advancing Genomics and Evolutionary Science (SEA-PHAGES) Symposium held at Janelia Farm Research Campus. Nadeem and Rehnuma presented the research completed by MSU's third cohort of the SEA-PHAGES program. Nineteen mycobacteriophages were isolated this year and two, Brocalys and Teardrop were sequenced and annotated, resulting in GenBank submissions with the students in the BIOL 112/113 SEA-PHAGES course as authors. MSU's SEA PHAGES program is coordinated by Dr. Adams, Dr. Kirsten Monsen-Collar and Dr. Quinn Vega of the Department of Biology and Molecular Biology. Nadeem and Rehnuma had the opportunity to meet Dr. Martin Chalfie, conference keynote speaker, who shared the 2008 Nobel Prize for Chemistry for the discovery and development of the green fluorescent protein, GFP.

Nadeem (L) and Rehnuma with Dr. M. Chalfie



Continued on page 11

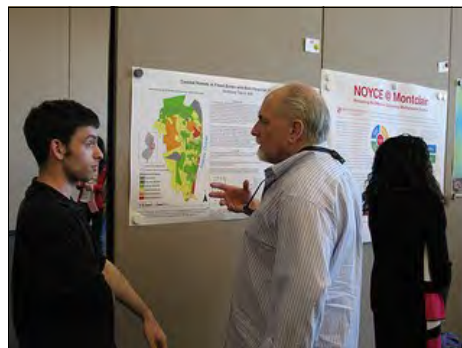
8th Annual Student Research Symposium

The University again held the annual Student Research Symposium on April 12, 2014. One hundred and thirty oral and/or media presentations were delivered in ten thematic blocks such as Genetics and Biochemistry, The State of Our Children, It's the Economy Stupid!, and Dancing to the Tune of Arts, History, and Culture. Additionally, 132 posters filled the University Conference Center space. More than 350 students participated either as primary or co-authors from across all disciplines and levels within the five academic colleges and schools.

This year, CSAM students swept the interdisciplinary research awards, winning all four categories as follows:

Graduate Poster Presentation: Robert Moore with co-authors: Diana Thomas, Steven Heymsfield, Manfred Mueller, Anja Bosy-Westphal, Courtney Peterson (Advisor: Dr. Diana Thomas).

Title: What predicts visceral adipose tissue: Trunk shape or trunk size?



Undergraduate Poster Presentation: Anthony Strobolakos with co-authors: Dajana Borova, Alvin Mercado, Mollie Rosenkrantz, Fady Sidhom (Advisor: Dr. Kirsten Monsen-Collar).

Title: Molecular detection of Ranavirus in the northeastern US: The largest Ranavirus screen in North America

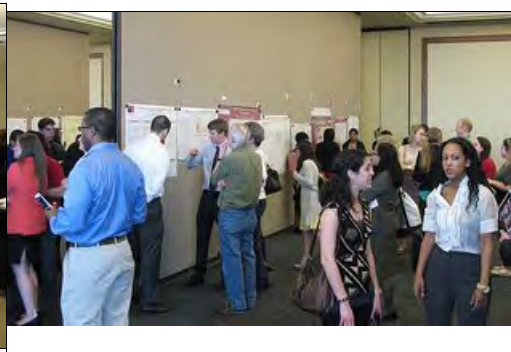


Graduate Oral Presentation: Kelly Triece with co-authors: Natalie Sherwood, Meiyin Wu, Gretchen Fowles, Brian Zarate (Advisor: Dr. Meiyin Wu).

Title: Examining wildlife habitats associated with road mortality hotspots in New Jersey

Undergraduate Oral Presentation: Sharmin Uddin (Advisor: Dr. Diana Thomas).

Title: Does administering different degrees of calorie restriction biweekly improve dietary adherence: A mathematical approach.



Concurrently, the College of Science and Mathematics (CSAM) hosted the second **TechLaunch Future Scientist Award competition**, in conjunction with the University's annual Student Research Symposium. The purpose of the competition is to motivate high potential undergraduate science students to demonstrate their skills at explaining their research projects to an audience outside of academia and the sciences.

Participating students were selected by their respective academic department for a total of 12 poster presentations. Professionals from industry judged the students' poster presentation style and most importantly their ability to make their research understandable and interesting.

