

CSAM NEWSLETTER

COLLEGE OF SCIENCE AND MATHEMATICS: A SPECTRUM OF POSSIBILITIES

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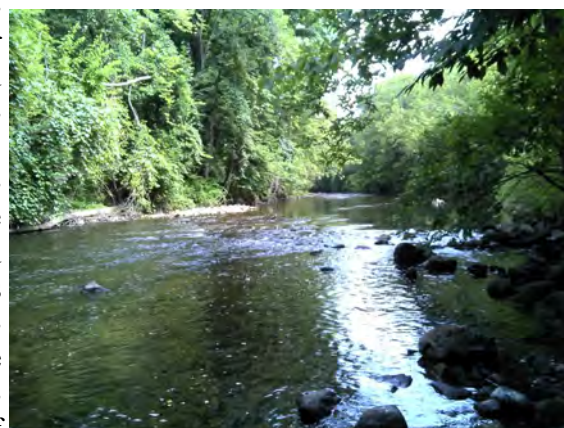
Are NJ Rivers Safe for Swimming?

By Mei Yin Wu, PRI Director

The Passaic River Institute (PRI) at Montclair State University has found recent success with its expertise in pathogen monitoring. Originally used for monitoring of the Passaic River, the Institute has now expanded to offer community groups the same monitoring services. In 2014, the institute provided services to the community groups: Friends of Bonsal Preserve in Montclair and the Musconetcong Watershed Association, located in the western part of the state. The pathogen monitoring has allowed for water quality monitoring of areas not regularly monitored by federal and state agencies.

Why is it important? Pathogen monitoring holds importance for ensuring the safety of the river communities and can give an indication of the present water quality. In the partnered projects, pathogen indicators *E. coli* and enterococcus were selected to identify possible sources of pollution. The pathogens and its indicators originate from warm-blooded animals like humans, pets, and wildlife animals and can be responsible for waterborne disease, including dysentery.

In the Passaic River, researchers found high levels of pathogen indicators in the Upper Passaic River compared to downstream-which is likely the result of more farming conducted in the area. The presence of animals is consistent with the other rivers that were monitored. The Third River,



Musconetcong River in northwest NJ

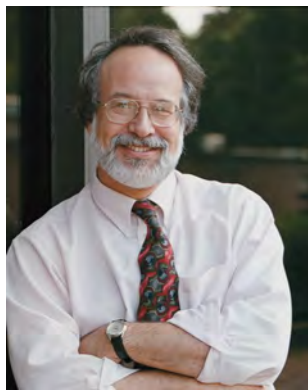
which flows throughout the greater Clifton, Nutley, and Montclair area found high levels of pathogen indicators along parks and nature preserves, common places for geese and other wildlife to reside. But in an area that is predominantly farmland, like the Musconetcong Watershed, researchers take their work to the next level and use molecular techniques to identify sources of pollution.

"In an agricultural area, we know that we're going to find high amounts of bacteria. The real question is where is it coming from and how can we help to limit it?" says Myla Ramirez, one of the PRI staff on the projects.

The team uses a molecular based technique to match up the *E. coli* and enterococcus DNA with its' correct animal host. "With this data, groups will be able to implement change in their communities. If it's a specific animal farm contributing to a lot of the pathogens in the water, we'll know" says Ramirez. Additionally, the group explains that in urban areas if there is human DNA detected, this

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From Dean Prezant



In 1900 the bubonic plague entered the United States eventually killing over 100 people in California. In 1915 Albert Einstein published his general theory of relativity. In 1945 the first atomic bomb was detonated. In 1975 the first personal computer became marketable (the Altair 8800). In 2015 a subset of individuals in the United

States have seemingly accepted a debunked 1998 study by Andrew Wakefield linking vaccines with autism and are refusing to have their children immunized. The study has been retracted from *The Lancet*, Wakefield had his medical license revoked, and the scientific community has soundly rejected his study. This is 2015; we know vaccines have save hundreds of thousands of lives. And now, measles is making a comeback. Is this linked to a distrust of science?

Some want to believe that large institutions are so money oriented that they rarely think of the general well-being (yes, examples can be found), some fail to take the time to take myth out of the voices of personality-based talking heads (think leaders who are climate change deniers, evolution deniers), and while exceptionally rare, scientists themselves can be at fault in falsifying data (a recent AIDS researcher did this to make his results look better). Sometimes though, the very basics of science are ignored by individuals in leadership posi-

tions and this can put the public at risk. Sometimes a mind gets locked and just won't take the time to insure credibility of source. Sometimes very personal views deafen us to what we'd prefer not to hear or believe. And sometimes political motives trump the truth. In the case of vaccines, a lone physician used faulty data from a very small set of subjects and spread his particular gospel to popular figures from the media who jumped on-board. The problem of course is not in what this group thinks but in the implications to their children and other's children. As contagions spread, the elderly, some infants, and some with compromised immune systems, stand at risk.

The largest "science and advocacy organization, dedicated to funding research into the causes, prevention, treatments and...cure for autism" states that "Vaccines do not cause autism." [<https://www.autismspeaks.org/science/policy-statements/information-about-vaccines-and-autism>].

The health issue is critical but why discuss in this column? It is the responsibility of our CSAM faculty and in fact all scientists and our alumni to educate students and the public about what is and what is not science. It is our responsibility to help prevent fraudulent science and to point out issues when they are found. But most importantly, it is our responsibility to educate the next generations so we not only get science "right" but so that the public regains trust in science where it might have been lost. ♦

CSAM Proposals and Awards: Highlights

By Ted Russo, Office of Research and Sponsored Programs

The faculty of the College of Science and Mathematics continue to actively seek and secure grants to conduct new research, continue and build on successes and support our students in pursuing their research interest.

