



# The Jess and Mildred Fisher College of Science and Mathematics

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ELECTRONIC NEWSLETTER

October/November 2014



## OFFICE OF THE DEAN

*The Fisher College – Inspiring Student Exploration in Science and Mathematics  
for the 21<sup>st</sup> Century*®

Greetings!

Among our Fisher College accomplishments this fall, please join me in congratulating:

Dr. Ming Tomayko of the Department of Mathematics, who received the Outstanding College Level Mathematics Educator Award at the Maryland Council of Teachers of Mathematics (MCTM) Excellence in Teaching Awards Banquet on October 16 in Mt. Washington.

Towson University Physics, listed by the American Physical Society as a top producer of undergraduate physics degrees. With an average of 11 degrees per year from 2010-2012, TU ranks #11 in the country among master's degree institutions.

Dr. Blair Taylor of the Department of Computer and Information Sciences, who was named by the Baltimore Sun as one of "50 Women to Watch" based on her work in Cybersecurity Education.

Four Forensic Science M.S. students (Alex Weghorst, Anjelica Perez, Jenna Roussillon, and Astrid Aniwa), who participated in a forensic competition (the Forensic Science "Scrimmage") at the Northeastern Association of Forensic Scientists' Annual Meeting in Hershey, PA, and placed 2<sup>nd</sup> out of 7 graduate program teams.

Two students in the Molecular Biology, Biochemistry and Bioinformatics program (Thamar Etienne and Maria Ritchie), who were recognized by Career Communications Group, Inc., at the 2014 Women of Color STEM Conference in Detroit, MI, with a Research Award and an Academic Award, respectively.

We could not be more proud of all of our fine faculty, staff and students in the FCSM. We rock!!!

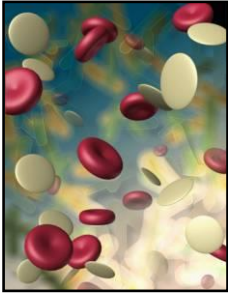
Here's wishing everyone a happy and restful holiday season.

Best wishes,

David A. Vanko  
Dean

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**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.



## DEPARTMENT OF BIOLOGICAL SCIENCES

### Manuscripts Reviewed

Vonnie Shields reviewed a manuscript for each of *PLOS One*, *Arthropod Plant Interactions*, and *Pan-Pacific Entomologist*.

Muktak Aklujkar reviewed a paper for *PLOS One*.

Harald Beck reviewed manuscripts for the *International Journal of Tropical Ecology* and *Biotropica*.

Chris Oufiero reviewed a paper for the *Journal of Animal Ecology*.

Richard Seigel reviewed manuscripts for the *Journal of Wildlife Management* and *Animal Conservation*.

### Research Presentations

[\* denotes an undergraduate student and \*\* denotes a graduate student]

Elana Ehrlich and Barry Margulies' labs attended the Annual Virology Retreat at UM College Park.

Nandjou, M.\*\*, and B.J. Margulies. 2014. Synergistic effects of acyclovir, ganciclovir, and cidofovir with foscarnet against neuropathogenic equine herpes virus type-1 *in vitro*: Inhibitory drug concentrations for equine dermal fibroblast cells (Ederm cells). 14<sup>th</sup> Annual Virology Retreat, College Park, MD.

Brian Fath gave a keynote presentation entitled, "Network Based-Information Indicators: Configurations toward Optimal Robustness," at the Ecological Informatics Conference October 20-24 in Nanjing, China. ([www.icei2014.org/programs/keynotes.html](http://www.icei2014.org/programs/keynotes.html))

Brian Fath was invited to Chair a new Focus Research Group on Ecosystem Dynamics within the NSF-funded Community Surface Dynamics Modeling System (CSDMS). CSDMS is a platform of modeling experts "promoting the modeling of earth surface processes by developing, supporting, and disseminating integrated software modules." ([http://csdms.colorado.edu/wiki/CSDMS\\_groups](http://csdms.colorado.edu/wiki/CSDMS_groups))

Students from Dr. Vonnie Shields' research laboratory made the following presentations:

Arnold\*\*, N.S., Shields, V.D.C., Heinbockel, T., and Lall, A. B. 2014. Electrophysiological investigation of the compound eye of the brown marmorated stink bug. 2014 Society for Neuroscience meeting, Washington, D.C., November 15-19.