Rabih Balilli, (pictured right) explaining his research to fellow students, won first place for work on "A Computational Evaluation of the Steric and Electronic



Students Develop Original Projects In Sensory Ecology

By Scott Kight, Biology & Molecular Biology

A wolf spider stalks a cricket in complete darkness. The cricket swivels its antennae and hops to safety in the nick of time. Crickets cannot see in the dark, so how do they know when a spider is near? Kelly Pniewski, a graduate student in the Department of Biology and Molecular Biology, could tell you.

Kelly designed experiments to manipulate the sensory information tiny predators and prey use to detect one another. She built a miniature arena where lights could be turned off, chemosensory cues blocked, and substrate vibrations damped. She used this apparatus to control whether animals could see, smell or feel vibrations from one another.

Kelly is a member of my research laboratory where we investigate how and why animals make particular decisions. Kelly asked *how* arthropods detect one another and *how* sensory information influences decisions. *Why* crickets jump away from spiders seems obvious, but *why* would vibration be more important than visual or chemical cues? Perhaps the nocturnal habits of crickets and wolf spiders influenced the way their sensory systems evolved.

Research in my laboratory is student centered. If experience is the best teacher, why not let students experience all aspects of scientific research? Research is more than technique: it is reading and understanding scientific literature, posing questions and designing experiments. These are par for the course for graduate students like Kelly. What about undergraduates?

I recently gave several undergraduates a general topic (arthropod sensory ecology) and turned them loose on the primary scientific literature. Each student developed an original research question, designed experiments, and conducted a scientific investigation.

Biology major Joseph Osei wondered if spiders would use different predatory tactics depending on prey awareness. He designed experiments using one-way glass panels that permitted the spider to see prey, but prevented prey from seeing the spider. Another biology major, Julia Greendyk, conducted an investigation from the perspective of prey: do antipredator tac-

tics change with age? Julia discovered that juvenile crickets seek cover whereas adults tend to flee.

Biology education major Samantha DeFranco wondered if information about predators could be transferred between prey animals. Her preliminary results indicate that naïve crick-

ets responded to other crickets that had previously been exposed to a spider. Samantha found evidence that crickets detect second-hand information from one another about what a spider had been eating!



Student Darnell Coleman collecting data on dragonflies

I am always excited when the research of

my students leads to publication. Kevin Hegarty, a biology education major, was recently the first author of an article in the international peer-reviewed journal *Behavioural Processes*. Mr. Hegarty is now a high school science teacher. But he is also, by the standards of our discipline, a *scientist*. ♦

Continued from page 9—Student News

Yu Qian, (PhD student under the supervision of Dr. H. Feng) presented “Seasonal variation in concentrations and distributions of lead and zinc in *Phragmites australis* roots from an urban brownfield wetland” at the Society of Wetland Scientists-Mid-Atlantic Chapter Conference and “Synchrotron XRF investigation of temporal and spatial variations of Pb and Zn translocation and distribution in *Phragmites australis* root” at the 2104 NSLS/NSLS-II/CFN Joint Users Meeting held in Brookhaven National Laboratory, Upton, New York.

The New Jersey Department of Environmental Protection Graduate Student Scholarship was awarded to **Natalie Sherwood**. Natalie has a Bachelors degree in Zoology from Rutgers University, and a Masters degree in Ecology and Evolution from Montclair State University. Natalie is currently pursuing a Ph.D. in Environmental Management at Montclair State University. Natalie's dissertation aims to identify the effects of mercury contamination in aquatic food webs, with a specific focus on bioaccumulation and biomagnification in snapping turtles. One of the objectives of Natalie's research is to be able to provide the New Jersey Department of Environmental Protection with recommendations on turtle consumption advisories, harvesting practices, and regulations to conserve a healthy and sustainable turtle population for future generations. ♦

Faculty Activity

A. Caporale, D. Sarkar, P. Punamiya, A. Violante and **R. Datta**, presented the “Effect of arbuscular mycorrhizal fungi on growth of vetiver grass (*Chrysopogon zizanioides* L.) and its arsenic uptake from soil and water systems” at the International Conference on Medical Geology.