For fiscal year 2015 (July 1, 2014 through 2/17/2015), 65 proposals totaling \$13.2 million were submitted. Seventeen were awarded for total funding of \$1.81M. The following are a few examples of our faculty's efforts:

- Stefanie Brachfeld, "Collaborative research: Deglacial ice dynamics in the Weddell Sea embayment using sediment provenance." Funded by the National Science Foundation. \$157,056.
- Eric Forgoston, "RUI: Transport of inertial particles in time-dependent and stochastic flows." Funded by the National Science Foundation." \$299,987.
- Carlos Molina, Marina Cunningham, "A Reciprocal Approach to Promoting Study Abroad in STEM: Montclair State University, USA and Universidad Mayor Chile." Funded by the Partners of America Foundation. \$25,000.
- David Rotella, John Siekerka, "Development of Medical Countermeasures for Botulinum Neurotoxin Intoxication Focused on Therapeutics and Neuroregenerative Medicines." Funded by the Defense Threat Reduction Agency. \$422,754. (Expected \$2.5M over 5 years.)
- Dibyendu Sarkar, "A Green Technology for Nutrient and Metals Reduction in New Jersey Coastal Waters." Funded by the National Oceanic & Atmospheric Administration/New Jersey Sea Grant Consortium. \$69,997. ♦

In the Basement of Science Hall

By Matthew Khan, Rebecca Shell, Robert Prezant

Only the intrepid few venture into the bowels of Science Hall, but those who do discover one of CSAM's marine and freshwater biology laboratories. Students who seek out the lab will find a team working on a wide variety of research projects ranging from the influence of pharmaceutical wastes on freshwater snail reproduction to intertidal biodiversity of the north shore of Long Island to the impact of crayfish scent on live bearing snail brood. Current research focuses on the effects of microplastics on the common ribbed marsh mussel, the impact of hard clam grow-out sites on underlying biota, and changes in shell microstructure that take place in the earliest growth stages of Chinese mystery snails.

Why this focus on invertebrates? Invertebrates are essential components in aquatic and terrestrial systems. Indeed, the eminent biologist E.O. Wilson famously wrote "If humans were to disappear tomorrow, the world would go on with little change...but if invertebrates were to vanish, I doubt that the human species could last more than a few months." Aquatic invertebrates play major roles in filtering our water, as pests and consumers of pests, stabilizing coastlines, recycling nutrients, and often serve as lynchpins in food webs. And, of course, many are delicious. Current work in the lab, pursued respectively by two of this article's authors (M. Khan and R.Shell), focuses on some of the issues noted above.

Geukensia demissa, the ribbed marsh mussel, is among the most abundant bivalves along New Jersey's tidal shore. A visit to any New Jersey salt marsh will find vistas of *Spartina*, a typical and native salt marsh grass but get closer and

you'll see that embedded among the root masses are thousands of ribbed mussels. An array of life depends on sediment and nutrients trapped between these marsh grasses and the mussels and importantly these mussels and roots help stabilize what would otherwise be prime real-estate for an erosive coastline.

Matthew Khan (B.S./M.S. student in Marine Biology and Coastal Sciences) is investigating how the growing threats of microplastics affect ribbed mussels. Microplastics range from 5 millimeters to sizes invisible to the naked eye and come from almost every conceivable source of



M. Khan slicing sections of sediment cores in preparation for microplastic analysis

plastic including the abrasives found in cosmetics. Amazingly, plastic is now the most prevalent pollutant in the ocean. Microplastics are mistakenly ingested by a range of marine organisms and are also a source of toxic plasticizers that can disrupt critical physiological processes. This research seeks to identify the distribution of microplastics within mussel beds at Sandy Hook Gateway National Recreation Area and to determine threats to ribbed mussel populations. Since ribbed mussels help stabilize marshes, the demise of these bivalves can have serious implications to the stability of coastal marshes.

The hard clam *Mercenaria mercenaria* is a more familiar species, rec-

ognizable from your favorite seafood restaurant (think quahog, little-necks, cherrystones, etc). Hard clams live fully buried in the sand with only inhalant and exhalant siphons poking up into the water column. Aside from being a commercial resource, these bivalves are essential parts of our coastal ecosystem. As filter feeders they consume phytoplankton, including algal species potentially toxic to humans. Populations of *Merceneria mercenaria* (the Latin name comes from the fact that Native Americans used these shells to create wampum) help maintain sediment porosity and as such facilitate gas and nutrient exchange between sediment and water column, a "service" vital to the health of infaunal communities.

Most of the clams being sold in markets today are farmed and like many aquacultural species, farmed *Mercenaria* are grown from "seed" (tiny juveniles) in nurseries. When they reach 8-10mm in length they are large enough for "planting" in sandy muddy stretches of bay bottom. Just as in terrestrial farming, high-density monoculture is the best way of achieving the highest economic benefit, so juvenile clams are planted at densities as high as



Mercenaria mercenaria from Barnegat Bay

3,000/m², much, much higher than the natural densities.

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Advisory Council – Member Profile



George Kelley is a licensed Civil Engineer and is Chairman of the national engineering firm, Langan Engineering and Environmental Services Inc. He has been a member of the Montclair State University, College of Science and Math Advisory Council since June 2011.

George and members of his firm, which is located in Elmwood Park New Jersey only about 10 minutes from the MSU campus, are active in numerous activities of the University. The firm sponsors various activities including the recently held Passaic River Symposium. Additionally Jorge Berkowitz, a Langan Senior Vice President, is working with the University on the design of a continuing education curriculum for working professionals regarding important environmental issues.

These educational programs, administered by MSU, fit well within the array of technical services offered by Langan. Numerous MSU students and alumni are associated with the firm through internships and part-time and full-time positions. Langan continues to offers

many of the best qualified graduates positions on its professional staff. At present the firm employs 15 MSU graduates on a full-time basis.

