

The Jess and Mildred Fisher College of Science and Mathematics

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ELECTRONIC NEWSLETTER

October 2008



OFFICE OF THE DEAN

The Jess & Mildred Fisher College of Science & Mathematics held its annual Fall Forum on Friday, October 31, 2008. At the forum we celebrated this year's faculty and staff awards, heard from the Acting Dean, and had a reception with great food. The faculty and staff awardees are shown in the photograph, and more photographs as well as the text of my address can be obtained on the college web site: <http://www.towson.edu/FCSM/faculty/2008-recipients.asp> and http://www.towson.edu/FCSM/aboutFCSM/state_of_college_2008.asp



This is an exciting time for the college, and particularly for those in the sciences in Smith Hall. That's because Towson University has asked that the renovation and expansion of Smith Hall be placed next on the Master Plan for capital improvements. The Board of Regents has already agreed to this, and our preliminary request to the state has been formulated. We will know when the governor's budget is published in January whether the proposal has received his blessing, in which case planning for the building and renovation can begin with a real budget! In preparation for the creation of new science facilities and the renovation of existing facilities, three faculty members from the FCSM (Acting Dean Vanko, Dr. David Schaefer from PAGES and Dr. Larry Wimmers from Biology) travelled to a Tradeline Conference on Building and Renovating

Science Laboratory Facilities. Joining us was David Mayhew, Towson University's chief architect. In the coming months, this team will be involved in communicating what we learned and gathering ideas for how we should proceed with both new construction and renovation of Smith Hall.

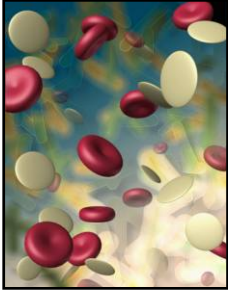
We are in the thick of a tremendous and busy fall semester. Everyone is working very hard, and you can read about some of the fruits of our labor in the following newsletter. I hope you enjoy it!

Sincerely,

David A. Vanko
Acting Dean

Memorial Gifts... from the Development Office

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



DEPARTMENT OF BIOLOGICAL SCIENCES

Student Activities and Research

Legenzov, E., and B.J. Margulies. Infection of Human Oligodendrocytes by HHV-6A and -6B. 5th Annual Regional Microbiology Educators Network Student Research Symposium, Swarthmore, PA (2008).

Longdo, S.B., Alizadeh, M., Durham, C., King, J., Krishnan, G., McGusty, S.O., Toothman, R., and B.J. Margulies. Silicone-Acyclovir Controlled Release Devices: Design Improvement and Suppression of Primary HSV-2 and VZV Infection. 33rd Annual Herpesvirus Workshop, Estoril, Portugal (2008).

Gina Meletakos (thesis advisor: Colleen Sinclair) presented her thesis research "DNA Barcoding of *Stenotrema* (Gastropoda: Stylommatophora) and a Molecular Phylogeny of Polygyrid Land Snails" at the 74th Annual Meeting of the American Malacological Society, June 29 - July 3, 2008, Carbondale, IL.

Jay Nelson presented a poster prepared by TU undergraduate Joshua P. Vandamm entitled "The use of fish drag strip to measure acceleration performance in a cohort of European sea bass (*Dicentrarchus labrax*)" at the 8th International Congress on the Biology of Fishes in Portland, Oregon. Guy Claireaux and Corey Handelsmann were also authors.

Grants and Donations

Sarah Haines is one of several researchers who received funding from NSF for a five-year project entitled "Targeted Partnership: Culturally relevant ecology, learning progressions and environmental literacy." The entire budget is \$12 million, and Towson's portion is \$1.2 million.

Publications

Don C. Forester, Melissa Cameron, and James D. Forester. 2008. "Nest and Egg Recognition by Salamanders in the Genus *Desmognathus*: A comprehensive Re-examination." *Ethology*, In Press.

Presentations

Don Forester co-authored one paper and two posters at the Joint Meetings of the Ichthyologists and Herpetologists in Montreal, Quebec, CA. July 23-28.

Cindy Ghent presented a paper entitled "Effectiveness of false correction strategy on science reading comprehension" at the College of Education Graduate Research Day, University of Maryland, May 2, 2008.