In August Dr. **Marc Favata** gave an invited review talk at the Numerical and Analytical Relativity and Data Analysis (NARDA) meeting at Cal State Fullerton. The title of the talk was “Measuring tidal effects with gravitational-wave observations.” He also attended a meeting of the LIGO-Virgo Collaboration at Stanford University shortly thereafter. He was accompanied by SHIP student **Blake Moore**.

Dr. **Jinan Jaber** presented a session on shared asset culture at the ARAP-PA annual meeting with Jay Hallinan from SLAM Collaborative.

Dr. **Pankaj Lal** delivered an invited talk titled “Willingness to pay for improved solid waste management: Experimental evidence from a choice experiment in the Dominican Republic” at Indian Institute of Technology and at the Association of American Geographers Annual Meeting. He also presented “Life cycle assessment of solid waste management system in the Dominican Republic”, coauthored with his doctoral student **Gin Dean Sanchez** at the Association of American Geographers Annual Meeting. He gave an invited research seminar titled “Market and Policy instruments for environmental management: Learnings from woody bioenergy in United States and solid waste management in Dominican Republic” at the Centre for Economic and Social Sciences India.

At the International Conference on Medical Geology, **Pravin Punamiya** presented the “Potential removal of arsenic via oxidation and adsorption on iron precipitates using an environ-

ment-friendly oxidant, ferrate (VI)”, co-authored by K. Kaur, Y. Deng and D. Sarkar. At the same conference he, along with D. Sarkar and R. Datta, presented the “Effect of solution properties on tetracycline removal by iron-based drinking water treatment residuals.” At the Geological Society of America, Annual Meeting in Vancouver, **P. Punamiya** presented “Debromination of tetrabromobisphenol A (TBBPA) with an environmentally friendly oxidant-ferrate (VI) co-authored with Y. Deng and D. Sarkar and “Remediation of tetracyclines in manure amended soils: A long-term greenhouse study” with D. Sarkar and R. Datta and the “Effect of arbuscular mycorrhizal fungi on growth of vetiver grass (*Chrysopogon zizanioides* L.) and its arsenic uptake from soil and water systems” at the International Conference on Medical Geology co-authored with A. Caporale, **D. Sarkar**, A. Violante and **R. Datta**.

Dr. **Aihua Li** co-organized the 2014 Garden State Undergraduate Mathematics Conference (GSUMC) held at Rowan University. In spring 2014, Dr. Li was invited to give a total of eight colloquium presentations/lectures in five Chinese universities. She presented a wide range of topics such as “applications of graph theory, knot theory, algebra, and number theory in bioinformatics and information security;” “Design of knapsack cryptosystems using Fibonacci Numbers;” and “Interactive teaching techniques used in the U.S. classrooms.” She also gave presentations at the following conferences:

- International Congress of Mathematicians/International Congress of Women Mathematicians, Seoul, Korea.
- 2014 Ecology and Evolution of Infectious Diseases Conference Multi-Scale Mechanisms of Disease Emergence and Control, Fort Collins, Colorado

- Southern Regional Algebra Conference, Montgomery, MS.
- International Conference on Computer, Network, Security and Communication Engineering, Shenzhen, China.
- AMS/MAA Joint National Conference, Baltimore, MD.
- In spring 2014, Dr. Li gave 17 lectures to over 500 elementary and middle school students of four local schools through CSAM’s Visiting Scientists program.

A poster on “Cloud technology for big data management and mining” was presented by Dr. **Aparna Varde** and her students **Michael Pawlish** (PhD), **Klavidya Hammond** (MS), **Shireesha Chandra** (MS) and **Jonathan Tancer** (BS) at the New Jersey Big Data Alliance conference held at Rutgers University.

The Passaic County Board of Chosen Freeholders has appointed Dr. **Robert Taylor** to the Passaic County Comprehensive Economic Development Strategic Committee (CEDSC). This Committee is designed to bring together public and private sectors for the development of a economic roadmap (comprehensive economic development strategy) to diversify and strengthen regional economies. Dr. Taylor, who specializes in creating urban place-based strategies for sustainable development, is particularly interested in how the sustainability science program at Montclair State University can assist our regional economy in weathering the developing crises in flooding, natural resource loss, and other environmental events that pose a threat to private investment. Also, he desires to emphasize the resiliency of businesses in their shift to a new regional economy that emphasizes entrepreneurial enterprises in energy conservation, brown-fields redevelopment, environmental risk reduction, and other technology-driven activities. ♦

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Dong D., W. Zhang, H. Ma, **H. Feng**, H. Lu, Y. Dong, L. Yu (2014). "A magnetic record of heavy metal pollution in the Yangtze River subaqueous delta." *Science of the Total Environment*, 476-477: 368-377.