Langan offers full technical services throughout the engineering and environmental disciplines. The firm employs approximately 950 people who work out of 20 offices located throughout the United States and abroad. Langan engineers and scientists participated in the design of several recent MSU projects including the new 2000 bed dormitory complex, the new building for the College of Science and Math and the new Business School.

George was a founding partner when the firm was established in Clifton in 1970. He also serves on the Board of the Independent College fund of New Jersey and is a Director on the Board of the American Council of Engineering Companies (ACEC). He was appointed by the Governor to sit on the New Jersey Brownfield Redevelopment Task Force and also serves on Boards of the Association for the Improvement of American Infrastructure and the Industry Leaders Council of the American Society of Civil Engineers. ♦

D. Thomas's Paper Selected Among Most Impactful

The Lifestyle and Cardiometabolic Health Council has selected and ranked Dr. Diana Thomas's paper, "Effect of dietary adherence on the body weight plateau: a mathematical model incorporating intermittent compliance with energy intake prescription", as one of the top ten most impactful Council publications in 2014. In this inaugural year of the award, there were many nominations from some of the highest impact journals and well-recognized names in nutrition, obesity, prevention, physical activity, and cardiometabolic fitness.



The publications were highlighted throughout the EPI/Lifestyle 2015 Scientific Sessions in Baltimore, MD March 3-6, 2015. In addition, each of the publications were individually recognized at the Council Dinner on Thursday, March 5, 2014. These important publications will also be highlighted on the Council website and in their upcoming Council Connections newsletter.

Dr. Thomas is professor of Mathematics and director of Montclair State University's Center for Quantitative Obesity Research. ♦

Vivarium Director Named

CSAM welcomes Ms. Kelly Patterson as its first Director of the Vivarium that will be housed in the soon to be completed CELS building. Ms. Patterson comes to MSU from Purdue Pharma in Cranbury, New Jersey, where she led the Purdue Pharma vivarium staff in the renovation and re-commissioning of their Cranbury facility. Before that, she worked for Columbia University in New York City where she coordinated cancer research work. Ms. Patterson brings extensive experience in animal care and work with accrediting organizations charged with ensuring animal welfare including AAALAC. ♦

100K Strong in Chile for CSAM Students

By Zareen Rhaman, PhD Candidate—Math Education

A group of Montclair State University's science students welcomed the new year with a visit to Chile. A continuation of the 100,000 Strong in the Americas innovation grant, sponsored by the US Department of the State, this trip was part of a molecular biology international exchange program. Through the grant Montclair State University created a collaborative biotechnology course with Universidad Mayor in Santiago, Chile. In September 2014 Montclair State University hosted a delegation of Chilean students and their mentors. For the second part of the program, the group arrived in Santiago on January 5th 2015 and received a warm welcome at Universidad Mayor, Huechuraba campus.

The US group included Bushra Ali (Biology/ Pre-Dental), Nashali Ferrara (Biochemistry), Nicole Jaronsky (Biology), Pamela Jumbo (Biochemistry), Justin Vercellino (Biology), Shakeera Walker (Molecular Biology), Michael Young (Graduate Assistant), Zareen Rahman

They learned about research in molecular biology, chemical and biochemical analysis, microscopy, cytometry and bioinformatics.



Students visiting art center in Valparaiso, Chile.



(Doctoral Student, Evaluator, Coordinator of educational activities), Dr. Munakata (Evaluator, Coordinator of educational activities), and Dr. Molina (PI and project director). The Chile group included Maria Teresa Gomez, Javier David Villacreses Lucero, Alejandro Marcelo Olmos Paredes, Andrés Alberto Eduardo Fuentes Flores, María Teresa Gómez Ponce, Stephanie Slebos, Valeria C. Labra Ramírez, Dr. Viviana Valdés de Petris, Dr. Patricio Manque and Dr. Rene Lara. Throughout the trip the students engaged in collaborative workshops and fieldtrips. They not only learned about the recent research in biotechnology through presentations but also presented their own research.

During the ten day visit, students engaged in workshops, seminars and fieldtrips designed to give them a comprehensive view of current research practices in biotechnology. They visited the center of Genomics and Bioinformatics (Universidad Mayor), Institute of Biotechnology at Talca, Estación Costera de Investigaciones Marinas (ECIM) at Las Cruces, BioSigma, Microscopy Center (Universidad de Chile) and Fundación Ciencia y Vida.

One of the main goals of the project is to support students' awareness and appreciation for international collaborations. Students have been working with Drs. Molina (MSU), Valdés de Petris (UM) and Manque (UM) on the application of gene editing techniques in Plant Biology, Neurobiology, Microbiology and Cancer research. They had the unique opportunity to not only engage in international collaboration but also to deliver their findings to an international audience and many now see research as a part of their future career goal. In learning about each other's cultures they formed bonds and lasting friendships as a result of this project. During the upcoming months, student teams will present their final projects at a campus-wide symposium and at MSU's student research symposium in April. ♦



Visit to Universidad Mayor, Huechuraba Campus research lab

CSAM Visiting Science Program

By Shari Ferguson-Murtha, CSAM Academic Advisement

The Visiting Scientist Program, developed and offered by the College of Science and Mathematics, provides short-term visits by faculty to area schools (K-12) to share their research and expertise and most importantly the excitement of being a professional scientist, mathematician, information technologist, or STEM educator. Other benefits of the program include establishing relationships with local schools who in turn will view CSAM/MSU as an extraordinary resource and first choice for college-bound students interested in the sciences. Most importantly, this is an excellent opportunity to get kids excited about STEM and STEM majors.