Cindy Ghent and William Holliday presented a paper entitled "Embedded Science Textbook Questions Used to Increase Comprehension" at the National Association of Research in Science Teaching general meeting, March 30, 2008.

Jay Nelson co-sponsored a symposium with former Towson graduate student Corey A. Handelsman entitled "Morphometrics as a Tool in Fish Physiological Ecology" at the 8th International Congress on the Biology of Fishes in Portland, Oregon.

Colleen Sinclair presented results of her land snail study "Surfing Snails: Analysis of the population structure of the land snail, *Ventridens ligera*, in the Potomac Gorge using species-specific microsatellites" at the 74th Annual Meeting of the American Malacological Society, June 29 - July 3, 2008, Carbondale, IL.

Journal and Reviewing Activities

Harald Beck was elected as Associate Editor for the Journal of Mammalogy.

Mark Bulmer reviewed a manuscript for the journal, The American Naturalist.

Cindy Ghent reviewed nine proposals for the 2009 general meeting of the National Association for Research in Science Teaching.

Sarah Haines reviewed two children's science trade books for the National Science Teachers Association.

Sarah Haines had a book review published on the National Science Teachers Association website "NSTA Recommends."

Jay Nelson served as a reviewer for the National Science Foundation for two separate proposals.

Jay Nelson was appointed to the Publications Overview and the Information Technology Oversight committees of the American Fisheries Society by incoming President Dr. William C. Franzin.

Community Outreach

Don Forester conducted a program for seasonal naturalists of Baltimore County entitled "The Reptiles and Amphibians of Baltimore County." The program was held at the Oregon Ridge Nature Center on June 6, 2008.

Don Forester was the Lead Instructor for a program entitled "Non-Game Wildlife Survey Techniques" held at the National Conservation Training Center, Shepherdstown, WV on June 23-28, 2008.

Jim Hull, Professor Emeritus, gave a presentation on the history, current status and plans for the Glen Arboretum to the Wiltondale Garden Club on October 13, 2008.

Jay Nelson consulted for The National Aquarium in Baltimore's major exhibit renovation of the third floor of the Aquarium that deals with adaptations. The principal exhibit theme will be that animals survive through adaptation and that humans are changing the environment faster than animals can adapt to those changes.

Other Activities

Don Forester participated in the NEPARC (Northeast Partners in Amphibian and Reptile Conservation) Conference held at the Powder Mill Nature Reserve, Rector, PA, Aug 13-15.

Sarah Haines was appointed by the National Center of Science & Civic Engagement as a SENCER (Science Education for New Civic Engagement & Responsibility) Leadership Fellow. The appointment period is for 18 months.

Sarah Haines will serve as a Towson University Service Learning Faculty Fellow for the 2008-2009 academic year. The program is sponsored by the Division of Student Affairs. Fellows are expected to create a new service learning course or incorporate a significant service learning component into an existing course.



DEPARTMENT OF CHEMISTRY

Publications

David Ownby is coauthor, with Jason Paul and Paul Steinbach, on a paper entitled "Distribution of mercury in a Gulf Coast lignite seam" accepted for publication in the Journal Energy and Fuels.

Grants

Clare Muhoro submitted a research proposal for \$108,000 entitled "A Research Project to Identify, Quantify, Map and Determine Impacts of Pesticides and Their Residues on East African Rift Valley Lakes" to the World Wildlife Fund.

Department Seminars

The two undergraduate Raspet Summer Research Fellows gave seminars on their research:

Khalid Srour (mentor: Ana Maria Soto), "Effect of Electrostatics on the Conformation and Interactions of TAR RNA," September 25.

Sudhir Dahal (mentor: Boon Loo), "Structural Characterization of Cyanide Ions Adsorbed on Metal Nanoparticles," October 2.

Research Presentations

Two undergraduate research students from Clare Muhoro's lab received second place awards for their poster presentations at the 11th Annual UMBC Undergraduate Research Symposium in the Biological and Chemical Sciences:

Andrea Castillo, "Catalytic Hydroboration of Phosphinoalkynes and Coordination of Phosphanyl (organyl) boranes to Electron-Rich Metals."