Huynh\*, K., Neslund#, M., and Shields, V.D.C. 2014. From molecules to motion: assessing the responses of house crickets to plant volatiles using behavioral and electrophysiological paradigms. 2014 Society for Neuroscience meeting, Washington, D.C., November 15-19. (# denotes former MS graduate student.)

### Publications

Allen RJ\*, Brenner EP\*, VanOrsdel CE, Hobson JJ, Hearn DJ<sup>^</sup> and Hemm MR<sup>^</sup> (in press) Conservation analysis of the CydX protein yields insights into small protein identification and evolution. *BMC Genomics*. (\*indicates co-first authors, <sup>^</sup>indicates co-senior authors)

Aklujkar, M., Risso, C., Smith, J., Beaulieu, D., Dubay, R., Giloteaux, L., DiBurro, K., Holmes, and D. 2014. Anaerobic Degradation of Aromatic Amino Acids by the Hyperthermophilic Archaeon, *Ferroglobus placidus*. *Microbiology*. epub before print.

Nelson, J. Gastrich\*, K., and Atzori\*\*, F. 2014 "Repeatability and phenotypic plasticity of fish swimming performance across a gradient of urbanization". *Environmental Biology of Fishes*. (\*former graduate student; \*\*visiting Italian scientist)

Ford, N. B. and R. A. Seigel. 2014. The influence of female body size and shape on the trade-off between offspring number and offspring size in two viviparous snakes. *Journal of Zoology* (in press).

Oufiero, C.E. and G.E.A. Gartner. 2014. The effect of parity on morphological evolution among phrynosomatid lizards. *Journal of Evolutionary Biology*. 27: 2559-2567.

## Grants and Donations

Richard Seigel received a supplement in the amount of \$40,000 from Exelon Corporation to expand his research on the conservation biology of the endangered Northern Map Turtle in Maryland. The additional funding will be used to determine the feasibility of artificial basking platform to mitigate the effects of high water levels on the turtle during 2014-2015.



## DEPARTMENT OF CHEMISTRY

### Grants

Ryan Casey, David Ownby and Steve Lev received \$10,000 in supplementary funding from the Copper Development Association to support their work evaluating bioretention structures for the removal of copper from roof runoff.

Kelly Elkins received a travel grant to present her research at the International Association for Forensic Science meeting in Korea:

K. M. Elkins, "Development of a Genetic Assay to Identify Drug-Containing Plant Species in a Mixture," American Academy of Forensic Sciences Forensic Science Foundation Travel Scholarship to present at the IAFS Meeting in Seoul, Korea, 10/15/14-10/17/14, \$5000.

Kelly also received a one-year research grant from the Forensic Sciences Foundation:

K.M. Elkins, "Development of New Genetic Assays for Plant Drug Species Differentiation using Real-time PCR," Acorn Research Grant, 10/3/14-12/15/15. \$993.

John Sivey served as the PI (with Christopher Salice, director of Environmental Science and Studies, and two collaborators from the University of Iowa as co-PIs) on the following grant submitted to the National Science Foundation:

Sivey, J. D., Salice, C. J.; Cwiertny, D. M.; Lehmler, H.-J. *SusChEM*: "Collaborative Research: Environmental Fate and Effects of "Inert" Herbicide Safeners, an Overlooked Class of Emerging Contaminants." National Science Foundation, CBET Division, Environmental Engineering Program. \$475,900 (Towson allocation: \$232,864).

## Research Presentations

Ryan Casey and David Ownby attended the 35<sup>th</sup> annual meeting of the Society of Environmental Toxicology and Chemistry in Vancouver, BC. Along with Steven Lev, they were coauthors on one oral presentation and two poster presentations reporting research conducted by ENVS graduate students Megan Schulze and Bill LaBarre (see details in the ENVS section).

Kelly Elkins and graduate research student Angelica Perez were coauthors on two platform presentations on research in the Elkins lab:

Elkins, K.M. and Perez, A.C.U.\*\* "Development of a Genetic Assay to Identify Drug-Containing Plant Species in a Mixture," 20th World Meeting of the International Association of Forensic Sciences, Seoul, Korea, October 17.

Perez, A.C.U.\*\* and Elkins, K.M. "Detection of "herbal highs": a multiplex PCR assay for species differentiation through melt-curve analysis," 40th Annual Meeting of the Northeast Association of Forensic Scientists, Hershey, PA, November 4.

Several Chemistry faculty and their undergraduate research students attended the 17<sup>th</sup> Annual Undergraduate Research Symposium in the Chemical and Biological Sciences at UMBC on October 25. One of the student presenters, Jon Jopse (research mentor: Ellen Hondrogiannis) earned first place in his category for his poster presentation, "Electronic Cigarette Aerosol Analysis: Instrumentation and Method Development."