As of fall of 2014, 26 faculty are participating, representing all CSAM departments. The program has received 53 requests for presentations. The program's website, <http://www.montclair.edu/csam/k-12-scientists>, has been recently updated and reconfigured. It now offers an on-line request form for the ease of school districts to request and schedule visits to their classes.

The following, from Ms. Samantha Kaminsky, Supervisor, East Windsor Regional Schools represents the sentiments of many of the host schools:

"Dear Dean Prezant, Dr. Truitt, and Dr. Leszczynski, I want to take a moment to thank you for taking the time (and distance) to come and visit our schools in East Windsor Regional. From both the feedback I received and personal observation, I can't say enough about how exciting and engaging the presentations were for our students. The topics were relevant, the presentations hands on, and I am so happy our students had the opportunity to benefit from your expertise.

I hope you will consider coming back again next year! ♦



One of Ms. Kaminsky's "brave" students handling Dr. Prezant's crustaceans.

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could be the result of compromised sewer lines and the data could be turned to the state to aid in reconstruction efforts.

With pathogen monitoring, the PRI hopes to continue to build their relationships with the community and with the private sector. The recently completed project, "Citizen Science Pathogen Monitoring of the Third River" was a joint effort of local volunteers and the PRI. Volunteers from Clifton and Montclair were trained both at the university and at the Environmental Protection Agency Regional Response Center at Edison to become certified citizen scientists.



Volunteer citizen scientist Vera Lazar and student Matthew Newton test the Third River in Clifton.

"This new class of scientists equips locals who feel a stake in their communities and gives them the skills to research problems in them" says Dr. Meiyin Wu, the PRI director. "Partnering with local groups also aligns with the institute's commitment to the community and increasing environmental awareness."

With the new 2015 sampling season approaching, Wu and her research team are looking forward to working with the community, identifying pathogen sources, and monitoring the water quality around the State. ♦

Student News

MSU REU students, **Rob Rexler Amolo Baello**, received an MAA travel grant to participate in the joint national AMS/MAA meeting held in San Antonio, Texas. He gave a poster presentation in the Undergraduate Poster Competition. The title was “Design of knapsack cryptosystems using Certain t-super-increasing sequences.”

MSU math majors, **Jasmine Rivers** and **Jose Torres**, received full travel funding from NIMBios to give a presentation at the 6th Annual Undergraduate Research Conference at the Interface of Biology and Mathematics in Knoxville, Tennessee. Their oral presentation was titled: “A new approach to understanding evolutionary relationships among Chagas disease insect vectors.”

Environmental Management doctoral student **Rebecca Shell** been selected for a NJWRRI graduate student grant. The grant award is \$5,000 for the period of March 2015 to February 2016.

Seven students across MSU departments and colleges attended and presented at ObesityWeek in Boston, Massachusetts. Mathematics student, **Mirna Halawani** presented her award winning poster “Do the obese eat faster than the lean?” at the e-Health/m-Health Section session. Her work was a statistical analysis of a new sensor device that captures bite rates from a wrist worn watch. Nutrition student **Dylan Bailey** presented a very popular poster on his work on “Liquid versus solid carbohydrate revisited”. The study examined phenomena known as “white hat bias”. And, biology students **Syeda Islam**, **Krishna Patel**, **Kofi Armah** and **Jenie Kunnippa-**

rampil presented a poster on “The Relationships Between Predicted Energy Intake, the Institute of Medicine Guidelines, and Self-Reported Energy Intake in the Pregnancy, Infection, and Nutrition Study: New Insights Derived from a Dynamic Energy Balance Model.” The team of CQOR used a mathematical model that predicts weight gain during pregnancy to back calculate energy intake.

Julian Litrento, a Nutrition student, was surprised at how far reaching advances in medicine and nutrition research can affect public policy. “One of the most memorable sessions I had attended was titled, “Calorie Labeling: Who’s Paying Attention and Why.” The interdisciplinary experience was an important take-away. Says Mirna Halawani, “I attended Obesity Week simply to present my research, but ended up falling in love with the talks that I thought were out of my realm of knowledge.”



Left to right: MSU students J. Litrento, D. Bailey, J. Kunnippa-rampil, M. Halawani, K. Armah, K. Patel, S. Islam, V. Bodrato at ObesityWeek

More than a Brown Truck

By Gennae Hinson, CSAM Career Services

UPS began as a messenger company in the United States in 1907 and has grown into a multi-billion-dollar corporation through strategic focus to enable commerce around the world. As the world's largest package delivery company and a leading global provider of specialized transportation and logistics services, they manage daily flow of goods, funds, and information in more than 200 countries and territories worldwide. While many see the UPS brown truck and associate the company with its former beginnings, UPS is globally active, yet locally

based with uncompromising innovation, technology and service that invigorate their student internship and employment program.

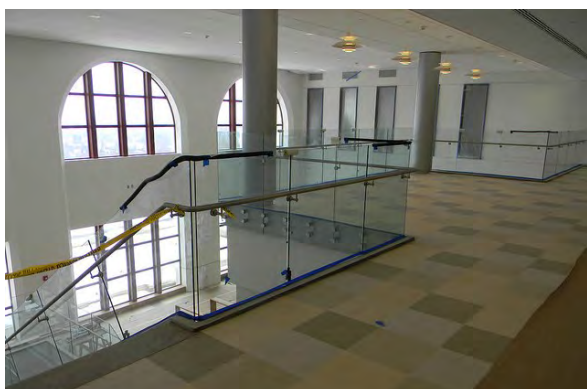


Kathy Wertalik, UPS Human Resources Supervisor meeting with CSAM Students

Since its inception in 2009, the UPS Cooperative Education (Co-op) Internship Program has hired more than 88 MSU alumni including CSAM's recent graduates from the Department of Computer Science and Information Technology; Nikolche Vasilevsk and Suchit Gupta. This year, UPS's technical team anticipates hiring more CSAM students for their paid internship program. They will be attending the CSAM Career and Internship Fair. ♦

CELS Nearing Completion

Various State inspectors have been visiting the nearly completed Center for Environmental and Life Sciences (CELS) to examine and certify the structure including the electrical and plumbing work behind the walls. The areas inspected, such as the elevators, the heating and cooling systems, the airflow among others, have met code and are certified for temporary occupancy. Below are recent photographs, as examples of the progress of the work completed. The next step is the furnishing of the classrooms, student areas, faculty offices and labs. Then comes the building prep for occupancy in June 2105. ♦



Pictured clockwise from bottom: 2nd floor student lounge, research labs.