Sonja Gamby, "Nucleophilicity of N-Methyl Carbamate Pesticides and Their Phenoxide Degradation Products."

Student Awards

Adil Shash, a recent Chemistry graduate, has received a 2008 national Student Award from the Coblenz Society for noteworthy research in the area of vibrational spectroscopy. Mr. Shash performed Surface-Enhanced Raman Spectroscopy studies of organics deposited on metal colloid surfaces, under the mentorship of Boon Loo and Nordulf Debye. Mr. Shash's award was announced in the august issue of Applied Spectroscopy and he has been invited to present a poster at the 2008 FACSS Conference in Reno, NV.

Department Events

The Department of Chemistry hosted its Fall Open House and Undergraduate Research Showcase on October 15. Students met the faculty and staff in an informal setting and viewed posters displaying research done by undergraduates in the Department.

Community Outreach

Liina Ladon and Alan Pribula presented their Chemistry Magic Show as part of Family Weekend on September 27.

Professional Development

Liina Ladon spoke about Fisher College academic programs and student success strategies at the annual SAGE forum on September 16.



DEPARTMENT OF COMPUTER AND INFORMATION SCIENCES

Publications and Presentations

Chatterjee, S., Chakraborty, S, Sarker, S., Sarker, S. and Lau, F. (Equal Authorship), "Examining the success factors for mobile work in healthcare: A deductive study", accepted for publication in Decision Support System special issue on Mobile Healthcare

Wright, R., Chakraborty, S., Basoglu, A. and Marett, K. "Where Did They Go Right? Understanding the Deception in Phishing Communications," accepted for publication in Group Decision & Negotiations

Gabriele Meiselwitz presented a paper "Information Security across Disciplines" at SIGITE (Special Interest Group for Information Technology Education) in Cincinnati, OH, Oct 15-18.

Marius Zimand has presented the paper "Algorithmically Independent Sequences," written jointly with Cristian Calude (Univ. of Auckland, New Zealand), at the 12th DLT (Developments in Language Theory) conference, Kyoto, Sep. 16 -19. This paper has been invited for a special issue of International Journal of Foundations of Computer Science, with selected papers from the DLT'2008 conference.

The paper "Simple extractors via cryptographic pseudo-random generators," by Marius Zimand, has been accepted for publication in the journal, Theoretical Computer Science.

Marius Zimand gave a talk entitled, "Increasing the expansion of pseudo-random generators" in the Computational Complexity Seminar at U. of Maryland College Park on October 1, 2008.

Siddharth Kaza presented "Identifying Significant Facilitators of Social-network Evolution" at the annual meeting of INFORMS, Washington, D.C., Oct 12-15, 2008.

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

Grants

Chuck Dierbach and Harry Hochheiser (with Chris Ariza of the Music Department) were awarded an NSF CPATH grant in the amount of \$139,981 for a two-year project titled "Piloting Pathways for Computational Thinking in a General Education Curriculum."

Harry Hochheiser, Shiva Azadegan, Mike O'Leary, Blair Taylor, and Claude Turner (of Bowie State) were awarded an NSF grant in the amount of \$399,511 for a three-year project titled "Building Security In: Injecting Security throughout the Undergraduate Computing Curriculum."

Services to the Discipline

Suranjan Chakraborty served as reviewer for the Hawaii International Conference on System Sciences (2009), and will be a reviewer at the International Conference for Information Systems (2008) and Americas Conference for Information Systems (2008).

Suranjan Chakraborty reviewed an article for The Journal of Information Technology Case and Applications Research (JITCAR).

Suranjan Chakraborty served as peer reviewer for Communications of AIS journal

Gabriele Meiselwitz chaired a session on "Integrating Advanced Topics into IT Education" at SIGITE (Special Interest Group for Information Technology Education) in Cincinnati, OH, Oct 15-18.



DEPARTMENT OF MATHEMATICS

Papers Published or Accepted for Publication

Geoff Goodson's paper, "Canonical Forms for Normal Matrices That Commute With Their Complex Conjugate," (written jointly with Roger Horn) was accepted for publication in Linear Algebra and Applications.

