



The Jess and Mildred Fisher College of Science and Mathematics

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ELECTRONIC NEWSLETTER

September 2008



OFFICE OF THE DEAN

Dear Friends,

Welcome back! This issue of the Fisher College's electronic newsletter is a long one, detailing our many accomplishments since the final newsletter of 2007-2008 last May. Now the fall semester has started and Towson University has 21,111 students, another all-time high. To help teach all these students, the college welcomed eleven new full-time faculty members and many more new part-time colleagues. We hope that all of our faculty members and students, new and continuing, will have a great year.

Last year, the FCSM had a great year, especially in the area of external grants. The college was awarded \$2.98 million, which is a new record. With these resources added to our own funds for research and professional development, our faculty and students have produced many fine examples of scholarly research, all of which you can read about in this report.

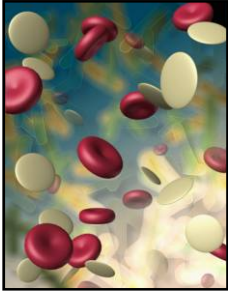
There is one external award, from the National Science Foundation, that I would like to highlight up front because it involves several collaborators from numerous departments. It's an NSF-ADVANCE grant. The ADVANCE program at NSF seeks effective ways to increase the participation and advancement of women in science and engineering careers, with the broader goal of a more diverse science and engineering workforce. A TU team including Drs. Gail Gasparich (Biology), Alex Storrs (Physics, Astronomy & Geosciences), Jay Zimmerman (Mathematics), Paz Galupo (Provost's office), and Ryan Casey (Chemistry) received \$191,709 for a study of the current state of affairs at Towson with respect to women in the sciences and mathematics. This "planning grant" could lead to a future "Institutional Transformation" award to support programs for institution-wide change. Congratulations to this great team!

Please enjoy the electronic newsletter!

Sincerely,

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

New Faculty

The Department is very pleased to welcome two new Assistant Professors in Fall 2008. Elizabeth Vaidya comes to us from the National Institute of Drug Abuse, where she had been a Post-Doctoral Fellow since 2006. Beth received her Ph.D. from the University of Cincinnati in 2006 and focuses her research on the neural mechanisms underlying motivation behavior in mammals, specifically drug use and binge eating. Her teaching responsibilities will be in the area of Anatomy & Physiology.

Dr. Mark Bulmer received his B.Sc. in Biochemistry at Edinburgh University (Scotland) and his Ph.D. from Boston University in 2001. He has had extensive Post-doctoral experience at James Cook University in Australia and Northeastern University in Boston. His research focuses on the molecular arms race between termites and their fungal pathogens. His teaching responsibilities will be in undergraduate Genetics, with future coursework in Population Genetics.

Student Research

Former graduate student Tory Johnson (Barry Margulies, Biology Professor) was awarded the Ruth L. Kirschstein National Research Service Award for Individual Predoctoral Fellows (F31). The title of the project is "Mechanism of CNS-Immune Reconstitution Inflammatory Syndrome with HIV infection."

Alexandra Karosas and Susan E. Gresens, "Effects of silt-clay sediment in a phosphorus-limited algal-grazer food chain." Presented at the concluding session of the Urban Biogeochemistry NSF REU program at Towson University, August 8th.

S.B. Longdo and B.J. Margulies. "In Vitro Suppression of Herpes Simplex Virus-2 by a Novel Acyclovir Implant." The 27th Annual Meeting of the American Society for Virology, Ithaca, NY (2008).

N. Romero, S.B. Longdo, R. Zinsou, K. Yim, and B.J. Margulies. "Improvements on Design of Silicone-Acyclovir Implants for Long-Term Control of Herpes Infection." The 27th Annual Meeting of the American Society for Virology, Ithaca, NY (2008).

E. Legenzov, and B.J. Margulies. "Infection of Human Oligodendrocytes by HHV-6A and -6B." The 27th Annual Meeting of the American Society for Virology, Ithaca, NY (2008).

S.O. McGusty, S.B. Longdo, R. Zinsou, K. Yim, and B.J. Margulies. "Improvements on Design of Silicone-Acyclovir Implants for Long-Term Control of Herpes Infection." The 5th Annual Regional Microbiology Educators Network Student Research Symposium, Swarthmore, PA (2008).

Publications

Brian Fath is the Associate Editor-in-Chief of Elsevier's recently published Encyclopedia of Ecology, a 5-volume major reference work. The Encyclopedia includes over 500 detailed entries on the complete field of ecology, from general to applied. Dr. Fath also authored three entries (Ecological Complexity, Network Environ Analysis, and Ecosystem Ecology). Harald Beck and Jim Hull also contributed entries to this work on Tropical Ecology and Plant Ecology, respectively.

Presentations

Erik Scully was the keynote speaker at the Regional Microbiology Educators 5th Annual Student Research Symposium, held at Swarthmore College on July 17th. His presentation was entitled "Evolution, Intelligent Design Creationism, and Microbiology." The presentation discussed misrepresentation of microbiological phenomena by proponents of Intelligent Design, and how the same cases and other recent studies in Microbiology advanced our understanding of biochemical evolution.

Susan E. Gresens presented "Response of *Chironomidae* to multiple gradients of urban impact" at the annual meeting of the North American Benthological Society in Salt Lake City, UT, on May 28, 2008.