Photos by Andrew Wiese

Continued from page 3—In the Basement of Science Hall

Rebecca Shell, a Ph.D. candidate in Environmental Management, has been raising her own clams off of Sedge Island in central Barnegat Bay in an attempt to understand the effects that farming clams at such high densities might have on associated organisms that reside beneath the “farms”. This project stands to inform regulators and aquaculturists of the potential changes that New Jersey’s industry might be having on the coastal ecosystem.

Furthering our work on invertebrates, our lab also has a long history of working with shell microstructure, recently publishing work focused on two seemingly distinct species of sympatric (living close together) lantern shell bivalves from the mangroves of Thailand. With help from Laying Wu in our Micros-

copy and Microanalysis Research Laboratory, and in the face of a maelstrom of taxonomic confusion, the lab’s work has established that there are in fact two species of *Laternula* coexisting in close proximity but segregating themselves along a tidal exposure gradient.



Students taking benthic samples on a hard clam lease site at Sedge Island, Barnegat Bay. From left: Rebecca Shell, Lydia Santogade, Matthew Khan, Paola Dolcemascolo, Karlye Jowers, Stephanie Parelli..

Undergraduate students working on these projects often cut their teeth as research assistants helping with benthic invertebrate biodiversity surveys in systems as diverse as Lake Wapalanne (at our NJ School of Conservation), the Bronx River, and the Hackensack estuary. Benthic invertebrates are important environmental indicators and thus their relative abundance and diversity help us better understand the health of the system.

And so a very busy corner in the basement of Science Hall pumps out research in many forms...albeit all focused on (some would say) non-charismatic but (all would say) essential marine and freshwater invertebrates. ♦

Faculty Activity

Dr. **Reginald Halaby** gave an oral presentation entitled, "Triptolide exerts its anticancer effects via a lysosomal-mediated mechanism: Implications for treating apoptosis-resistant breast cancers," at the 4th International Symposium on Molecular Technology (Biotechnology in Progress), Drug Development and Therapeutics in Tehran, Iran.

Dr. **Aihua Li** participated in the joint national AMS/MAA (American Mathematical Society and Mathematical Association of America) meeting held in San Antonio, Texas. She co-organized a themed MAA session Perspectives and Experiences from Faculty on Mentoring Undergraduate Students in Research. She was elected as vice chair for speakers of the Mathematics Association of America New Jersey section, 2015-2016. In fall 2014, Dr. Li joined the editorial board of the journal *Discrete Dynamics in Nature and Society*, reviewed an article for Math Reviews and refereed an article for the *Journal of Commutative Algebra*. In December 2014, Dr. Li gave a talk on "Graph Connectivity Indices of Octagonal Graphs" in the 68th Graph Theory Day held at Nassau Community College, SUNY. ♦

Kudos

The **Sokol Institute** and Celgene Corporation's Global Health Division, have renewed their sponsored research agreement for lead drug development for the treatment of lymphatic filariasis. Drs. **John Siekierka** and **David Rotella** will continue their efforts to identify novel compounds with the potential to treat this disease. The funding for the current year is \$236,195.00 which brings the total funding for the program to date at \$932,873.00.

Dr. **Reginald Halaby** is serving as a member of the Editorial Board (2014-Present) of the *Journal of Molecular Biology and Molecular Imaging*. ♦

Publications

Aartsenet, M.G. and The LIGO-Virgo and IceCube Collaborations, including **M. Favata** (2014). "Multi-messenger search for sources of gravitational waves and high-energy neutrinos: Results for initial LIGO-Virgo and IceCube." *Physical Review D*, 90: 102002.

Aasi, J. and The LIGO-Virgo Collaboration, including **M. Favata** (2014). "Improved upper limits on the stochastic gravitational-wave background from 2009-2010 LIGO and Virgo Data." *Physical Review Letters*, 113:231101.

Aasi, J. and The LIGO-Virgo Collaboration, including **M. Favata** (2014). "First all-sky search for continuous gravitational waves from unknown sources in binary systems." *Physical Review D*, 90:062010.J.

Aasi, J. and The LIGO-Virgo Collaboration, including **M. Favata** (2014). "Methods and results of a search for gravitational waves associated with gamma-ray bursts using the GEO600, LIGO, and Virgo detectors." *Physical Review D*, 89:122004.

Aasi, J. and The LIGO-Virgo Collaboration, including **M. Favata** (2014). "Search for gravitational radiation from intermediate mass black hole binaries in data from the second LIGO-Virgo joint science run." *Physical Review D*, 89:122003.

Aasi, J., The LIGO-Virgo and IPN Collaborations, including **M. Favata** (2014). "Search for gravitational waves associated with gamma-ray bursts detected by the Interplanetary Network", *Physical Review Letters*, 113:011102.

Aasi, J. and The LIGO-Virgo Collaboration, including **M. Favata** (2014). "Search for gravitational wave ring-downs from perturbed intermediate mass black holes in LIGO-Virgo data

from 2005-2010." *Physical Review D*, 89:102006.