Alexei Kolesnikov's joint paper with J. Baldwin and S. Shelah, "The Amalgamation Spectrum," has been accepted for publication in the Journal of Symbolic Logic.

Grants Submitted

Gail Kaplan, Michael Krach, and Todd Moyer submitted a grant proposal to the Maryland Higher Education Commission (MHEC) for students and teachers at Dundalk area secondary schools.

Irwin Goldstein, USM Vice Chancellor for Academic Affairs (PI) and Raouf Boules (Co-PI) submitted, to the United States Department of Education, the grant proposal, "Closing the Achievement gap: Developing a Faculty Community to Redesign Developmental Mathematics Courses."

Conference Presentations

The Mathematics Department was well-represented at the Annual Conference of the Maryland Council of Teachers of Mathematics in Essex, Maryland on October 17. Mike Krach demonstrated "Problem Solving Activities for Grades 3 through 8"; Judy Macks presented, "What is the Function of Functions? Making Connections to Functions"; Todd Moyer presented "Using the Geometer's Sketchpad in PreCalculus and Calculus"; Lawrence Shirley presented "Using Ethnomathematics in Your Classroom"; Felice Shore and Linda Cooper jointly presented "Judging Center and Variability of Data from Different Types of Graphs"; and Ming Tomayko gave "A Report on the Working Conditions of Maryland Math Teachers." Three undergraduate students, Kristy Andres, Francesca Montello, and Rasheda Webster, together presented "Incorporating Poetry in a Mathematics Lesson Can't be Done, or Can It?" Also, Jeremy Carlino, an occasional part-time faculty and a TU graduate, spoke on "Keys for student achievement on the AP Calculus exam." Finally, Honi Bamberger organized the conference section for pre-service teachers. Dr. Bamberger also put together a poster session of Geometry projects completed by Jim Plutschak's Spring 2008 students.

Sergiy Borodachov gave a talk on "Optimal Cubature Formulas, Which use Values of the Radon Transform" (joint work with Vladislav Babenko and Dmitriy Skorokhodov, Ukraine) at the International Conference on Applied Mathematics and Approximation Theory at the University of Memphis on October 11-12, 2008 and also at the Conference on the occasion of Richard Varga's 80th birthday at Kent State University on October 17-18, 2008.

Gail Kaplan presented "An Excursion in Mathematical Representations: Experience functions verbally, numerically, graphically, and algebraically!" at the regional NCTM Conference in Cleveland, Ohio. Lynn Anne Rice, a graduate student in the masters in secondary mathematics education at Towson University took part in the presentation.

Invited Talks

Alexei Kolesnikov gave a talk "Internality, definable groupoids, and amalgamation in stable theories" at the University of Maryland, College Park, Logic Seminar.

Ming Tomayko was an invited speaker at the Maryland Council of Supervisors of Mathematics Fall Retreat held at the Baltimore Yacht Club on October 16, 2008. She presented her research on the working conditions of Maryland mathematics teachers.

Workshops

On October 8th, Honi Bamberger conducted an afternoon mathematics workshop for the middle and upper school teachers at The Summit School, in Edgewater, Maryland. Teachers learned new ways to incorporate writing into their mathematics program.

On October 16th, Honi Bamberger conducted a morning mathematics workshop for the entire faculty at Liberty Elementary School. Activities on decomposing and recomposing numbers and shapes were shared.

Gail Kaplan organized a workshop on diversity for pre-service teachers at Towson University. The workshop was presented by James Engles, a Baltimore County teacher, and Lynn Anne Rice, a Carroll County teacher.

Gail Kaplan and Michal Krach organized a workshop on diversity for Towson's graduate students. The workshop was presented by James Engles, a Baltimore County teacher, and Lynn Anne Rice, a Carroll County teacher.

Gail Kaplan organized a workshop on classroom technology for Towson's graduate students. The workshop was presented by Dolores Bonincontri, a Baltimore County teacher, and Ed Nolan, a Prince George's County teacher.

Gail Kaplan accepted an invitation from the College Board to present a six hour workshop on AP Calculus for teachers from the middle states region. The workshop took place at Broadneck High School in Anne Arundel County on October 17, 2008.

