A Message from the Dean

Dear Friends,

Greetings from the Fisher College of Science and Mathematics and welcome to the last newsletter for 2016. Much is happening in the college and, frankly, there’s too much news to publish in each issue, but here you’ll find a large sampling of our activities. The college has been producing the newsletter since before I joined TU in 2001 as the Physics, Astronomy & Geosciences chairperson. It has not evolved very much since then, and we feel there’s a need to do something new. Therefore, this will be the last issue of the newsletter in its current format!

Look for something new in 2017. And, as always, you can catch up at any time on all the latest Fisher College news at the college’s web site http://www.towson.edu/fcsm/index.html.

Best wishes,

David A. Vanko
Dean

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.
Faculty Publications


Sarah Haines: Book review published on NSTA website: Finding Wonders

Presentations / Workshops

Sarah Haines presented at the following:


North American Association for Environmental Education Conference, Madison, WI:
   “Certification 101- You Can Become a Certified Environmental Educator”
   “Connecting State EE Certification programs & Environmental Literacy Plans”
   “The Good, the Bad, & the Ugly: Aquatic Invasive Species of the Mid-Atlantic”

Barry Margulies gave a seminar at the Baltimore Under Ground Science Space, "Improvements in long-term antiherpetic interventions for single-dose extended therapy"

Barry Margulies: NIH review panel "NCCIH Training, Career Development, Fellowship, and Research Grants"

Grants

Sarah Haines was awarded a one-year grant from the National Center for Science and Civic Engagement entitled “Partnership Champions: SENCER-ISE and Professional Development Through Mentoring to Enhance Learning Environments.” This collaborative project with the National Aquarium in Baltimore will focus on informal environmental education in Baltimore.

David Hearn was awarded NSF funding for a collaborative project with the University of Maryland and other institutions to This grant will provide equipment and fund student involvement to digitize the botanical collections at the Towson University Herbarium.

Reviews

Manuscripts

Dr. Steve Kimble reviewed one manuscript for American Midland Naturalist.

Sarah Haines reviewed articles for the journals: Electronic Journal of Science Education (one), Journal of Applied Environmental Education (one), and Journal of Science Teacher Education (one).

David Hearn reviewed one manuscript for the journal Haseltonia.
Reviews

Books
Sarah Haines reviewed four children’s science trade books for NSTA Recommends:

What You Need to Know About Pink Eye, What You Need to Know About Allergies, What You Need to Know About Obesity, and What You Need to Know About Head Lice

Student Achievements

Awards
From Dr. Mara Shainheit’s lab:

Scott Haynes and Charmaine Nganje were awarded 1st place for their poster presentations at the Undergraduate Research Symposium for Chemical and Biological Sciences at UMBC.

Rachel Lent was awarded 2nd place for her poster presentation at the Undergraduate Research Symposium for Chemical and Biological Sciences at UMBC.

From Dr. Barry Margulies’ lab: the following students were awarded FCSM undergraduate research grants:

Ari Gordon and Ricardo Mack "Analysis of drug release and viral suppression of implant devices through plaque assay and high performance liquid chromatography”


Jensen Dunkling, Jennifer Suon, J. Brian White "Determining the efficacy of antitherpetic vaginal rings in vitro”

Community Outreach
Laura Gough spoke at Career Day for 8th graders at Ridgely Middle School in Lutherville, MD. She discussed careers in science and academia with the students.

Sarah Haines gave a guest presentation on trees to the kindergarten class at Green Acres School, Bethesda.
Faculty Publications

Faculty Professional Development
Ryan Casey conducted a program review for the Chemistry Department at Shepherd University.
Ryan Casey reviewed a proposal for the Maryland Industrial Partnerships program.

Student Achievements

Publications

Presentations


Awards
Ms. Sarah Talamantez-Lyburn, graduate student in Biological Sciences (Research Mentors: Drs. Devadas and Ehrlich) and Mr. Erik Hobbs, graduate student in Applied Physics (Research mentor: Dr. Devadas) were awarded $500 each for research from Towson University’s Graduate Student Association.