Two students, Aloise Diedrich and Daniela Rey-Ardila, from Richard Preisler's lab presented a poster on "Transition from B-DNA to Z-DNA in Sodium Ion-Stabilized Polynucleotide Duplexes."

Several Chemistry faculty (Tim Brunker, Ellen Hondrogiannis, Shuhua Ma and Shannon Stitzel) served as judges at the UMBC Symposium.

Keith Reber gave the following research seminar to the MB3 Club on October 10:

Adventures in Organic Synthesis: From Natural Products to Pharmaceuticals.

## Department Seminars

Dr. Margaret Scheuermann, Princeton University, "Cobalt-Catalyzed Alkene Hydroboration," October 23.

Dr. Troy Townsend, St. Mary's College of Maryland, "From Sunlight to Power: Nanocrystals for Solar Water Splitting and Spray-On Solar Cells," October 28.

Dr. Mary Devadas, University of Notre Dame, "Imaging single nano-objects on a surface and in optical traps," October 30.

Two undergraduate recipients of summer research fellowships gave seminars on their Summer 2014 research:

Jamy Therres (research mentor: John Weldon), Linda Sweeting Fellowship, "Searching for Synergy: Studying the intoxication pathway of recombinant immunotoxins based on *Pseudomonas* exotoxin A with small molecule inhibitors," November 20.

Mark Bickley (research mentor: John Sivey), Ronald and Linda Raspet Summer Research Fellowship, "Reactivity of phenylalanine with brominating agents: Quantifying regiospecific rates of brominated phenylalanine formation," December 4.

Richard Vreeland, a 2010 TU graduate and former undergraduate research student in Ryan Casey's lab gave a seminar on October 3 on his Ph.D. research at the University of Arizona:

"Exploring conducting polymer electrodes for sensitive electrochemical neurotransmitter detection."

## Department Open Houses

The Department of Chemistry Fall Open House was held on October 22. A number of faculty, staff and students attended, viewed posters on undergraduate research and academic programs of the Department and enjoyed refreshments (see photo).

The Pre-Pharmacy Advising Committee held an Open House for interested students on October 29.



## DEPARTMENT OF COMPUTER AND INFORMATION SCIENCES

### Publications and Presentations

Mona Tavakolan and Nadim Alkharouf, co-authored a paper titled: "SoyProLow: A protein database enriched in low abundant soybean proteins," that was recently published in the journal *Bioinformatics*.

Omar Darwish and Nadim Alkharouf, co-authored a paper titled: "Draft genome sequence of *Phomopsis longicolla* isolate MSPL 10-6", that was recently published in the journal *Genomics Data*.

Marius Zimand has given a talk on "Combinatorial Slepian-Wolf theorem" in the Computational Complexity seminar at Univ of Maryland College Park on November 17, 2014.

Siddharth Kaza and Blair Taylor (with Ambareen Siraj of Tennessee Tech) conducted a Birds of Feather at the National Initiative for Cybersecurity Education Conference and Expo (NICE 2014) in Columbia, MD on November 5, 2014 entitled: Open Invitation to Cybersecurity Educators: Let's Work Together to Empower CS Education Community to Teach Cybersecurity across the Curriculum.

Siddharth Kaza and Blair Taylor presented a Fast Talk at the CAE Community meeting in Columbia, MD on November 3, 2014 entitled: Security Injections 2.0: “Cool” Cybersecurity modules, no grading required!

Jonathan Lazar published a paper (co-authored with doctoral graduate and now Shippensburg U professor Brian Wentz, U of Maryland professors John Bertot and Paul Jaeger, and U of Maryland doctoral students Ursula Gorham, Natalie Greene Taylor, Liz Larson, and Ruth Lincoln), titled "Connecting government, libraries and communities: Information behavior theory and information intermediaries in the design of LibEGov.org" in the peer-reviewed online journal First Monday.

Jonathan Lazar gave a presentation titled "Locked Out: Investigating Societal Discrimination Against People with Disabilities Due to Inaccessible Websites" to a meeting of the DC chapter of the Human Factors and Ergonomics Society, on Wed, November 5<sup>th</sup>.

Nnanna Ekedebe, Houbin Song, Wei Yu, Chao Lu, and Yan Wan, “Secured Transportation CPS,” to appear in *Securing Cyber Physical Systems*, CRC Press, USA, 2015.