DEPARTMENT OF CHEMISTRY

New Faculty

The Department is pleased to welcome two new tenure track Assistant Professors in Fall 2008. Tim Brunker is an Organic Chemist who received his Ph.D. in Chemistry from Oxford University and was a Postdoctoral Fellow at Dartmouth University. He previously served as a Visiting Assistant Professor at the College of the Holy Cross and a lecturer at Boston University.

Shannon Stitzel is an Analytical Chemist who received her Ph.D. in Chemistry from Tufts University and was a Postdoctoral Fellow at the National Centre for Sensor Research in Dublin, Ireland. She previously served as an Assistant Professor of Chemistry at Skidmore College.

Publications

Ryan Casey is the coauthor on a paper submitted by William Hillgartner and undergraduate researcher Mark Nejako to The Journal of the Torrey Botanical Society entitled, "A 200-year paleoecological record of *Pinus virginiana*, trace metals, sedimentation and mining disturbance in a Maryland serpentine barren."

Grants

Clare Muhoro received a two-year, \$43,003 grant from Research Corporation entitled "Phosphanyl(organyl)boranes: Synthesis, Characterization and Applications as Novel Ligands and Co-Catalysts in Metal-Catalyzed Oligomerizations."

Cindy Zeller received a two-year, \$170,643 grant from the National Institutes of Justice Forensic DNA Research and Development Solicitation entitled "Development of a DNA-Based Real-Time PCR Assay for the Identification of Sperm, Blood and Saliva."

Summer Undergraduate Research

The first cohort of students in the NSF-REU program in Urban Environmental Biogeochemistry completed their 10-week research projects in Summer 2008. Ryan Casey is the director of this program with faculty mentors: Susan Gresens, Steven Lev, Clare Muhoro, David Ownby, Joel Snodgrass and Joy Watts. Participating students came from Towson University, Colorado State University, University of Minnesota, Virginia Tech and Western Washington University.

Two students participated in the Rasper Summer Research Fellowship program. Sudhir Dahal was mentored by Boon Loo in a project entitled "Structural Characterization of Cyanide Ions Adsorbed on Metal Nanoparticles." Khalid Srour was mentored by Ana Maria Soto in a project entitled "Effect of Electrostatics on the Conformation and Interactions of TAR RNA."

Professional Development

Liina Ladon evaluated the potential chemical safety hazards in a commercial science kit from LabPaq.

Community Service

Shirish Shah completed a six-week volunteer program in the Hospice Center at GBMC.



DEPARTMENT OF COMPUTER AND INFORMATION SCIENCES

New Faculty

The Department of Computer & Information Sciences would like to welcome Dr.'s Siddharth Kaza, Dong Hee Shin, Suranjan Chakraborty, Josh Dehlinger, and Subrata Acharya to our team of faculty. Dr. Siddharth Kaza joins us from the University of Arizona where he received his Doctorate in Management Information Systems. Dr. Dong Hee Shin joins us from Penn State University, where he was an assistant professor. He received his Doctorate from Syracuse University. Dr. Suranjan Chakraborty comes to us from Washington State University, where he received his Doctorate in Information Systems. Dr. Josh Dehlinger comes to us from the University of Virginia, where he was a research associate for the Charles L. Brown Department of Electrical and Computer Engineering. He received his Doctorate in Computer Science from Iowa State University. Dr. Subrata Acharya joins us from the University of Pittsburgh, where she received her Doctorate in Computer Science. We are very excited to have such talented individuals joining our department and University.

Publications and Presentations

In April, Jonathan Lazar presented a paper (with co-authors professor Heidi Feng and undergraduate researcher Jon Holman) on the topic of "Investigating the Security-Related Challenges of Blind Users on the Web" at the Cambridge Workshop on Universal Access and Assistive Technology, at Cambridge University in the United Kingdom. This was subsequently selected as one of the best papers at the workshop, and was selected to be expanded into a full journal article for inclusion in a special issue of the journal, Universal Access in the Information Society.

In July, Jonathan Lazar was one of the plenary speakers at the annual convention of the National Federation of the Blind in Dallas, Texas. His presentation, entitled, "Making CAPTCHAs More Accessible for the Blind" was attended by over 1,500 participants.

Jonathan Lazar published a paper (with Catherine Plaisant, Ben Shneiderman, and Haixia Zhao) entitled, "Data Sonification for Users with Visual Impairment: A Case Study with Georeferenced Data" in the journal ACM Transactions on Computer-Human Interaction.

Scott Hilberg and Gabriele Meiselwitz wrote a paper entitled, "Undergraduate Fluency with Information and Communication Technology: Perceptions and Reality," which was accepted at the ACM SIGITE 2008 conference.

Gabrielle Meiselwitz wrote a paper, "Information Security across Disciplines," which was accepted for presentation at SIGITE (Technical Symposium for Information Technology Education) in Cincinnati, OH, October 16-18, 2008.

Josh Dehlinger, along with Joanne Bechta Dugan, co-authored an invited paper entitled, "Analyzing Dynamic Fault Trees Derived from Model-Based System Architectures," that will be published in Nuclear Engineering and Technology: An International Journal of the Korean Nuclear Society.

Josh Dehlinger co-authored, and presented along with Joanne Bechta Dugan, a research paper entitled, "Dynamic Event/Fault Tree Analysis of Multi-Agent Systems using Galileo," at the 3rd International Workshop on Integration of Software Engineering and Agent Technology in Oxford, UK on August 12, 2008.

