

THE JESS AND MILDRED FISHER COLLEGE OF SCIENCE AND MATHEMATICS

Newsletter

May 2016

A Message from the Dean



Our Commencement exercise on May 20th marked the official end of Towson University's year-long celebration of the institution's 150th anniversary. It's been an exciting year of looking back and looking forward, rededicating ourselves to student success and academic excellence. TU150 has given us great opportunities to re-engage with our alumni, too. There's no question that, this year, the Fisher College has served a record number of TU students, and logged record numbers of STEM majors and STEM graduates.

Here in the Dean's office, we said goodbye to Helen Harrison, and hello to Grace Nicholl, our new Executive Administrative Assistant. We wish the best to Helen and we welcome Grace to our family.

A few FCSM highlights to mention:

Maryland's capital budget this year includes funding to proceed with the architectural design of our new science complex. Groundbreaking is scheduled for 2017 and move-in for summer of 2020!

Towson University's undergraduate and graduate forensic science programs were reaccredited by FEPAC for five years. We have the only accredited forensic programs in Maryland!

The following faculty members received very prestigious Regents' Awards from the University System of Maryland. Congratulations!

- Dr. Jane Wolfson, Biology, Regents' Faculty Award for Excellence in Public Service
- Dr. Rommel Miranda, Physics, Astronomy & Geosciences, Regents' Faculty Award for Excellence in Teaching
- Dr. Matthew R. Hemm, Biology, Regents' Faculty Award for Excellence in Mentoring

Finally, TU welcomed our new President, Dr. Kim Schatzel, in January. This has been an exciting year and we are looking forward to 2016-2017 with anticipation. Please enjoy the newsletter.

Sincerely,



David A. Vanko
Dean

*The Fisher
College —
Inspiring Student
Exploration in
Science and
Mathematics for
the 21st Century*

In This Issue

- FCSM's 26th Annual Honors Convocation
- Undergraduate & Graduate Research Expo
- 251st American Chemical Society National Meeting
- 2016 Colonial Academic Alliance Conference

Memorial Gifts... from the Development Office - Gifts benefiting The Jess and Mildred Fisher College of Science and Mathematics or any of the departments mentioned in this newsletter, may be made to Towson University Foundation in honor of a birthday, anniversary or other special occasion, or simply as a thank you for a special favor. Gift acknowledgements will be sent to the donor as well as the individual being honored. For more information, contact the Towson University Development Office at 410-704-3375 or 1-866-301-3375 or write to the Towson University Foundation, 8000 York Road, Towson, MD 21252-0001.

FCSM GENERAL NEWS

Honoring our Faculty

FCSM professors Matthew Hemm, Ph.D.; Rommel Miranda, Ph.D.; and Jane Wolfson, Ph.D. each won 2016 University System of Maryland Regents' Awards.

Hemm and Wolfson, both in the Department of Biology, won awards for mentoring and public service, respectively. Miranda, a physics professor, won his award for teaching.

Celebrating Our Students

Congratulations to all the students who were selected to represent Towson University at the 2016 Colonial Academic Alliance Conference, held at the College of William and Mary in Williamsburg, VA on April 15-17. The following students were selected to make oral or poster presentations:

Eva Lopez (Department of Biological Sciences) - Breaking the dormancy period of *Oplismenus undulatifolius* (Wavyleaf basketgrass) (Dr. Vanessa Beauchamp) (poster)

Sarah Talamantez-Lyburn (Department of Chemistry)- Synthesis and characterization of cobalt nanostructures for electro-catalytic applications (Dr. Mary Sajini Devadas) (poster)



David Smith (Department of Computer and Information Sciences) - The design of a repository backed automated presumptive drug test evaluation (Dr. Subrata Acharya) (poster)

Luc O'Brien (Department of Mathematics) - 3D Volumes of neighborhood complexes (Dr. Justin Hughes) (poster)

Emileigh Shoemaker (Department of Physics, Astronomy, and Geosciences) - A Bayesian method for finding galaxies that cause quasar absorption lines (Dr. Jennifer Scott) (poster)

L to R: David Smith, Joshua Milstein, Dr. Vonnie Shields, Forest Krueger, Cynthia Weidman, Emileigh Shoemaker, Eva Lopez, Luc O'Brien, Felicia Essien, Sarah Talamantez-Lyburn, and Phillip Phan

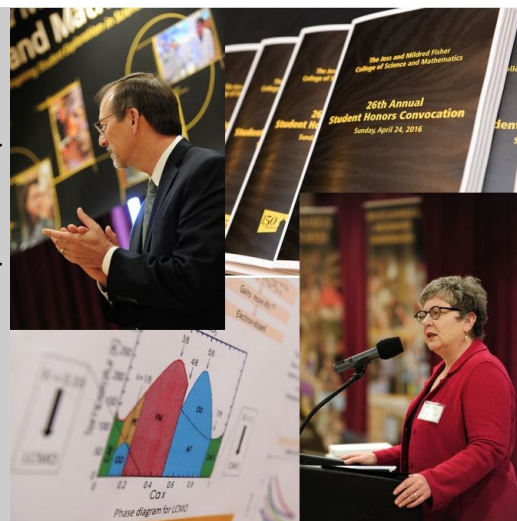
FCSM 26TH ANNUAL HONORS CONVOCATION

The event included a formal ceremony to recognize all the Fisher College students who received an award or scholarship during the 2015-2016 academic year.

President Kim Schatzel and Provost Timothy Chandler were among those in attendance.

To view the pictures from convocation, visit

www.towson.edu/fcsm/news



DEPARTMENT OF BIOLOGICAL SCIENCES

CHAIRPERSON: DR. LAURA GOUGH

Presentations and Conference Proceedings

Harald Beck coauthored a poster that was presented to the *Spotlight on National Park Resources in the National Capital Region* 2016 Centennial Meeting at Shepherdstown, WV and coauthored a talk that was given at the University of Aberdeen, UK, titled, *How mammals structure the tree community of a tropical forest*.

Brian Fath gave the following presentations:

Flourishing within the limits, at the Towson University Environmental Conference, Towson, Maryland. April 15, 2016

Food-energy-water nexus: The role for energy network science. 16th annual conference of the National Council for Science and the Environment. World Café on Models, Metrics, and Data. Washington DC. January 19-21, 2016.

Systems perspective in ecosystem and environmental management. Workshop of the Research Alliance for Regenerative Economy. Towson University, Towson, Maryland. January 13–14, 2016.

Energy network science: metrics for assessing a regenerative economy. 9th biennial conference on energy and environmental accounting. Gainesville, Florida. January 7–9, 2016.

Sustainability of ecological and socio-ecological systems. Invited Seminar. Hebei University. Baoding, China. 20 December 2015.

Sustainability of complex systems: Insights from ecological dynamics and systems thinking. Invited Presentation. Systems Analysis Conference. International Institute for Applied Systems Analysis, Laxenburg, Austria. November 11 – 13, 2015.

Sarah Haines gave the following presentations:

National Science Teacher's Association, Philadelphia November 2015: "Teaching Environmental Awareness in Maryland (TEAM): Watershed Education Inside and Outside the Classroom".

Ecological Society of America's Life Discovery Conference, Baltimore, MD March 2016: "Making Biology Relevant to Careers: Maryland High School EANR Program".

Ecological Society of America's Life Discovery Conference, Baltimore, MD March 2016: "Beyond Four Walls- Community Partnerships in Biology Education".

with Betsy Neville and Laila Richman (Dept. of Special Ed) at the UDL-IRN Summit, Towson MD March 2016: "The Next Generation Science Standards and UDL- a Powerful Partnership".

with Katie Dell (BCPS) at the Maryland Association for Environmental & Outdoor Education, Ocean City MD February 2016: "The Link between Maryland Green Schools and Higher Student Achievement".

with Cindy Etgen (Maryland DNR) at the Maryland Association for Environmental & Outdoor Education, Ocean City MD February 2016: "Implementing the Good, The Bad, & The Ugly- the Invasive Species Education Project".

Sarah Haines, Betsy Neville, and Laila Richman (Dept. of Special Ed) had the following paper published in the 2016 UDL-IRN Conference Proceedings: The Next Generation Science Standards and UDL- a Powerful Partnership.

DEPARTMENT OF BIOLOGICAL SCIENCES

Presentations and Conference Proceedings

Chris Oufiero presented a talk at a regional meeting with a TU undergraduate co-author; the data collected were part of the BRIDGES 2015 summer program.

Chris Oufiero and J. Broome*. The correlated evolution of fish swimming morphology and the relation to feeding habitat in Pomacentridae. Regional Division of Vertebrate Morphology and Comparative Biomechanics of the Society for Integrative and Comparative Biology meeting. New Jersey Institute of Technology, Newark, NJ. November 2015.

Chris Oufiero gave two presentations at the Annual Meeting of the Society of Integrative and Comparative Biology Meetings. Portland, OR. January 2016:

Oufiero, C.E., T. Nguyen*, A. Sragner* and A. Ellis*. The mantis strikes again: patterns of variation in the kinematics of a praying mantis feeding strike.

Van Sant, M.J. and **C.E. Oufiero**. Repeatability and variation in cutaneous water loss at different times of day and temperatures in *Sceloporus consobrinus*. Annual Meeting of Society of Integrative and Comparative Biology Meetings. Portland, OR. January 2016

Research from **Vonnie Shields**' lab was presented at the following:

Arnold, N.S., **Shields, V.D.C.**, and Lall, A. 2016. Electroretinogram responses of receptors from the compound eyes of the brown marmorated stink bug. Howard University Research Symposium, Howard University, Washington, D.C., April 14.

Arnold, N.S., **Shields, V.D.C.**, and Lall, A. 2016. Investigation of electroretinogram signals of the stink bug compound eye. Advancing Computational Biology @ Howard University Symposium: Molecular Simulation & Design, Systems Biology, Genomics, and Big Data. Gallaudet University, Washington, D.C., April 8.

Ferguson, S., Asante*, R., and Holt. 2016. Which biological relevant odor stimuli elicit positive anemotaxis? Advancing Computational Biology @ Howard University Symposium: Molecular Simulation & Design, Systems Biology, Genomics, and Big Data. Gallaudet University, Washington, D.C., April 8.

Book Reviews

Haines, S. had a book review for the children's trade book *Wild about Bears* appear in Science & Children 53(1), 2015.

Haines, S. had a book review for the children's trade book *When the Sun Shines on Antarctica: And Other Poems about the Frozen Continent* appear on the National Science Teachers Association website

Haines, S. had a book review for the children's trade book *Camas and Sage: A Story of Bison Life on the Prairie* appear on the National Science Teachers Association website

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Manuscript and Proposal Reviews

Harald Beck reviewed a grant for the Research Grants Council (RGC) of Hong Kong and four manuscripts for *Ecology*, *Plant Ecology*, *Tropical Ecology*, and *Biotropica*.

Laura Gough served on a review panel for the National Science Foundation Division of Environmental Biology and handled several manuscripts as a subject matter editor for *Oecologia*.

Barry Margulies reviewed a manuscript for *Virus Genes*, one chapter for the OpenStax Microbiology text, two chapters for *Molecular and Cell Biology Viruses*, one chapter for Life, *The Science of Biology*, 11th Edition, and served as editor for three manuscripts in the journal *Medicine*. He also served as a reviewer for NIH on the special emphasis panel for Pediatric Drug Formulation.

Jay Nelson reviewed three manuscripts for *The Journal of Fish Biology*, and one manuscript each for *Comparative Biochemistry and Physiology*, *Hydrobiologica*, *Environmental Biology of Fishes*, *Fish Physiology and Biochemistry*, and *Biology Letters*.

Richard Seigel reviewed manuscripts for the following journals; *Biological Conservation* (2 papers), *Current Zoology*, and *Herpetological Conservation*.

Vonnie Shields reviewed manuscripts for the *International Journal of Environmental Research and Public Health*, *Journal of Insect Physiology*, *Annals of the Entomological Society of America*, and *PLOS One*.

Professional Service and Outreach

Harald Beck was external reviewer for a faculty for promotion to Full Professor, at a research university.

Sarah Haines was invited to St. Paul's School for Girls to conduct the presentation "The Influence of Maryland Green Schools on Student Achievement" in October. She also conducted a Project Learning Tree Environmental Education professional development workshop at Creative City Charter School (Baltimore City) and at Rock Park Nature Center (Frederick County). She gave classroom presentations on the Chesapeake Bay at Sunset Elementary School (Anne Arundel County), North East Elementary School (Cecil County), Pointers Run Elementary School (Howard County), RICA School (Baltimore City).

Barry Margulies hosted the Biomedical Research class from Park Upper School in a visit to Towson University and was invited to speak for TU ASBMB's Student Chapter.

Richard Seigel gave an invited seminar on "Turtle Research at Towson University" to the Mid-Atlantic Turtle and Tortoise Society in March 2016 and an invited presentation at the annual "Fisherman's Day" held by Exelon Corporation at the Conowingo Dam in May 2016.

Vonnie Shields served as a moderator Howard University Research Symposium, Howard University, Washington, D.C., April 14 and served as a judge for the "61st Annual Baltimore Science Fair," Towson University, Towson, MD, March 19.

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Media

Brian Fath conducted a Radio Interview: It's Hot in Here: Environmental News, Views, and Grooves. University of Michigan Radio. October 9, 2015. <http://www.hotinhere.us/podcast/flourishing-within-limits-to-growth/>

Brian Fath contributed to the research blog of IIASA: Flourishing within limits to growth. October 14, 2015 Systems Analysis; <https://blog.iiasa.ac.at/2015/10/14/flourishing-within-limits-to-growth/>

Peer-Reviewed Research Publications

Abbott, B., **L. Gough**, et al. 2016. Biomass offsets little or none of permafrost carbon release from soils, streams, and wildfire: an expert assessment. *Environmental Research Letters* 11: 034014.

Amroabadi B.S., **Fath B.D.**, Renani M. 2016. Measuring System Entropy Generation in a Complex Economic Network (The Case of Iran). *Quarterly Journal of Quantitative Economics*, 12(1): 93–126.

