



# The Jess and Mildred Fisher College of Science and Mathematics

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ELECTRONIC NEWSLETTER

February/March 2011



## OFFICE OF THE DEAN

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

Dear Friends,

The Fisher College is proud to announce that our Chemistry Department's programs in forensic chemistry were awarded accreditation by the Forensic Science Education Programs Accreditation Commission (FEPAC). Congratulations to all in the forensic science program! You can read more details about this accreditation elsewhere in the newsletter.

After several years of very successful Saturday Morning Science programs here on campus, our Hackerman Academy of Mathematics and Science held two SMS programs at Southside Academy in the Cherry Hill neighborhood of South Baltimore. These programs are one way the Fisher College is helping Southside achieve its vision of being *the* destination for Cherry Hill students who crave quality STEM education.

Speaking of vision, the Fisher College adopted its new vision statement in connection with our new 2016 Strategic Academic Plan:

FCSM's vision is to be recognized as one of the best and most effective learning environments in Maryland for preparing undergraduate and graduate students in the natural, physical and computing sciences and mathematics to work, live and lead in a highly complex scientific and technological world. FCSM faculty members are teacher-scholars who commit themselves to a high level of interaction with their students—both undergraduate and graduate—in challenging, innovative, interdisciplinary, research-based, practice-based and applied programs. This results in graduates who are fully qualified to work in any setting and also to lead others with their passion for discovery.

Finally, here are some upcoming events that I hope everyone will consider attending:

- Sunday, May 1<sup>st</sup>, at 1:00 p.m. in the University Union – The 21<sup>st</sup> Annual FCSM Honors Convocation, celebrating student honorees and, in particular, those from the 2011 graduating class.
- Saturday, May 7<sup>th</sup>, noon-4:00 p.m. – The Second Annual TU Field Station Open House. Come enjoy the woods and streams, view student projects and displays, and sample the free food and drinks. Bring the whole family! Contact the dean's office for details and directions.

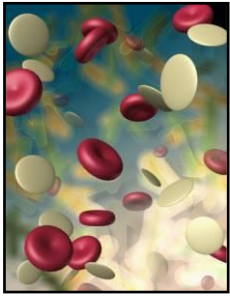
Sincerely,

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

### Student Research

Timothy Martin (graduate student in Vonnie Shields' lab) attended the 22<sup>nd</sup> USDA Interagency Forum on Invasive Species in Annapolis, MD (January 11-14) and presented the following poster: Martin, Timothy and Shields, Vonnie D.C. 2011. "Neurophysiological characterization of gustatory neurons of gypsy moth larvae."

### Publications

D.R. Brown, M. May, J.M. Bradbury, K. Johansson, H. Neimark. Order I. "Mycoplasmatales," and Family I. "Mycoplasmataceae," in Bergey's Manual of Systematic Bacteriology Volume 4, Second Edition (N.R. Krieg, J.T. Staley, B. Hedlund, B.J. Paster, N. Ward, W. Ludwig and W.B. Whitman, eds.) Springer, New York, NY. 2010.

D.R. Brown, M. May, J.M. Bradbury, M.F. Balish, M.J. Calcutt, J.I. Glass, S. Tasker, J.B. Messick, K. Johansson, H. Neimark. Genus I. "Mycoplasma," in Bergey's Manual of Systematic Bacteriology Volume 4, Second Edition (N.R. Krieg, J.T. Staley, B. Hedlund, B.J. Paster, N. Ward, W. Ludwig and W.B. Whitman, eds.) Springer, New York, NY. 2010.

Nelson, J. A. and A. M. Dehn. 2011. "The GI tract in air breathing." Pp. 395-433 In: Fish Physiology (v. 30): "The Multifunctional Gut of Fish." (A. P. Farrell, C. J. Brauner, and M. Grossell eds.) Elsevier, London.

### Presentations

Sarah Haines was an invited keynote speaker at the Environmental Education Symposium held at the Taiwan Normal University, December 6-9, 2010.

Sarah Haines conducted two poster presentations at the Hawaii International Conference on Education in Honolulu, HI. The poster titles were "Baltimore Partnership for Environmental Science Literacy: Building Scientific Minds by inspiring Effective Teaching & Learning," and "Culturally Relevant Ecology, Learning Progressions, and Environmental Literacy."

Sarah Haines and Cindy Ghent presented a paper at the Hawaii International Conference on Education in Honolulu, HI. The title was "An Evaluation of the Project Learning Tree Module Forests of the World."

### Journal and Reviewing Activities

A. Mickey Dehn reviewed a manuscript for the Journal of Fish Biology.

Sarah Haines completed a book review for the National Science Teacher's Association children's trade book service NSTA Recommends.

Jay Nelson reviewed manuscripts for the journal Physiological and Biochemical Zoology and the Journal of Fish Biology.

Jay Nelson reviewed a grant proposal to the Government of The Netherlands.

Vonnie Shields was appointed as a member of the Editorial Board for the journal, Annals of the Entomological Society of America.

Vonnie Shields reviewed a manuscript for the journal: Annals of the Entomological Society of America.

Colleen Sinclair-Winters was appointed Editor-in-Chief of the American Malacological Bulletin.

## Workshops and Workshop Presentations

Virginia Johnson Anderson led an all-day assessment workshop at Broome Community College in Binghamton, New York on January 14, 2011.

Virginia Johnson Anderson led an all-day assessment workshop in Phoenix, AZ for DeVry University on January 28, 2011. Over 50 “on-ground” faculty attended; the presentation was also made available to additional on-line faculty.

Sarah Haines and Elena Takaki (National Geographic) conducted a presentation at the National Science Teachers Association conference in Baltimore. The title of the presentation was “Using Real-Time Data to Teach Chesapeake Bay Issues.”

Sarah Haines conducted a professional development workshop at the Maryland Association for Environmental & Outdoor Education annual conference, held at the University of Maryland. The focus of the workshop was field science techniques for elementary and middle school teachers.

## Community Outreach

Sarah Haines was a judge for the Parkville High School science fair held on February 3<sup>rd</sup>.

Cindy Ghent and Sarah Haines were Project Learning Tree facilitators at a facilitator workshop for Projects Wet, Wild and Learning Tree on February 25<sup>th</sup> helping to train 40 new environmental education facilitators.

## Other Activities

Virginia Johnson Anderson was part of a Writing in the Disciplines/ Across the Curriculum Round Table at Catonsville CCBC campus on January 21<sup>st</sup>. The panel session was entitled “Writing in Mathematics and in the Sciences” and was attended by over 40 across the CCBC system.