Josh Dehlinger, along with Robyn R. Lutz, co-authored a research paper entitled, "Supporting Requirements Reuse in Multi-Agent System Product Line Design and Evolution," and will present it at the 24th IEEE International Conference on Software Maintenance in Beijing, China, September 28 to October 4, 2008.

Harry Hochheiser gave a talk, "Voting: The Evolving Political and Technical Landscape," to the Washington DC Chapter of the Association of Computing Machinery.

The paper, "Exposure-Resilient Extractors and the Derandomization of Probabilistic Sublinear Time," by Marius Zimand, has been published in the journal Computational Complexity, vol. 17, no. 2 (2008), pp. 220—253. This is a special issue dedicated to selected papers from the 22nd IEEE Conference in Computational Complexity.

Marius Zimand attended the conference CSR (Computer Science in Russia) 2008, in Moscow, Russia, June 7-12, 2008. His paper, "Two Sources Are Better than One for Increasing The Kolmogorov Complexity of Infinite Sequences," received the Best Paper Award at the conference.

Marshall, B., H. Chen, S. Kaza (in press), "Using Importance Flooding to Identify Interesting Networks of Criminal Activity," Journal of the American Society for Information Science and Technology (JASIST).

S. Kaza, and H. Chen (2009), "Effect of Inventor Status on Intra-organizational Innovation Evolution," Hawaii International Conference on System Sciences (HICSS – 42), Big Island, HI.

Grants

Dr. Hochheiser and Dr. Azadegan were awarded a \$15,000 Academic Alliance Seed grant to help increase and retain the number of women majoring in CS & CIS Programs. Funding for the Seed Fund is provided by Microsoft Research. (August 2008)

Jinjuan Feng, Jonathan Lazar, and Mike O'Leary received a grant from the National Science Foundation in the amount of \$299,832. The grant will support a two year project that aims at integrating usability and accessibility concepts and methods into the information assurance field.

Harry Hochheiser submitted a proposal entitled "Universally Usable Privacy and Security" to the NSF CAREER program, requesting \$433,534 over five years.

Harry Hochheiser and colleagues from the Association of Computing Machinery's US Public Policy Committee met with Senate and Congressional Staff in June to discuss usability and security implications of e-voting system.

Services to the Discipline

Harry Hochheiser, Jinjuan Feng, and Jonathan Lazar organized a workshop on Accessible Privacy and Security, held at the Symposium on Usable Privacy and Security in Pittsburgh, PA in July.

Harry Hochheiser reviewed papers for the 2008 International Symposium on Visual Computing (as a member of the program committee) and the 2009 Conference on Visualization and Data Analysis.

Josh Dehlinger is serving as a member of the program committee of the 19th IEEE International Symposium on Software Reliability Engineering. As a member he reviewed papers for the research track, student paper track, and fast abstract track and attended the program committee meeting in Raleigh, NC.

Marius Zimand was a member of the Local Organizing Committee for the 23rd IEEE Conference in Computational Complexity, College Park, Maryland, June 22-26, 2008.

Announcements

National Center for Women and Information Technology (NCWIT) has named Towson University as an Academic Alliance Partner.



DEPARTMENT OF MATHEMATICS

New Faculty

The Department welcomes two new assistant professors who joined Towson last month. Dr. Sandy Spitzer has a Ph.D. in Mathematics Education from The University of Delaware. Her research interests include technology use in mathematics education and algebra learning and teaching. Dr. Sergiy Borodachov received his Ph.D. in applied mathematics from Vanderbilt University and has Post Doctoral experience at the Georgia Institute of Technology. His research interests include approximation theory, geometric measure theory, and applied harmonic analysis. The Department wishes them a very successful and rewarding career at Towson.

Papers Published or Accepted for Publication

Linda Cooper and Felice Shore published the paper, "Students' Misconceptions in Interpreting Center and Variability of Data Represented via Histograms and Stem-and-leaf Plots," in the American Statistical Association's July issue of the Journal of Statistics Education, 15(2). The full text can be found by following links at <http://www.amstat.org/PUBLICATIONS/JSE/>.

Xuezhong (John) Hou's paper (with H.Gao, S.Weng and D. Jiang), "Upper and Lower Solutions Method for Fourth-Order Periodic Boundary Value Problem," has been published in the Journal of Applied Analysis, 14 No. 1 (2008), 53-61.

Gail Kaplan's paper, "Trigonometry through a Ferris Wheel," appeared in the September 2008 issue of The Mathematics Teacher, the NCTM publication on teaching mathematics in the secondary classroom.

Angel Kumchev's joint paper with J.Y. Liu, "Sums of Primes and Squares of Primes in Short Intervals," has been accepted for publication in Monatshefte für Mathematik.

Todd Moyer, along with co-author Edward Gambler, published an article in the September 2008 issue of The Mathematics Teacher. The article describes an activity using Fathom Dynamic Data software to illustrate the Central Limit Theorem.

Tatyana Sorokina's joint paper with A.J. Worsey, "A Multivariate Powell-Sabin Interpolant," has been published in Advances in Comp. Math., Volume 29 (2008), 71 – 89.

Tatyana Sorokina's joint paper with P. Alfeld, "Two Tetrahedral C^1 Cubic Macro Elements," has been accepted for publication in the Journal of Approximation Theory.

Leonid Stern's article, "On the Norm Groups of Galois $2n$ -extensions of Algebraic Number Fields," has been accepted for publication in the Journal of Number Theory.

Coy May's paper, "The Real Genus of Direct Products $Z_n \times G$," has been accepted for publication in the Houston Journal of Mathematics.