Byer, N. W.*, S. A. Smith, and **R. A. Seigel**. In press. Spatial, temporal, and statistical variation in home ranges of the Bog Turtle *Glyptemys (Clemmys) muhlenbergii*. *Journal of Herpetology* (in press)

Christie, K.S., R.W. Ruess, K.D. Tape, **L. Gough**, V.T. Ravolainen and J.P. Bryant. 2015. The role of vertebrate herbivores in regulating shrub expansion in the Arctic: A synthesis. *BioScience* 65: 1123-1133.

Goerner S, Fiscus DA, **Fath B.D.** 2015. Using Energy Network Science (ENS) to connect resilience with the larger story of systemic health and development. *Emergence: Complexity & Organization* 17, 3.

Haines, S. had the following manuscript accepted: Feet Wet, Hands Dirty: Engaging Students in Science Teaching & Learning with Stream Investigations. *Journal of College Science Teaching* in press.

Howell, H. J.*, D. T. McKnight, and **R. A. Seigel**, In press. A novel method of collecting Spotted Turtles (*Clemmys guttata*). *Herpetological Review* (in press).

Jørgensen SE, Nielsen SN, **Fath B.D.** 2015. Recent progress in systems ecology. *Ecological Modelling*. 319, 112–118.

Kharrazi A, **Fath B.D.** 2016. Measuring global oil trade dependencies: An application of the point-wise mutual information method. *Energy Policy*. 88, 271–277.

Krause, J.S., H.E. Chmura, J.H. Perez, L.N. Quach, A. Asmus, K.R. Word, M.A. McGuigan, S.K. Sweet, S.L. Meddle, **L. Gough**, N. Boelman and J. Wingfield. 2015. Breeding on the leading edge of a northward range expansion: Differences in morphology and the stress response in the Arctic Gambel's white-crowned sparrow. *Oecologia* 180:33-44.

Longo, S.J., McGee, M.D., **Oufiero, C.E.**, Waltzek, T.B. and P.C. Wainwright. 2016. Ram, not suction, is the primary axis of suction feeding diversity. *Journal of Experimental Biology*, 219: 119-128.

Lu W, Su M, **Fath B.D.**, Zhang M, Hao Y. 2016. A systematic method of evaluation of the Chinese natural gas supply security. *Applied Energy*. 165, 858–867.

McGee, M.D., J.W. Reustle, **C.E. Oufiero**, and P.C. Wainwright. 2015. Intermediate kinematics produce inferior feeding performance in a classic case of natural hybridization. *American Naturalist* 186:807-814.

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Faculty Grants and Awards

Elana Ehrlich was awarded a new grant entitled “Ubiquitin and Ubls in KSHV” from the National Institutes of Health (\$282,000) for 2016-2019.

Richard Seigel received a new grant from Exelon Corporation to support entitled continued work on the ecology and conservation of the endangered Northern Map Turtle. The amount funded was \$50,000 for 2016. This brings the total funding for this work to over \$300,000 since 2011.

Richard Seigel also received a new grant from the National Park Service to support research studying the impacts of feral hogs on wetlands communities of amphibians and reptiles. The amount funded was \$9400 for 2016 with another \$9400 for 2017.

The Towson University Faculty Development and Research Committee awarded FDRC Grants to **Vanessa Beauchamp, Matt Hemm, Barry Margulies, Chris Oufiero, Michelle Snyder, John Weldon, and Colleen Winters.**

Jay A. Nelson was awarded a 2016-17 Fulbright U.S. Scholar grant to conduct research in Iceland.

Barry Margulies was awarded a Mentor’s Certificate of Appreciation from the Howard County Public School System’s Gifted and Talented Education Program for hosting a Centennial High School senior in his lab this academic year.

Vonnie Shields was awarded the Towson University Biological Sciences Department 2015 Hilton Service Award.

Book Chapters

Canter J.A., Rosso L.E., and **Tsuji P.A.** (November 2015). Trace Minerals. In *Encyclopedia of Food and Health*. Caballero, Finglas, Toldrá, Editors. Elsevier, Oxford, UK.

Carlson B.A., Hartman J.M.*, and **Tsuji P.A.** (2016). The 15kDa selenoproteins: Insights into its regulation and function. In *Selenium: Its molecular biology and role in human health*. (4th Edition) Hatfield D.L., Schweizer U., **Tsuji P.A.**, Gladyshev V.N., Editors. Springer Science+Business Media, LLC, New York, NY. (*In press*)

Carlson B.A., Lee B.J., **Tsuji P.A.**, Tobe R., Park J.M., Schweizer U., Gladyshev V.N., and Hatfield D.L. (2016). Selenocysteine tRNA^{[Ser]Sec}: From nonsense suppressor tRNA to the quintessential constituent in selenoprotein biosynthesis. In *Selenium: Its molecular biology and role in human health*. (4th Edition) Hatfield D.L., Schweizer U., **Tsuji P.A.**, Gladyshev V.N., Editors. Springer Science+Business Media, LLC, New York, NY. (*In press*)

Galinn S.E.* and **Tsuji P.A.** Quercetin and kaempferol ameliorate inflammation through Nrf2 and other signaling pathways (2016). In *Broccoli: Cultivation, Nutritional Properties and Effects on Health*. Juurlink B., Editor. Nova Publishers, Hauppauge, NY.

Galinn S.E.*, Hartman J.*, and **Tsuji P.A.** (November 2015). Diet and Cancer. In *Encyclopedia of Food and Health*. Caballero, Finglas, Toldrá, Editors. Elsevier, Oxford, UK.

Peters K.M.*, Galinn S.E.*, and **Tsuji P.A.** (2016). Selenium: Dietary sources, human nutritional requirements and intake across populations. In *Selenium: Its molecular biology and role in human health*. (4th Edition) Hatfield D.L., Schweizer U., **Tsuji P.A.**, Gladyshev V.N., Editors. Springer Science+Business Media, LLC, New York, NY. (*In press*)

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Book Chapters

Seigel, R. A. 2016. Data collection and storage. Pp. 32-42. In: C. K. Dodd, Jr. (editor): Reptile Ecology and Conservation: A Handbook of Techniques. Oxford University Press.

Tsuji P.A., Carlson B.A., Lee B.J., and Hatfield D.L. (2016). Interplay of selenoproteins and different antioxidant systems in various cancers. In *Selenium: Its molecular biology and role in human health*. (4th Edition) Hatfield D.L., Schweizer U., **Tsuji P.A.**, Gladyshev V.N., Editors. Springer Science+Business Media, LLC, New York, NY. (In press)

Vliet, N., D. Cornelis, **H. Beck**, P. Lindsey, R. Nasi, S. LeBel, J. Moreno, J. Fragoso, and F. Jori. 2016. *Meat from the Wild: Extractive uses of wildlife and alternatives for sustainability*. Pages 226-265. In R. Mateo et al. (eds.). Current Trends in Wildlife Research, Wildlife Research Monographs 1. Springer International Publishing, Switzerland.

Peer-Reviewed Research Publications

Nelson, J.A. 2016. Oxygen Consumption Rate versus Rate of Energy Utilization of Fishes: A comparison and brief history of the two measurements. *Journal of Fish Biology* 88:10–25. DOI: 10.1111/jfb.12824

Nelson, J.A. and Val, A. 2016. From the equator to the poles, a physiology section perspective on climate change. *Fisheries*. In press.

Oufiero, C.E.: Featured in Outside JEB: Binning, S.A. 2016. Hybrid fish sucks at feeding. *Journal of Experimental Biology* 219: 613 doi: 10.1242/jeb.129890

Pérez, J.H., J.S. Krause, H.E. Chmura, S. Bowman, M. McGuigan, A.L. Asmus, S.L. Meddle, K.E. Hunt, **L. Gough**, N.T. Boelman, and J.C. Wingfield. 2016. Nestling growth rates in relation to food abundance and weather in the Arctic. *The Auk* 133: 261-272.

Reyna-Hurtado, R., **H. Beck**, M. Altrichter, C. A. Chapman, T. R. Bonnell, A. Keuroghlian, A. L. J. Desbiez, J. Moreira-Ramirez, G. O'Farrill, J. Fragoso and E. J. Naranjo. 2016. What ecological and anthropogenic factors affect group size in White-lipped peccaries (*Tayassu pecari*)? *Biotropica* 48: 246-254.

Rodríguez RA, Herrera AM, Santander J, Miranda JV, Perdomo ME, Quirós Á, Riera R, **Fath BD**. 2016. From a stationary to a non-stationary ecological state equation: Adding a tool for ecological monitoring. *Ecological Modelling*. 320, 44–51.

Shannon-Firestone S, Reynolds HL, Phillips RP, Flory SL, and Yannarell A. 2015. "The role of ammonium oxidizing communities in mediating effects of an invasive plant on soil nitrification" *Soil Biology & Biochemistry* 90, 2015

Xia L, **Fath BD**, Scharler UM, Zhang Y. 2016. Spatial variation in the ecological relationships among the components of Beijing's carbon metabolic system. *Science of the Total Environment*. 544, 103–113.

Yang S, **Fath BD**, Chen B. in press. Ecological network analysis of embodied particulate matter 2.5 – A case study of Beijing. *Applied Energy*.

Biology Awards at the 26th Annual Fisher College Convocation Ceremony

John Kelly, Recipient of the Compton N. Crook Award

Hunter Howell, Recipient of the Carl Henrikson Memorial Award and the John David Horst Memorial Award

Rachael Mady, Recipient of the Lois D. Odell Biology Award and the Mary-Scarbrough-Carr Scholarship

Sarah Galinn, Recipient of the Wilfred B. Hathaway Award

Linda Njonkou, Recipient of the Betty Kennedy Dale Scholarship

Rebecca Silver and **Alexandra Vlk**, Recipients of Biology Alumni Scholarship

Katie Garrett, Recipient of James Edward Ewig Memorial Scholarship

Ogbeide Eromosele, Recipient of James Moniodis Scholarship

Domonique Parker, Recipient of Lois D. Odell Biology Scholarship

Alexandra Vlk, Recipient of Wendy M. & Jeffrey C. Miller, D.D.S. Scholarship

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Student Awards

Yuyi Zhu, a student in **Dr. John Weldon's** research laboratory, received an American Society for Biochemistry and Molecular Biology (ASBMB) Undergraduate Research Award for his research proposal "Combination therapy to enhance the efficacy of recombinant immunotoxins: Evaluating the role of mitochondrial translation in toxin-mediated cell death."

Undergraduate Biology major **Elizabeth Leo** earned a 2016 Undergraduate Student Research Award from the Botanical Society of America for her project entitled "Bioavailability and Trophic Transfer of Heavy Metal Soil Contaminants in Urban Gardens in Baltimore, MD." She is conducting this research project with **Dr. Laura Gough**.

Poster presentations from TU students

Galinn SE*, Rosso LE*, Carlson BA, Tobe R, Naranjo-Suarez S, **Tsuji PA**. The AhR pathway and its potential role in the regulation of the 15 kDa Selenoprotein. Experimental Biology (FASEB), San Diego, CA (April 2016)

Kraskura, K.*, **J.A. Nelson**, **C.E. Oufiero** and K. Ricci*. Allometry and repeatability of gymnotiform swimming performance in black ghost knifefish (*Apteronotus albifrons*). Annual Meeting of Society of Integrative and Comparative Biology Meetings. Portland, OR. January 2016

Peters KM*, Carlson BA, Garrett KN*, Canter JE*, Tobe R, Seifried HE, Yu Y, Cao L, Gladyshev VN, Davis CD, Hatfield DL, and **Tsuji PA**. Potential role of the 15kDa selenoproteins in colorectal inflammation. Experimental Biology (FASEB), San Diego, CA (April 2016)

Tsuji PA, Canter JA*, Carlson BA, Margulies D*, Patterson A*, Gladyshev VN, Yu Y, Cao L, Davis CD, and Hatfield DL. Impact of the 15kDa selenoproteins and dietary selenium on initiation and promotion in colorectal carcinogenesis. Experimental Biology (FASEB), San Diego, CA (April 2016)

Whitlow, K.* and **C.E. Oufiero**. Effects of gymnotiform locomotion on swimming performance and efficiency in knifefish. Annual Meeting of Society of Integrative and Comparative Biology Meetings. Portland, OR. January 2016

Undergraduate & Graduate Research Expo

The annual Undergraduate/Graduate Research and Performance Expo is sponsored by TOUR.

The Expo occurs each spring and is open to ALL undergraduate and graduate students from across campus who wish to share their work with the university community. This year's Expo was held April 20th, 2016.

The Towson Research and Performance Expo—April, 2016

Expo Oral Presentations Undergraduate:

Title: Acyclovir-Polycaprolactone Controlled-Released Devices Effectively Suppress Primary Infection *in vitro* with *Herpes simplex virus-1* and 2

Presenter: Gabrielle Thomas

Faculty Sponsor: Dr. Barry Margulies

Title: Infection without Disease: Reservoir Species Immune System

Presenter: Cindy Kolade

Faculty Sponsor: Dr. Nevil Singh (University of Maryland)

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The Towson Research and Performance Expo—April, 2016

Expo Oral Presentations Graduate:

Title: Electrophysiological investigation of the compound eye of the stink bug, *Halyomorpha halys* (Hemiptera: Pentatomidae)

Presenter: Nicole Arnold

Faculty Sponsor: Dr. Vonnie Shields

Expo Poster Presentations Undergraduate:

Title: Characterizing small *Escherichia coli* proteins ZupT and YoaX

Presenter: Charles Allen

Faculty Sponsor: Dr. Matthew Hemm

Title: Andrea Bempong

Presenter: Affinity Purification of Small Protein YghX in *Escherichia coli*

Faculty Sponsor: Dr. Matthew Hemm

Title: Investigating the Role of the MetX Small Protein in *Escherichia coli*

Presenter: Brittany Burke

Faculty Sponsor: Dr. Matthew Hemm

Title: Investigating Membrane Bound Bacteriocins as Potential Targets on *Streptococcus pneumoniae* that are Degraded by Neutrophil Serine Proteases

Presenter: Cory Casal

Faculty Sponsor: Dr. Mara Shainheit

Title: Nathaniel Donahue

Presenter: Title: Purification and Comparison of EF2

Faculty Sponsor: Dr. John E. Weldon

Title: Which Biological Relevant Odor Stimuli Elicit Positive Anemotaxis in the House Cricket, *Acheta domesticus*?