Virginia Johnson Anderson, the external formative evaluator for the Inland Waters and Sensors IGERT grant shared by Kent State and Miami of Ohio joined grant faculty and doctoral students in a two-day workshop Jan 21-23 in Oxford, Ohio.



## DEPARTMENT OF CHEMISTRY

## Research Presentations

Two of Ana-Maria Soto's undergraduate research students gave poster presentations at the Biophysical Society 55<sup>th</sup> Annual Meeting in Baltimore on March 9. Each student received a travel grant from the FCSM Undergraduate Research Committee:

Gordon Crews and Ana-Maria Soto, “Effect of Helix Stability on the Formation of Loop-Loop Complexes.”

Ying Li and Ana-Maria Soto, “Binding of Kanamycin to the A-site of *M. tuberculosis*.”

Richard Preisler presented a poster including results from three undergraduate research students at the Biophysical Society 55<sup>th</sup> Annual Meeting in Baltimore on March 6:

Richard Preisler, Ira Ashman, Crista T. Nguemeta and Sandra L. Ramos, "Transition Metal Complexes and the B-to-Z DNA Transition: the Role of Charge, Conformational Entropy and Osmotic Stress."

## Forensic Programs

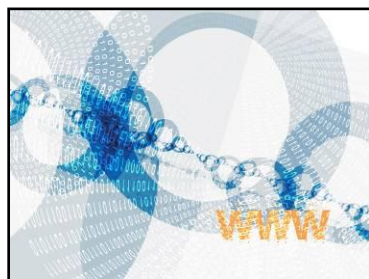
The Chemistry Department's B.S. in Forensic Chemistry and M.S. in Forensic Science were awarded FEPAC (Forensic Science Education Programs Accreditation Commission) accreditation at the American Academy of Forensic Sciences annual meeting in February. The accreditation process employs rigorous, consensus standards that assure and advance academic quality at regionally accredited institutions. Requirements include multi-disciplinary curriculum, assessment procedures, institutional support, student support services, admission standards, research and seminar for graduate programs and professional involvement with professional forensic agencies. Towson's programs are 1 of 18 undergraduate and 1 of 17 graduate FEPAC accredited programs in the U.S. Towson is 1 of only 3 universities that have both undergraduate and graduate accredited programs. FEPAC accreditation will help our graduates obtain professional placement in the forensic science field. It will increase the national visibility of our forensic programs and make them eligible for research and educational grants from the National Institutes of Justice.

## Department Events

The Department held its Spring Open House on Wednesday, March 16. The event, which was well attended by students, faculty, staff and parents, included a Mini-Awards Ceremony for this year's Chemistry student awardees and an Undergraduate Research Showcase.

## Community Outreach

Ellen Hondrogiannis conducted a forensics workshop for the enhancement of college prep skills for Dundalk High School Students on January 28.



## DEPARTMENT OF COMPUTER AND INFORMATION SCIENCES

### Publications and Presentations

Robert Hammell and doctoral student Max McQuighan had their paper entitled "Computational Intelligence for Project Scope" accepted for publication and presentation at the 22<sup>nd</sup> Midwest Artificial Intelligence and Cognitive Science Conference (MAICS 2011) in Cincinnati, Ohio from April 16-17, 2011.

Marius Zimand presented his paper "Combinatorial characterizations of extractors and Kolmogorov extractors" at the Sixth International Conference on Computability, Complexity and Randomness (CCR 2011), January 31-February 4, 2011, Cape Town, South Africa.

Marius Zimand had the paper "Symmetry of information and bounds on nonuniform randomness extraction via Kolmogorov extractors" accepted at the 26<sup>th</sup> IEEE Conference on Computational Complexity, San Jose, California, June 8-10, 2011.

Chao Lu and his grad students David Li and Mu Zhao had a paper "Efficient Algorithms and Implementation for Error-free Computation Using P-adic" accepted by CNSI 2011, May 23-25, 2011, Jeju Island, Korea.

Siddharth Kaza's paper "Effect of Inventor Status on Innovation Diffusion within Institutions: A Study on SCI Literature from China, Russia, and India," with X. Liu, P. Zhang, and H. Chen has been accepted for publication in the Journal of the American Society for Information Science and Technology (JASIST).

Blair Taylor and Siddharth Kaza had their paper, "Security Injections: Modules to Help Students Remember, Understand, and Apply Secure Coding Techniques" accepted to the ACM 16<sup>th</sup> Annual Conference on Innovation and Technology in Computer Science (ITICSE 2011) in Darmstadt, Germany.

Blair Taylor along with Kara Nance and Brian Hay (University of Alaska) and Ron Dodge (United States Military Academy) had a paper entitled "Creating Shareable Security Modules" accepted to appear at the Seventh World Conference on Information Security Education (WISE 7) conference, June 9-10, 2011 in Lucerne, Switzerland.

Jonathan Lazar published a chapter (co-authored with Paul Jaeger and John Bertot of the University of Maryland) titled "Persons with disabilities and physical and virtual public library settings" in the book Public libraries and the Internet: Roles, perspectives, and implications Westport, CT: Libraries Unlimited.

Bharat Rawal, Ramesh Karne and Alexander Wijesinha had a paper titled "Splitting HTTP Requests on Two Servers" published in COMSNETS-2011.

Jonathan Lazar gave a presentation titled "Improving Campus IT Accessibility" to the University System of Maryland Council of CIOs, on March 11 at the USM headquarters.

Jonathan Lazar and recent doctoral graduate Brian Wentz published a paper titled "Usability Evaluation of Email Applications by Blind Users" in the Journal of Usability Studies.

Jonathan Lazar and recent doctoral graduate Brian Wentz gave a presentation titled "Are Separate Interfaces Inherently Unequal? An Evaluation with Blind Users of the Usability of Two Interfaces for a Social Networking Platform" at the *iSchools Conference* in Seattle Washington, and the paper was published in the ACM Digital Library.

Jonathan Lazar and Paul Jaeger (professor at the University of Maryland) published a paper titled "Reducing Barriers to Online Access for People with Disabilities" in Issues in Science and Technology, the Public Policy Journal of the National Academies

Jonathan Lazar published a short article titled "Public Policy Activity Related to Accessibility in the United States" in the ACM SIGACCESS newsletter.

Jonathan Lazar gave testimony to the Judicial Proceedings Committee in the Maryland State Senate, on Wednesday, March 2<sup>nd</sup>, related to Senate bill 596.