Grant Submission

Tatyana Sorokina, Xiaoyin Wang and Mircea Voisei submitted an REU (Research Experience for Undergraduates) grant proposal to the National Science Foundation in August 2008.

Conference Presentations

Honi Bamberger was an invited Keynote Speaker at the Washington Literacy Conference in Washington, Pennsylvania on August 7, 2008. She conducted a 2½ hour morning session entitled, "Connecting Mathematics and Language Arts: PreK-Grade 2," and an afternoon session entitled, "Connecting Mathematics and Language Arts: Grades 3 - 5."

Geoffrey Goodson and Roger Horn (University of Utah), presented their paper, "A Canonical Form for Normal Matrices that Commute with their Complex Conjugate," to the International Linear Algebra Society Conference in Cancun, Mexico on June 2008.

Gail Kaplan presented her paper, "The Catenary Art, Architecture, History, and Mathematics," at the Bridges Conference in Holland. The paper was published in the conference proceedings, July, 2008.

Angel Kumchev gave a talk on "Additive Bases Arising from Functions in a Hardy Field" at the 6th Annual Workshop on Combinatorial and Additive Number Theory (CANT 2008) in New York, NY.

Angel Kumchev gave a talk on "Exceptional Sets for Sums of Primes and Squares of Primes" at the Tenth Meeting of the Canadian Number Theory Association (CNTA X) in Waterloo, ON, Canada.

Lawrence Shirley participated in the 11th International Congress on Mathematical Education (ICME-11) in Monterrey, Mexico, July 6-13. He worked with Discussion Group #18 on Ethnomathematics, where he made a presentation, "Ethnomathematics Looks Back and Looks Forward."

New Joint Program with China Launched

The Department of Mathematics started a new cohort of the Master's Program in Mathematics Education in Shanghai, China this summer. Wei Sun taught the courses, Math 627 and Math 529 to 14 students during July 2008. Jay Zimmerman taught the courses, Math 628 and Math 667 in August 2008 to the same students. The students of this program are current mathematics teachers in the public high schools of Shanghai.

Workshops

As part of the Mobile Mathematics Initiative (MMI) Honi Bamberger conducted a three-day institute, July 7-9, on Geometry and Measurement for all of the new second and third-grade teachers in Decatur, Alabama. Dr. Bamberger also developed and conducted a two-day workshop, July 10-11, for all pre-kindergarten through second-grade teachers on differentiating mathematics instruction in the classroom.

Tatyana Sorokina participated in the Mathematical Association of America (MAA) PREP Wavelets Workshop at the University of St. Thomas in St. Paul, MN, June 4-7, 2008.

Tatyana Sorokina participated in the Discrete Wavelet Module-Writing Workshop in Madison, WI, July 29-31 2008. The workshop was sponsored by NSF.

Community Outreach

Honi Bamberger, as she's done for the past three years, conducted a mathematics workshop, on June 26th, for the undergraduate students participating in the T.U.T.O.R.S. program with Cherry Hill Elementary Students. This workshop provided tutors with ideas and activities to use during their tutoring sessions with children.

On August 22nd, Dr. Bamberger attended and spoke at a meeting at Govans Elementary School, in Baltimore City. As one of the "stakeholders" in an MSDE Grant entitled "Govans 21st Century Community Learning Center Mission," Towson University Mathematics Education Club members would become involved in an after-school mathematics tutoring program coordinated by Dr. Bamberger. The State Department of Education will be notifying Govans by mid-September should funding be awarded.

As part of the Middle Grades Partnership (MGP) project, Dr. Bamberger collaborated with Mr. Edward C. Nolan, from Montgomery County Public Schools, to create a post-test assessment that was given to all 428 middle school students participating in the summer school program. Following this, Dr. Bamberger worked with a team of five consultants to score the assessment and then reviewed the results and wrote, with Mr. Nolan, a summative report analyzing the results.

Linda Cooper organized the In-service to Pre-service Teachers' Workshop at Towson University. Eight teachers from Howard County Public Schools presented a workshop to undergraduate elementary education majors on May 6, 2008. The focus of the workshop was to compare multiple ways to teach statistics and proportion concepts in addition to an open discussion about expectations for the job interview process and first year teaching experience.

Gail Kaplan, Michael Krach, and Todd Moyer provided an intensive three-day workshop in August 2008 to Baltimore County teachers on how to improve mathematics instruction in the secondary mathematics classroom. Ms. Dolores Bonincontri, a Baltimore County teacher who recently completed our Masters in Mathematics Education program, helped to provide training for technology that is appropriate for the classroom. Mr. James Engle and Ms. Lynn Anne Rice, who are both students in our masters in mathematics education program, led a workshop on diversity during the sessions.

During June and July, Felice Shore directed an all-day, five-week program on campus for 38 rising 7th, 8th, and 9th graders from Calverton Middle School in Baltimore City, with funding from the Middle Grades Partnership. The program was mathematics-focused, including curricula on rational numbers, data analysis, and non-routine problem solving. The program also featured classes on library research, debate, and language arts, all of which incorporated the topical theme of immigration. The partnership continues all year with a morning program held at Calverton, as well as Saturday events for families.

On September 6, Felice Shore hosted students from Calverton Middle School and their families for a day at Towson. Those who weathered Tropical Storm Hannah were treated to a viewing of a slide show of their summer experiences on campus and an Origami workshop before heading over to enjoy the Many Moons Festival, held at the Center for Arts.