Presenter: Swithun Ferguson Jr., Rita Asante and Ashley Holt

Faculty Sponsor: Dr. Vonnie Shields

Title: Using Next-Generation DNA Sequencing to Study Two Populations of Coyotes

Presenter: Ashley Firesryche and Bruno Franco

Faculty Sponsor: Dr. Brian Masters

Title: The Effect of Inhibition of VEGF Receptors on Albino Axolotl Salamanders

Presenter: Kadiyatu Fofana

Faculty Sponsor: Dr. Renee Dickie

Title: Quantification of antiviral efficacy of antiherpetic drug released from implant devices through plaque

assay and high pressure liquid chromatography

Presenter: Ariel Gordon

Faculty Sponsor: Dr. Barry Margulies

Title: Role of the 15kDa Selenoprotein in Inflammatory Colitis

Presenter: Janelle Hartman

Faculty Sponsor: Dr. Peko Tsuji

Title: A Biochemical Approach to Identify Cell Wall-Associated Proteins on *Streptococcus pneumoniae* that are Degraded by Neutrophil Serine Proteases

Presenter: Scott Haynes and Charmaine Nganje

Faculty Sponsor: Dr. Mara Shainheit

Title: Measuring the Effects of Furin on the Intoxication Pathway of *Pseudomonas* Exotoxin A

Presenter: Benjamin Henry

Faculty Sponsor: Dr. John E. Weldon

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The Towson Research and Performance Expo—April, 2016

Expo Poster Presentations Undergraduate:

Title: A Novel Method of Collecting Spotted Turtles (*Clemmys guttata*)

Presenter: Hunter Howell

Faculty Sponsor: Dr. Richard A. Seigel

Title: Identifying small proteins encoded by intragenic short open reading frames in *Escherichia coli*

Presenter: John Kelly

Faculty Sponsor: Dr. Matthew Hemm

Title: Characterization of small protein OsmX in *Escherichia coli*

Presenter: Ulrich Kemajou

Faculty Sponsor: Dr. Matthew Hemm

Title: Effect of Notch Inhibition on Larval Salamander Regeneration

Presenter: Ariana Kerber

Faculty Sponsor: Dr. Renee Dickie

Title: Development of a PCR-Based Technique to Identify Toad DNA in Environmental Samples

Presenter: Melissa Lamborn, Jessica Brauer and Jacqueline Minehart

Faculty Sponsor: Dr. Brian Masters

Title: Characterization of the Small Protein DsbB*

Presenter: Christina Danielle Lein

Faculty Sponsor: Dr. Matthew Hemm

Title: The Role of Choline Binding Proteins in *Streptococcus pneumoniae* as Potential Targets Degraded by Neutrophil Serine Proteases

Presenter: Rachel Lent

Faculty Sponsor: Dr. Mara Shainheit

Title: Breaking the Dormancy Period of *Oplismenus undulatifolius* (Wavyleaf basketgrass)

Presenter: Eva Lopez

Faculty Sponsor: Dr. Vanessa Beauchamp

Title: Development of a PCR-based Technique to Distinguish the Two Species of Gray Tree Frog

Presenter: Elizabeth Lyons, Rebecca Stone and Claire Reider

Faculty Sponsor: Dr. Brian Masters

Title: Are the Athletic Ones the Handsome Ones? Linking Female Preference to Locomotor Performance in *Xiphophorus montezumae*

Presenter: Rachael Mady

Faculty Sponsor: Dr. Christopher Oufiero

Title: Characterization of CspX Small Protein in *Escherichia coli*

Presenter: Ricardo-Jose Melendez

Faculty Sponsor: Dr. Matthew Hemm

Title: Quantification of Methylene Blue Penetration Assay to Track Regenerative Re-Epithelialization of Zebrafish and Axolotl

Presenter: Maresha Milyavsky

Faculty Sponsor: Dr. Renee Dickie

Title: Identification and Development of Species-Specific PCR Primers for the Bull Frog and Wood Frog

Presenter: Jacob Mitchell and Hassan Syed

Faculty Sponsor: Dr. Brian Masters

Title: Using RADSeq in *Thelypteris palustris* Schott (marsh fern)

Presenter: Kara Molesworth

Faculty Sponsor: Dr. David Hearn

Title: Longitudinal monitoring of hepatic endoplasmic reticulum calcium changes in rats as a result of dietary intake

Presenter: Ifeanyi Ozobu

Faculty Sponsor: Dr. Brandon Harvey (NIH) Genes in Colon Tumorigenesis

DEPARTMENT OF BIOLOGICAL SCIENCES

The Towson Research and Performance Expo—April, 2016

Expo Poster Presentations Undergraduate:

Title: The Relationship Between the 15kDa Selenoprotein and the Expression of Cancer Regulatory Genes in Colon Tumorigenesis

Presenter: Angelica Patterson

Faculty Sponsor: Dr. Petra Tsuji

Title: The 15kDa Selenoprotein in the Regulation of Colon Cancer Signaling Pathway in a Mouse Model of Selenium Deficiency

Presenter: Christina Perreira

Faculty Sponsor: Dr. Petra Tsuji

Title: Role of the Enlarges Epaxial Muscle in Suction Feeding in *Chitala ornata*

Presenter: Kelsey Ricci

Faculty Sponsor: Dr. Christopher Oufiero

Title: Matrix-based controlled release delivery of acyclovir from silicone rings

Presenter: Jaspreet Samra

Faculty Sponsor: Dr. Barry Margulies

Title: Using a CRISPR-Cas9 knockout to evaluate the role of furin in the intoxication pathway of *Pseudomonas* exotoxin A

Presenter: Jack Sanford

Faculty Sponsor: Dr. John E. Weldon

Title: Inhibition Of TGF- β Receptor Diminishes Regeneration In Larval Axolotl Salamanders

Presenter: Rachel Serpas

Faculty Sponsor: Dr. Renee Dickie

Title: Characterization of Small Protein ybdR_rnk_1 in *Escherichia coli*

Presenter: Avery Taylor

Faculty Sponsor: Dr. Matthew Hemm

Title: Population Diversity Analysis by Identification of Polymorphisms in the Wood Frog Genome Using ddRADseq, A Partial Genome Sequence Technique

Presenter: Alexandra Vlk

Faculty Sponsor: Dr. Brian Masters

Title: Delineation of *Ventridens* using mitochondrial CO1 sequence

Presenter: Luke Walker

Faculty Sponsor: Dr. Colleen Winters

Title: Investigating the Role of TRAF3 in T Cell Biology

Presenter: Theresa White

Faculty Sponsor: Dr. Gail Bishop (NIDA)

Title: Small Molecule Inhibitors/Activators on Tail Regeneration and Regenerative Angiogenesis

Presenter: Dreu Wilkins, Rachel Serpas, Julia Kepley, Kadiyatu Fofona, Ariana Kerber and Maresha Milyavski

Faculty Sponsor: Dr. Renee Dickie

Title: Characterization of YlcX – A Small Protein in *Escherichia coli*

Presenter: Alexander J. Wilson

Faculty Sponsor: Dr. Matthew Hemm

Title: Combination Therapy to Enhance the Efficacy of Recombinant Immunotoxins: Evaluating the Role of Mitochondrial Translation in Toxin-Mediated Cell Death

Presenter: Yuyi Zhu

Faculty Sponsor: Dr. John Weldon

Title: Small Molecule Inhibitors/Activators on Tail Regeneration and Regenerative Angiogenesis

Presenter: Dreu Wilkins

Faculty Sponsor: Dr. Renee Dickie

DEPARTMENT OF BIOLOGICAL SCIENCES

The Towson Research and Performance Expo—April, 2016

Expo Poster Presentations Undergraduate:

Title: Bioavailability and Trophic Transfer of Heavy Metal Soil Contaminants in Urban Gardens in Baltimore, MD

Presenter: Elizabeth Leo

Faculty Sponsor: Dr. Laura Gough

Expo Poster Presentations Graduate:

Title: Allometry and Repeatability of Gymnotiform Swimming Performance in Black Ghost Knifefish (*Apteronotus albifrons*)

Presenter: Krista Kraskura

Faculty Sponsor: Dr. Jay Nelson

Title: Effects of Runoff induced Rapid Temperature Change on the Swimming Performance of Black Nose Dace (*Rhinichthys atratulus*)

Presenter: Morgan Matthews

Faculty Sponsor: Dr. Jay Nelson

Title: Allometry and Repeatability of Gymnotiform Swimming Performance in Black Ghost Knifefish (*Apteronotus albifrons*)

Presenter: Krista Kraskura

Faculty Sponsor: Dr. Jay Nelson

Title: *Dictyostelium discoideum* as a model organism to identify virulence and virulence regulatory factors in *Escherichia coli*

Presenter: Matthew Weichseldorfer

Faculty Sponsor: Dr. Michelle Snyder

DEPARTMENT OF CHEMISTRY

CHAIRPERSON: DR. RYAN CASEY

The BS in Forensic Chemistry and MS in Forensic Science programs were reaccredited by the Forensic Science Education Programs Accreditation Commission (FEPAC) in March. Congratulations to the Forensic faculty! Towson University is 1 of 7 universities in the US that has both its undergraduate and graduate forensic programs FEPAC accredited.

Faculty Publications

LaBarre, W.J.**; **D.R. Ownby**, S.M. Lev, K.J. Rader, **R.E. Casey**. 2016. Attenuation of copper in runoff from copper roofing materials by two stormwater control measures. *Water Research*. 88 (January 1, 2016):207-215.

Elkins, K.M.; Perez, A.C.U.**; Quinn, A.A.** "Simultaneous identification of four "legal high" plant species in a multiplex PCR high resolution melt assay," *Journal of Forensic Sciences*, **2016**, accepted.

Quinn, A.A.**; **Elkins, K.M.** "Analysis of ATR FT-IR Spectra to Differentiate Menstrual and Venous Blood on Various Substrates," *Journal of Forensic Sciences*, **2016**, accepted.

Elkins, K.M.; Perez, A.C.U.**; Sweetin, K.C.** "Rapid and inexpensive species differentiation using a multiplex real-time PCR high resolution melt (HRM) assay," *Analytical Biochemistry*, **2016**, 500, 15-17.

Elkins, K.M.; Weghorst, A.**; Quinn, A.A.**; Acharya, S. "Color Quantitation for Chemical Spot Tests for a Controlled Substances Presumptive Test Database," *Drug Testing and Analysis*, **2016**, DOI: 10.1002/dta.1949

Lewis*, A. and **Reber, K. P.** 2016. Synthesis of Antifungal Alatanone and Trineurone Polyketides. *Tetrahedron Lett.* 57, 1083-1086.

Grants

S. Acharya (PI), **K.M. Elkins** (co-PI), "The Design and Development of a Drug Testing Application to Aid in Crime Scene Investigation," Maryland Technology Development Corporation, 12/01/15-03/15/16. **\$10,000 – Funded**

Undergraduate Chemistry major **Hannah Burdge** was awarded a \$5000 summer research grant from the Organic Division of the American Chemical Society. **Dr. Keith Reber** is the PI on the grant and her research mentor.

Faculty Professional Development

Beth Kautzman reviewed a research proposal for NOAA.

Beth Kautzman attended "Anthropogenic Influences on Organic Aerosol Formation and Regional Climate Implications" *U.S. EPA Meeting and Webinar*.

Kelly Elkins was interviewed for a featured article about her research on GenomeWeb.com (155,000 monthly unique visitors), "Researchers Describe Rapid, Multiplexed High-Res Melt Assay for Species Differentiation," February 25, 2016 based on research published in *Analytical Biochemistry*.

DEPARTMENT OF CHEMISTRY

Presentations / Workshops

The Chemistry Department sent four faculty members and six students to the **251st ACS National Meeting** in San Diego, CA.

Faculty presentations included:

The Analytical Chemistry faculty (**Ryan Sours**, **Shannon Stitzel**, **Beth Kautzman**, and **John Sivey**) delivered a platform presentation in the Chemical Education Division at the 251st ACS National Meeting in San Diego, CA, entitled, *Development, pilot testing, and full implementation of an authentic research experience in undergraduate analytical chemistry: Quantitative analysis of caffeine in coffee*.

Reber, K., Sivey, J., Brunker, T., Stitzel, S., Kautzman, K., Sours, R. 2016. Development of a sophomore-level cohort for chemistry majors to promote concurrent enrollment and success in analytical and organic chemistry. Platform presentation.

Student presentations included:

Broadwater, M. A.*; **Sivey, J. D.** Influence of often-overlooked free chlorine and free bromine species on regiospecific halogenation rates of salicylic acid.

Taggart, G. A.*; **Sivey, J. D.** Regiospecific rates and steric effects of phenyl ether bromination by aqueous free bromine.

Maloney, S.*, Sudol, P.*, Khalsa, R.*, **Stitzel, S., Sours, R.** 2016. Determination of cocoa liquor provenance using fatty acid and trace element signatures. Poster session.

Smiddy, B.*, **Sours, R.** 2016. Chromatographic investigation of the interaction between the polymorphic compound mCyPU and tailored surface. Poster session.

Watts, T.*, **Sours, R.** 2016. Chromatographic investigation of the interaction between a polymorphic compound and tailored surfaces. Oral presentation.

Burdge, H.*, **Reber, K.** Total synthesis of pyrophen. Poster session.

M.T. Wilfong**, K.M. Hauser*, **D.R. Ownby, R.E. Casey.** 2016. Performance of commercially available soil amendments for enhanced copper removal in bioretention media. Poster. Chesapeake-Potomac regional SETAC meeting, Charlottesville, VA.