Jonathan Lazar gave a presentation titled "Web Accessibility for People with Disabilities: U.S. Federal Policies and Enforcement" at the Princeton University Center for Information Technology Policy Invited Lecture Series, February 24<sup>th</sup>.

Jonathan Lazar gave a presentation titled "Web Accessibility: Recent Research and Government Policy Activity" at the George Mason University Department of Psychology Lecture Series, February 16, 2011.

Jonathan Lazar was a panelist on "Having Your Cake and Eating It, Too: Making Accessibility Win-Win" presented at the EDUCAUSE 2011 Mid-Atlantic Regional Conference, January 13, 2011.

John Schoeberlein (doctoral student AIT) and Yuanqiong Wang (advisor) have a poster "Examining the current state of group support accessibility – an expanded study" accepted for presentation at HCI International 2011 (Human Computer Interaction International), Orlando, FL, July 9-14.

## **Services to the Discipline**

Alfreda Dudley served as Faculty Judge for The Howard County Science, Technology, Engineering and Mathematics Fair the weekend of February 25<sup>th</sup> and 26<sup>th</sup>. Dr. Dudley judged individual and group projects and exhibits in the categories of Engineering and Computer Science.

Alfreda Dudley was the Faculty Representative/Contact for the 5<sup>th</sup> Annual Minorities in Engineering Day held on March 4, 2011 at Lockheed Martin in Manassas, Virginia.

Alfreda Dudley, Subrata Acharya and Mike O'Leary represented Towson University at the High School Cybersecurity Expo and Career Fair in conjunction with the 6<sup>th</sup> Annual Mid-Atlantic Collegiate Cyber Defense Competition held on March 12, 2011 at the Johns Hopkins Applied Physics Laboratory.

Siddharth Kaza served on the program committee of the Pacific Asia Workshop on Intelligence and Security Informatics (2011) and European Intelligence and Security Conference (2011).

Blair Taylor and Siddharth Kaza led a Birds of Feather discussion entitled *Secure Programming* at the the 42<sup>nd</sup> ACM Technical Symposium on Computer Science Education (SIGCSE) 2011 in Dallas, Texas on March 10.

Jan Baum (Interdisciplinary Object Design), Bridget Sullivan (Interactive Media Design), James Braman and Giovanni Vincenti participated in a panel discussion on Using Multi-User Virtual Environments for Education as part of the CIAT Emerging Technologies Series.

## Announcements

Jonathan Lazar was elected to the council of the USACM, the US public policy council of the Association for Computing Machinery.

The 9<sup>th</sup> International Conference on Software Engineering Research (SERA2011) will be held in Baltimore, Radisson Plaza Lord Baltimore, August 10 thru 12. Chao Lu is serving as conference co-chair, Yeong-Tae Song is serving as program chair, and Cheryl T. Brown is serving as local arrangements chair. [www.acisinternational.org](http://www.acisinternational.org)



## DEPARTMENT OF MATHEMATICS

### Awarded Grants

Martha J. Siegel and co-PIs Gail Gasparich (Associate Dean of FCSM and Professor of Biological Sciences) and Gabriele Meiselwitz (Assistant Professor of Computer and Information Sciences), were informed by the National Science Foundation (NSF) that they have been awarded a four-year grant (March 1, 2011-February 28, 2015) for \$588,816 to fund the CoSMiC Scholars Program. This program has been in place since 2002, and this is the third grant from the NSF to support students majoring in specified STEM fields. The award will provide up to \$5000 per year to undergraduate students majoring in the Computing Sciences, Mathematics, or MB3. Eligibility requirements include US citizenship (or permanent residency), at least a B average, and financial need as determined by the FAFSA. All students are required to attend group sessions covering career opportunities and professional preparation appropriate to their majors. They often are asked to attend talks and conferences, they are advised on how to get involved with research as undergraduates, how to apply and succeed at graduate school, etc. There are many interdisciplinary lectures and field trips as part of each year's program. Applications for the Fall are now being accepted. The first deadline is April 22. Students should contact one of the PIs for more information or go to [www.towson.edu/cosmic](http://www.towson.edu/cosmic).

### Submitted Grants

Felice Shore and Ming Tomayko submitted a Middle Grades Partnership grant to implement a five-week, full day summer program for approximately 32 students from Baltimore Civitas School on Towson's campus.

## Papers Published or Accepted for Publication

Russell Hendel's (Adjunct Faculty) paper, "Almost-Recursiveness of Reciprocals of Linearly Recurrent Sequences," was published in The Fibonacci Quarterly, Volume 49, Number 1 (2011), pp. 41-51.

Russell Hendel's paper, "Solution to Problem B-1061, Sum of Products," was published in The Fibonacci Quarterly, Volume 49, Number 1, (2011), pg. 84.

Russell Hendel's paper "Five, Basic, Creative, Problem-Extension Methods for a fixed Syllabus," has been selected for publication in the Journal of Education, Informatics, and Cybernetics.

Russell Hendel's paper, "Kimberlings Floor Function," was accepted for publication in The Fibonacci Quarterly.

Russell Hendel's paper, "Sequences of the Initial Digits of Fibonacci Numbers," jointly authored with Tom Barrale and Michael Sluys was accepted for publication in the Proceedings of the 14<sup>th</sup> Conference on Fibonacci Numbers and Their Applications."

Russell Hendel's paper, "Continued Fractions Consisting of Alternating String Functions," was accepted for publication in the Proceedings of the 14<sup>th</sup> Conference on Fibonacci Numbers and Their Applications.

Mircea Voisei's paper "A counter-example to 'Minimal distance between two non-convex surfaces'" (joint with C. Zalinescu) was accepted for publication in Optimization.

Mircea Voisei's paper "Counterexamples to some triality and tri-duality results" (joint with C. Zalinescu) was accepted for publication in the Journal of Global Optimization.

Mircea Voisei's paper "Counter-Examples in Bi-duality, Triality and Tri-duality" (joint with C. Zalinescu & R. Strugariu) was accepted for publication in Communications on Pure and Applied Analysis.

Mircea Voisei's paper "Counterexamples to a triality theorem in 'Canonical dual least square method'" (joint with C. Zalinescu) was accepted for publication in Computational Optimization and Applications.

## Conference and Seminar Presentations

Sergiy Borodachov presented a talk "A topological separation condition for fractal attractors" (joint work with Tim Bedford and Jeff Geronimo) at the 2011 American Mathematical Society Spring Southeastern Section Meeting held at the Georgia Southern University.