Miscellaneous Professional Activities

Ms. Wendy Pye, President of Sunshine Publications, in Auckland, New Zealand, has awarded Dr. Honi Bamberger a contract to develop 18 additional lessons, along with all print material, for a primary mathematics program that will be piloted in the United States during the 2008-2009 academic year and distributed in 2010. Dr. Bamberger first reviewed their existing program during the summer of 2007, making recommendations for topics needed for an American audience. The next phase of this project is to develop a prototype which will be given to interested U.S. school systems.

Sergiy Borodachov visited the Georgia Institute of Technology in Atlanta, GA on August 18-22, 2008 and worked on a research project related to fractal analysis with Professor Jeff Geronimo.

Gail Kaplan was invited in July 2008 as a College Board consultant to provide an intensive week long workshop to train secondary educators on how to teach AP Calculus.

Gail Kaplan participated in June 2008 in a leadership role at AP Calculus Reading in Kansas City. The College Board sponsored two evening workshops for reading participants. Dr. Kaplan was invited to present her work on discovery in the AP Calculus classroom.

Gail Kaplan reviewed manuscripts for Mathematics Teacher, the NCTM publication on teaching mathematics in the secondary classroom.

NCATE and NCTM once again extended an invitation to Dr. Gail Kaplan to evaluate the mathematics education programs of colleges and universities throughout the United States.

Todd Moyer served as a reader for the AP Calculus AB exam for the fifth time this summer. Almost 300,000 exams were read by 800 readers in Kansas City in June 2008.

Todd Moyer completed his consultation work with the Reading, PA School District in August. He helped the director of curriculum and mathematics teachers re-align their secondary curriculum with the Pennsylvania State Standards.

Todd Moyer reviewed a journal article for The Mathematics Teacher.

Martha Siegel, Secretary of the Mathematical Association of America (MAA), attended the International Congress on Mathematics Education (ICME-11) in Monterey, Mexico in early July. She was a member of the US Organizing Team, representing the MAA. The 40 individuals constituting the US delegation were partially funded by a grant from the

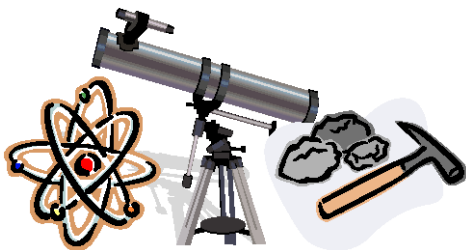
National Science Foundation. Her small group has been preparing papers on “Rethinking the Primary and Secondary School Curriculum in Mathematics.” The ICME is held every four years and attracts thousands of mathematicians and mathematics educators (pre K - college) from all over the world.

Martha Siegel participated in the MAA's MathFest, held in Madison, WI. July 29 - Aug 2. More than 1400 mathematicians (including many undergraduates and graduate students) met in Madison to enjoy a wide variety of talks, including a three-lecture series on origami and its connections to mathematics and biology by Erik Demaine. Demaine, a MacArthur Fellow, has origami works displayed at MOMA in New York and is on the Computer Science faculty at MIT. His website <http://erikdemaine.org/> is full of interesting things.

Martha Siegel was elected Vice Chair of the Council of University System Faculty (CUSF) for the current academic year.

Personal

Lawrence Shirley welcomed his new granddaughter, Maya Rose Sweet on May 1, weighing 4.86 kg. Maya had to have heart surgery when she was six days old, but has now recovered and is thriving. She even paid a brief visit to the Mathematics Department in August and was welcomed by everyone.



DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

The department of Physics, Astronomy and Geosciences would like to welcome Dr. Ronald Hermann as a Visiting Assistant Professor. Ron's area of expertise is in Science Education.

Elluz K. Chong Qui, a geology major, has been chosen as the Northeast Section recipient of the Subaru Minority Student Scholarship for 2008. She will receive a check for \$1000 from the Geological Society of America and Subaru of America, Inc. Congratulations Elluz!

PAGS held an Orientation Workshop for part time faculty on August 22, 2008. Dr. Henry Chen, Dr. Jeff Simpson, Dr. Jennifer Scott, Dr. Alex Storrs, Dr. David Schaefer, and Dr. Phuoc Ha contributed to a general discussion of topics and Dr. Cody Sandifer and Mark Edmonston presented at Breakout sessions.

For six weeks of the summer, Dr. Pamela Lottero-Perdue used “Engineering is Elementary” units and trade books to teach elementary-aged children about engineering in the summer program of Harford County Boys and Girls Club in Havre de Grace, Maryland. First and second grade Summer Engineering and Science (SEAS) Club participants learned about civil engineering and bridge design, while third through fifth grade participants investigated agricultural and mechanical engineering, designing hand pollinators, sailboats, and windmills. Dr. Lottero-Perdue conducted research before, during and after the SEAS Club to investigate the development of children's ideas about science, technology and engineering. Her undergraduate research assistant, Ms. Kristen Wimer, is a senior in early childhood education at Towson University.



SEAS Club children learned about the sails of the Skipjack Martha Lewis, and cruised by a railroad bridge to investigate its structure.



Dr. Pamela Lottero-Perdue added a geotechnical engineering mini-unit, based on Engineering is Elementary curricula, to her PHSC 303 methods course, preparing future elementary teachers for STEM education that includes attention to engineering and technology. She pilot-tested the unit in her spring 2008 cohort, wrote pre-service teacher training materials for it in the summer, and aims to teach it to the Harford County cohort in the fall of 2008.