Wei Yu, Dou An, David Griffith, Qingyu Yang, and Guobin Xu, “On Statistical Modeling and Forecasting of Energy Usage in Smart Grid,” in *Proc. of ACM International Conference on Reliable & Convergent Systems (RACS)*, October 2014, Baltimore, MD, USA.

## Services to the Discipline

Wei Yu was invited to serve on an NSF Panel (October 2014).

Wei Yu was invited to serve as the track co-chairs of the Multimedia and Real-Time Networking (MRN) track for the *IEEE International Conference on Computer Communications and Networks (ICCCN)*, August 2015.

## Grants & Awards

Blair Taylor and Siddharth Kaza (with Ambareen Siraj of Tennessee Tech) received an NSF grant titled “CyberWorkshops: Resources, Strategies, and Support for Teaching Cybersecurity in Computer Science Courses (CReST).” The grant amount is \$549,942 over two years starting 2014.

The Dept. of Computer and Information Sciences received \$10,000 from Intel Corporation to support Blair Taylor in developing a module entitled –“Balancing Privacy and Social Media.”

Robert Hammell received additional incremental funding in the amount of \$25,000 under the five-year Cooperative Agreement (CA) between Towson University and the US Army Research Laboratory. The funds were provided to support work aimed at addressing battlefield situational awareness challenges. Total funding for the project could reach \$500k; value of funds applied thus far now totals approximately \$305,000.



## DEPARTMENT OF MATHEMATICS

## Faculty Awards

Gail Kaplan was awarded the FCSM 2014 Excellence in Teaching Award (shared with Sarah Bruce of Biological Sciences).

Ohoe Kim was awarded the FCSM 2014 Mentoring Award.

Felice Shore was awarded the FCSM 2014 University & Professional Service Award.

## Books Published

Houshang Sohrab's book, *Basic Real Analysis*, second edition, 2014, was published by Birkhäuser.

## Grants Awarded

Sergiy Borodachov, Alexei Kolesnikov, and Min Ji received a grant of \$1,200 from the Mathematical Association of America to hold the 2015 Regional Undergraduate Mathematics Research Conference at Towson University. The conference will be held on Saturday, March 7, 2015 in the 7800 York Road building.

## Papers Published or Accepted for Publication

Sergiy Borodachov's paper "Low complexity methods for discretizing manifolds via Riesz energy minimization" (joint with D.P. Hardin, E.B. Saff) has appeared in *Foundations of Computational Mathematics*, Volume 14 (2014), no. 6, pp. 1173 --1208.

Sergiy Borodachov's paper "A topological separation condition for fractal attractors" (joint with T. Bedford and J. Geronimo) has appeared in the *Journal of Fractal Geometry*, Volume 1 (2014), no. 3, pp. 243--271.

Sergiy Borodachov's paper "Asymptotics of discrete Riesz d-polarization on subsets of d-dimensional manifolds" (joint with N. Bosuvan) has appeared in *Potential Analysis*, Volume 41 (2014), no. 1, pp. 35 --49.

Diana Cheng and graduate student Nicole Horner wrote an article entitled "Finding the total number of solutions to 'FOUR + ONE + FIVE': Word sum problems for elementary through graduate students." It was accepted for publication in the *Iowa Council of Teachers of Mathematics* journal.

Diana Cheng and graduate student David Thompson wrote two articles that were accepted for publication in November 2014. The first is entitled "U-Turn from zero: Trajectory from near extinction" and was published in the November / December 2014 issue of the *Oregon Mathematics Teacher (TOMT)* Journal. The second is entitled "Endangered species: A population simulation" and was accepted for publication in the *Ohio Journal of School Mathematics* for its Spring 2015 issue.

Russell Hendel's paper "Enhancing Writing through Strengthened Executive Function," was published in a special issue of the *Journal of Systemics, Cyberetics, and Informatics*.

Russell Hendel's paper, "A Discipline-Independent Approach to a Higher Cognitive Pedagogy," was published in a special issue of the *Journal of Systemics, Cyberetics, and Informatics*.

Russell Hendel's, "Advanced Problem, H-756," was published in the *Fibonacci Quarterly*.

Xuezhong Hou' s paper "A Sliding Model Control for an Euler-Bernoulli Beam with Boundary Shear Force Feedback" was accepted for publication in the *Journal of Semigroup Theory and Applications*.