Russell Hendel was awarded \$1,000 by the Number Theory Foundation and Brigham Young University for attendance and presentation at the 10<sup>th</sup> Western Number Theory Conference, held in Orem Utah on Dec. 15– 18, 2010.

## Workshops

Gail Kaplan presented a one day workshop in Maryland for Advanced Placement Calculus teachers in the middle states region to enhance their understanding of calculus and to provide insight into how to better prepare their students for success on the upcoming 2011 AP Calculus examination.

Gail Kaplan presented a customized workshop for Baltimore County Advanced Placement Calculus teachers focused on specific recommendations such as the importance of demonstrating mastery of broad concepts rather than mere memorization of definitions and theorems.

## Service to the Discipline

Upon invitation, Linda Cooper and Felice Shore spent February 28<sup>th</sup> in a working group of the Maryland State Department of Education to create statistics resources that will be available on MSDE's website for use by teachers of the high school Algebra I course. The work is being done as part of the effort to align the proposed sequence of high school courses with the probability and statistics components of the Core Curriculum State Standards.

## Community Outreach

Honi Bamberger continues to spend Wednesdays at either Cherry Hill Elementary/Middle School or Patapsco Elementary Middle/School, teaching mathematics lessons to students as well as working with teachers on their weekly plans.

Gail Kaplan, Michael Krach, and Todd Moyer continue to provide professional development support for the mathematics teachers at Don Bosco Cristo Ray High School in Takoma Park.

On February 12<sup>th</sup>, Felice Shore brought a group of 28 middle school students and their family members to the American Visionary Arts Museum as part of the Middle Grades Partnership project between Towson and Baltimore Civitas School.

During February and early March, Felice Shore volunteered four Saturday mornings to work on mathematics remediation with upper elementary and middle school students at the East Baltimore Community School in the run up to the Maryland School Assessment.

## Refereeing, Reviewing and Panel Service

Honi Bamberger reviewed an article for the National Council of Teachers of Mathematics journal, Teaching Children Mathematics.

Raouf Boules served on a review panel to review graduate applications to the NASA Graduate Fellowship which met in Washington, D.C. in February.

Russell Hendel wrote a book review, published in the Mathematical Association of America (MAA) book reviews. He also wrote two paper reviews that were published in the Mathematical Reviews.

Russell Hendel refereed papers for The Fibonacci Quarterly, for the Proceedings of the 14<sup>th</sup> Conference on Proceedings of the Fibonacci Numbers and Applications, for the 15<sup>th</sup> World Multi-Conference on Systemics, Cybernetics and Informatics, and for the 3rd International Symposium on Engineering Education and Educational Technologies.

Ming Tomayko reviewed two manuscripts for Teaching Children Mathematics and three manuscripts for the Banneker Banner. She also had a book review appear in the February 2011 issue of Teaching Children Mathematics.

## Mathematics Department Colloquia, Seminars and Talks

On February 24, Towson graduate and award-winning Eastern Tech High School mathematics teacher, Kim Burton-Regulski, presented a workshop to members of various departments, as well as outside guests, on using wikis for instructional purposes.

On March 4, Dr. Boris Shekhtman, Professor of Mathematics at the University of South Florida presented a colloquium lecture "A taste of ideal interpolation."

On March 17, the Mathematics Colloquium hosted talks by the two student teams that represented Towson University in the 2011 Mathematics Contest in Modeling. The first talk entitled "Circular reasoning: Random optimization in the disk-covering" was given by Dennis Howell, Patrick O'Neill and Matthew Tiger. The second talk "Optimizing the half-pipe" was given by Lily Glushakow-Smith, Matthew Green and Kelly Lockheed.

## Other Professional Activities

Honi Bamberger, an advisory board member of the "MATH-UP" grant, from Lehman College in the Bronx, NY, attended her first meeting on Tuesday, February 15, 2011. This five-year NSF grant intends to identify and then support superior pre-service teachers who will then teach in the Bronx and continue to receive professional development in mathematics.

Russell Hendel was the Coordinator of Judges at the Greater New York Math Fair. The first round was held on March 13 at Brooklyn Technical High School in Brooklyn, New York.

Member institutions of the College Board elected Gail Kaplan to a three-year term on the College Board Middle States Regional Council. Council members are an important communication link between the College Board and the regional member institutions it serves. In addition, council members provide advice to the staff of the Middle States Regional Office on the program offerings of the College Board.

## Student Clubs

The Mathematics Education Club (under the leadership of Honi Bamberger, its advisor), held its first meeting of the new semester on February 9. A former Towson University graduate, Ms. Nicole Hauser, who has been teaching in Baltimore City Public Schools for four years, spoke on the topic "Implementing Mathematics Concepts and Skills through Daily Routines." Members attending loved her practical suggestions and interesting ways to incorporate numerous mathematics concepts and skills throughout the day and in morning routines.

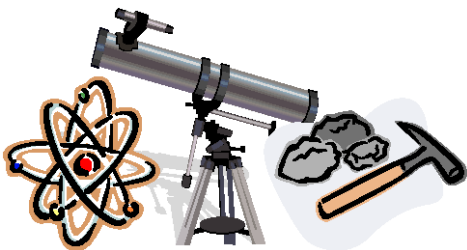
The Mathematics Education Club held a Make-and-Take for its members on February 21. Members attending created games and activities which they will be able to use during their student teaching and in their own classrooms.

For its March meeting, the Mathematics Education Club invited Mr. John SanGiovanni, Elementary Mathematics Instructional Facilitator for Howard County Public Schools and Heinemann Publications author. On March 15, Mr. SanGiovanni spoke on the topic, "Mastering the Basic Facts: Understanding and Automaticity."

## Thesis Defenses and Presentations

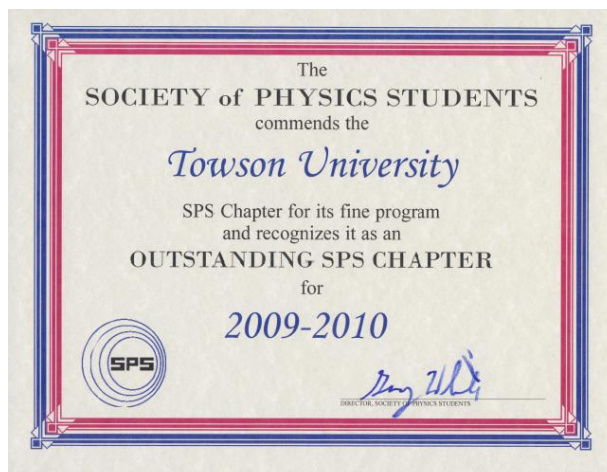
Belinda Kauffman earned a Master's Degree in Applied and Industrial Mathematics. Her thesis focused on hospital emergency departments in metropolitan Baltimore. She used data from the U.S. Department of Homeland Security and the National Center for Study of Preparedness and Critical Event Response. Using queueing theory, she built cost effective models and suggested overall policies for the healthcare system. Her work was supervised by Ahlam Tannouri (Adjunct Faculty).