Elementary education majors pack down dirt in preparation to test the relationship between soil compaction and the stability of a structure embedded within the soil.

Grants and Grant Proposals

Dr. Pamela Lottero-Perdue and her partners from HCPS—Mr. Eric Cromwell, Coordinator for Accelerated Learning Programs, Ms. Amy Ryan, Teacher Specialist for Elementary Science, and Mr. Mark Herzog Assistant Supervisor of Science—were awarded a BRAC Workforce ONE Maryland grant from the Maryland Department of Labor, Licensing and Regulation, for \$93,634. The title of the project is, “Enhancing K-12 Engineering Education: Implementing an Elementary Engineering Program in Harford County Public Schools.” Dr. Lottero-Perdue is the Principal Investigator of the project and in the first year will work to develop a cadre of fourteen teachers across seven schools to become teacher leaders in elementary engineering education. Roughly 160 students in third and fourth grade will learn an engineering unit during the first year. The five-year implementation plan is set to reach all HCPS students in first through fifth grade.

Dr. Jeff Simpson received a grant from the United States Department of Commerce, National Institute of Standards and Technology for funding a project entitled “Raman Spectroscopic Studies of Carbon Nanostructures and Multiferric Oxides.” The amount of the award is \$25,000.

Dr. Rommel Miranda submitted a research paper proposal entitled, “Manifestation of Threats to Quality in Science Teaching in Urban Classroom Settings,” to the 2009 American Education Research Association Conference in San Diego, California.

Steven Lev wrote a beam time proposal entitled, “Establishing a Trophic Transfer Model for Roadway Derived Contaminants in an Urban Ecosystems,” which was accepted by the National Synchrotron Light Source at Brookhaven National Laboratory providing beam time access for a three year period.

In August, Dr. Pamela S. Lottero-Perdue, with support from Geannine Callaghan, Director of Foundation Relations, submitted a request to the Phase Foundation to support teaching and research activities for a Summer Engineering and Science club in the summer of 2009.

Dr. Jennifer Scott received a grant from the National Aeronautics and Space Administration for \$27,975. The title of the project is “HST/COS Guaranteed Time Observations.”

Dr. Cody Sandifer received a \$92,648 grant from the University System of Maryland’s NSF VIP K-12 program to fund Towson’s STEM Teaching Community (STEM-TC) Project.

David Schaefer, Rajeswari Kolagani, Vera Smolyaninova, David Vanko, Lev Ryzhkov, Boon Loo, and Ryan Sours submitted a proposal to the NSF REU program entitled “REU Site: An REU/RET Program in Materials Science at Towson University.” It was submitted in August 2008.

Publications

Ron Herman submitted a manuscript entitled, “Students Predispositions toward Understanding Evolutionary Concepts,” to the journal, Science Education.

Alex Storrs wrote an article on “Teaching Astrobiology” for submission to Astronomy Education Review.

S.M. Lev, E.R. Landa, K. Szlavecz, R. Casey, and J. Snodgrass, 2008. Application of Synchrotron Methods to Assess The Uptake of Roadway-derived Zn by Earthworms in an Urban Soil, Mineralogical Magazine, Volume 72, Number 1, February 2008, pp. 191-195(5).

Dr. Pamela S. Lottero-Perdue submitted a paper to the journal, Science Education, entitled, “Critical Analysis of Science-Related Texts in a Breastfeeding Information, Support and Advocacy Community of Practice.”

D. M. Schaefer, M. Holley, C. Eginton, L. Brown, “Characterization of Amyloidogenesis of Hen Egg Lysozyme in Concentrated Ethanol Solution,” Biochemical and Biophysical Research Communications, 373 (2008), p. 164-168.

Lising, L. & Sandifer, C. (2008). “A Broad Approach to Mentoring in an Inquiry-focused Early Teaching Experience.” American Physical Society Forum on Education Newsletter, Spring 2008.

Presentations and Abstracts

Ron Hermann submitted an abstract to the annual meeting of the National Association for Research in Science Teaching (NARST) entitled, “Elementary Evolution Education: What Should It Look Like?”

Alex Storrs attended a two-day workshop on the Digital Starlab planetarium projector for the planetarium.

Alex Storrs presented a poster on “Pedagogical Considerations” at the recent “Great Planet Debate” at APL.

Alex Storrs and Norman Dean presented three planetarium shows over the summer entitled, “Our Place in Space,” in June, July and August. Over 100 people attended.

Dr. Rommel Miranda’s research paper proposal entitled, “A Study of Urban Stakeholders’ Perceptions of Effective High School Science Pedagogical Skills,” was accepted for the 2009 Association for Science Teacher Education (ASTE) Conference in Hartford, Connecticut.

Steven Lev presented a poster at the “Geochemistry of the Earth’s Surface 8” meeting in London in August and published an associated manuscript in Mineralogical Magazine with co-authors from the Urban Environmental Biogeochemistry Laboratory, Johns Hopkins University and the US Geological Survey.

Dr. Smolyaninova’s abstract entitled, “Effects of Oxygen Content on Photoinduced Properties of $\text{Bi}_{1-x}\text{Ca}_x\text{MnO}_3$ Thin Films,” also written by G. Yong, Rajeswari Kolagani, and K. Karki was accepted for the Material Research Society Fall 2008 meeting in Boston, MA.

Dr. David Schaefer presented a poster entitled, “Nano-oxidation Studies of Magnanite Thin Films Using Atomic Force Microscopy,” also by R. Kolagani, M. Schneider, M. Earle, and S. Adhikari at the 2008 International Conference of Nanoscience and Technology. The conference was in Keystone, Colorado from July 20–25, 2008.