Community Outreach

Honi Bamberger spent the day at Liberty Elementary School, in Baltimore City, on September 24th. Grade level meetings with teachers in pre-kindergarten through fifth-grade provided her with specific content areas where teachers need new ideas and activities to enhance their instruction.

Miscellaneous Professional Activities

On September 8 – 10, 2008, Honi Bamberger returned to Decatur, Alabama to meet with teachers from three schools participating in the Mobile Mathematics Initiative (MMI). During grade-level meetings Dr. Bamberger helped teachers analyze their student's state and national mathematics test scores. Classroom observations and co-teaching in specific classrooms allowed her to determine teacher's level of implementation of strategies taught during summer institutes.

On September 15th and 16th as well as October 6th and 7th, Honi Bamberger traveled to Newark, New Jersey to co-teach, during mathematics class, with the pre-kindergarten through third-grade teachers at First Avenue School. Throughout the autumn she will mentor first and second year teachers across the grades.

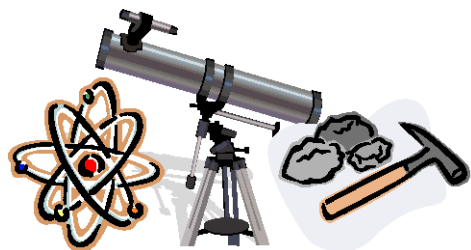
Sergiy Borodachov visited Vanderbilt University in Nashville, TN on October 10, 2008 and October 13, 2008 to collaborate on discrete minimum energy problems on curves.

Martha Siegel attended the Conference Board of the Mathematical Sciences Forum in Washington, DC on October 6th and 7th. She was on the four-person Maryland State Group team. There were 300 attendees in 80 teams (each team comprised 2-4 individuals) that responded to the National Mathematics Advisory Panel report, released on March 13, 2008. There were three other teams from Maryland as well as teams from many of the member organizations of the Conference Board. For further information about the various proposals set forth to improve mathematics education in the US, see http://www.cbmsweb.org/NMP_Forum/NMP_Intro.htm. The National Mathematics Advisory Panel report can be found at <http://www.ed.gov/about/bdscomm/list/mathpanel/index.html>. The attendees are expected to reconvene in the spring to report on the follow-up and implementation of their preliminary recommendations. The Forum was funded by the National Science Foundation.

Ming Tomayko was elected College Level Representative for the Maryland Council of Teachers of Mathematics. She will serve a two-year term beginning in October, 2008.

Mathematics Department Colloquium Series

The next Mathematics Department Colloquium will take place on Thursday, October 30, 2008. The speaker will be Dr. David Bressoud, Professor of Mathematics at Macalester College in St. Paul, MN and President-elect of the MAA. He will speak on "Proofs and Confirmations: The Story of the Alternating Sign Matrix Conjecture." Refreshments will be served at 3:30 and the talk will start at 4:00 pm. All are invited.



DEPARTMENT OF PHYSICS, ASTRONOMY & GEOSCIENCES

The university received a \$20,000 grant from the University System of Maryland to implement STEM Teach initiatives, a collaboration between FCSM and the College of Education. Principle authors were David Schaefer, Cody Sandifer, Rommel Miranda, Ron Hermann, and Robert Blake.

Grants and Grant Proposals

Bao Ha was awarded a research grant by the University Research Committee for her undergraduate research project "Development of Perovskite Manganite Thin films for Uncooled Night Vision Sensors and Other Room Temperature Applications." Faculty Mentor: Raj Kolagani.

Benjamin Hofmann (faculty Mentor: Vera Smolyaninova) received a Towson University Undergraduate Research Committee award in the amount of \$500, for his project entitled "The effect of magnetic field on photoinduced effects in $\text{Bi}_{0.4}\text{Ca}_{0.4}\text{MnO}_3$ thin films."

Publications

Colossal Magnetoresistive Manganite Based Fast Bolometric X-ray Sensors for Total Energy Measurements of Free Electron Lasers ; G.J. Yong, Rajeswari M. Kolagani, S. Adhikari, R.M. Mundle, D.W. Cox, A.L. Davidson III, Y. Liang, O.B. Drury, S.P. Hau-Riege, C. Gardner, E. Ables, R.M. Bionta, S. Friedrich (Accepted for publication in Sensor Letters, September 2007).