Jessie Kiefner earned a Master's Degree in Applied and Industrial Mathematics. His thesis focused on the Deepwater Horizon oil spill. He used data from the National Oceanic and Atmospheric Administration (NOAA) to test hypotheses about the location of surface oil and oil plumes. His work was supervised by Ahlam Tannouri.



## DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

The PAGS Society of Physics Students chapter received the 2009-2010 Outstanding SPS Chapter Award.



## Grants and grant proposals

Dr. Lottero-Perdue wrote a proposal, submitted by Harford County Public Schools to SAIC (Science Applications International Corporation), to fund Mrs. Amy Ryan, Elementary Science Teacher Specialist, and Mrs. Jennifer Nealy, 4<sup>th</sup> grade teacher at Darlington Elementary School, to present at the 2011 National Conference of the National Science Teachers Association Conference in March. As a result, SAIC provided \$1987.50 in funding to support Mrs. Ryan's and Mrs. Nealy's travel expenses.

Jennifer Scott served as co-PI on two proposals submitted for observing time with the Hubble Space Telescope, "Measuring the contribution of quasar outflows to AGN Feedback" and "Imaging quasar outflows: A critical step in assessing AGN feedback."

The following students were awarded undergraduate research grants from the FCSM and TU undergraduate research committees:

Tyler Goehringer : "Thermal Annealing Studies of Manganese Oxide Thin Films" (Faculty Mentor: Raj Kolagani)

Gilles Dongmo Momo and Cacie Hart : "Magnetoresistance Studies of Strained Manganese Oxide Thin Films" (Faculty Mentor: Raj Kolagani)

Raj Kolagani (PI) submitted an NSF GOALI Proposal "Development of Microbolometer Arrays Based on Rare Earth Manganites for Uncooled IR Imaging" in collaboration with Dr. Steven Gross, Triton Services Inc ( Co PI).

## Publications

Jennifer Scott co-authored a paper appearing in the Feb. 10 issue of the Astrophysical Journal entitled "Ultraviolet and X-ray Variability of the Seyfert 1.5 Galaxy Markarian 817."

Rommel Miranda and Ronald Hermann's manuscript entitled, "An Integrated Instructional Approach to Facilitate Inquiry in the Classroom," was accepted for publication in the peer-reviewed NSTA journal, Science Scope.

Grace Yong, Rajeswari Kolagani, Benjamin Hoffman, Sanjay Adhikari, Yong Liang and Vera Smolyaninova "Epitaxial integration of  $\text{Bi}_{0.4}\text{Ca}_{0.6}\text{MnO}_3$  thin films with (100) Si" [Accepted for publication in Journal of Applied Physics].

Vera Smolyaninova, Grace Yong, Rajeswari M. Kolagani, Amlan Biswas, Kilhwan Wang, and H. K. Ermer, submitted a paper to Physical Review B entitled "Large photoinduced conductivity reduction in thin films of metallic ferromagnetic manganites."

## Presentations and Abstracts

Lottero-Perdue, P.S., Ryan, A., & Nealy, J. (2011). "STEM on Camera: Using handheld digital cameras to enhance teaching and learning." Presentation at the 2011 National Science Teachers Association (NSTA) National Conference, San Francisco, CA, March 12, 2011.

Lottero-Perdue, P.S. (2011). "Integrating Engineering is Elementary (EiE) within the science curriculum." Presented at the Virginia Children's Engineering Convention, Richmond, VA, February 24, 2011.

Steve Lev gave an invited seminar at the SUNY Stony Brook, Department of Geosciences colloquium titled "On the road to ruin: Are roadways the next big threat to the Chesapeake Bay Watershed?"

Ronald Hermann and Rommel Miranda were invited to facilitate a workshop with 25 teachers participating in a Math and Science Partnership Grant Program in Harford County on their published NSTA manuscripts, "Presto: Open Inquiry" (April 2010; Science Scope), and "Fostering the Development of Open Inquiry Questions: Using Questions to Encourage and Support Inquiry in Earth and Space Science" (November 2010; The Science Teacher).

## Community Engagement and Professional Service

On March 8, 2011, Karen Cimino, Pamela Lottero-Perdue and members of Ms. Cimino's SCIE 170 Special Topics in Science Education – School-Based STEM Outreach course taught a hands-on activity to three classrooms of 3<sup>rd</sup> grade children at Pleasant Plains Elementary School about the engineering design process. Dr. Lottero-Perdue also discussed what it meant to be an engineer with the students from all three classes.

Rommel Miranda presented a planetarium show to 25 students participating in the Building STEPS program at Patterson High School in Baltimore City.

David Schaefer presented a talk on Nanotechnology to 14 students participating in the Building STEPS program at Forest Park High School in Baltimore City.

David Schaefer presented a talk on Nanotechnology to 40 students participating in the Building STEPS program at W.E.B. Debois High School in Baltimore City.

Alex Storrs gave shows with the portable planetarium to over 100 first graders at the KIPP Harmony Academy in Baltimore, on Monday Feb. 28<sup>th</sup>.

Raj Kolagani was a guest panelist at the “Best Practices Workshop” on Professional Science Masters programs organized by the National Professional Science Masters Association and the HBCU PSM (NPSMA). The workshop was held on 2/25/11 at Morgan State University.

Reizelie Barreto participated at a Baltimore City Public School System (BCPSS) meeting sponsored by Race To The Top Maryland Funds and the Office of Teaching and Learning to modify and develop integrated STEM units for grades K-5.

Reizelie Barreto reviewed a manuscript for the peer-reviewed edited book, with working title, “Complicating Borders, Dialogues and Understandings of Curriculum and Pedagogy.” This book is for the 11th Annual Curriculum and Pedagogy Conference Proceedings.

Reizelie Barreto participated in a panel discussion at the 17th Annual Multicultural Conference entitled “Dangerous Teaching” at Towson University.



## **MOLECULAR BIOLOGY, BIOCHEMISTRY BIOINFORMATICS (MB3) PROGRAM**

On March 5 and 19, the MB3 club hosted refreshments and served as student role models for three Hackerman Academy Saturday Morning Science programs as part of the community outreach and public service commitment of Towson University.