Dr. David Schaefer attended and presented a workshop at the 2008 Council of Undergraduate Research National Conference at the College of St. Benedict, in St. Joseph, Minnesota on June 21-24, 2008. The workshop was entitled “Finding and Keeping a Tenure-Track Position at a PUI.”

Dr. David Schaefer attended the 2008 CUR Business Meeting at the College of St. Benedict, St. Joseph, Minnesota on June 19 – 20, 2008.

In July, Dr. Cody Sandifer attended the National meeting of the Physics Teachers Education Coalition (PhysTEC) project in Edmonton, Alberta.

Sandifer, C. (2008, August). "Challenges Faced By First-time Users of an Inquiry Science Curriculum." Poster presented at the NSF Course, Curriculum, and Laboratory Improvement (CCLI) conference, Washington, DC.

Community Engagement and Professional Service

Ron Herman reviewed proposals for the annual meeting of the Association for Science Teacher Education (ASTE).

On September 26, Jennifer Scott gave a planetarium presentation for Family Weekend entitled "The Autumn Sky."

On August 11 and 12, Jennifer Scott and Rommel Miranda conducted the first Baltimore Project ASTRO workshop with 14 astronomer and educator participants, including Alex Storrs, and had a presentation by Don Thomas.

Dr. Rommel Miranda presented planetarium shows to grades Pre K- 5 students from the Harford County Celebree Learning Center.

Dr. Rommel Miranda presented planetarium shows to students participating in Dr. Felice Shore's Middle Grades Partnership Program.

Dr. Rommel J. Miranda gave a portable planetarium presentation to an after school science club at Rosa Parks Middle School in Montgomery County.

Dr. Rommel Miranda served as a lead panelist, scribe and reviewer for the NSF Innovative Technology Experiences for Students and Teachers (ITEST) program in Washington, D.C. in June.

Dr. Rommel Miranda served as a lead panelist, scribe and reviewer for the NSF Informal Science Education (ISE) Program in Arlington, VA in August.

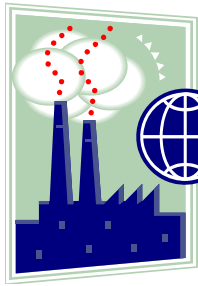
Dr. Rommel Miranda served as a lead panelist, scribe and reviewer for the NASA Education and Public Outreach for Earth and Space Science (EPOESS) Program in Washington, D.C. in August.

Dr. Rommel Miranda reviewed 10 conference proposals for the American Educational Research Association.

Dr. Rommel Miranda reviewed 11 conference proposals for the National Association for Research in Science Teaching.

On September 10, 2008, Dr. Pamela S. Lottero-Perdue conducted a workshop for 3rd grade teachers at Abingdon Elementary School who will be mentor teachers for the science teaching internship component of the Harford County Elementary Education / Special Education cohort. This is part of large organizational effort that Dr. Lottero-Perdue has put forth to prepare for and teach the science education courses (PHSC 303 & SCIE 376) for this cohort at Harford Community College and Abingdon Elementary School.

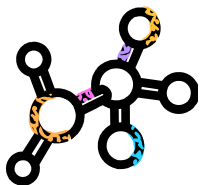
Dr. David Vanko reviewed three manuscripts, one each for the U.S. Geological Survey, a Geological Society of America Special Paper, and Mineralogical Magazine.



ENVIRONMENTAL SCIENCE AND STUDIES PROGRAM

On August 4th, Ms Annie McMahon joined TOPS [Towson OPportunities in STEM] as our new Program Coordinator. Annie McMahon, a native of Towson, graduated from Salisbury University with a bachelor's degree in Chemistry. She taught Chemistry, Forensic Science, and Biology at both public and private high schools in Maryland and Vermont. In February of 2006, Annie earned her Masters of Education in Interdisciplinary Studies from the University of Vermont where she also coordinated New Student and Transfer Orientation and was the Assistant Director of Student Life for Leadership and Involvement. She has taken courses in Student Affairs and Higher Education Administration, Career and Lifestyle Development Counseling, and Educational Foundations, and she has participated in extensive professional development in the areas of Diversity and Multiculturalism. In addition to Annie, Ms. Tissa Thomas, a recent TU graduate (from the MB3 program) is serving as Program Assistant of TOPS. Both Annie and Tissa are very busy developing programs for new STEM students. In the future there will be a newsletter section for TOPS.

Dr. Wolfson served as a Judge for the statewide Maryland Envirothon competition. The Envirothon is a series of environmental competitions in which teams of students move beyond the classroom in order to solve real-life environmental problems in a natural setting. Envirothon works like a sports meet - winning teams progress through local, state, and international competitions.



MOLECULAR BIOLOGY, BIOCHEMISTRY BIOINFORMATICS (MB3) PROGRAM

Jim Saunders served as the USA Team Leader in a 55 Country International competition of the Biology Olympiad in Mumbai, India from July 11 - 21, 2008. The four member USA student team, who were selected from 10,600 applications from high schools nationwide, won four gold medals in the competition. Dr. Saunders has been involved in the selection and training of the USA Team since our country first joined this International event six years ago.

Nadim Alkharouf from COSC and Jim Saunders from MB3 received awards from the Mid-Atlantic Plant Molecular Biology Society in recognition of Outstanding Service to the Society for multiple years of service in organizing their national meeting.