Faculty Awards

Beth Kautzman was presented The 2016 President's Diversity Award (Faculty Research)

DEPARTMENT OF CHEMISTRY

Community Outreach

John Sivey delivered an invited research seminar in the Department of Civil Engineering at Villanova University.

Research from **John Sivey's** group was the subject of a recent segment (January 13, 2016) on NPR's *The Academic Minute* national broadcast.

John Sivey presented an outreach event, "Mathematics of Color and Light," at Stricker Middle School on April 20, 2016.

Beth Kautzman presented an invited talk entitled "Unraveling Uncertainties in Global Climate Change: Evaluating the Chemistry and Physics of Atmospheric Aerosols" to the Girl's STEM Club, Sacred Heart of Glyndon Girls School

Kelly Elkins co-hosted a Maryland ACS 2016 Women in Chemistry event at Towson University on February 17, 2016.

The Department of Chemistry hosted the central Maryland site for the national chemistry competition called the You Be The Chemist Challenge®. The event for high school students was held on March 19, 2016 and was hosted by **Mary Devadas** on behalf of the department.

Journal Reviews

John Sivey reviewed journal articles for *Analytical Chemistry*, *Environmental Science and Technology*, and *Environmental Engineering Science*.

David Ownby reviewed for *Environmental Science and Technology* and *Bulletin of Environmental Contamination and Toxicology* and a book proposal for CRC Press.



Baltimore County Public School students participating in the "Mathematics of Color and Light" outreach activity developed by **John Sivey**.

Ryan Casey reviewed for *Landscape and Urban Planning*, *Urban Water* and *Environmental Pollution*.

Kelly Elkins reviewed manuscripts for the *Journal of Chemical Education*, *Drug Testing and Analysis*, and *Electrophoresis* and a book chapter for *ACS Books*.

Beth Kautzman reviewed a manuscript for *Environmental Science and Technology*

DEPARTMENT OF CHEMISTRY

Student Presentations

* - undergraduate student co-author ** - graduate student co-author

Shelby Weatherbee and **Erik Hobbs** gave platform presentations at TOUR Expo.

Sarah Talamntez-Lyburn and **Thomas Kountz** gave poster presentations at Tour Expo.

DeAngelo, T.M.**; Elkins K.M. "Potential Sources of DNA Cross Contamination from Non-Disposable Equipment," Poster Presentation, Towson University Undergraduate and Graduate Student Research Expo (TU-UGSRE), April 20, 2016.

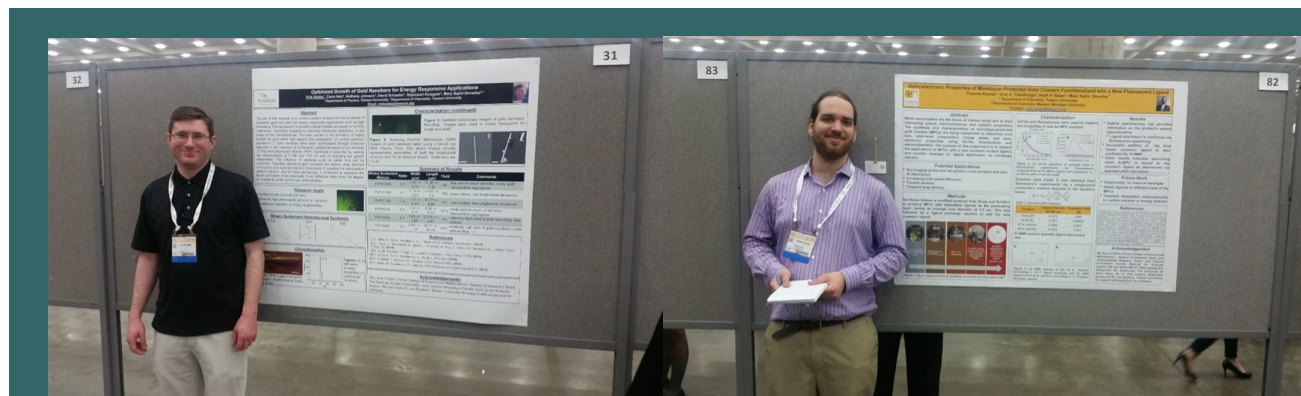
Quinn, A.A.**; Elkins K.M. "Analysis of ATR FT-IR Spectra to Differentiate Menstrual and Venous Blood on Various Substrates," Poster Presentation, Towson University Undergraduate and Graduate Student Research Expo (TU-UGSRE), April 20, 2016.

Boise, T.H.*; Elkins K.M. "Comparison of Detection of Food-Borne Pathogens by a PCR HRM Assay to a Rapid on the Market Test Kit," Poster Presentation, Towson University Undergraduate and Graduate Student Research Expo (TU-UGSRE), April 20, 2016.

Adams, K.D.**; Elkins K.M. "Persistence of Explosive Particles under Real World Conditions," Poster Presentation, Towson University Undergraduate and Graduate Student Research Expo (TU-UGSRE), April 20, 2016.

Smith, D.*; Acharya S.; Elkins, K. "The Design of a Repository Backed Automated Presumptive Drug Test Evaluation Platform," Poster Presentation, 14th Annual CAA Undergraduate Research Conference, College of William and Mary, Williamsburg, VA, April 16, 2016.

Elkins, K.M.; **Sweetin, K.C.**** "Sensitivity of a multiplex PCR high resolution melt assay for food-borne pathogens *Salmonella enterica*, *Escherichia coli* and *Shigella flexneri*," ANYL Poster #68, 251st National Meeting of the American Chemical Society (ACS), San Diego, CA, March 13, 2016.



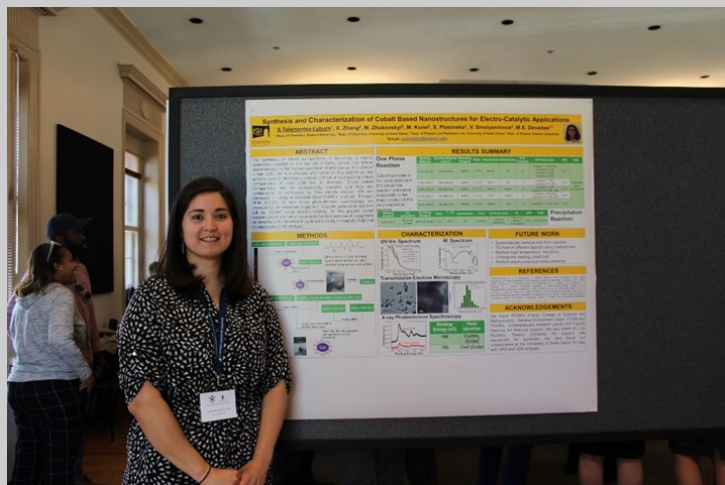
Erik Hobbs (left) and Thomas Kountz (right) at the American Physical Society, March 2016

DEPARTMENT OF CHEMISTRY

Student Presentations

Quinn, A.;** Elkins K.M. "Development of a High Resolution Real-Time Polymerase Chain Reaction (PCR) Melt Assay for Identifying "Legal High" Plant Material," oral presentation in the Criminalistics Section (B191) at the 68th Annual American Academy of Forensic Sciences (AAFS) National Meeting, Las Vegas, NV, February 26, 2016.

Quinn, A.;** Elkins K.M. "Analysis of Attenuated Total Reflectance/Fourier Transform Infrared (ATR/FTIR) Spectra to Differentiate Menstrual and Venous Blood on Various Substrates," poster presentation in the Criminalistics Section (B8) at the 68th Annual American Academy of Forensic Sciences (AAFS) National Meeting, Las Vegas, NV, February 24, 2016.



*Sarah Talamantez-Lyburn at the Colonial Academic Alliance
April 2016 – 1 of 10 students selected to represent TU.*

Elkins, K.M.; Murphy, K. "Implementation of the computer version of the ACS General Chemistry Exam: A pilot study," SCTY Oral #344, 2015 International Chemical Congress of Pacific Basin Societies, Honolulu, HI, December 19, 2015.

Elkins, K.M.; Schelble, S.M. "Leadership across multiple cultures: Providing workplace fairness regarding common issues faced by women in chemistry," SCTY Invited Oral #145, 2015 International Chemical Congress of Pacific Basin Societies, Honolulu, HI, December 17, 2015.

Student Awards

Allison Ricko received a Graduate Student Research Award from the Office of Graduate Studies at Towson University for her Master of Science in Environmental Science thesis entitled, *Anaerobic abiotic reduction of dichloroacetamide safeners: Effects of manganese oxides and agrochemical co-formulants*. Allison graduated in August 2015 and currently works as a scientist at Critical Path Services, a company that supports agrochemical environmental fate studies to assist major agrochemical companies with EPA product registration. Allison's thesis advisor was **John Sivey**.

Matthew Broadwater was selected to receive a 2016 Undergraduate Student Award from the ACS Division of Environmental Chemistry. This award recognizes outstanding achievement in undergraduate coursework and/or research related to environmental chemistry. Matthew's research advisor is John Sivey.

DEPARTMENT OF COMPUTER & INFORMATION SCIENCES

CHAIRPERSON: DR. CHAO LU

Publications and Presentations

S. Acharya, B. Coats, “*Healthcare Information Security in the Cyber World: Improving Care Delivery by Using Frameworks to Realize Accessibility, Efficiency, and Integrity in Healthcare Information Security*”, book chapter in *Unconventional Algorithms and Cyber Security*, Publisher: Springer, Summer 2016 (forthcoming)

S. Acharya, S. Khatiwada (undergraduate student), **K. Elkins**, “*CSI-Pi: A novel automated secure solution to interpret on-site colorimetric tests*”, *Colonial Academic Alliance Undergraduate Research Journal (CAAURJ)*, Volume 5, Issue 2, December, 2015

D. Smith (undergraduate student), **S. Acharya**, **K. Elkins**, “*The Design of a Repository Backed Automated Presumptive Drug Test Evaluation Platform*”, CAA Undergraduate Research Conference, Williamsburg, WV, April 2016

Z. Tang, J. Guo (doctoral student), S. Miao (doctoral student), **S. Acharya**, **J. Feng**, “*Ambient Intelligence Based Context-Aware Assistive System to Improve Independence for People with Autism Spectrum Disorder*”, 49th Hawaii International Conference on System Science (HICSS-49), Kauai, Hawaii, January 2016

S. Acharya, R. Sarraf (doctoral student), “*An Automated Approach to Conduct Effective On-Site Presumptive Drug Tests*”, IEEE 15th International Conference on Bioinformatics and Bioengineering (IEEE BIBE), Belgrade, Serbia, November 2015

S. Acharya, Gabriel Susai (graduate student), Manoj Pillai (graduate student), “*Patient Portals: Anytime, Anywhere*”, IEEE International Conference on Bioinformatics and Biomedicine (BIBM) Workshop on Health Informatics and Data Science (HI-DS), Washington D.C., November 2015

S. Acharya, William Glenn (graduate student), and Matthew Carr (graduate student), “*A GRReat Framework for Incident Response in Healthcare*”, IEEE International Conference on Bioinformatics and Biomedicine (BIBM) Workshop on Health Informatics and Data Science (HI-DS), Washington D.C., November 2015

S. Acharya, Branden Ehrenreich (graduate student), James Marciniak (graduate student), “*OWASP Inspired Mobile Security*”, IEEE International Conference on Bioinformatics and Biomedicine (BIBM) Workshop on Health Informatics and Data Science (HI-DS), Washington D.C., November 2015

On Feb. 2, 2016, **Marius Zimand** gave an invited talk on “Distributed compression - the algorithmic-information-theoretical point of view”, at the Institute Henri Poincare in Paris, in the framework of the “Nexus of Information and Computation Theories” thematic program. The video with the lecture is available on youtube.

The survey paper “A brief on short descriptions” by Jason Teutsch (NUS Singapore) and **Marius Zimand**, has been published in *ACM Sigact News*, 47(1), pg. 42-67, March 2016.

DEPARTMENT OF COMPUTER & INFORMATION SCIENCES

Publications and Presentations

Robert Hammell, doctoral student Allison Newcomb, and three collaborators from the US Army Research Laboratory had their paper entitled “A Fuzzy-Based Approach to Support Decision Making in Complex Military Environments” published in the *International Journal of Intelligent Information Technologies* (special issue on *The Impact of Fuzzy Set and Intuitionistic Fuzzy Approaches in Relation to Organizational Decision Making*), 12(1), pp. 1-30, January 2016.

Robert Hammell, doctoral student Chuck Smith, and two collaborators from the US Army Research Laboratory had their paper entitled “A Theoretical Exploration of the Impact of Packet Loss on Network Intrusion Detection” published in the *International Journal of Networked and Distributed Computing*, 4(1), pp. 1-10, January 2016.

Robert Hammell and doctoral student Allison Newcomb had their paper entitled “A Fuzzy Logic Utility Framework (FLUF) to Support Information Assurance,” accepted for the upcoming publication *Studies in Computational Intelligence*, R. Lee, Ed., Germany: Springer, 2016.

Robert Hammell, doctoral student Chuck Smith, and a collaborator from the US Army Research Laboratory had their paper entitled “An Experimental Exploration of the Impact of Multi-Level Packet Loss on Network Intrusion Detection” accepted for presentation and publication as part of the upcoming 14th *IEEE/ACIS Conference on Software Engineering Research, Management and Applications (SERA 2016)*, to be held June 8-10, 2016 at Towson University.

Robert Hammell reviewed papers for the following:

- Special issue of *International Journal of Intelligent Information Technologies* on the theme *The Impact of Fuzzy Set and Intuitionistic Fuzzy Approaches in Relation to Organizational Decision Making* (published January 2016).
- 14th *IEEE/ACIS International Conference on Software Engineering Research, Management, and Applications (SERA2016)*, Towson University, June 8-10, 2016
- 4th *International Conference on Smart Computing and Artificial Intelligence (SCAI2016)*, Jumamoto, Japan, July10-14, 2016

AIT Doctoral Student Jie Lian and **Michael McGuire** recently presented their paper entitled “Mining Persistent and Dynamic Spatio-Temporal Change in Global Climate Data.” at the 13th International Conference on Information Technology – New Generations conference held on April 4-6, 2016, in Las Vegas, NV.