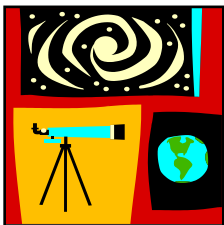
On March 4, the MB3 club spring seminar series started. Yemisis Solomo'sn seminar was titled “Day/Night Fluctuation in Bird Song.” Heather Davis talked about the summer research internship program at the University of Maryland, Baltimore.

On March 18, the MB3 club seminar presenter was Femi Ifelowo. Femi presented his work on the “Link between multiple sclerosis and human herpes virus 6A using a fluorescent sensor.”



## **CENTER FOR SCIENCE AND MATHEMATICS EDUCATION**

The Center for Science & Mathematics Education was recently inducted into the Office of University Research Services “Five Million Dollar Club” for being awarded five million dollars or more in grant funds. Sarah Haines and Bob Blake accepted the award on behalf of the CSME at the annual OURS dinner held in the Minnegan Room last month.



## HACKERMAN ACADEMY OF MATHEMATICS AND SCIENCE

### Saturday Morning Science at Towson University

The Hackerman Academy's Saturday Morning Science continued its spring series on February 5 with Harald Beck from the Biology Department doing a program on "Exploring the Rainforest." On February 19, Noble Jones from the NASA Goddard Space Flight Center presented a program on "Exploring the Moon with the Lunar Reconnaissance Orbiter." On February 26 a special program was presented by Dr. Patricia Ponce from the College of Health Professions on "Batting a Thousand: The Science Behind Baseball." This program was in cooperation with Cook Library's exhibit titled "Pride and Passion: The African American Baseball Experience." On March 5 a living history performance on the life and science of Albert Einstein was given by Marc Spiegel. Total attendance for these four programs was 1,650. The total attendance for the six programs this spring has been 2,600.



**Dr. Harald Beck from the Department of Biology took everyone on a trip exploring the rainforest at Saturday Morning Science on February 5.**

### Hands-On Science

Following each of the programs this spring, **Hands-On Science** activities were held for 25 elementary and middle school students. These hour-long activities allow the students to explore topics in more detail with themes related to each of the programs at Saturday Morning Science. On February 5 the activities was led by Mr. Ray Miller from the Aberdeen Proving Ground. On March 5th our Noyce Scholars prepared and led five different hands-on activities.

### Outreach Activities

The Hackerman Academy visited the following schools, institutions, and community groups and made presentations on career planning, the Space Shuttle, and science in space reaching over 1,800 students, teachers, family members, seniors, and community leaders.

#### School Visits:

- 2/8 Presentation on living and working in space to 120 preK-fifth graders at The Gerstell Academy (Carroll County).
- 2/9 Presentations on living and working in space to 172 sixth graders at Bohemia Manor Middle School (Cecil County).
- Presentation on career planning and living and working in space to 50 STEM students at Bohemia Manor High School (Cecil County).
- Three presentations to 376 K-5 students at Chesapeake City Elementary School (Cecil County).

- 2/22 Presentation on living and working in space to 90 first graders at Penn Valley Elementary School outside Philadelphia.
- Presentation on living and working in space to 23 third graders at Merion Elementary School outside Philadelphia.
- 2/23 Three presentations on the importance of STEM education for 250 students, parents, and teachers for STEM Night program at Bellows Spring Elementary School (Howard County).
- 3/7 Presentation on living and working in space to 100 fifth and sixth graders at Beth Tfiloh School (Baltimore County).

**Additional Community Outreach:**

- 2/8 Participated in a science fair mentorship program held at the Maryland Science Center for Baltimore City Public School students involving 120 middle school students.
- 2/18 Presentation on living and working in space to 150 students and family members at the Southern Maryland Boys and Girls Club (Charles County). This program was part of a new series of STEM programs for young students coordinated by the College of Southern Maryland.
- 2/22 Presentation on “Achieving Your Dream” to 75 members of the American Institute of Aeronautics and Astronautics (AIAA) and engineering students at Villanova University (Philadelphia).
- 2/24 Presentation on living and working in space to 50 boy scouts and family members of Troop #732 in Perry Hall, MD.
- 3/10 “The Space Shuttle Program: Disasters and Accomplishments” a 4-week course taught for 50 seniors at the Osher Institute of Lifelong Learning at Towson University.
- 3/13 Presentation on “My Journeys to Space” presented to 30 parishioners at educational program at the Church of the Redeemer (Baltimore).

**Professional Development Programs:**

- 2/12 Presentation on “The Role of Inspiration in Education” for 150 middle and high school science teachers participating professional development program at the Maryland Science Center.
- 2/17 Presentation on “The Role of Inspiration in Education” for twenty elementary school administrators at Emmorton Elementary School (Harford County).
- 3/8 Presentation on the “Have Spacesuit Will Travel Program” for ten science teachers at Fallston Middle School (Harford County).

**Hackerman Academy in the News**

- 2/24 Interview on “Coffee With” segment of morning show on WJZ TV regarding launch of the Space Shuttle:
- <http://video.baltimore.cbslocal.com/global/video/flash/popupplayer.asp?vt1=v&clipFormat=flv&clipId1=5600330&at1=News&h1=Coffee%20With:%20Don%20Thomas&rnd=81938256>
- An additional “web extra” interview is posted on the WJZ website:
- <http://video.baltimore.cbslocal.com/global/video/flash/popupplayer.asp?vt1=v&clipFormat=flv&clipId1=5600151&at1=News&h1=Web%20Extra:%20Don%20Thomas&rnd=67205227>
- 3/2 “For the Love of Science” article in the Avenue News newspaper (Eastern Baltimore) on Towson University’s Saturday Morning Science programs.
- 3/9 Live interview on Fox 5 TV in Washington, D.C., regarding the landing of Space Shuttle Discovery.
- <http://www.myfoxdc.com/dpp/mornings/shuttle-discovery-makes-its-last-descent-030911>



## 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-led working teams, which consist of a STEM faculty member and 1-3 undergraduate LAs.

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, and the increased recruitment of STEM majors into the secondary teaching program.

### Project Personnel

Seven faculty and nine learning assistants are currently involved in the STEM-TC project. Dr. Sonali Rajee has rejoined the project, Dr. Alex Storrs is a new STEM-TC faculty fellow, and four new undergraduate learning assistants have joined (Ying Li, Gene Shanholtz, Eddie Strobach, Zachary Steelman).