As part of ongoing outreach activity in the Devadas Lab, (Top) Dr. Devadas (L) and Ms. Sarah Talamantez-Lyburn (R) presented at Notre Dame Preparatory High School November 2016. (Bottom) Sarah in conversation with McKayla Charney, President of the Science National Honor Society.
Student Achievements

Presentations

The Chemistry Department sent eight students to the 19th Undergraduate Research Symposium in the Chemical and Biological Sciences held on October 22, 2016 at UMBC. Student poster presentations included:


Fusco, V.; Devadas, M. Phytochemical Synthesis of Metal Nanoparticles and their Antimicrobial Activity.

Mease, J.; Reber, K. Total Synthesis of Clerobungin A.

Burdge, H.; Mease, J.; Reber, K. Towards a Total Synthesis of Cladosin C.

Morales, A.; Devore, T. Temperature Dependent PXRD Analysis of Tutton’s Salts K2M(SO4)2 • 6 H2O (M = Zn, Cu, Ni, Co, and Mg).


Six students representing the Towson University chemistry department won 1st or 2nd place awards in their respective divisions for posters presented at the 19th Undergraduate Research Symposium in the Chemical and Biological Sciences at UMBC.

Faculty Publications


Robert Hammell, doctoral student Chuck Smith, and a collaborator at the US Army Research Laboratory had their paper entitled “The Use of Entropy in Lossy Network Traffic Compression for Network Intrusion Detection Applications” accepted for publication and presentation at the upcoming 12th International Conference on Cyber Warfare and Security (ICCWS-17), to be held 1-3 March 2017 in Dayton, OH.

Robert Hammell and doctoral student John Auten had their paper entitled "Predicting Terminal Ballistics using an Iterative Application of an Artificial Neural Network" accepted for publication and presentation at the upcoming 2017 Computing Conference (CC2017) to be held 18-20 July 2017 in London.

Robert Hammell, doctoral student Sheng Miao, and a collaborator at the US Army Research Laboratory had their paper entitled “Empirical Study on Combining Complementary and Contradictory Information in a Fuzzy-Based System” accepted for publication and presentation at the upcoming 2016 IEEE Symposium on Computational Intelligence for Security and Defense Applications (CISDA 2016) to be held 6-9 December 2016 in Athens, Greece.

Robert Hammell, doctoral student Chuck Smith, and two collaborators from the US Army Research Laboratory had their paper entitled “An Experimental Exploration of the Impact of Host-Level Packet Loss on Network Intrusion Detection” accepted for publication in the post-conference edited proceedings of the 2016 Cybersecurity Symposium that was held 18-20 April 2016 in Coeur d’Alene, ID.

Presentations / Workshops

A Special Session entitled “Human Computation for Military Situational Awareness” to be Co-Chaired by Robert Hammell and a collaborator at the US Army Research Laboratory was accepted for inclusion in the upcoming 2017 FUZZ-IEEE Conference to be held 9-12 July 2017 in Naples, Italy.

On Oct 7, Jonathan Lazar gave a presentation titled "Access technologies at work: Strategies and solutions that make work environments accessible and sustain employment for People with disabilities." at the "Disability and Equity @ Work: The Power of Policy, Myth and Practice from Higher Education to Employment" conference sponsored by the Harvard Graduate School of Education.

Faculty Professional Development

Faculty Professional Development

Several CIS faculty met with representatives of the Army Materiel Systems Analysis Activity (AMSAA) from Aberdeen Proving Ground to discuss opportunities they might have for our undergraduate and graduate students to work with them on projects. Several options for projects and associated student participation were identified; detailed discussions are ongoing.

On November 7, Jonathan Lazar was an invited guest to the White House Disability and Inclusive Technology Summit.

Grants


Faculty Publications

Diana Cheng and Dr. Peter Coughlin (University of Maryland College Park, Department of Economics) wrote an article entitled, “Using equations from power indices to analyze figure skating teams.” It was accepted for publication in the journal, Public Choice.