## Conference and Seminar Presentations

Sergiy Borodachov gave a plenary talk entitled "Asymptotic results on the discrete Riesz minimal energy and polarization problems when the power of the potential equals the dimension of the conductor" at the Workshop on "Optimal Point Configurations and Applications" at the Erwin Schrodinger Institute in Vienna, Austria, October 13-17, 2014. This talk was also given at the workshop "Discrepancy Theory" at ICERM in Providence, RI, October 27-31, 2014. The talk featured joint work with N. Bosuvan, D. Hardin, and E. Saff.

Raouf Boules, presented "New ways of educating students in mathematics", as a member of an invited panel at "Counting on Our Future: Redefining Quantitative Literacy in Maryland" Conference, Towson University, October 2014.

Raouf Boules, along with Dr. Uri Treisman of the University of Texas at Austin (Panel Chair), and Dr. William R. LaCourse, Dean, College of Natural and Mathematical Sciences, UMBC, presented the invited panel "Issues Faced by Non-R1 Institutions", as part of the conference, *Transforming Post-Secondary Education in Mathematics* (TPSE Math), University of Maryland Baltimore County, November 2014.

Diana Cheng presented two sessions at the 2014 Maryland Council of Teachers of Mathematics conference with mathematics education graduate students. She presented “U-Turn from Zero: Trajectory from Near Extinction” with David Thompson and “Word Math: Making Letters into Numbers” with Nicole Horner (see Photos 1 and 2 below).

Trystan Denhard and Emily Dennis (undergraduate Towson UTeach Math majors) presented a session entitled “Discovering the Law of Sines” at the Annual Conference of the Maryland Council of Teachers of Mathematics held on October 17, 2014 at Baltimore Polytechnic Institute. The presentation was based on a lesson that had been created and implemented during SEMS 240 in the spring 2014 semester.

Russell Hendel will participate in the West Coast Number Theory conference, held annually in Asilomar, California, in December, 2014, by presenting a paper, "Polynomial Convergence of recursively defined polynomial sequences."

Stanley Max gave a talk entitled “A Geostatistical Study of the Towson University Campus: A Tool for Teaching Mathematics and Statistics” as part of the faculty seminar series, November 2014.

Ming Tomayko and Sarah Fike presented a session entitled “Exploring Shapes and Their Properties Through Art and Literature” at the Annual Conference of the Maryland Council of Teachers of Mathematics held on October 17, 2014 at Baltimore Polytechnic Institute. Participants learned about common geometric misconceptions and activities to develop spatial sense.



Photos 1 and 2  
Diana Cheng with  
students David  
Thompson and  
Nicole Horner



## Workshops

Michael Krach presented a problem solving workshop at the 2014 MCTM Annual Conference on Friday, October 17, 2014, at the Baltimore Technic Institute in Baltimore, Maryland. This well-attended session featured the use of cooperative groups and physical materials to solve non-routine numerical and geometric problems.

On November 11<sup>th</sup>, Ming Tomayko conducted an afternoon workshop for staff and TU MAT interns at Ferndale Early Education Center in Anne Arundel County. Counting and cardinality activities were the focus of the workshop (see Photos 3 and 4 below).





Photos 3 and 4

Ming Tomayko showing staff at Ferndale Early Education Center (Anne Arundel County) how a shoe string number line can be used to teach number concepts.

Towson MAT interns working on counting and cardinality activities during the same workshop.

### **Refereeing, Reviewing, and Panel Service:**

Sergiy Borodachov refereed a paper for *Periodica Mathematica Hungarica*.

Russell Hendel was asked to review several papers for the The 13<sup>th</sup> International Conference on Education and Information Systems, Technologies and Applications, EISTA 2015.

Russell Hendel was asked to review several papers for the The 9th International Multi-Conference on Society, Cybernetics and Informatics, IMSCI 2015.

### **Book Reviews**

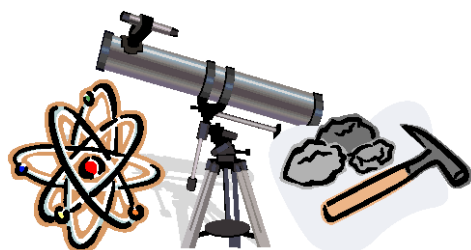
Russell Hendel's book review of [Computer Games for Learning](http://www.maa.org/publications/maa-reviews/computer-games-for-learning), by Richard A. Mayer, was published by the [Mathematical Association of America](http://www.maa.org/publications/maa-reviews/computer-games-for-learning) (<http://www.maa.org/publications/maa-reviews/computer-games-for-learning>).