Aasi, J., The LIGO-Virgo and NINJA Collaborations, including **M. Favata** (2014). "The NINJA-2 project: Detecting and characterizing gravitational waveforms modelled using numerical binary black hole simulations." *Classical & Quantum Gravity*, 31:115004.

Aasi, J. and The LIGO-Virgo Collaboration, including **M. Favata** (2014). "Application of a Hough search for continuous gravitational waves on data from the 5th LIGO science run." *Classical & Quantum Gravity*, 31:085014.

Aasi, J. and The LIGO-Virgo Collaboration, including **M. Favata** (2014). "Constraints on cosmic (super)strings from the LIGO-Virgo gravitational-wave detectors." *Physical Review Letters*, 112:131101.

Aasi, J. and The LIGO-Virgo Collaboration, including **M. Favata** (2014). "First searches for optical counterparts to gravitational-wave candidate events." *Astrophysical Journal Supplement Series*, 211:7.

Allaire, R., P. Guerron, **B. Nita**, P. Nolan, **A. Vaidya** (2015). "On the equilibrium configurations of flexible fibers in a flow." *International Journal of Nonlinear Mechanics*, 69:157-165.

Bhat, R., S. Tummalapalli, D.P. Rotella (2014). "Progress in discovery and development of heat shock protein 90 (Hsp90) inhibitors." *Journal of Chemical Chemistry*, 57:8718-8728.

Bhat, R., A.T. Adam, J.J. Lee, G. Deloison, Y. Rouille, K. Seron, D.P. Rotella (2014). "Structure-activity studies of (-)-epigallocatechin gallate derivatives as HCV entry inhibi-

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tors." *Bioorganic & Medicinal Letters*, 24:4162-4165.

Brachfeld, S., D. Cuomo, L. Tatsu-mi-Petrochilos, J. Bowles, J. Hammer, J., D. Shah (2014). "Contribution of basaltic intrusions to the intensity and stability of Mars crustal magnetic anomalies." *Geophysical Research Letters*, 41 (22):7997-8005.

Brown, J.L., M.W. Collopy, **J.A. Smallwood** (2014). "Habitat fragmentation reduces occupancy of nest boxes by an open-country raptor." *Bird Conservation International*, 24:364-378.

Casazza, K., A. Brown, A. Astrup, F. Bertz, C. Baum, M. Bohan Brown, J. Dawson, N. Durant, G. Dutton, D.A. Fields, K.R. Fontaine, D. Levitsky, T. Mehta, N. Menachemi, P.K. Newby, R. Pate, H. Raynor, B.J. Rolls, B. Sen, D.L. Smith, Jr., **D. Thomas, B. Wansink, D.B. Allison** (2014). "Weighing the evidence of common beliefs in obesity research." *Critical Review in Food Science and Nutrition*, Epub Jun 20:0.

Christ, A. J., M. Talaia-Murray, N. Elking, E.W. Domack, A. Leventer, C. Lavoie, **S. Brachfeld, K.C. Yoon, R. Gilbert, S.M. Yeong, S. Petrushak, J. Wellner and LARISSA Group** (2014). "Late Holocene glacial advance and ice shelf grown in Barilari Bay, Graham Land, west Antarctic Peninsula." *Geological Society of America Bulletin*, 126, doi: 10.1130/B31035.1.

Chu, T., M. Wu, L. Pohren, B. Haghjoo, C. Soman and **L. H. Lee** (2014). "Molecular identification of a fungal pathogen *Batrachochytrium dendrobatidis* and its impact on urbanized New Jersey." *Advances in Microbiology*, 4:1164-1173.

Chu T.C., **S.D. Adams, L.H. Lee** (2014). "Tea polyphenolic compounds on herpes simplex viruses". In S.P. Gupta (Ed) *Cancer Causing Vi-*

ruses and Their Inhibitors, CRC Press, Taylor and Francis Group. ISBN 9781466589773. pp. 321-344.

Chung, B.J., K. McDermid, **A. Vaidya** (2014). "On the affordances of the MaxEP principle." *European Physical Journal B: Condensed Matter and Complex Systems*, 87(1):20.

Cronin, M.A., G. Rincon, **R.W. Meredith, M.D. MacNeil, A. Islas-Trejo, A. Cánovas, J.F. Medrano** (2014). "Molecular phylogeny and SNP variation of polar bears (*Ursus maritimus*), brown bears (*U. arctos*) and black bears (*U. americanus*) derived from genome sequences." *Journal of Heredity*, 105:312-323.

Cutler, J. and A. J. Radcliffe (2014). "The maximum number of complete subgraphs in a graph with given maximum degree." *Journal of Combinatorial Theory Series B*, 104:60-71.

Cutler, J. and A. J. Radcliffe (2014). "Extremal graphs for homomorphisms II." *Journal of Graph Theory*, 76:42-59.

Dawson, J.A., K.D. Hall, **D.M. Thomas, J.W. Hardin, D.B. Allison, S.B. Heymsfield** (2014). "Novel mathematical models for investigating topics in obesity." *Advances in Nutrition*, 5(5):561-2.

Dhurandhar N, D. Schoeller, A. Brown, S. Heymsfield, **D. Thomas, T. Sorensen, J. Speakman, M. Jean-sonne, D. Allison** (2014). "Energy balance measurement: When something is not better than nothing." *International Journal Obesity*, doi: 10.1038/ijo.2014.199.

Eubanks Turner, C. **A. Li** (2015). "Graphical Properties of the Bipartite Graph of $\text{Spec}(Z[x]) \setminus \{0\}$." *Journal of Algebra Combinatorics Discrete Structures and Applications*, 2(1):65-73.

Favata, M. (2014). "Systematic parameter errors in inspiraling neutron

star binaries." *Physical Review Letters*, 112:101101.