Joyram Chakraborty and **Michael McGuire** recently presented their paper entitled “Preliminary Findings from an Information Foraging Behavioral Study Using Eye Tracking.” at the 8th Cambridge Workshops on Universal Access and Assistive Technology (CWUAAT) held on March 21-23, 2016, at the University of Cambridge, Cambridge, UK.

Omar Darwish and **Nadim Alkharouf**, along with USDA collaborators, co-authored a paper titled: “Proteomic Investigation of *Rhizoctonia solani* AG 4 Identifies Secretome and Mycelial Proteins with Roles in Plant Cell Wall Degradation and Virulence”, which appeared in the journal of Agricultural and Food Chemistry.

Omar Darwish and **Nadim Alkharouf**, co-authored a paper titled: “Genome-wide functional annotation of *Phomopsis longicolla* isolate MSPL 10-6”, which appeared in the journal Genomics Data.

DEPARTMENT OF COMPUTER & INFORMATION SCIENCES

Publications and Presentations

Jonathan Lazar was the lead author on an article published in the journal **Foundations and Trends in Human Computer Interaction** titled, "Human-Computer Interaction and International Public Policymaking: A Framework for Understanding and Taking Future Actions." This article is the output of a 4-year process, involving multiple workshops and meetings, with 31 co-authors from 10 countries.

Gabriele Meiselwitz and undergraduate student Kenway Chung presented a paper at ISECON 2015 (Information Systems Education Conference), Orlando, FL, Nov 5-7, title: "Small-scale Interdisciplinary Service Projects in CIS".

Since the last FCSM newsletter in September, **Dr. Lazar** has given 10 presentations about technology access for people with disabilities at various disability (e.g. Coleman Institute for Cognitive Disabilities at the University of Colorado), legal (Jacobus tenBroek Disability Law Symposium), education (e.g. EDUCAUSE), and technical (e.g. the AccessEngineering Capacity Building Institute) venues.

Services to the Discipline

Faculty mentors, **R. Miranda** (Department of Physics, Astronomy, and Geosciences), **C. Zeller** (Department of Chemistry), and **S. Acharya** (Department of Computer and Information Sciences) conducted and participated in the STEM workshop on "Inspiring Middle School Female Students Through STEM Education at Towson University", co-directed by **Honi J. Bamberger** and **Diana Cheng**, hosted by the Department of Mathematics, November 2015.

<http://thetowerlight.com/math-dept-hosts-stem-day-for-middle-school-girls/>

Jinjuan Heidi Feng from the Computer and Information Sciences Department is honored to serve as the general chair for the 18th International ACM SIGACCESS Conference on Computers and Accessibility (ACM ASSETS 2016). The conference will be held on October 24-26 at the Atlantis Casino Resort & Spa in Reno, Nevada.

Chao Lu and **Charles Dierbach** served as external reviewers of the computer science programs at Frostburg State University in March. Dr. Lu reviewed the graduate program, and Dr. Dierbach reviewed the undergraduate program.

Gabriele Meiselwitz has been elected to serve as the Program Board Chair for the 8th International Conference on Social Computing and Social Media, part of HCII (Human Computer Interaction International 2014-2016). HCII is an international conference with over 2000 participants from over 60 countries.

Jonathan Lazar published a book, co-edited with Pat Langdon, Ann Heylighen, and Hua Dong, titled, "Designing Around People," which is a selection of the best papers from the 2016 Cambridge University Workshop on Universal Access and Assistive Technology, which Dr. Lazar co-directed. Dr. Lazar and Dr. Brian Wentz (doctoral graduate from Towson, now professor at Shippensburg University) presented a paper at the workshop titled, "Exploring the Impact of Inaccessible Redesigns and Updates."

Jonathan Lazar completed co-editing a book with Michael Stein of Harvard Law School, titled, "Global Inclusion: Disability, Human Rights, and Information Technology," which is partially based on the 2015 Radcliffe Exploratory Workshop at Harvard University about "Frontiers in US Law: Equal Access to Information Technology for People with Disabilities." The book is under contract to the University of Pennsylvania Press and is expected to be published in early 2017.

DEPARTMENT OF COMPUTER & INFORMATION SCIENCES

Grant & Awards

S. Acharya (PI), **K. Elkins** (co-PI), *Evaluation of Technologies for the Design and Development of a Drug Testing Application to Aid in Crime Scene Investigation, Market Study Proposal*, Funded by: Maryland Technology Development Corporation (TEDCO), \$10,000, November 2015 – April 2016

Michael McGuire received a sub-award of \$27,539 from Johns Hopkins University to develop a world-wide geographic hierarchy and gazetteer service to support the Meta Citizen Sciences Project funded by the John Templeton Foundation.

Ziying Tang and **Jinjuan Heidi Feng** from the Computer and Information Sciences Department, together with Dr. Amanda Jozkowski from the College of Health Professions received a grant of \$10,000 from the Fisher Endowment Fund and another grant of \$20,000 from the Mid Atlantic CIO Forum to develop a communication system for young children with Spinal Muscular Atrophy (SMA).

Robert Hammell, as PI, received a grant of \$55,150 from ARL on “Fuzzy Methods for Social Computing” to have two course releases for the fall, 2016 semester to allow him to spend HALF time with the ARL Multilingual Computing and Analysis Branch.

Wei Yu, as PI, Dr. **Chao Lu**, as co-PI, received a grant of \$100,000 from CERDEC on “Efficient Network Transport for Tactical Networks Analysis, Research and Development” April 2016 to April, 2017.

Both of these two grants are the new additions to the Army Research Lab Cooperative Agreement # W911NF-11-2-0092.

Jonathan Lazar was named the recipient of the 2016 Social Impact Award from ACM SIGCHI (the Association for Computing Machinery Special Interest Group on Computer-Human Interaction), the world's largest organization of researchers, practitioners, and educators in human-computer interaction. This award "is given to individuals who promote the application of human-computer interaction research to pressing social needs" (description from the SIGCHI web site).

Jonathan Lazar was quoted in an article titled “Facebook taps artificial intelligence for users with disabilities” published in USA Today on March 26, 2016 and available at: <http://www.usatoday.com/story/tech/news/2016/03/23/facebook-accessibility-people-with-disabilities/82026554/>

DEPARTMENT OF MATHEMATICS

CHAIRPERSON: DR. MICHAEL O'LEARY

Grants and Contracts

Diana Cheng was awarded a Mathematics Travel Grant by the Association of Women in Mathematics in the amount of \$868. Her proposal was entitled, "Using sports as an interdisciplinary application of mathematical modeling." The travel grant was awarded for her presentations at the 2016 Joint Mathematics Meetings in Seattle, WA. Funding is provided by the Division of Mathematical Sciences of the National Science Foundation.

Ming Tomayko and **Michael Krach** will be conducting a two week summer institute for a group of 24 BCPS middle school mathematics teachers in July 2016. The activities will focus on the content and pedagogy emphasized by both the CCSSM and the NCTM for middle grade students. The funds for this summer institute will be provided by Dr. Nancy Grasmick's office and the BCPS, with support from the TU Department of Mathematics.

Gail Kaplan and **Michael Krach** will be conducting a one week summer institute for a group of 24 BCPS algebra teachers in August 2016. The activities will focus on the content and pedagogy emphasized by both the CCSSM and the NCTM for algebra students. The funds for this summer institute will be provided by Dr. Nancy Grasmick's office and the BCPS, with support from the TU Department of Mathematics.

Papers Published or Accepted for Publication

Diana Cheng co-authored two papers with **Tetyana Berezovski** that have been accepted for publication: "Exploring geometric and algebraic relationships in the pairs figure skating death spiral," which was accepted for publication in the Fall 2016 issue of the New York State Mathematics Teachers' Journal; and "Arm magic in skating spins," which will be published in the Spring 2016 issue of OnCore: Arizona Association of Teachers of Mathematics journal.

Linda Cooper and Towson UTeach student, **Emily Dennis**, had a paper, "Estimating Earth's Circumference with an App," accepted for August 2016 publication in NCTM's *Mathematics Teaching in the Middle School*.

Angel Kumchev's paper "On sums of four squares of primes" (joint with L. Zhao) was published by *Mathematika* 62 (2016), 348-361.

Angel Kumchev's paper "On the Waring-Goldbach problem for eighth and higher powers" (joint with T.D. Wooley) was accepted for publication by the *Journal of the London Mathematical Society*.

Stanley Max's article, entitled "Metric Notation in the Middle East," was published in *Metric Today*, 51:2 (March/April 2016): 2-3.

Nathan McNew's paper "The most frequent values of the largest prime divisor function" was accepted for publication by *Experimental Mathematics*.

Nathan McNew's paper "Infinitude of k-Lehmer numbers which are not Carmichael" (joint with T. Wright) was accepted for publication by the *International Journal of Number Theory*.

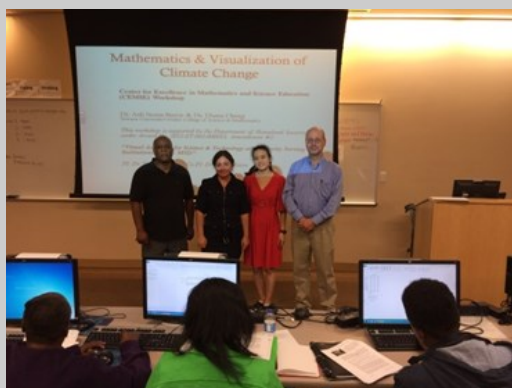
Tatyana Sorokina's paper entitled "Linear differential operators on bivariate spline spaces and spline vector fields" joint with Peter Alfeld, was published in BIT Numerical Mathematics, Volume 56 Number 1, p. 15-32.

Tatyana Sorokina's paper entitled "Dimension of trivariate C^1 splines on bipyramid cells", joint with J. Colvin (TU graduate student), and D. DiMatteo (TU undergraduate student), was accepted for publication in Computer Aided Geometric Design.

DEPARTMENT OF MATHEMATICS

Workshops

On Saturday, September 26th, **Diana Cheng** and **Asli Sezen-Barrie** (PAGS) presented a professional development workshop entitled “Mathematics and Visualization of Climate Change” hosted by Morgan State University on Saturday, September 26. This workshop was supported by a \$10,000 sub-contract of a grant from the Department of Homeland Security entitled “Visual Analytics for Science & Technology at a minority Serving Institutions (VAST MSI),” awarded to Dr. Timothy Akers and Dr. Kevin Peters.



Photograph: Dr. Kevin Peters (Morgan State University), Dr. Asli Sezen-Barrie (PAGS), Dr. Diana Cheng, and Dr. Timothy Akers (Morgan State University) at the Mathematics and Visualization of Climate Change workshop on Saturday, September 26th.

Refereeing, Reviewing, and Panel Service

Diana Cheng peer-reviewed one article submitted to the Mathematics Teaching in the Middle Grades journal, a publication of the National Council of Teachers of Mathematics.

Russell Hendel's book reviews of the books listed below were published by Mathematical Association of America (MAA): “Combinatorial Geometry in the Plane,” by Hugo Hadwiger and Hans Debrunner, translated by Victor Klee, “Building Models By Games,” Wilfrid Hodges, “Algebraic and Discrete Mathematical Methods for Modern Biology,” Raina Robeva, Editor

Russell Hendel reviewed papers for the following journals and conferences: The Fibonacci Quarterly, The Journal of Integer Sequences, The American Mathematical Monthly, World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI), International Conference on Society, Cybernetics and Informatics (ICSCI), Education and Information Systems, Technology and Applications (EISTA) and International Conference on Education, Training and Informatics (ICETI).

Conference and Seminar Presentations

Diana Cheng and graduate student David Thompson presented at the 2015 Maryland Council of Teachers of Mathematics conference held at the Baltimore Polytechnic High School on October 16. The title of their presentation was “Amazing mazes: Geometric and algebraic patterns in labyrinths.”

Diana Cheng and Dr. Tetyana Berezovski of St. Joseph's University gave a talk entitled “Two Skaters and Several Equations: Modeling Pairs Figure Skating” at the 2015 Maryland Council of Teachers of Mathematics conference held at the Baltimore Polytechnic High School on October 16.

Graduate student David Thompson presented a talk co-authored with **Diana Cheng** at the 2015 National Council of Teachers of Mathematics Regional Conference and Exposition in Atlantic City, NJ. The talk was entitled, “Tigers, Birds and Beads: A Population Simulation.”

DEPARTMENT OF MATHEMATICS

Conference and Seminar Presentations

In January 2016, **Diana Cheng** presented two talks at the Joint Mathematics Meetings of the American Mathematical Society and Mathematical Association of America in Seattle, Washington: “Getting on top of spinning: Modeling the figure skating upright spin” with Dr. Tetyana Berezovski of St. Joseph’s University, and “Complex Mazes with Simple Paths: Mathematics within the Art of Classical Labyrinths” with graduate student David Thompson.

Russell Hendel’s paper, “Implementing an Executive-Function Syllabus: Operational Issues,” was accepted for presentation at the Education and Information Systems, Technology and Applications (EISTA) 2016 to be held in Orlando Florida in July 2016. Russell Hendel was also invited to deliver a keynote address.

Russell Hendel’s paper, “Generalization of the Tagiuri-Gould Identities to m parameters with proof by Binetization,” was accepted for presentation at the International Fibonacci Conference to be held in Caen, France in June 2016.

Angel Kumchev presented a talk on “Recent progress in the Waring–Goldbach problem” at the Winter Meeting of the Canadian Mathematical Society in Montreal, Canada, December 5-6, 2015.

Angel Kumchev presented a talk on “Recent progress in the Waring–Goldbach problem” at the Southeast Regional Meeting on Numbers (SERMON) XXIX in Harrisonburg, VA, April 2-3, 2016.

Nathan McNew presented a talk on “Numbers divisible by a large shifted prime” at the Southeast Regional Meeting on Numbers (SERMON) XXIX in Harrisonburg, VA, April 2-3, 2016.