### **Other Professional Activities:**

Sergiy Borodachov made research visits to ICERM in Providence, RI (November 14-December 1, 2014), Erwin Schrodinger Institute, Vienna, Austria (October 10-20, 2014), and Vanderbilt University, Nashville, TN (September 3-8, 2014).

Raouf Boules was appointed member of the *Maryland Mathematics Reform Initiative Steering Committee*, a 23 member statewide committee that is examining mathematics teaching and learning in the State. Other members include the USM Chancellor (Committee Chair), the Maryland State Superintendent of Schools, and the Executive Director of Maryland Association of Community Colleges.

Russell Hendel is a member of Greater New York Math Fair Planning Committee, held annually in New York City, with participants from many High Schools in the greater New York area, spanning a wide variety of mathematical topics.



## DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

### Proposals

Vera Smolyaninova submitted an NSF DMR proposal entitled, "RUI: Metamaterial Superconductors," \$347,545.

### Publications

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). *This work generated considerable media interest including ExtremeTech, The Physics arXiv Blog, etc.*

Sandifer, C., Hermann, R. S., & Vocke, D. (Fall, 2014). Towson University continues its physics and education partnership to prepare future teachers effectively. Fall 2014 American Physical Society Forum on Education newsletter. URL: <http://www.aps.org/units/fed/newsletters/fall2014/towson.cfm>

Lottero-Perdue, P.S., Bolotin, S., Benyameen, R., Brock, E., and Metzger, E. (in press). The EDP-5E: Rethinking 5E for engineering design – An example from early childhood. *Science and Children*. (Sonja Bolotin was a student co-author; Ruth Benyameen and Erin Brock are kindergarten teachers and Ellen Metzger is a pre-kindergarten teacher at Tunbridge Public Charter School in Baltimore City).

Lottero-Perdue, P.S., De Luigi, A., and Goetzinger, T. (in press). Blade Structure and Wind Turbine Function: Third and Fifth Graders Co-Investigate and Co-Design Wind Turbine Blades and Voltage Output." *Science and Children*. (Angela De Luigi is a 5th-grade teacher at Darlington Elementary School, and Tracy Goetzinger is a 1st-grade teacher at William S. James Elementary School; both schools are within Harford County Public Schools).

J. Lee, J.M. Overduin, T.H. Lee and P. Oh, "Cosmological coincidence without fine tuning", *Physical Review D*, in press;<http://arxiv.org/abs/1405.7681>, 2014.

R.C. Henry, J. Murthy, J.M. Overduin and J. Tyler\*, "The mystery of the cosmic diffuse ultraviolet background radiation," *Astrophysical Journal*, in press; <http://arxiv.org/abs/1404.5714>, 2014.

### Presentations and abstracts

Thomas Gresock,\*\* Bradley J. Yost,\*\* David Lahneman,\* Vera N. Smolyaninova and Igor. I. Smolyaninov, "Reconfigurable Tunable Hyperbolic Metamaterial," MAS APS Inaugural Meeting, State College, PA, October 2014.

\* - undergraduate student co-author

\*\* - graduate student co-author

Lottero-Perdue, P., De Luigi, A., & Goetzinger, T. (2014, October). Being Scientists and Engineers: Third and Fifth Graders Co- Investigating and Co-Designing Wind Turbines. Presented at the *Maryland Association for Science Teaching (MAST)* Fall Conference, Ellicott City, MD, October 18th.

Lottero-Perdue, P.S. "The Engineering Design Process as a Safe Place to Try Again: Perspectives on and Responses to Failure by Elementary Teachers and Students" within the Paper Set, "Research on Engineering Education in the Elementary Grades." Accepted for presentation at the 2015 Annual Conference of *NARST: A Worldwide Organization for Improving Science Teaching and Learning Through Research*.

N. Prins\* (presenter), J.M. Overduin and J. Lee, "Supernova constraints on quintessential inflation," poster, Goddard Space Flight Center-Johns Hopkins University Interaction Day, Baltimore, MD, November 21.

V. Polyak\* (presenter), J.M. Overduin and S. Aulton, "Optimization of a magnetohydrodynamic boat for introductory physics demonstrations," oral presentation and demonstration, Fall 2014 Meeting, American Association of Physics Teachers (Chesapeake Section), Loyola University, Baltimore, MD, October 25. *Co-winner, "Best Student Presentation."*

K. Wilcomb\* (presenter) and J.M. Overduin, "When you dance, you dance with the universe," poster, 2014 Annual Meeting of the American Physical Society (Mid-Atlantic Section), University Park, PA, October 4.