Erin Young and Jim Saunders chaired the registration committee for Mid-Atlantic Plant Molecular Biology Society Meeting in Savage, MD. There were approximately 150 attendees at the two day meeting including several Towson University faculty and students. Posters from representatives from Towson University included a report entitled, "Detection of Misidentified Plants in International Cocoa Genebank, Trinidad," by Roland Roberts, Larry Wimmers, Andre Wells, Sara Campbell, Oletejumade Adegbenro, Karimat Okanlawon, Darin Sukha, David Butler, Frances Bekele, and James Saunders.

GRANTS

Jim Saunders received a \$1000 grant from the Pepsi Foundation at Towson University to support 10 awards to regional schools engaged in science fairs. Each school will receive \$100 and Fisher College Awards for Excellence in Science will be presented to students who win the top competition in areas related to Molecular Biology, Biochemistry and Bioinformatics. Several student organizations have helped Dr. Saunders to judge these science fairs in previous years.

Jim Saunders and David Butler from the University of West Indies received a grant for \$2500 from the World Cocoa Foundation to support exchange of students and travel related expenses for a collaborative project with Joy Watts and Roland Roberts on genotyping studies in Cacao. Two graduate students from Trinidad visited Towson University this summer to work with Drs. Watts and Roberts on this project.



HACKERMAN ACADEMY OF MATHEMATICS AND SCIENCE

Saturday Morning Science Series

The Hackerman Academy Saturday Morning Science series started up its fall program on September 13 with a talk entitled, "Space Stations: From Science Fiction to the International Space Station," presented by Dr. Don Thomas, director of the Hackerman Academy. The Saturday Morning Science Series features presentations, performances, and demonstrations that are designed to excite the mind and spark the imagination of students of all ages. Six other programs are scheduled this fall. Attendance for the September 13 program was 250.

Outreach Activities

During September the Hackerman Academy visited the following schools and made presentations on career planning, the Space Shuttle, and science in space:

School Presentations

- 8/25 Presentation to 300 students in grades 1-5 at Kingsville Elementary School (Baltimore County) on living and working in space.
- 9/15 Presentation to 60 sixth grade students at Roland Park Middle School (Baltimore City) on living and working in space.

Teacher Professional Development Presentations

- 8/12 Presentation on the space shuttle at the Project Astro teacher workshop held at Roland Park Elementary/Middle School.
- 8/20 Keynote presentation on career planning and living and working in space to 500 middle and high school science teachers and instructional assistants as part of Baltimore County Public Schools Professional Study Day held at Chesapeake High School.



Center for Science and Mathematics Education

The Center for Science & Mathematics Education was awarded two grants from the American Forest Foundation. One award (\$2,100) targets the implementation of Project Learning Tree curricula in area secondary schools. The other award (\$3,500) targets the use of the curricula by college and university faculty in pre-service teacher programs.



SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) TEACHING COMMUNITY PROJECT

Project Description

The goals of the Science, Technology, Engineering, and Mathematics Teaching Community (STEM-TC) project are to: (1) improve STEM courses in the College, (2) recruit and retain secondary STEM teachers, and (3) establish an expanded teaching and learning community that includes STEM faculty and undergraduate STEM majors.

A key aspect of STEM-TC is the implementation of an undergraduate Learning Assistant (LA) program, in which undergraduate STEM majors are hired to assist faculty in implementing active learning teaching strategies in large lectures, small lectures, laboratory classrooms, and various out-of-class contexts. All project activities are driven by these faculty-learning working teams, which consist of a STEM faculty member and 1-3 undergraduate LA's.

Projected outcomes of Towson's STEM-TC project include course improvements in all Fisher College of Science and Mathematics (FCSM) departments, student learning and attitude gains, increased retention and recruitment of STEM majors, increased recruitment of STEM majors into the secondary teaching program, and the creation of new synergies and collaborations between the various departments in the FCSM, the Department of Secondary Education, the Center for Science and Mathematics Education, and the Hackerman Academy of Mathematics and Science.

Project Personnel

The STEM-TC project has expanded from 7 faculty and 11 learning assistants in the Spring of 2008 to 15 faculty and 22 learning assistants in the Fall of 2008.

STEM-TC Faculty:

Department of Biological Sciences: Sarah Bruce, Susannah Feldman, Cindy Ghent, Pam Healey, Lynn Middleton, Roland Roberts, Susan Schreier, Larry Wimmers

Department of Chemistry: Sonali Raje

Department of Computer and Information Sciences: Harry Hochheiser

Department of Mathematics: Gail Kaplan

Department of Physics, Astronomy and Geosciences: Phuoc Ha, Steve Lev, Cody Sandifer (Project Director), Jeff Simpson

Undergraduate Learning Assistants:

Department of Biological Sciences: Jesse Bortell, Lauren Cabrera, Stella Cox, Kyra Crafton, Laura Krajewski, Helen Naylor, Malinda Ross, Amanda Roth, Donald Smith, Krystle Starvis, Krista Taylor, Nicole Williamson

Department of Chemistry: Oluwarotimi Folorunso, Teriakie Joseph

Department of Computer and Information Sciences: Edward Kosiba, Eric Weaver

Department of Mathematics: Stephani Roark

Department of Physics, Astronomy and Geosciences: Brian Eney, Stephanie Gonzalez, Allison Jenkins, Brian Kirby, John MacInnis

In upcoming FCSM newsletters, we will highlight the activities of different faculty-LA working teams.