Fiordilino, J., M. Massoudi, **A. Vaidya** (2014). "Pressure driven flow and heat transfer in inhomogeneous fluids." *Applied Mathematics and Computation*, 243:184-196.

Furness, A.I., D.N. Reznick, M.S. Springer, **R.W. Meredith** (2015). "Convergent evolution of alternative developmental trajectories associated with diapause in African and South American killifish." *Proceedings of the Royal Society B*. doi: 10.1098/rspb.2014.2189.

Greenstein, S. (2014). "Making sense of qualitative geometry: The case of Amanda." *Journal of Mathematical Behavior*, 36:73-94.

Halaby, R. (2014). "Triptolide: novel anticancer agent for chemoresistant cancer cells that are caspase-3 deficient." *Journal of Molecular Biology and Molecular Imaging*, 1(3):8.

Heymsfield S.B., **D. Thomas, C. Peterson, J. Schuna, M. Heo, S. Hong, W. Choi.** (2014). "Scaling of adult body weight to height across sex and race/ethnic groups: Relevance to Body Mass Index." *American Journal of Clinical Nutrition*, 100(3):787-95.

Hobbs, N., E. Lazo-Wasem, M. Faasse, J.R. Cordell, J.W. Chapman, C.S. Smith, **R. Prezant, R. Shell, J.T. Carlton** (2015). "Going global: The introduction of the Asian *Ispod Ianiropsis serricaudis* Gurjanova to North America and Europe." *Aquatic Invasions*, 10, www.Aquaticinvasions.net.

Iacoviello, F., G. Giorgetti, I. Turbanti Memmi, **S. Passchier** (2014). "Early Miocene Antarctic glacial history: New insights from heavy mineral analysis from ANDRILL AND-2A drill core sediments." *International Journal of Earth Sciences*, DOI 10.1007/s00531-014-1117-3.

Jia, J., **D. Wang**, J. Fan, S. Zhang (2014). "In-band bootstrapping in database-driven multi-hop cognitive radio networks, *Proceedings of the 11th IEEE Consumer Communications and Networking Conference (IEEE-CCNC)*:611-616.

Krumins, J.A., N.M. Goodey, F. Gallagher (2015). "Plant-soil interactions in metal contaminated soils." *Soil Biology and Biochemistry*, 80:224-231.

Kyle, T.K., **D.M. Thomas** (2014). "Consumers believe nutrition facts labeling for added sugar will be more helpful than confusing." *Obesity* 12:2481-2484.

Lee, L.H., M. Wu, A. Peri, T.C. Chu. (2014). "Method evaluations for *Escherichia coli* and coliforms detection in Northern New Jersey water bodies." *GSTF Journal of BioSciences*, 13(1): www. globalscience-journals.com/article/10.7603/s40835-014-0002-y/.

Leszczynski, E., M. Munakata, Evans, J., & Pizzigoni, F. (2014). "Integrating mathematics and science: Ecology and Venn diagrams." *Teaching Mathematics in the Middle School*, 20(2): 90-96.

Lorenzo-Trueba, J., A.D. Ashton (2014). "Rollover, drowning, and discontinuous retreat: distinct modes of barrier response to sea-level rise arising from a simple morphodynamic model." *Journal of Geophysical Research-Earth Surface*, doi: 10.1002/2013JF002941.

Li, A., R. Tucci, (2014). "The Cayley Graph built upon the semigroup of left ideals of a ring." *Journal of Shanghai Normal University (Natural Science×Mathematics)*, 43(3):506-510.

Lin, L., S. Zhou, L. Xu, **D. Wang** (2014). "Conditional diagnosability of arrangement graphs under the PMC model." *Theoretical Computer Sci-*

ence, 548:79-97.

Massoudi, M., G. Sanchez, S. Soltan, **A. Vaidya**, J. Varner (2014.) "Some experimental observations on the pressure driven flow of biomass suspensions." *International Journal of Engineering Science*, 85:58-65.

Meredith, R.W., G. Zhang, M.T.P. Gilbert, E.D. Jarvis, M.S. Springer. (2014). "Evidence for a single loss of mineralized teeth in the common avian ancestor." *Science*, 346:1254390 DOI: 10.1126/science.1254390.

Murray D., J. Patel, C. Feldman, **L. H. Lee**, A. Fissinger (2014). "Phase II study of the safety of ready-to eat foods served in privately owned delicatessens: A confirmatory examination." *Journal of Nutritional Health & Food Engineering*, 1(4): 00023.

Oufiero, C.E., **R.W. Meredith**, K. Jugo, P. Tran, M.A. Chappell, M. Springer, D.N. Reznick, T. Garland, Jr. (2014). "The evolution of the sexually selected sword in *Xiphophorus* does not compromise aerobic locomotor performance." *Evolution*, 68:1806-1823.

Patterson, M.O , et al, including **S. Passchier** (2014). "Orbital forcing of the East Antarctic ice sheet during the Pliocene and Early Pleistocene." *Nature Geoscience*, 7(11):841-847.

Pierce, E., S.R. Hemming, T. Williams, T. van de Flierdt, S.N. Thomson, P.W. Reiners, G.E. Gehrels, **S.A. Brachfeld**, S.L. Goldstein (2014). "A comparison of detrital U-Pb zircon, 40Ar/39Ar hornblende, and 40Ar/39Ar biotite ages in marine sediments off East Antarctica: Implications for the geology of subglacial terrains and provenance studies." *Earth Science Reviews*, 138:156-178.

Pollux, B.J.A., **R.W. Meredith**, M.S. Springer, D.N. Reznick (2014). "The evolution of the placenta drives a shift in sexual selection in livebearing fish." *Nature*, 513: 233-236.

Pope, G.A., D. Chatr Aryamontri, L. Wu, T. Renner(2015). "Deterioration of stone and mineral materials from the Roman Imperial 'Villa of the Antonines' at Ancient Lanuvium." In Lollino, G. et al. (Eds.), *Engineering Geology for Society and Territory*, 8:495-501.