Dr. Michael Krach and Dr. Gail Kaplan led a one day workshop emphasizing critical thinking in the teaching of middle school and high school algebra on Saturday, November 12th at Towson University. The participants were enthusiastic and highly engaged in the challenging critical thinking activities utilized in the workshop.

Schenck H. and T. Sorokina, Subdivision and Spline Spaces, Constructive Approximation, accepted.

Presentations / Workshops

In August 2016, Diana Cheng presented a workshop at the Bridges 2016: Mathematics, Music, Art, Architecture, Culture conference in Jyvaskyla, Finland. The workshop was entitled, “Spinning Arms in Motion: Exploring Mathematics within the Art of Figure Skating.”

Dr. Michael Krach and Ms. Emma Talbot (an undergraduate elementary education major) presented a problem solving workshop to a group of STEM students residing in Richmond Hall. Participation by the STEM students was spirited and very enthusiastic.

T. Sorokina, Piecewise harmonic and divergence-free splines, Finite Element Circus, Worcester Polytechnic Institute, 10/15/2016, Oral Presentation

On October 14, Dr. Ming Tomayko and Dr. Mike Krach led an afterschool professional development workshop for 12 Baltimore County middle school teachers as part of the Mathematics in the Middle grant. During the workshop, teachers experienced and discussed geometry activities focused on shapes and their properties, transformations, and spatial visualization.

Professional Conferences

Dr. Ming Tomayko presented a best practices session at the E-Learn 2016 conference in Alexandria, VA on November 14. Her presentation, “Finding the Right Balance when Redesigning a Pre-Calculus Course with Online Software”, detailed the lessons learned during a 2013-2015 course redesign grant funded by the University System of Maryland.

Student Achievements

Presentations

Rachel Mulvaney, TU Middle School Education pre-service teacher, and Diana Cheng co-presented a workshop entitled “US Presidential Elections and Power Indices.” They presented this session to the Mathematics Education Club on October 5, as well as at the Maryland Council of Teachers of Mathematics conference in Pasadena, MD on October 22nd.
Community Outreach

Rachel Mulvaney, TU Middle School Education pre-service teacher, and Diana Cheng conducted an after-school STEAM Club session at the Afya Public Charter School, a Baltimore City Public School on October 11th. They also conducted a Math Club session at the Digital Harbor High School on November 2nd. Both of these sessions were about using power indices in the context of the US presidential elections, as an application of fractions and statistics.

The Mathematics Education Club (MEC) is advised by faculty members Honi Bamberger, Diana Cheng, and Nicole Winner this academic year. The MEC will be hosting two more sessions during the Fall semester. On November 30th, Population Connection will be speaking about “Geography and Census Activities Connected to Mathematics” in YR 459 from 5:30-7:30 pm. On December 6th, Ms. Darla Winstead, mathematics teacher at the Summit School, will be speaking about “Empowering Students Who Learn Differently” in YR 320 from 6- 7:30 pm. The MEC is supported by the PepsiCo Foundation, which provides beverages for its meetings.
Faculty Publications


Presentations / Workshops

Joel Moore gave an invited presentation entitled “Road salt and water quality” at the “Salt management in the Washington region: environmental and transportation perspectives” workshop sponsored by the Metropolitan Washington Council of Governments, Washington, DC.

Joel Moore presented a seminar entitled “Sources of elevated specific conductance, major ions, and dissolved inorganic carbon in urban streams” as part of the Visiting Scholar Seminar Series at the Appalachian Laboratory of the University of Maryland Center for Environmental Science in October 2016.

Joel Moore shared a presentation about road salt impacts and had a discussion with Scott Simon from the Maryland State Highway Authority (SHA). Scott gave the presentation to SHA managers and drivers on Joel’s behalf since Joel could not attend the workshop in western Maryland in October 2016.


Professional Conferences


Grants

Submitted grant proposal NSF RUI: Engineered superconductors, $440,344, PI: Vera Smolyaninova, co-PI Mary Devadas

Joel Moore is co-PI on a Chesapeake Bay Trust grant award for $199,992 along with Vanessa Beauchamp, Ryan Casey, and Chris Salice. The grant is entitled “Determining the effects of legacy sediment removal and floodplain reconnection on ecosystem function and nutrient export.”