J. Lee (presenter), J.M. Overduin, T.H. Lee and P. Oh, "Cosmological coincidence without fine tuning," oral presentation, 2014 Annual Meeting of the American Physical Society (Mid-Atlantic Section), University Park, PA, October 4.

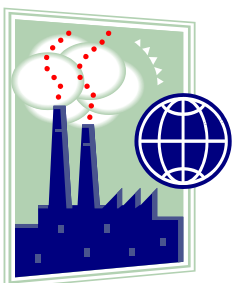
D. Zile\* (presenter) and J.M. Overduin, "Derivation of the Biot-Savart law from Coulomb's law and implications for gravity," oral presentation, 2014 Annual Meeting of the American Physical Society (Mid-Atlantic Section), University Park, PA, October 4.

N. Prins\* (presenter), J.M. Overduin and J. Lee, "Supernova constraints on modified theories of gravity," oral presentation, 2014 Annual Meeting of the American Physical Society (Mid-Atlantic Section), University Park, PA, October 4.

## Community Engagement and Professional Service

Vera Smolyaninova reviewed a paper for JOSA B.

Pamela Lottero-Perdue provided professional development to 24 teachers (8 3rd grade, 8 4th grade, 8 fifth grade) from Harford County Public Schools on October 15th, 2014. This professional learning experience deepened teachers learning about teaching engineering habits of mind and the design process, and engaged the teachers in learning three new Engineering is Elementary (EiE) units of instruction.



## ENVIRONMENTAL SCIENCE AND STUDIES PROGRAM

### Publications and Presentations

Environmental Science graduate student Andrew East was the lead author on a presentation at this year's Maryland Water Monitoring Council Meeting in Linthicum.

East, A.E., C.J. Salice. 2014. Developing a bioenergetic framework for sentinel species to predict effects of disturbance on Maryland Streams. 20th Annual Meeting of the Maryland Water Monitoring Council, Linthicum, MD. Poster Presentation.

Environmental Science graduate student Bill LaBarre and recent MS in Environmental Science graduate, Megan Schulze, were authors on the following presentations at the 35<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry in Vancouver, BC. Affiliated faculty Ryan Casey, Steven Lev and David Ownby also attended the conference.

Schulze, M.\*\*, RE Casey, SM Lev, DR Ownby, JW Snodgrass. 2014. A Comparison of uptake and elimination rates of bulk ZnO powder, ZnCl<sub>2</sub>, and ZnO nanoparticles by *Eisenia fetida* using a stable isotope tracer. 35<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry. Vancouver, BC. Platform Presentation.

LaBarre, W.\*\*, RE Casey, DR Ownby, SM Lev, KJ Rader. 2014. Stormwater best management practices decrease the toxicity of copper roof runoff. 35<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry. Vancouver, BC. Poster Presentation.

LaBarre, W.\*\*, RE Casey, SM Lev, DR Ownby, KJ Rader. 2014. Attenuation of copper in runoff from copper roofing materials by two stormwater best management practices. 35<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry. Vancouver, BC. Poster Presentation.

Environmental Science Director Christopher Salice gave an invited platform presentation at the 35th Annual Meeting of the Society of Environmental Toxicology and Chemistry in Vancouver, BC. The research effort involved graduate students from Towson University (Andrew East) as well as several from Texas Tech University.

Salice, C.J., A.E. East\*\*, A. Olson, B. Perkins, E. Reategui-Zirena. 2014. A bioenergetic-based model to identify and understand the effects of pesticides on ground nesting birds. 35<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry. Vancouver, BC. Platform Presentation.

Environmental Science Director Christopher Salice traveled to the Chesapeake Biological Laboratory in Solomons, MD on October 8<sup>th</sup> for an invited seminar. The title of the talk was: "Risky Business: Understanding and Predicting Ecological Effects of Anthropogenic Stressors."

## Additional News

The Environmental Science and Studies Program is working with Maryland Department of the Environment. The project title is: A cooperative effort between Maryland Department of the Environment and Towson University to Support the Assessment of Estuarine Benthic Macroinvertebrate Samples for Exterior Monitoring of Hart-Miller Island Dredged Materials Containment facility.

Ayla Haig defended her master's thesis entitled "A Comparative Analysis of Community Sustainable Development Indicators with Application to Baltimore County" on November 19, 2014.