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Qian Y., F.J. Gallagher, H. Feng, M. Wu, Q. Zhu (2014). "Vanadium uptake and translocation in dominant plant species on an urban coastal brownfield site." *Science of the Total Environment*, 476-477: 696-704.

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Rakshit, S., D. Sarkar, E. Elzinga, P. Punamiya, R. Datta (2013). "Mechanisms of ciprofloxacin removal by nano-sized magnetite." *Journal*

of Hazardous Materials, 227: 211-216. ♦

Kudos

Dr. **AnnMarie Dileo** is the recipient of a \$2,100 award from the Angelo and Mary Cali Fund for Italian Studies at MSU for research on the "Role of molecular genetic techniques in identifying human migration of the Peoples of Magna Graecia."

Dr. **Yang Deng** (PI), with two Co-PIs, Dr. Zhao at Veolia Environment Services and Dr. Torrens at Brown and Caldwell consulting firm, recently won a 2-yr, \$175,652 grant from the Environmental Research and Education Foundation. The project is entitled "Approaches to Mitigation of Landfill Leachate-Induced UV Transmittance Impacts." They will explore origins and nature of UV absorbance dissolved organic matters present in landfill leachate, which is challenging our solid waste industry, and find the best strategies to reduce the UV impacts. This is the first grant of Montclair State University from this research foundation.

Dr. **Aihua Li** was awarded the National Research Experience for Undergraduates Program "Summer REU at MSU," NSF (DMS-1156582 and DMS). She also received an Association for Women Mathematicians (AWM) Travel Grant of \$3,000. This grant supported Dr. Li's attendance at the International Congress of Women Mathematicians (ICM2014) and the International Congress of Mathematicians (ICWM 2014) in Seoul, Korea.

Dr. **Stefanie Brachfeld** was awarded \$157,056 from the National Science Foundation. This collaborative project includes researchers at Lamont Doherty Earth Observatory, Indiana University Purdue University at Indianapolis, the Alfred Wegener Research Institute, Germany, Imperial College, England, and the British Antarctic Survey. The project, "Deglacial

Continued on next page

Ice dynamics in the Weddell Sea Embayment using sediment provenance," uses mineralogic and geochemical "tracers" in marine sediment to explore when and where Antarctic ice destabilized in the past in order to predict how ice sheets will behave as climate continues to warm.

Dr. **Mark Chopping** was awarded \$39,086 by the National Aeronautic & Space Administration for "A high-resolution circumpolar delineation of the forest-tundra ecotone with implications for carbon balance." The study will map and characterize the current Arctic forest-tundra transition zone and reveal its changes during the last several decades with multi-sensor satellite data and field observations. The work will be performed in collaboration with researchers at NASA's Goddard Space Flight Center.

Dr. **Pankaj Lal** was awarded \$25,000 by the NJ Department of Environmental Protection (NJDEP) as part of NJIT led study titled "Assessment of economic, ecological, and social capi-

tal in congruence with design studies for reducing storm surge and flooding risks to New Jersey coastal communities." Dr. Lal is leading ecosystem valuation and environmental constraint component of the project and is evaluating ecosystem effects of university design alternatives in three areas being considered for flood mitigation: Barnegat Bay; Hudson River and its tributaries and the Delaware Bay.

Dr. **Robert Perzant** has been awarded the following grants:

- A five-year (2014-2019) Multiple N.J. institutions \$3,500,000 grant from the National Science Foundation for the Garden State AMPS: New Jersey Louis Stokes Alliance for Minority Participation in the Sciences with Administrative lead (P.I.) Alexander Gates, Rutgers University.
- A \$1,000,000 two-year funding from PSEG for the PSEG Institute for Sustainability Studies.
- \$10,000 from the Celgene Corporation for "Advancing the Frontiers of Knowledge: The Science Honors In-

novation Program." And

- \$5,000 for work on "Burial depth of infaunal benthos of Passaic River, with C.D. Smith, from the Army Corp of Engineers.