“RUI: Collaborative Research: Acoustic Study of Lattice Dynamics and Elastic Properties in Perovskite Dielectrics and Ferroelectrics”, Gary Pennington (PI), Rajeswari Kolagani (Co-PI), Jeffrey Simpson (Co-PI) and Jia-An Yan (Co-PI), collaborative proposal together with Oleksiy Svitelskiy and David Lee from Gordon College, MA, submitted to NSF. Budget: $287,340 for three years.

Reviews

Vera Smolyaninova served on an NSF panel

Joel Moore served as the external member on the Ph.D. committee of Vijaya Joyti, University of Massachusetts–Boston for the dissertation entitled “Isotopic, hydrogeochemical and sustainability assessment of groundwater in Punjab and Haryana, India.”

Books

Between July and November, 2016, Dr. Pamela Lottero-Perdue was one of nine reviewers from around the country who reviewed and selected the Children's Book Council's first ever "Best STEM Books" for grades PreK-12. Reviewers represented organizations such as the National Science Teachers Association, the American Society for Engineering Education, and the International Technology and Engineering Educators Association. Towards this effort, she reviewed over 275 books, met with other reviewers in early November to establish a final list, and wrote annotations for that list. The list will be published in the near future.

Journals

Vera Smolyaninova reviewed a manuscript for Scientific Report and a manuscript for Nanotechnology

Joel Moore reviewed four manuscripts: 1 each for Applied Geochemistry, for Environmental and Engineering Geoscience, for Journal of Geophysical Research – Earth Surface, and for Water Resources Research.

Faculty Professional Development

Dr. Jia-An Yan and Dr. Raj Kolagani attended the 2016 ARL Open Campus Open House, held from Nov. 16-17 at the ARL's Adelphi Maryland Campus.
Student Achievements

Presentations


Bridget Lawson (Undergraduate physics student)  and Dustin Ullery presented a poster at the Mid-Atlantic Section Meeting of the American Physical Society held at the University of Delaware, Oct 15-16 2016. Details: Structure, Transport and Magnetoresistance Properties of Tensile Strained CaMnO3 Thin Films. Bridget Lawson*, Dustin Ullery, Adeel Chaudhry*, Samuel Neubauer, Cacie Hart and Rajeswari Kolagani


Community Outreach

On Oct. 28-30, Dr. Jennifer Scott led astrophysics students in the Astrophysical Techniques class on a field trip to the Green Bank Observatory in Green Bank, WV. In addition to touring the facilities, the students obtained radio telescope data on a 40-foot radio dish for use in a class project.
**Community Outreach**

Joel Moore gave a presentation on the science of climate change with a focus on geoscience perspectives on climate and paleoclimate data at the MADE Clear Climate Academy for K–12 teachers, Queenstown, MD.

Joel Moore presented on “Effects of road salt on groundwater and stream chemistry” at the Science Professionals Day for Baltimore County Public Schools.

Dr. Alex Storrs held a Public Planetarium show on Nov. 18. Over 100 people were in attendance including a hearing impaired group with their interpreter. Afterwards, Dr. Storrs and Bob Auberger provided attendees with telescope viewing.

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**“Learning Physics Through Movement”**

Created by Deep Vision Dance Company’s Artistic Director/Founder (and instructor at Towson University Dance Department) Nicole A. Martinell in collaboration with Towson University Physicist Dr. Svetlana Gladycheva, “Learning Physics through Movement” is an arts integration program for K-12 children that shares innovative ways to explore and grasp physics concepts through the art of dance. Concepts, such as inertia, force, and equilibrium, are introduced to students through dance/movement classes, hands-on experiences, lecture demonstrations, performance excerpts, choreography workshops, movement analysis classes, and supplementary materials. The program has successfully launched and was enthusiastically received in a number of Baltimore and Baltimore County schools, and was featured in the Maryland State Department of Education Fine Arts Office “5th Floor View” October newsletter.