John Sivey, Christopher Salice, and two collaborators from the University of Iowa submitted the following proposal to the National Science Foundation:

Sivey, J. D., Salice, C. J.; Cwiertny, D. M.; Lehmler, H.-J. *SusChEM: Collaborative Research: Environmental Fate and Effects of "Inert" Herbicide Safeners, an Overlooked Class of Emerging Contaminants*. National Science Foundation, CBET Division, Environmental Engineering Program. \$475,900 (Towson allocation: \$232,864).



## MOLECULAR BIOLOGY, BIOCHEMISTRY BIOINFORMATICS (MB3) PROGRAM

On October 10<sup>th</sup> Keith Reber from Chemistry presented a seminar on his research in the organic synthesis of natural products for use as pharmaceuticals. His presentation included several examples of potential student projects in his laboratory.

On October 17<sup>th</sup> Dr. Darrell Murray from the Office of Intramural Education and Training at the National Institutes of Health spoke to students about research and scholarship opportunities at the NIH.

On October 24<sup>th</sup> an MB3 alumnus, Dr. Crystal Neely presented her work on the cellular mechanisms of immune dysfunction following severe burn injuries. She also spoke to students about research as a career in general and pursuing a PhD in particular.

On October 31<sup>st</sup> two MB3 students presented the results of their research. Theresa White described her work at Cornell University during the summer of 2014. Her talk was titled “Investigating the role of female-expressed candidate genes on sperm competition in *Drosophila melanogaster*” Daniela Rey Ardila presented her work done with Dr. Richard Preisler. Her talk was titled “Transition from B-DNA to Z-DNA in sodium ion-stabilized polynucleotide duplexes”

On November 7 two Biology alumni presented their research and spoke to students about careers in industry and government research labs. Dr. Henry Wolfe, the VP for Research and Development at Sun Pharmaceuticals, spoke about computer modeling of peptide therapeutics. Dr. Steve Harvey, Research Biologist at the United States Army Medical Research Institute for Chemical Defense, spoke about the development of enzymatic antidotes for chemical nerve agent poisoning.

On November 14<sup>th</sup> Dr. Ailong Ke discussed Cornell University’s summer undergraduate research programs and their graduate programs

On November 21<sup>st</sup> Catherine Landis presented her work conducted at the University of Maryland School of medicine during the summer of 2014. Her presentation was titled “Knockdown of Hsp70 expression and cancer”.

Two MB3 students, Darren Johnson and Oluwaseun Durojaye presented their research projects at the Annual Biomedical Research Conference for Minority Students in San Antonio Texas November 12-16. Darren presented work conducted at the University of Pennsylvania School of Medicine during the summer of 2013. Oluwaseun presented her work done at Johns Hopkins Medical Institute that summer.



## Center for STEM Excellence

On November 11, [SciTech](#) opened up their doors to a new group of ‘students’. Members of the [Osher Lifelong Learning Institute](#) attended a special SciTech program, *On the Halfshell, A Look into the Oysters of the Chesapeake Bay*. Osher has been part of the TU community since 1999, offering adults age 50 and over, opportunities for continued learning, such as short courses, social and cultural programs as well as book clubs and interest groups.

The visit began with an engaging lecture by Christina Romano, SciTech’s education and outreach specialist. Ms. Romano drew upon her marine science educational background, as well as her lifelong passion for the Eastern Oyster to put together a historical account that explored the rise and fall of *Crassostrea virginica* in the Chesapeake Bay. After an introductory lecture, participants were each given half of an oyster shell to examine, and were then challenged to find their matching half!

Next, participants moved into the SciTech Student Learning Lab, where they were able to observe the external morphology of the oysters under a microscope. While many of the participants had eaten oysters before, some even telling stories of working for waterman during their youth, none had ever taken the time to really consider oyster structure at this level. Many of the participants shucked their own oysters, so they could examine the internal structure and function of the critters under the microscope.



**Members of the Osher Lifelong Learning Institute participating in the *On the Halfshell* SciTech program.**

After the laboratory portion of the visit, participants re-grouped back into the auditorium for more discussion on the health of the Eastern Oyster population in the Chesapeake Bay, with an emphasis on current efforts to both improve the health of the Chesapeake Bay in general, as well as efforts to increase oyster populations.

SciTech staff really enjoyed working with this group of 'students'. Their passion for learning, combined with their wealth of experience lead to meaningful dialogue, and rich discussions.

SciTech staff very much enjoyed their time with the Osher participants who took the time to share their memories and experiences with the Chesapeake Bay and oysters look forward to more visits by Osher participants to SciTech.