Dr. **Dibyendu Sarkar** has been awarded two new grants. The first is from the National Sea Grant Program. Dr. Sarkar and co-PI Dr. **Yang Deng** were awarded \$140,000 for the project titled "A green technology for nutrient and metal reduction in NJ coastal waters." The second is a \$145,000 grant is from the Michigan Department of Environmental Quality, Nonpoint Source Program with Michigan Technological University Dr. Mayer as co-PI for the project "Reducing copper loads from stamp sand deposits in the Keewenaw Peninsula with Permeable Reactive Barriers." And, Dr. **Sarkar** has accepted the position of Editor-in-Chief in Springer's new journal *Current Pollution Reports*. CPR is the second environmental journal in Springer's highly successful Current Reports series, after Current Environmental Health Reports. ♦

CSAM Welcome Social

By Gennae Hinson, Dean's Office

The Offices of Career Services and Academic Advising within the College of Science and Mathematics (CSAM) hosted their first annual CSAM Student Welcome. This event was an opportunity for students to meet with faculty, staff and their peers to kick off the 2014-2015 academic year. Students had the opportunity to hear from Dr. Robert Prezant, Dean for the College of Science and Mathematics, who talked about academic success and engagement within CSAM. Students also had the opportunity to meet with faculty to discuss research opportunities, connect with campus resources and much more.



Dean Prezant (center) chatting with students

CSAM provides to our community. I have to say, the event was great for networking! I met Dr. Andrea Ivanescu, one of the new faculty at CSAM. Dr. Ivanescu helped me with some vexing statistical questions. I also learned about her interests in functional data analysis." And, Jasmine Lee, a Chemistry major, added "It was nice to have a time and place to socialize with fellow CSAM students and CSAM faculty. I was able to start conversations that led to very helpful advice from a professor, as well as to meet other students in my department."

We were glad to welcome all of our students, faculty and staff within CSAM to an exciting and successful academic year. ♦

PharmFest 2014

Jared Eisenberg (UG Business Administration), Brian Ubhaus (UG Chemistry), Magdalenda O'Mahony (GR Finance) and Michael Young (GR Biology) have something in common this year. They are the winners of the 2014 PharmFest (two-year) scholarship. They were recognized at PharmFest 2014. The theme of this year's biennial event, held on April 3, 2014, was The Decade Ahead (<http://www.montclair.edu/pharmfest/>).

Following the opening remarks by Mr. Dean Paranicas, President and CEO of the HealthCare Institute of NJ (co-sponsor of PharmFest), plenary speaker Dr. Richard Evans, Founding Partner and Research Analyst at Sector & Sovereign Research and author of *Health and Capital* presented "21st Century Biopharma: What happens next and how to make the best of it." This was followed by two dual track sessions - Exploring new paradigms in drug discovery and The Evolution of the biotech and pharmaceutical sectors: Skills, attributes and capacities for the 21st century; and Future targets and challenges in biopharmaceutical research and drug development and Partnership opportunities to improve quality and efficiency in Healthcare: Enlisting pharmaceutical, payer and governmental expertise. As in the past, industry panelists presented an ever popular session on "Pharma careers in the coming decade." The lunch keynote address was delivered by Mr. John Castellani, President and CEO of The Pharmaceutical Researchers and Manufacturers of America (PhRMA). At 4:00 p.m. students, alumni and industry professionals gathered for Career Networking hour.

The event was made possible by contributions from Pfizer, Bristol-Myers Squibb, Actavis, Celgene, Novartis, HINJ, New Jersey Life Sciences Vendor Alliances, and Riker Danzig. Panelists and speakers hailed from our participating sponsors: Center for Medicine in the Public Interest, Chemtall, Coriell Institute, Forest Research, Health Quality Ontario, Merck, Patient-Centered Outcomes Research Institute, Pharmaceutical Research and Manufacturers of America, Rutgers University School of Medicine, Sanofi-Genzyme, Sector & Sovereign, Temple's Moulder Center for Drug Discovery Research, Venenum Biodesign and Yale School of Medicine. ♦

EAES Launches Inaugural Summer Field Geology Course

By Matthew Gorrington, Earth and Environmental Studies

During the 2014 Summer Session, the Department of Earth and Environmental Studies launched the inaugural version of EAES404 Field Geology, a 6-credit capstone required course for BS Geoscience majors. Sixteen undergraduates completed the 6-week, field-intensive course. It was team taught by four EAES faculty. The course venues included two weeks at MSU's New Jer-

sey School of Conservation (NJSOC) followed by one month in various locations in the Rocky Mountains of Wyoming and Montana.