This project of Deep Vision Dance Company, Inc., [www.deepvisiondancecompany.org](http://www.deepvisiondancecompany.org) is funded by The Citizens of Baltimore County.
Student Achievements

Poster Presentations at SETAC Annual Meeting at Orlando, Florida:


A systems modeling framework to link organism level effect of chemical stressors to effects on ecosystem services. Salice, C.J. and Forbes, V.E. SETAC World Congress, Orlando, FL, 2016.


**Denotes Graduate Student Author
* Denotes Undergraduate Student Author
Presentations / Workshops

Joel Moore presented a seminar entitled “Sources of elevated specific conductance, major ions, and dissolved inorganic carbon in urban streams” as part of the Visiting Scholar Seminar Series at the Appalachian Laboratory of the University of Maryland Center for Environmental Science in October 2016. The talk was based, in part, on research done by an Environmental Science MS student and in UEBL facilities.

Professional Conferences

Drs. Chris Salice, Ryan Casey and David Ownby attended the World Congress of the Society of Environmental Toxicology and Chemistry in Orlando, FL November 6-10. They were accompanied by seven Towson students, one of the largest groups to attend SETAC! Towson is also now a Sustaining Member of SETAC and Drs. Salice, Casey and Ownby attended a networking event comprised of other SETAC sustaining members. It was a great meeting with multiple presentations from students and faculty!

Community Outreach

Joel Moore shared a presentation about road salt impacts and had a discussion with Scott Simon from the Maryland State Highway Authority (SHA). Scott gave the presentation to SHA managers and drivers on Joel’s behalf since Joel could not attend the workshop in western Maryland in October 2016. The talk was based, in part, on research done in collaboration with other TU faculty affiliated with the Environmental Science MS program/UEBL and in UEBL facilities.
Faculty Publications

Zane May (former MB3 student), Omar Darwish (CIS) and Nadim Alkharouf (CIS\MB3), published a paper titled: “A searchable database for the genome of Phomopsis longicolla (isolate MSPL 10-6)” that appeared in the journal Bioinformation.

Student Achievements

Alec Ahearn investigated the effectiveness of some complex tertiary amine catalysts on the Baylis-Hillman reaction with Dr. Brunker (Chemistry).

John Biondo interned for professor Tami Imbierowicz, a biology professor at Harford Community College, and a TU Alumni. They measured the amount of Enterococci bacteria before and after rainfall, to use as an indicator of water quality based upon EPA guidelines. Study was done through the Chesapeake Bay Foundation (CBF). A press release on the findings can be found here: http://www.cbf.org/how-we-save-the-bay/in-our-communities/bacteria-testing-2016

Maresha Milyavsky worked with Dr. Renee Dickie (Biology) over the summer to develop a quantitative Methylene blue exclusion assay to assess the time course for re-epithelialization in the regenerating zebrafish fin and axolotl tail.

Jill Taylor interned at the National Institute on Drug Abuse in Baltimore in the lab of Dr. Marisela Morales (her mentor was Dr. David Barker). She conducted research to determine the functional role of the GABAergic and Glutamatergic projections from the Lateral Preoptic Area to the Lateral Habenula in mice. She used Optogenetic Stimulation of these projections and Real Time Place Conditioning to behaviorally test the mice.
The Jess and Mildred Fisher College of Science & Mathematics

Mission Statement

Through rigorous and high quality undergraduate programs in a wide variety of scientific, computing and mathematical disciplines and graduate programs in research-based, practice-based, applied and interdisciplinary fields, FCSM prepares its students to live and work productively in a scientific and technological world and to pursue learning throughout their lives. Faculty members engage both their undergraduate and graduate students through interactive teaching, advising, basic and applied research, and collaborative activities internally and externally. They form partnerships both to serve the metropolitan community as well as to meet regional, national and international needs. The result is dedicated, innovative, flexible, and highly prepared individuals who excel in graduate school, professional school, and careers in industry, government and teaching.

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Inspiring Student Exploration in Science and Mathematics for the 21st Century

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