Nathan McNew presented a talk on “The most frequent values of the largest prime divisor function” in the Number Theory Seminar at PennState University, State College, PA, April 14, 2016.

On May 25, 2016, **Felice Shore** and **Diana Cheng** will co-present a talk at the 2016 Annual UTeach Conference with undergraduate UTeach students Samantha Forsythe and Victoria Newman. Their talk is entitled, “Examining Teacher-Student Discourse and Patterns of Questioning in Classroom Interactions” and will take place at the University of Texas at Austin.

Miscellaneous Professional Activities, Community Engagement, and Service to the Discipline

Diana Cheng provided sports-related mathematical activities to over 1000 elementary and middle school students from the Baltimore City Public School and Baltimore County Public School students attending a STEM Day women on November 24th. The field trip day involved students’ watching the Towson University women’s basketball home game and participating in STEM activities coordinated by Sharlene Roberson, FCSM STEM Program Director.

Russell Hendel attended the Greater New York Math Fair, held in Brooklyn New York on April 3, 2016. The Greater New York Math Fair is a friendly High School competition, in which students at the High School level from the greater New York area, meet and present math papers on research they have been doing. Russell is the coordinator of judges for this fair. Close to 100 students from a variety of High Schools in the New York area came and presented to about 50 judges who came from High Schools and Universities. The day climaxed with the awards ceremony in which students were awarded gold, silver and bronze medals.

DEPARTMENT OF MATHEMATICS

Miscellaneous Professional Activities, Community Engagement, and Service to the Discipline

On Saturday, November 14, 2015, **Honi Bamberger** and **Diana Cheng** co-directed an on-campus field trip for 19 female middle school students from the Afya Public Charter School, in Baltimore City. Thanks to sponsorship from The Pepsi Foundation, the FCSM, and the Mathematics Department, a successful day of STEM activities entitled, "Inspiring Middle School Female Students Through STEM Education at Towson University" occurred. The young women attended four workshops: 1) "Wind Powered Vehicles" conducted by **Rommel Miranda** (Dept. of Physics, Astronomy, and Geosciences) and assisted by his daughter Luna, 2) "Who took Doc?" conducted by **Cynthia Zeller** (Chemistry Department), 3) "Computational Thinking: Logic Code & Beyond" led by **Subrata Acharya** (Dept.

of Computer and Information Sciences), and "What Does Mathematics Have to do With Mazes?" conducted by Towson University graduate student **David Thompson**, who is also a Special Education Mathematics Teacher for the Baltimore City Public Schools. Twenty-one undergraduate pre-service elementary teachers volunteered to prepare workshop materials, give a campus tour, and lead small group activities with the middle school students.

Russell Hendel was invited to submit a chapter for an upcoming book, "Comprehensive Problem Solving and Skill Development for the Next Generation Educational Leader," planned to be published later this year.

Russell Hendel is chair of the Models for Life Contingency (MLC) committee for the Society of Actuaries. They recently updated the Curriculum and Learning Objectives for MLC.

In early October, **Angel Kumchev** and **Nathan McNew** (jointly with Mike Knapp of Loyola University) founded a regular local number theory seminar that meets on TU's campus on Friday afternoons.

Tatyana Sorokina served as an editor for a special issue of Computer Aided Geometric Design on "Multivariate Splines and Algebraic Geometry" scheduled to appear in 2016.

Undergraduate Research

On March 17th, undergraduate student Casee Callaghan (Elementary Education / Special Education dual major) presented her originally designed activities on fractions and proportional reasoning based on a children's literature book to middle school students attending the STEAM Club at the Afya Public Charter School. Casee will present additional activities regarding fraction comparisons to third graders at Gunpowder Elementary School, a Baltimore County Public School, on April 27th. **Diana Cheng** supervised Casee's independent study project and assisted with the design of these activities.



Afya Public Charter School students participating in David Thompson's workshop on mathematics within mazes on November 14, 2015.

DEPARTMENT OF MATHEMATICS

Student Clubs

The Mathematics Education Club, co-advised by **Honi Bamberger** and **Diana Cheng**, held meetings in October, November, December, February, March, and April; and another meeting will be conducted in May. Refreshments were provided by the Pepsi Foundation and dinner was provided by the Mathematics Department at all of these meetings. The speaker for the October 15th meeting was Dr. Tetyana Berezovski of St. Joseph's University, who spoke on "Arms Magic in Figure Skating Spins." On November 16th, **Ming Tomayko** presented originally created activities during a session entitled "Using Manipulative Materials in Middle School Mathematics." Ms. Janice Wong of The Park School in Brooklandville, MD and senior undergraduate middle school education student Kathleen Ho collaborated to present the December 8th meeting on "Origami Builds Spatial Problem Solving Skills."

On Tuesday, February 16th, the Mathematics Education Club hosted a Principals' Panel with principals of local independent and public schools discussing what they look for in teacher candidates. The principals who served on the panel were: Megan McGowan, Head of the Lower School at Jemicy; Jonathan Davis, Principal at Guilford Elementary School in Howard County; and Katie Eichman, Principal of Afya Public Charter School in Baltimore City.

On Thursday, February 25th, Laura Potter spoke on "Engaging Calculus Tasks: Volumes of Solids." Ms. Potter is a TU alumna who earned the Harford County Public Schools' 2015 Teacher of the Year award.

On Tuesday, March 22, a First-Year Teachers' Panel was held and the invited speakers were all Towson University alumni: Katie Burdge (Bear Creek Elementary School), Regan Roth (Sollers Point Technical High School), Kristian Rusher (McCormick Elementary School), and Alexandra Ward (Centennial High School) shared their experiences with their job searches and with teaching for their first year in public schools. On Monday April 18th, **Howard Kaplon** spoke to the club on "Discrepancies in mathematics that confuse middle school students" and **Nicole Winner** helped prepare the pedagogical aspects of the presentation.

The last meeting of the Mathematics Education Club will take place on Thursday, May 5th. Baltimore County Public School teacher Lisa Antonious will be presenting on the use of foldables in mathematics instruction.

On October 24, 2015, four TU mathematics students took part in the annual Virginia Tech Regional Mathematics Contest. Two of the students, Duncan Gichimu and Christian Knoll, placed among the top 40% of all participants.

On December 5, 2015, three TU mathematics students took part in the annual William Lowell Putnam Mathematics Competition, the most prestigious mathematics competition for college mathematics in North America. One of the students, Luc O'Brien, placed among the top 25% of all participants.

On March 10, 2016, the Mathematics Club hosted a Pi Day celebration.

DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

CHAIRPERSON: DR. DAVID SCHAEFER



The 2016 Sigma Pi Sigma Inductees along with current members of Sigma Pi Sigma. The induction ceremony was held on Thursday, April 28 in the West Village Ballroom.

Student News

"From Legos to LIGO: alumnus Ryan Everett's journey into physics history," TU homepage (March 7)

Cacie Hart (Applied Physics Master's Graduate 2015) was awarded the TU graduate research award for her thesis titled "Lattice Mismatch Strain Effects in Calcium Manganese Oxide Thin Films". (Research Advisor: Raj Kolagani)

Daniel Zile (Physics B.S, senior) was selected to participate in an REU program at the University of Michigan

Morgan Githinji (Physics B.S, junior) was selected to participate in an REU program at Howard University

Zoey Warecki (Physics B.S Graduate, 2014) was awarded an NSF Graduate Research Fellowship during the first semester of her PhD program at the Materials Research and Engineering Department at the University of Maryland. The award announcement cites her 'demonstrated scholarly excellence', thus highlighting Zoey's accomplishments as an undergraduate researcher at TU (Research Mentors: James Overduin and Raj Kolagani). Zoey also participated in internship programs in materials research at two national labs and was the recipient of the outstanding student award for undergraduate research from the National Society of Physics Students.

Proposals

Wendy Nelson was co-PI on an NSF proposal entitled "Collaborative Research: Subduction Initiation and development of the nascent Izu-Bonin-Mariana arc: A Petrologic and Geochemical Investigation of IODP Expedition 352 whole rocks and glasses." The project was funded through NSF's Marine Geology and Geophysics program. Co-PI's are Mark Reagan (PI, U of Iowa), Jeff Ryan (U of South Florida), John Shervais (Utah State), and Katie Kelly (U of Rhode Island). (\$46,500 to TU)

DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

Publications

J.M. Overduin, N. Prins* and J. Lee, "Supernova constraints on higher-dimensional cosmology with a phantom field," *International Journal of Modern Physics D* 25 (2016) 1650069 [10 pages]

J.M. Overduin, "Paul S. Wesson (1949-2015)," *The Observatory* 136, (2016) 102-104

J.M. Overduin, "Spacetime, spin and Gravity Probe B", *Classical and Quantum Gravity* 32 (2016) 224003 [11 pages]

C.W.F. Everitt et al. (95 authors including **J.M. Overduin**), "The Gravity Probe B test of general relativity," *Classical and Quantum Gravity* 32 (2016) 224001 [29 pages]

Vera N. Smolyaninova, Kathryn Zander,* Thomas Gresock,** Christopher Jensen,** Joseph C. Prestigiacomo, M. S. Osofsky, and Igor I. Smolyaninov, "Using metamaterial nanoengineering to triple the superconducting critical temperature of bulk aluminum," *Scientific Reports* (Nature Publishing Group) **5**, 15777 (2015). **This work was featured by SPIE News Room, Superconductor Week and other media outlets.**

Vera Smolyaninova, Christopher Jensen,** William Zimmerman,* Anthony Johnson,** **David Schaefer** and Igor Smolyaninov, "Lithographically fabricated magnifying Maxwell fisheye lenses," *Photonics* **2016**, 3(1), 8; doi:[10.3390/photonics3010008](https://doi.org/10.3390/photonics3010008) (2016).

Three published papers of Dr. Vera Smolyaninova's students as co-authors were highlighted in the quarterly publication of the national Council on Undergraduate Research:

V.N. Smolyaninova, B. Yost,** K. Zander,* M. S. Osofsky, H. Kim, S. Saha, R. L. Greene, and I. I. Smolyaninov "Experimental demonstration of superconducting critical temperature increase in electromagnetic metamaterials", *Scientific Reports* (Nature publishing group) **4**, 7321 (2014).

Vera N. Smolyaninova, David Lahneman,* Todd Adams,* Thomas Gresock,** Kathryn Zander,* Christopher Jensen,** and Igor I. Smolyaninov, "Experimental demonstration of Luneburg waveguides," *Photonics* **2**, 440 (2015), invited paper for special issue *New Frontiers in Plasmonics and Metamaterials*

Vera N. Smolyaninova, Kathryn Zander,* Thomas Gresock,** Christopher Jensen,** Joseph C. Prestigiacomo, M. S. Osofsky, and Igor I. Smolyaninov, "Using metamaterial nanoengineering to triple the superconducting critical temperature of bulk aluminum," *Scientific Reports* (Nature Publishing Group) **5**, 15777 (2015).

Furman, T, **Nelson, W.R.**, Elkins-Tanton, L.T., Evolution of the East African rift: Drip magmatism, lithospheric thinning and mafic volcanism. *Geochimica et Cosmochimica Acta* (2016) doi:[10.1016/j.gca.2016.03.024](https://doi.org/10.1016/j.gca.2016.03.024)

Lottero-Perdue, P.S. (April 2016). Fifth graders' perceptions about failure and mindsets before and after learning to engineer. Paper presented at the 2016 NARST – A Worldwide Organization for Improving Science Teaching and Learning Through Research – Annual International Conference, Baltimore, MD, April 14. <http://www.eie.org/engineering-elementary/research/articles>

Lottero-Perdue, P.S., Bolotin, S.††, Benyameen, R. †, Brock, E.†, and Metzger, E.† (2016). The EDP-5E: Rethinking 5E for engineering design – An example from early childhood. In Froschauer, L. (Ed.) *Bringing STEM to the Elementary Classroom*. (pp. 53-60). Arlington, VA: National Science Teachers Association (NSTA) Press.

DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

Publications

Lottero-Perdue, P.S., De Luigi, M.A. †, and Goetzinger, T. † (2016). Blade structure and wind turbine function: Third and fifth graders co-investigate and co-design wind turbine blades and voltage output." In Froschauer, L. (Ed.) *Bringing STEM to the Elementary Classroom*. (pp. 199-210). Arlington, VA: NSTA Press.

Joel Moore was a co-author on a paper that came out of the 2014 Urban Geochemistry Working Group meeting: Chambers L., Chin Y-P, Filipelli G., Moore J., Moyer R., Neumann K., Nezat C., Soderberg K., Teutsch N., Widom E. (2016) Developing the scientific framework for urban geochemistry. *Applied Geochemistry*. 67: 1–20. (authors ordered alphabetically) <http://dx.doi.org/10.1016/j.apgeochem.2016.01.005>

Kendrick, M.A., Honda, M., and **Vanko, D.A.**, 2015. Halogens and noble gases in Mathematician Ridge meta-gabbros, NE Pacific: implications for oceanic hydrothermal root zones and global volatile cycles, *Contributions to Mineralogy and Petrology*, 170:43, doi:10.1007/s00410-015-1192-x.