Experience in bedrock and surficial geological mapping is the main goal of the course using traditional field methods of mapping on topographic and satellite images at a variety of scales. In addition, students also gained experience using a variety of hydrologic and geophysical instrumentation to investigate fluvial and environmental problems.

At the NJSOC, projects were uniquely designed to integrate surficial geology, fluvial hydrology, and environmental geophysical instrumentation with the goal of deciphering the geological processes that have occurred here since the end of the Last Ice Age (~10,000 years

ago). To accomplish this goal, students combined traditional surficial mapping and soil profile logging with sophisticated geophysical instrumentation, such as GPS total station, ground penetrating radar, and shallow seismic surveys.

The course venue moved to the Big-horn Basin of Wyoming, southwestern Montana, and Yellowstone and Grand Teton National Parks. Working in small teams, students identified and measured the orientation of different rock units and took detailed field notes; maps were "inked" and stratigraphic and structural cross sections constructed. A one-week geology tour of the Beartooth Plateau and Yellowstone/Grand Teton National Parks followed. For the last week, the course was held at the University of Montana-Western in Dillon for the final mapping project at Block Mountain, a popular site for field geology projects. ♦



EAES404 class at Beartooth Pass (11,000' elev.), Wyoming

2014 Commencement

During the university's 2014 Commencement exercises on Friday, May 23, at the Izod Center Montclair State University conferred a total of 4,382 degrees, including 3,210 undergraduates and 1,172 graduate students. Among those, 407 bachelors, 123 masters and 12 doctorate degrees awarded to College of Science and Mathematics graduates. The twelve doctoral students represent the largest number of graduates in CSAM since the College began offering the doctorate degrees. Best-selling author, James Patterson with book sales of more than 270 million copies of adult and children's and recipient of numerous awards delivered the Commencement address. We are proud of all of our graduates and especially the following new "doctors":

Marcia Anderson (Advisor: Robert Taylor)

The Effectiveness of Venue Strategies for Environmental Communication in Non-Agricultural, Integrated Pest Management Campaigns

Padmini Das (Advisor: Kirsten Monsen)

Chemically Catalyzed Phytoremediation of 2,4,6-Trinitrotoluene (TNT) Contaminated Soils by Vetiver Grass
Sarkar Paola Dolcemascolo PhD 2014 Anthropogenic Disturbance of the Herpetofauna in the Northeast US: Wildlife Disease and Habitat Modification

Amy Ferdinand (Advisor: Danlin Yu)

Spatial Decision Support Systems for Sustainable Urban Redevelopment

Eliza Leszczynski (Advisor: Mika Munakata)

The study of Middle School Mathematics and Science Teachers' Practices, Perceptions, and Attitudes Related to Mathematics and Science Integration

Kevin Olsen (Advisor: Michael Kruege)

Organic Geochemical Investigations of Urban Sediments by Pyrolysis -- Gas Chromatography/Mass Spectrometry

Naz Onel (Advisor: Avinandan Mukherjee)

Antecedents of Environmentally Sensitive Consumer Behaviors: An Investigation of Goal Framing Theory

Michael Pawlish (Advisor: Aparna Varde)

Towards the Next Generation of Green Data Centers

Pravin Punamiya (Advisor: Dibyendu Sarkar)

Green Remediation of Veterinary Antibiotics in Soil-Water Systems

Sagarika Ray (Advisor: Duke Ophori)

Hydrologic Modeling in Semi-Arid Agricultural Region: An Integrated Approach to Study Water Resources in Southern San Joaquin Valley, California

Marc Francis Russo (Advisor: Mika Munakata)

Advisor: Duke Ophori

Quantitative Literacy and High School Mathematics: The Evolution of a Collaborative Constructed Course and its impact on Students' Attitudes and Numeracy

Benjamin Witherell

Watershed-Based Water Quality Management

Advisor: Huan Feng