#### STEM-TC Faculty.

Department of Chemistry: Sonali Rajee

Department of Mathematics: Gail Kaplan

Department of Physics, Astronomy & Geosciences: Phuoc Ha, James Overduin, Cody Sandifer (Project Director), Jeff Simpson, Alex Storrs

#### Undergraduate Learning Assistants (LAs).

Department of Chemistry: Ying Li

Department of Mathematics: Sarah Kutzberger

Department of Physics, Astronomy & Geosciences: Stephanie Gonzalez, Gene Shanholtz, Joshua Tyler, Eddie Strobach, Gilles Dongmo-Momo, Brittany Bonsall, and Zachary Steelman

### STEM-TC Project: Spring 2011 Activities

Activities from different project faculty are highlighted each newsletter.

#### Physics, Astronomy & Geosciences.

##### James Overduin:

My LAs, Brittany Bonsall and Gilles Dongmo, have been invaluable in my large (75-student) algebra-based intro Physics II class. They help me primarily in three ways: (1) by tutoring the students for two hours/week each, (2) by attending each class, circulating among the students during clicker questions and reporting back to me their impressions of where students are having trouble, and above all (3) by helping me plan, set up and execute the demonstrations that make learning physics fun. Here the LAs have been brave as well as helpful. So far (not yet halfway through the semester)

Brittany has been shocked by the Van der Graff generator, Gilles has produced a huge explosion with a charged capacitor, and both of them have lit up LED bulbs with a lemon battery and levitated a magnet above a frozen superconductor. Well done, Gilles and Brittany!

Cody Sandifer:

I have been offering teaching and learning seminars each week to the project's new learning assistants. Each seminar meeting focuses on a single teaching topic (e.g., the questioning of students) which is explored via small-group discussion and a variety of different hands-on and "active learning" activities.

In addition, I have been observing the various ways in which Towson's LAs are participating in the lecture sections of lower division STEM courses, I have been discussing possible LA activities with Jim Selway (our PhysTEC teacher-in-residence), and I have been conducting research into how LAs are participating at other institutions. Consequently, a list of potential LA lecture activities has been distributed to all STEM-TC faculty.

The list of potential LA lecture activities:

- PRS question activities: (1) having the LAs create powerpoint slides for the PRS questions, (2) having the LAs occasionally take responsibility for presenting the PRS question to the class, (3) having the LAs circulate around the room to discuss students' possible answers (including question reasoning) to the PRS questions, and (4) during the class discussion that occurs after the first PRS vote, having the LAs share some of the ideas/reasons that they heard with the class.
- Lecture demonstrations and lectures: Having the LAs take responsibility for occasionally planning and presenting a classroom demonstration – or even a brief (10-15 minute) lecture.
- Hands-on activities during lecture: Having the LAs prepare and distribute materials for brief hands-on experiments/activities during lecture, and having the LAs interact with students (or student groups) as they work on the experiments/activities.
- Paper-based tutorials during lecture: LAs interact with students as they work in groups on lecture tutorials.

For more information, see:

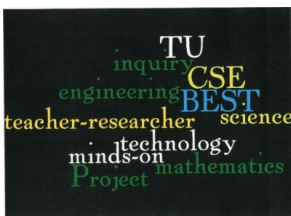
[http://serc.carleton.edu/NAGTWorkshops/teaching\\_methods/lecture\\_tutorials/index.html](http://serc.carleton.edu/NAGTWorkshops/teaching_methods/lecture_tutorials/index.html)

- Minute papers: LAs collect and read minute papers.

For more information, see:

[http://wikis.lib.ncsu.edu/index.php/Minute\\_Papers](http://wikis.lib.ncsu.edu/index.php/Minute_Papers)

Similar lists will be prepared for potential LA activities in lab sections and out-of-class teaching sessions (e.g., tutoring sessions, test review sessions).



## BALTIMORE EXCELLENCE IN STEM TEACHING PROJECT (BEST)

The Baltimore Excellence in STEM Teaching Project (BEST) is the newest addition to the FCSM's Professional Development, Community Outreach and STEM Education Initiatives. Funded by a grant from NASA, BEST aims to improve high school and middle school science, technology, engineering, and mathematics (STEM) instruction throughout the Baltimore metropolitan area. As part of TU's Center for STEM Excellence, BEST offers training and mentoring opportunities to in-service STEM teachers as well as educational outreach to their students.

The BEST Project focuses on improving the content knowledge and pedagogical effectiveness of its participating teachers. A 6-week summer research experience at a local university or research institution will be followed by academic year professional development workshops on topics such as implementing inquiry-based instruction, incorporating

technology, and effective assessment strategies. Immersion in authentic, hands-on research activities will expose teachers to cutting-edge science and technology and provide them with the credibility and experience to incorporate current content and relevant data into their STEM instruction. Winter and Spring classroom activities will include the translation of content and skills learned during the summer research internship into lessons that intellectually engage students, get them excited about STEM subject matter, and emphasize the real-world relevance of STEM research.

In January, 2011, 49 secondary-level public school STEM teachers from Baltimore City, Baltimore County, and neighboring school systems applied for the 2011-2012 BEST Project. 30 teachers advanced to the second tier of the application process which includes a classroom observation, post-observation interview, and Research Site Preference Essay. 24 teachers will be selected for the 2011-2012 BEST Cohort, with notifications being made by April 8<sup>th</sup>, 2011.

Thank you to the following FCSM Faculty who have offered to sponsor a summer research experience for and mentor a BEST teacher during the 2011-2012 academic year: Vanessa Beauchamp, Raj Kolagani, Barry Margulies, Jay Nelson, Lev Rhyzkov, Tatyana Sorokina, and Grace Yong.

Julie Damico, Director



## PhysTEC – PHYSICS TEACHER EDUCATION COALITION

### Project Description

The Physics Teacher Education Coalition (PhysTEC) project is a nationwide project that has the mission of improving and promoting the education of future physics teachers. At each of the PhysTEC sites around the United States, physics faculty, education faculty, and a full-time teacher-in-residence (TIR) work together to improve secondary physics education programs.

Towson University's current PhysTEC project will run from 2010-2013. The project team consists of Dr. Ronald Hermann and Dr. Cody Sandifer, two full-time science education faculty in the Department of Physics, Astronomy & Geosciences (PAGS), and a full-time TIR. The 2010-2011 TIR is James (Jim) Selway, a former Baltimore County physics teacher of 30+ years.