Presentations and Abstracts

* - undergraduate student co-author ** - graduate student co-author

A. Poyneer*, J. Pereira, T. Krause and **J.M. Overduin**, "Equivalence Principle tests as probes of Modified Newtonian Dynamics," March 2016 meeting of the American Physical Society, Baltimore (March 15)

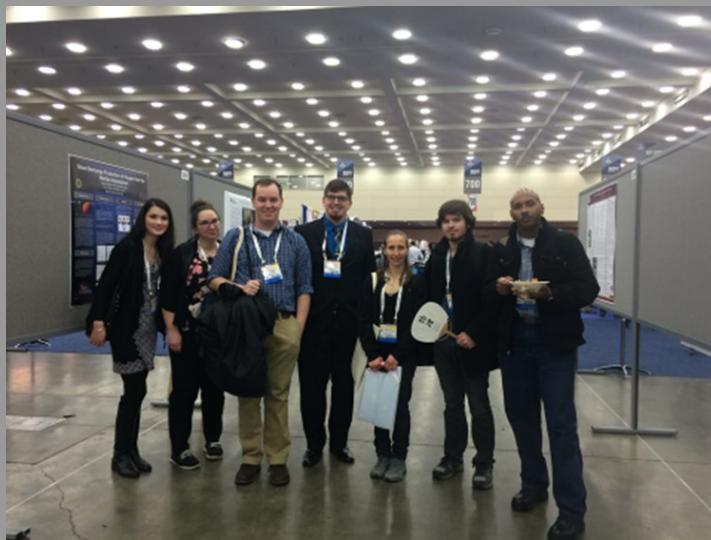
R. Huxford*, M. Ridge* (co-presenter), **J.M. Overduin** and **J. Selway**, "Roadrunner physics: using cartoons to challenge student preconceptions," March 2016 meeting of the American Physical Society, Baltimore (March 15)

D. Zile*, T.J. Sebastian*, V. Polyak*, A. Rutah and **J.M. Overduin**, "The Hunt for Red October II: a demonstration for introductory electromagnetism," March 2016 meeting of the American Physical Society, Baltimore (March 15)

James Overduin: "Can Physics Save the World?" (May 5)

William Zimmerman, Christopher Jensen, David Lahneman, Todd Adams, Thomas Gresock, Kathryn Zander, **Vera N. Smolyaninova**, and Igor I. Smolyaninov, "Transformation optics devices based on tapered waveguides," M-AS APS 2015 Meeting, Morgantown WV

M. Osofsky, C. Krowne, R. J. Soulen, E. Clements, G. Woods, H. Srikanth, I. Takeuchi, **V.N. Smolyaninova**, B. Yost,** K. Zander,* T. Gresock,** S. Saha, R. L. Greene, and I. I. Smolyaninov "New approaches for enhancing T_c", (Invited), EMA 2016 (Electronic Materials and Applications Conference), 2016, Orlando, FL



PAGS students at the March 2016 Meeting of the American Physical Society, Baltimore MD

DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

Presentations and Abstracts

Vera N. Smolyaninova, Kathryn Zander,* Thomas Gresock,** Christopher Jensen,** William Zimmerman,* Joseph C. Prestigiacomio, M. S. Osofsky, Zhen Xing, M. M. Qazilbash, and Igor I. Smolyaninov, "Application of metamaterial nanoengineering to triple the superconducting critical temperature of bulk aluminum," March 2016 Meeting of the American Physical Society, Baltimore MD.

Christopher Jensen,** Kathryn Zander,* Bradley Yost,** Thomas Gresock,** William Zimmerman,* Joseph C. Prestigiacomio, Heungsoo Kim, M. S. Osofsky, Shanta Saha, R. L. Greene, Igor I. Smolyaninov, and **Vera N. Smolyaninova**, "Metamaterial approach to superconducting critical temperature increase," M-AS APS Meeting, Morgantown WV,



Christopher Jensen has received the Student Poster Award in student poster competition

Christopher Jensen,** William Zimmerman,* David Lahneman,* Todd Adams,* Thomas Gresock,** Kathryn Zander,* **Vera N. Smolyaninova**, and Igor I. Smolyaninov, "Experimental demonstration of Luneburg waveguides," March 2016 Meeting of the American Physical Society, Baltimore MD.

William Zimmerman,* Christopher Jensen,** **Vera N. Smolyaninova**, and Igor I. Smolyaninov, "Image magnification in transformation optics devices based on tapered waveguides," March 2016 Meeting of the American Physical Society, Baltimore MD.

Vera N. Smolyaninova, and Igor I. Smolyaninov, "Experimental observation of melting of the effective Minkowski spacetime," March 2016 Meeting of the American Physical

Society, Baltimore MD.

Vera N. Smolyaninova, Kathryn Zander,* Thomas Gresock,** Christopher Jensen,** Joseph Prestigiacomio, Michael S. Osofsky, Igor Smolyaninov, "Application of Metamaterial Nanoengineering for Increase of Superconducting Critical Temperature," Material Research Society Spring Meeting, Denver 2016

William Zimmerman,* Christopher Jensen,** David Lahneman,* Todd Adams,* Thomas Gresock,** Kathryn Zander,* **Vera N. Smolyaninova**, and Igor I. Smolyaninov, "Transformation optics devices based on tapered waveguides," NCUR 30 at the University of North Carolina Asheville, 2016

William Zimmerman,* Christopher Jensen,** Igor I. Smolyaninov, Faculty Mentor: **Vera N. Smolyaninova**, "Image Magnification in Transformation Optics Devices Based on Tapered Waveguides," TU Undergraduate and Graduate Student Research and Performance Expo and at the FCSM Annual Honors Convocation Research Poster Session, 2016.

Christopher Jensen,** William Zimmerman,* Kathryn Zander,* Thomas Gresock,** Igor Smolyaninov, Joseph Prestigiacomio, Michael Osofsky, Faculty Mentor: **Vera N. Smolyaninova**, "Using Metamaterial Nanoengineering to Triple the Superconducting Critical Temperature of Bulk Aluminum," TU Undergraduate and Graduate Student Research and Performance Expo, 2016

V. N. Smolyaninova presented invited talk "Metamaterial Superconductors," College of William and Mary, Williamsburg VA

DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

Presentations and Abstracts

Raj Kolagani gave a talk titled "Towson University's Professional Science Master's Program in Applied Physics: The first 5 years" at the March Meeting of the American Physical Society, held in Baltimore (March 17, 2016)

Cacie Hart, Zoey Warecki, Adeel Chaudhry, Natalie Ferrone, David Houston, Bridget Lawson, **Grace Yong**, **Rajeswari Kolagani** Thickness Dependence of Electrical and Structural Properties of Tensile Strained Calcium Manganese Oxide Thin Films: American Physical Society Meeting (March 14-18, 2016)

Bridget Lawson, Samuel Neubauer, Adeel Chaudhry, Cacie Hart, Natalie Ferrone, David Houston, **Grace Yong**, **Rajeswari Kolagani** Tensile Strain Effects on the Magneto-transport in Calcium Manganese Oxide Thin Films: Comparison with its Hole-doped Counterpart : American Physical Society Meeting (March 14-18, 2016)

Anthony Johnson, Cacie Hart, Adeel Chaudhry, Bridget Lawson, Natalie Ferrone, Samuel Neubauer, David Houston, **Rajeswari Kolagani**, **David Schaefer**, Studies of Surface morphology and Atomic Force Microscope-induced Surface Modifications in Calcium Manganese Oxide Thin Films, American Physical Society Meeting (March 14-18, 2016)

Natalie Ferrone, Adeel Chaudhry, Cacie Hart, Bridget Lawson, David Houston, Samuel Neubauer, Anthony Johnson, **David Schaefer**, **Rajeswari Kolagani** Effects of Post-Deposition Annealing on the Properties of Calcium Manganese Oxide Thin Films American Physical Society Meeting (March 14-18, 2016)

Nelson, W.R., Furman, T., Elkins-Tanton, L., 2015. Geochemical evidence for pre- and syn-rifting lithospheric foundering in the East African Rift System, 2015 AGU Fall Meeting. T44C-04. *INVITED*

Nelson, W.R., Furman, T., Pitcavage, E.M., 2015. Exploring the link between metasomatized lithosphere and continental rifting: a case study of the East African Rift System. Geological Society of America Abstracts with Programs. 131-2.

Pitcavage, E., Furman, T., **Nelson, W.R.**, 2015. Insights into Continental Evolution and Lithospheric Stability: Geochemical Evidence from the Western Rift, Uganda. Goldschmidt Abstracts, 2015 2499.

Wendy Nelson was invited to give a seminar at the University of Maryland - College Park (Geology Department) on January, 29th. The talk was titled, "Evolution of the East African Rift: Thinning, Drip Magmatism, Lithospheric Thinning, and Mafic Volcanism."

Wendy Nelson was invited to give a seminar at Pennsylvania State University - University Park (Geoscience Department) on November 29, 2015. The talk was titled, "Tracing Mantle Evolution during Pacific Plate Subduction: a Re-Os isotopic Perspective."

Lottero-Perdue, P.S. (April, 2016). Fifth graders' perceptions about failure and mindsets before and after learning to engineer. Paper presented at the 2016 NARST – A Worldwide Organization for Improving Science Teaching and Learning Through Research – Annual International Conference, Baltimore, MD, April 14. <http://www.eie.org/engineering-elementary/research/articles>

Lottero-Perdue, P.S. (January 22, 2016) Lunchtime Keynote Session: Engineering education. University of Delaware Engineering Education Conference. Newark, DE: University of Delaware. **Note: Duplication of "engineering" purposeful in title.**

Joel Moore gave an invited talk at the "Road Salt Usage and Environmental Impacts" workshop sponsored by the Maryland Water Monitoring Council, Patuxent National Wildlife Center, April, 2016.

DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

Presentations and Abstracts

Joel Moore gave a research seminar entitled "How does urbanization alter stream chemistry?" in Department of Earth Sciences, Dickinson College, November 2015.

Joel Moore gave an oral presentation entitled "Road salt and concrete as significant contributors to high ion concentrations & high specific conductance in urban streams" at the 2015 Annual Geological Society of America Meeting, Baltimore, MD, November 2015.

Community Engagement and Professional Service

James Overduin reviewed four journal articles, one each for *Annals of Physics*, *Physics Letters B*, *International Journal of Modern Physics D* and *The Physics Teacher*

Vera Smolyaninova served on NSF panel

Vera Smolyaninova served on CLEO2016 Technical Program Committee, Metamaterials and Complex Media Subcommittee, where she reviewed and rated 136 conference papers.

Vera Smolyaninova reviewed a paper for Optics Express and a paper for Scientific Reports.

Vera Smolyaninova conducted a full-day workshop "Galilean decoder" (in five 4th grade classes) at the Pointers Run Elementary School STEM Day, 2016. Activities were developed together with **James Selway**.

Raj Kolagani attended to the Army Research Lab open house at Aberdeen Proving Grounds (October 2015)

Raj Kolagani participated in a National Science Foundation proposal review panel of the division of Physics (April 2016)

Wendy Nelson was invited to participate in an international workshop in Kigali, Rwanda, (March 2016) to discuss evidence supporting geothermal energy exploration in the western branch of the East African Rift System. As part of the workshop, Nelson gave two talks: (1) "Dynamic Model of Lithospheric Drip Magmatism in the western arm of the East African Rift System and its Implications for the Geothermal Occurrences," and (2) "Heat sources for the occurrence of geothermal systems in the western branch of the East African Rift System: Are magma chambers viable heat sources?"

Wendy Nelson attended an *International Ocean Discovery Program* (IODP) workshop in Agros, Cyprus (May 2016) and presented a talk entitled, "187Os and HSE in FAB and bonnets from the Izu-Bonin-Mariana forearc: Preliminary Results."

Wendy Nelson reviewed one *NERC* proposal, three *NSF* proposals, and two manuscripts for *Geochimica et Cosmochimica Acta* and *Chemical Geology*, respectively.

Wendy Nelson completed geologic fieldwork in the Virunga Volcanic Province of northern Rwanda (March 2016) and in the Troodos Mountains of Cyprus (May 2016).

Joel Moore gave a talk on road salt impacts and research at the Maryland Department of Environment (January 2016) as well as conducting a consulting conversation with a MDE employee working on development of environmental regulations for CI (March 2016).

DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

Community Engagement and Professional Service

Joel Moore reviewed a proposal for NSF and manuscripts for *Geochimica et Cosmochimica Acta* and the *Journal of Hydrology*.

Gregory Woodward (Geology undergraduate) gave an oral presentation at the 2015 Annual Meeting of the Geological Society of America, Baltimore, MD. The research was conducted using the facilities of the Urban Environmental Biogeochemistry Laboratory.

Gregory Woodward and **Joel Moore**, Road salt (NaCl) runoff increases soil pH and significantly alters cation exchange chemistry in soils and aquifers. Geological Society of America – 2015 Annual Meeting, Baltimore, MD. Oral presentation.

Planetarium News: In 2015-2016 there were 77 planetarium shows given at the Watson-King Planetarium and 28 planetarium shows using the portable planetarium.

Alex Storrs received the 2015 Faculty Alumni Volunteer Service Award from the TU Alumni Association.

ENVIRONMENTAL SCIENCES

PROGRAM DIRECTOR: DR. CHRISTOPHER SALICE

The Environmental Science and Studies Program had an exciting year! We completed a 7-year program review and helped organize the Towson Environmental Conference. Our students and faculty continue to do great things. The number of students involved in internships and research continues to climb and our students are presenting at regional, national and international conferences.

Student accomplishments

Allison Ricko received a Graduate Student Research Award from the Office of Graduate Studies at Towson University for her Master of Science in Environmental Science thesis entitled, "*Anaerobic abiotic reduction of dichloroacetamide safeners: Effects of manganese oxides and agrochemical co-formulants*". Allison graduated in August 2015 and currently works as a scientist at Critical Path Services, a company that supports agrochemical environmental fate studies to assist major agrochemical companies with EPA product registration. Allison's thesis advisor was John Sivey.

Shoshana Nachmen (Environmental Science and Studies 2016) was awarded the Francesca Borrelli-Johnson Scholarship for 2015. Shoshana has done extremely well in academics and has also sought additional internship and research experiences.

Laina Lockett (ENVS MS student) received two presentation awards this year for poster presentations on her research on the effects of multiple stressors in aquatic ecosystems (see student presentations section).

Undergraduate Student Presentations

Gregory Woodward and Joel Moore, Road salt (NaCl) runoff increases soil pH and significantly alters cation exchange chemistry in soils and aquifers. Platform Presentation at the Geological Society of America – 2015 Annual Meeting, Baltimore, MD.

K. Nellenbach, E. Mazur and S. E. Gresens. (November 13, 2015) A trickle in time: An analysis of stream integrity in an urbanizing environment. Student Poster Session at the 21st Annual Meeting of the Maryland Water Monitoring Council, Linthicum, MD

Pererira, V., T. Woo, A. East, and C.J. Salice. 2015. Effects of common anthropogenic pollutants on the surrogate freshwater invertebrate, *Daphnia magna*. Maryland Water Monitoring Council Annual Meeting.