Prezant, R.S., R.M. Shell and L. Wu (2015). "Comparative shell microstructure of two sympatric laternulid bivalves from Kungkabaen Bay, Thailand with notes on taxonomy." *American Malacological Bulletin*, 32:1-12 (and cover photo).

Rebesco, M., E. Domack, F. Zgur, C. Lavoie, A. Leventer, **S. Brachfeld**, V. Willmott, G. Halverson, M. Truffer, T. Scambos, J. Smith, E. Petit (2014). "Boundary condition of grounding line systems beneath Larsen B Ice Shelf, Antarctica, prior to collapse." *Science*, 345(6202):1354-1358.

Schäfer, K.V.R., H.J. Renninger, N.J. Carlo, **D. Vanderklei** (2014). "Forest response and recovery following disturbance in upland forests of the Atlantic Coastal Plain." *Frontiers in Plant Science* 5:294. doi: 10.3389/fpls.2014.00294.

Shaffer, C.D. , ..., **C. Du**, et al. (2014). "A course-based research experience: How benefits change with increased investment in instructional time." *CBE Life Science Education*, 13:111-130.

Schoeller, D.A., **D. Thomas** (2015). "Energy balance and body composition." *World Review of Nutrition and Dietetics*, 111:13-18.

Schuna, Jr., J.M., C.M. Peterson, **D.M. Thomas**, M. Heo, S. Hong, W. Choi, S.B. Heymsfield (2014). "Scaling of adult regional body mass and body composition as a whole to height: Relevance to body shape and Body Mass Index." *American Journal of Human Biology*, doi: 10.1002/ajhb.22653.

Continued on next page

St. John, K., S. Passchier, B. Tantillo, D. Darby, L. Kearns (2015). "Microfeatures of modern sea ice-rafterd sediment and implications for Paleo-Sea ice reconstructions." *Annals of Glaciology*, 56:69.

Thomas, D.M., A.E. Ivanescu, C.K. Martin, S.B. Heymsfield, K. Marshall, V.E. Bodrato, D.A. Williamson, S.D. Anton, F.M. Sacks, D. Ryan, G.A. Bray (2014). "Predicting successful long-term weight loss from short-term weight-loss outcomes: New insights from a dynamic energy balance model (The POUNDS Lost study)." *American Journal of Clinical Nutrition*, ajcn.091520.

Thomas, D.M., M.C. Gonzalez, A.Z. Pereira, L.M. Redman, S.B. Heymsfield (2014). "Time to correctly predict the amount of weight loss with dieting." *Journal of the Academy of Nutrition and Dietetics*, doi: 10.1016/j.jand.2014.02.003.

Vaidya, A. (2014). "MEP and stable configurations in fluid solid interactions." In *Understanding Complex Systems (Book Series): Beyond the Second Law: Entropy Production and Non-Equilibrium Systems*, Dewar, R.C., C. Lineweaver, R. Niven, K. Regenauer-Lieb (Eds.). Springer Verlag, Chapter 13, 257-276.

Xiong, W. and **C. Du** (2014). "Mining hidden polymorphic sequence motifs from divergent plant *Helitrons*." *Mobile Genetic Elements*, 4(5):1-5.

Xiong, W., L. He, J. Lai, H.K. Dooner, **C. Du** (2014). "HelitronScanner uncovers a large overlooked cache of Helitron transposons in many plant genomes." *Proceedings of the National Academy of Science USA*, 111: 10263-10268.

Yidana, S.M., **D.U. Ophori, C.A. Alo** (2014). "Hydrological characteriza-

tion of a tropical crystalline aquifer system." *Journal of Applied Water Engineering and Research*, 2(1):13-24.

Zhang G., C. Li, O. Li, B. Li, D.M. Larkin, C. Lee, J.F. Storz, A. Antunes, M.J. Greenwold, **R.W. Meredith** et al. (96 additional authors). (2014). "Comparative genomics reveals insights into avian genome evolution and adaptation." *Science*, 346: 1311-1320.

Zhou, S., L. Lin, L. Xu, D. Wang (2015). "The t/k-diagnosability of star graph networks." *IEEE Transactions on Computers*, 64(2): 547-555.

Zhu, Q., G. Guo, **D. Wang** (2014). "Relating diagnosability, strong diagnosability and conditional diagnosability of strong networks." *IEEE Transactions on Computers*, 63 (7):1847-1851. ♦

Mark your calendars:

CSAM Career and Internship Fair

March 18, 2015

The College of Science and Mathematics (CSAM) Office of Career Services is proud to host the second annual Career and Internship Fair for majors within CSAM to help connect employers with talented undergraduate/graduate students, and alumni with internship and job opportunities. The event will take place on Wednesday, March, 18, 2015 from 3:00p.m.-5:00p.m. in the Student Center Ballrooms

Montclair State University's 9th Annual Student Research Symposium

April 26, 2015

CSAM Convocation

May 19, 2015—7 p.m.

A New Articulation Program

By Lynn Schneemeyer, Dean's Office

CSAM has completed a new articulation agreement with the SUNY College of Optometry (SUNY-CO), located in New York City, that will allow students from the Department of Biology and Molecular Biology to obtain a Doctorate in Optometry in 7 years. Students will spend

their first 3 years of college at MSU before moving to SUNY-CO where they will spend their next 4 years earning their doctorates in Optometry. A portion of the first year SUNY-CO coursework will be counted towards the MSU Biology degree, allowing students in the program to

complete their BS in Biology from MSU at the end of their first year at SUNY-CO. The SUNY College of Optometry provides the metropolitan region with much-needed health care practitioners specializing in vision and eye care. ♦