At Towson, the PhysTEC project team is making a concerted effort to expose physics majors early in their academic career to (a) the possibility of teaching as a career and (b) actual teaching experiences at both the K-12 and university levels. This is being done through general advertising (posters, open meetings, classroom visits, school- and outreach-based early teaching courses (SCIE 170), and the STEM-TC learning assistant program.

Other efforts are geared towards helping our education majors develop a greater sense of belonging to an educational community. These efforts include the creation of a comprehensive physics education web site, the establishment of a new secondary STEM education club, formal and informal discussions with the physics TIR, and the funding of small grants that allow education majors to attend and present at NSTA and AAPT meetings.

Please visit the national and local web sites for more information about PhysTEC:

<http://www.phystec.org> (national)

[http://www.towson.edu/fcsm/community\\_engagement/PhysTEC/index.asp](http://www.towson.edu/fcsm/community_engagement/PhysTEC/index.asp) (local)

### PhysTEC Project: Spring 2011 Activities

Different activities from Towson's PhysTEC project are highlighted in each newsletter. In this edition, the January-March project activities of Jim Selway, the PhysTEC TIR, are described.



Jim Selway, 2011 PhysTEC TIR

As of January, Jim Selway has been on board as Towson's Physics teacher-in-residence. He taught Physics in Baltimore County for thirty-eight years. The TIR wears many hats, including recruiting high school students to be future Physics teachers, working with several undergraduate groups, mentoring first-year Physics teachers, and initiating conversations and collaborations with the Physics teachers in surrounding school districts. To date the following have been accomplished or are in progress:

- *Lab presentations* – Jim visited 17 lab classes (PHYS 211, 212, 241, 242) to present information about (a) the SCIE 170 A (fall semester) and SCIE 170 B (spring semester) early teaching experience courses, (b) pathways to become a secondary Physics teacher, and (c) the STEM Teaching Community (STEM-TC) Learning Assistant program.
- *Baltimore County Physics Olympics Event* – Student teams from 20 high schools, each accompanied by their Physics teacher, came to compete for prizes. Jim attended the event as an opportunity to talk to old colleagues and meet the newest physics teachers, with the purpose of spreading the word about Towson's Physics and Physics Education programs.
- *SCIE 170 (early teaching experience course)* – Since the spring section of SCIE 170 is composed of five secondary Physics education majors, Jim currently offers assistance to Karen Cimino, Towson's elementary science internship coordinator and SCIE 170 course instructor, to help plan the class activities, offer the students practical examples of physics demonstrations and lessons, and attend the on-site Harford Hills Elementary outreach sessions where the SCIE 170 students teach fun and engaging science lessons to fifth graders.
- *STEM-TC Learning Assistant program* – Jim attends Dr. Sandifer's teaching and learning seminar for new LAs and observes the classes of STEM-TC faculty to survey the contributions that LAs are making to the Physics program. The purpose is to maximize the ways that the LAs can creatively add to the teaching process and give feedback to the professors so they can maximize the effectiveness of their "active learning" teaching methods.



## ROBERT NOYCE SCHOLARSHIP PROGRAM

In keeping with the Robert Noyce scholarship objective to promote professionalism among STEM teachers, the FCSM provides substantial annual monetary awards to students who want to become STEM teachers.

We are asking all faculty members to encourage students who are interested in becoming science or math teachers to apply for this prestigious award. In addition to financial support, the Robert Noyce Scholarship program will assist in cultivating students' personal and professional desire to become exceptional STEM educators.

We aim to produce outstanding STEM teachers and invite you to join us in achieving this goal. Applicants must apply by April 14 to be eligible for these awards.

You can find additional information about the program at <http://www.towson.edu/fcsm/Noyce/>. If you have any questions please contact us by email at [noyce@towson.edu](mailto:noyce@towson.edu)

Thank you for helping us to spread the word about this exciting opportunity!



## STEM Leaders

The STEM leaders met with Dean Vanko for the second annual **Breakfast with the Dean** on February 23. Student leaders representing the following clubs attended: BetaBetaBeta Biological Honor Society (TriBeta), Math Club, Minorities in Science and Technology Club (MSTC), Pre-pharmacy club, Student Affiliates of the American Chemical Society (SAACS), the Society of Physics Students (SPS), and Women in Science (WIS). The clubs are also running the second annual **Penny Wars** to raise funds for charity. Support your FCSM clubs and donate your pennies (and other change)! Flyers are posted to show what charity each club is sponsoring.

The **Women in Science Forum** was held on March 12, highlighting the work of three guest speakers. Dr. Clare Muharo, Department of Chemistry, Towson University, gave a talk entitled "Organic Chemistry Can Help Solve Environmental Problems." Dr. Dianne P. O'Leary, Computer Science Department, University of Maryland, College Park, presented "Mathematics and Computer Science in Words and Images" and Dr. Patricia S. Steeg, Head, Women Cancers Section, Laboratory of Molecular Pharmacology, National Cancer Institute, NIH, spoke about "Insights into Careers in Medical Research: Molecular Characterization of Tumor Metastasis." This annual forum traditionally attracts seventy or eighty attendees, from science and mathematics teachers and professors, students interested in careers in STEM, and practicing scientists and mathematicians, who gather to network and discuss issues that pertain to supporting women in STEM.



## TOPS (Towson Opportunities in STEM)

### Programming

TOPS Students attended the Women in Science Forum held in Smith Hall on March 12. Given the breadth of topics covered, each student, regardless of major, took away valuable information.

On Friday February 18, nine TOPS and BCCC STEM students traveled to Washington D.C. to participate in the BEYA Conference. This conference takes place annually and includes representatives from hundreds of companies and organizations with engineering, technology, and mathematics at their core. Dr. Roland Roberts from the Department of Biology volunteered to attend with the students.

### Outreach

TOPS staff members Jane Wolfson and Annie McMahon were invited to facilitate a session on the online articulation system for students from Baltimore City Community College (BCCC) on Friday, February 25. The session took place on the BCCC Campus with a group of students in the STEM program who plan to transfer to Towson University.

### Presentations

On Tuesday February 22 from 12pm-1pm in Smith Room 340, Annie McMahon facilitated a session entitled "Towson Opportunities in STEM: Creating Productive Learning Environments in FCSM." This session was part of the larger "Tools for Inclusion: Succeeding in the Diverse Classroom" Workshop Series sponsored by the Education and Scholarship Working Group.

On Thursday, March 17, TOPS Program Staff presented information on "Community Building through Cohort Development" to participants of the National Science Foundation STEP Grantees Meeting. TOPS staff and counterparts from Baltimore City Community College presented a poster at this meeting as well.