Woo, T.J. and Salice, C.J. 2016. Patterns of pulse exposure influence the magnitude of sub-lethal effects of sodium chloride on *Daphnia magna*. Poster presentation: Chesapeake Potomac Regional Chapter Meeting of the Society of Environmental Toxicology and Chemistry. Charlotte, NC.

Periera, V. and Salice, C.J. 2016. Complex interactions of nutrients and pesticides in aquatic systems: Does phosphate protect against fungicide toxicity? Poster presentation: Chesapeake Potomac Regional Chapter Meeting of the Society of Environmental Toxicology and Chemistry. Charlotte, NC.

Rian Fleming, Corey Mueller (2015 Geology graduate), and Joel Moore, Measuring the Effects of Urbanization on Stream Water Chemistry In Baltimore County, MD

Graduate Student Research Presentations

East, A. and C.J. Salice. 2015. A bioenergetic modeling framework to understand effects of anthropogenic stressors on interacting aquatic species. Poster session presented at the 36th Annual North American SETAC Meeting, Salt Lake City, UT.

ENVIRONMENTAL SCIENCES

Graduate Student Research Presentations

East, A. and C.J. Salice. 2016. Simulating system level effects of stress on aquatic systems through linked dynamic energy budget individual-based models (DEB-IBMs) in Netlogo." Platform Presentation at the International Society of Ecological Modelling Annual Meeting, Towson, MD.

Laina Lockett, Veronica Pereira, **Andrew East**, Christopher J. Salice. 2016. Toxicological impacts of the fungicide pyraclostrobin on the model organism *Daphnia magna*. Conference PROMISE AGEP Research Symposium, College Park, MD. **1st Place Student Poster Competition**

Lockett, L. and Salice, C.J. 2016. An examination of the impacts of temperature to standard toxicological protocols using pyraclostrobin and *Daphnia magna*. Poster presentation: Chesapeake Potomac Regional Chapter Meeting of the Society of Environmental Toxicology and Chemistry. Charlotte, NC. **3rd Place Student Poster Competition**

Bolyard, K. E., Gresens, S. E., Sivey, J. D., Salice, C. J. (November 2015). *Chironomus riparius*: A tool for studying ecological effects of "inert" safeners. Poster session presented at the 36th Annual North American SETAC Meeting, Salt Lake City, UT.

Bolyard, K. E., Gresens, S. E., Sivey, J. D., Salice, C. J. (March 2016). How Safe are Safeners? A Benthic Microcosm Study. Poster session presented at the 5th Annual Young Environmental Scientists Meeting, Gainesville, FL.

Community engagement & professional service

Christopher Salice served as a reviewer for the U.S. Environmental Protection Agency, Science to Achieve Results (STAR) Graduate Fellowship Program.

Joel Moore gave a talk on road salt impacts and research at the Maryland Department of Environment (January 2016) as well as conducting a consulting conversation with a MDE employee working on development of environmental regulations for CI (March 2016).

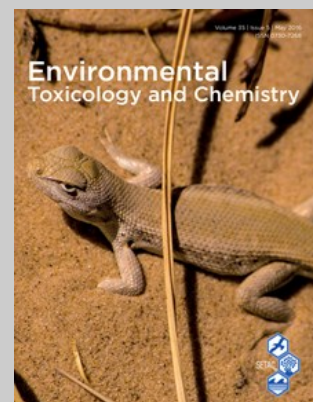
Joel Moore reviewed a proposal for NSF and manuscripts for *Geochimica et Cosmochimica Acta* and the *Journal of Hydrology*.

Publications

Weir, S.M., Knox, A., Talent, L.G., Anderson, T.A., and **Salice, C.J.** Direct and indirect effects of petroleum production activities on the Western fence lizard (*Sceloporus occidentalis*) as a surrogate for the dunes sagebrush lizard (*Sceloporus arenicolus*). *Environmental Toxicology and Chemistry* 35 (5):1276-1283.

Joel Moore was a co-author on a paper that came out of the 2014 Urban Geochemistry Working Group meeting:

Chambers L., Chin Y-P, Filipelli G., **Moore J.**, Moyer R., Neumann K., Nezat C., Soderberg K., Teutsch N., Widom E. (2016) Developing the scientific framework for urban geochemistry. *Applied Geochemistry*. 67: 1–20. (authors ordered alphabetically)
<http://dx.doi.org/10.1016/j.apgeochem.2016.01.005>



Christopher Salice is the corresponding, primary investigator and co-author of a recent publication in *Environmental Toxicology and Chemistry* that was on the cover of the May issue

ENVIRONMENTAL SCIENCES

Publications

Jeremy Tasch (Geography) co-authored a book titled “Contesting the Arctic: Politics and Imaginaries on the Circumpolar North”. The effort was funded by a three-year, multi-university National Science Foundation grant. The book draws from interviews with over 150 representatives of indigenous peoples groups, environmental and civil society organizations, and members of governments and businesses throughout the circumpolar north, to understand how northern stakeholders are seeking to reproduce, modify, challenge – or simply disregard – the state-focused norms of contemporary global politics.

Christopher Salice was the corresponding author of a recent article in *Environmental Pollution*: Fidler, B.N., Reategui-Zirena, E., Olson, A.D., and **Salice, C.J.** 2016. Energetic endpoints provide early indicators of life history effects in a gastropod exposed to the fungicide, pyraclostrobin. *Environmental Pollution* 211:183-190.

Christopher Salice was a co-author on a recent paper in *Ecological Applications*: Weir, S.M., Scott, D.E., **Salice, C.J.**, Lance, S.L. 2016. Integrating copper toxicity and climate change to understand extinction risk to two species of pond breeding anurans. *Ecological Applications* DOI: 10.1002/15-1082

Presentations & abstracts

Joel Moore gave an invited talk at the "Road Salt Usage and Environmental Impacts" workshop sponsored by the Maryland Water Monitoring Council, Patuxent National Wildlife Center, April 2016.

Joel Moore gave a research seminar entitled "How does urbanization alter stream chemistry?" in Department of Earth Sciences, Dickinson College, November 2015.

Joel Moore gave an oral presentation entitled "Road salt and concrete as significant contributors to high ion concentrations & high specific conductance in urban streams" at the 2015 Annual Geological Society of America Meeting, Baltimore, MD, November 2015.

Christopher Salice gave and invited talk at the Emerging Contaminants Summit in Westminster, Colorado. His co-authors included Todd A. Anderson from Texas Tech and Richard (Hunter) Anderson from the U.S. Air Force. The platform presentation: “Ecological Risk Assessment of Aquatic PFAS Exposure at Barksdale AFB”.

Christopher Salice gave an invited seminar to the Biology Department at George Mason University. “Climbing the slippery slope: predictive ecotoxicology in the age of the anthropocene.”

Research Funding

Christopher Salice is the Primary Investigator on \$1.2M in funding from the Strategic Environmental Research and Development Program (SERDP). The multi-year research program involves collaborators from Texas Tech University, Oregon State University and CH2MHill and is focused on developing mathematical tools and toxicity data to better predict the ecological effects of per- and poly-fluoroalkyl substances (PFASs) which are emerging contaminants of concern. The research will involve a number of undergraduate and graduate students from Towson University and will begin in summer 2016.

MOLECULAR BIOLOGY, BIOCHEMISTRY AND BIOINFORMATICS

PROGRAM DIRECTOR: DR. LARRY WIMMERS

Undergraduate Research

On September 4th, two MB3 students presented their work. Neta Shwartz presented her work done at JHU on the roles of LSM proteins in *C. elegans* sex muscle fate specification. Jacob Mitchel presented on Student Research at the U.S. Army Medical Research Institute of Infectious Diseases.

On October 2nd two MB3 students presented the results of their research. James Robertson presented his work titled "Development of Standards within ISO/TC276: Biotechnology" done at the National Institute of Standards and Technology. Theresa White presented her work done at the University of Iowa: Investigating the Role of TRAF3 in T Cell Biology

On November 13th two MB3 students presented their research. Taylor Watts presented her work done at Georgetown University: Cocrystallization of N,N'-Diphenylureas and Triphenylphosphine Oxide Based on Heterodimer Energies. Maria Boluda spoke about the work she carried out with **Nadim Alkrahouf**; Comparing Genome Variant Detection Tools.

On February 18th two MB3 students presented their research. Benjamin Leicht presented "Characterization of Host Immune Responses to Viral Infections" based on work done at the United States Army Medical Research Institute of Infectious Disease. Phillip Phan shared the stage with his mentor, Devon Dobrosielski from Kinesiology in their presentation, "Moving" sleep to the forefront of exercise science

On March 25th two MB3 students presented their research. Janelle Hartman described her work done with **Petra Tsuji**. The title of her presentation was the "Role of the 15kDa Selenoprotein and Dietary Selenium in Inflammatory Colitis". Harrison Reed presented his work with **Muktak Aklujkar**; "Gene Annotation of *Geopsychrobacter electrodiphilus*"

On March 25th two MB3 students presented their research. Christina Perreira described her work done with **Petra Tsuji**. The title of her presentation was "The 15kDa Selenoprotein (Sep15) in the Regulation of the Wnt Cell Signaling Pathway and Colon Cancer". Joel Chavarria-Rivera presented his work with **Muktak Aklujkar**; "Genome Annotation of *Pelobacter seleniigenes*"

On April 22nd two MB3 students presented their work. Olubunmi Olakunle presented her work with **John Weldon** titled "Identifying the Minimum Catalytic Fragments of *Pseudomonas exotoxin A*". Tyler Burden presented work done at the National Institutes of Health. The title of his presentation was "Effects of Ultraviolet Radiation on HeLa Cells"

On May 6th, two MB3 students presented their research. Jill Taylor presented her work done with **Brian Masters**. The title of her presentation was "Identification and Testing of Polymerase Chain Reaction Primers for Next Generation Sequencing Analysis of Environmental DNA". LeNyia Preston presented her work done with **Nadim Alkrahrouf**. The title of her presentation was "RNA-seq analysis and database development of flg22-induced gene expression changes in *Arabidopsis thaliana*"

Presentations

On September 18th KD Nguyen, MB3 Alumn and recipient of a TU Outstanding Recent Alumni Award presented a seminar titled "Understanding the MIA3 (1q41) GWAS locus for Coronary Artery Disease" diphthamide synthesis"

MOLECULAR BIOLOGY, BIOCHEMISTRY AND BIOINFORMATICS

PROGRAM DIRECTOR: DR. LARRY WIMMERS

Presentations

On October 16th Drs. Bret Hassel and Greg Carey spoke to students about research internship opportunities at the University of Maryland School of Medicine.

On October 30th, TU alumnus, Dr. Tory Johnson of Johns Hopkins University spoke about her research in a seminar entitled Investigating the Role of TRAF3 in T Cell Biology.

Dr. Ailong Ke of Cornell University spoke on December 3rd about their Sumer Research Program and graduate programs. On December 4th Dr. Erica Barr from the NIH Office of Intramural Training discusses research and scholarship opportunities at the National Institutes of Health.

On February 4th, Dr. Caleb McKinney from the Laboratory of Viral Diseases at the National Institutes of Health presented his a seminar titled "Investigating early stage Human Papillomavirus infection by using an HPV18 Quasivirus genome delivery system"

March 4th the seminar speaker was TU alumnus Dr. Tiha Long from the University of Maryland, Baltimore County. Dr. Long's talk was titled "How do immune cells impact obesity and the associated increase in cancer risk?"

CENTER FOR STEM EXCELLENCE

The Towson University Center for STEM Excellence (TUCSE) has had another great year! We've had over 2,500 students visit the SciTech Student Learning Lab and sent out science equipment to over 180 classrooms through the Maryland Loaner Lab program!

This past year, we have continued our *Healthy Harbor Lab Days* Program, an innovative partnership developed by TUCSE in conjunction with the T. Rowe Price Foundation and the Waterfront Partnership of Baltimore. *Healthy Harbor Lab Days* brings these three organizations together to engage Baltimore City youth in learning about urban ecosystems and how cleaning and greening their neighborhoods can help make the Harbor fishable and swimmable by 2020. A typical *Healthy Harbor Lab Day* begins with a class of Baltimore city students (grades 3-12) arriving by bus at the SciTech Student Learning Lab, a field trip destination within TUCSE, located in Baltimore's Inner Harbor. Students begin their experience by collecting water samples for the Harbor, which is just steps away from TUCSE. While collecting water samples, the students meet with a T. Rowe Price employee who is actively involved in the *Great Baltimore Oyster Partnership* (another unique partnership between T. Rowe Price and Waterfront partnership). The T. Rowe Price employee is a 'citizen scientist' and explains to the students how the oysters they have been growing in cages suspended in the Inner Harbor all year are aiding in statewide oyster recovery efforts. Students then enter the SciTech Lab, analyzing water quality indicators from the samples they collected and viewing various micro invertebrates from the Harbor using microscopes. These activities support student academic achievement and are directly aligned with classroom curriculum.

On May 18, students from Waverly Elementary visited SciTech as part of a *Healthy Harbor Lab Day* field trip. In addition to learning about the critters that live in the Chesapeake Bay the students were able to celebrate Mr. Trash Wheel's 2nd birthday and thank him for all the work he's been doing to keep the Harbor trash-free! Students made a birthday cake out of all of his favorite trash and delivered the cake to @MrTrashWheel while singing Happy Birthday!

Follow @SciTechTU on Twitter to keep up with all the exciting adventures at TUCSE!





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Contact Us

Email:

fcsm@towson.edu

Phone:

410.704.2121

Fax:

410.704.2604

Dean

David A. Vanko

Associate Dean

Vonnie Shields

Special Assistant to the Dean

Howard S. Kaplon

Administrative Assistant

Grace Nicholl

**The Jess and Mildred Fisher
College of Science and Mathematics
Towson University
8000 York Road
Towson, MD 21252-0001**

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