Jeff Simpson was co-author on the journal article :W. Zhou, H. Wu, T. Yildirim, J.R. Simpson, and A.R. Hight Walker "Origin of the exceptional negative thermal expansion in metal-organic framework-5 $\text{Zn}_4\text{O}(1,4\text{-benzenedicarboxylate})_3$." Phys. Rev. B **78**, 054114 (2008).

Presentations and Abstracts

Ron Hermann submitted a paper for publication in The Science Teacher entitled "Breaking the Cycle of Continued Evolution Education Controversy."

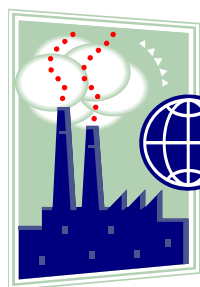
Community Engagement and Professional Service

Dr. Alex Storrs gave a public planetarium show on "The Great Planet Debate" on Sept. 19 (est. attendance 40).

To promote physics among female students, Vera Smolyaninonova organized a whole day field trip for the physics class of Mercy High School (all girls). Participation of Mark Edmonston, Dave Schaefer, Grace Yong, and Don Thomas made this field trip a very exciting and stimulating experience for the students.

On October 14, Dr. Jennifer Scott gave planetarium presentations to 60 area high school students visiting TU as part of the Building Steps Program.

Dr. David Vanko reviewed a manuscript for the American Geophysical Union's e-journal, G-cubed (Geochemistry, Geophysics, Geosystems).

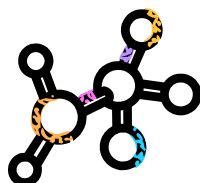


ENVIRONMENTAL SCIENCE AND STUDIES PROGRAM

Dr. Jane Wolfson attended the 13th Annual Community Greening Celebration on Wednesday, October 15 where The Honorable Sheila Dixon, Mayor, City of Baltimore, presented this year's Community Greening Awards. This event was sponsored by Parks and People Foundation, the City of Baltimore and the Baltimore Ecosystem Study.

Dr. Wolfson is actively involved in helping Col. Ed Badolato, a member of TU's Board of Visitors, organize a forthcoming Green Maritime Conference at Towson University to be held on November 12 at the Berkshire Marriott Conference Center. She will be moderating a session at the conference which brings in local stakeholders, especially environmental and educational organizations.

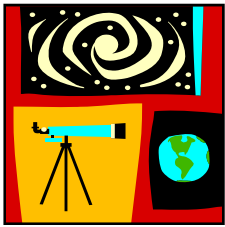
Dr. Wolfson, in her role of Project Director in TOPS, has been participating in the College Bound sessions and outreach recruiting efforts on campus and at Baltimore City Community College.



MOLECULAR BIOLOGY, BIOCHEMISTRY BIOINFORMATICS (MB3) PROGRAM

Dr. James Saunders took thirty-eight MB3 and Biology students on a field trip to the Ft. Detrick Research Station on Oct 24, 2008 to visit labs and attend presentations associated with the US Army Medical Research Institute of Infectious Diseases, The National Cancer Institute, The National Institute of Health, and the US Dept. of Agriculture Foreign Disease Unit. This trip was sponsored by the MB3 club from funds that they raised by helping the Hackerman Academy with the Saturday Morning Science Program.

The MB3 Program would like to welcome two new affiliate faculty members, Dr. Mark Bulmer and Dr. Elizabeth Duncan-Vaidya. Director James Saunders thanks them and looks forward to their contributions to the program.



HACKERMAN ACADEMY OF MATHEMATICS AND SCIENCE

Saturday Morning Science Series

The Hackerman Academy Saturday Morning Science series continued its fall program with a presentation titled "Skin and Bones: Using Science to Solve Crimes" by Dr. Dana Kollmann in the Department of Sociology, Anthropology, and Criminal Justice. On October 11 Towson University alumnus Stephanie Stockman from the NASA Goddard Space Flight Center presented a program titled "Remote Sensing: Adventures in Earth and Space Science". Attendance for the first three programs this fall was over 900.



Towson University alumnus Stephanie Stockman returned to campus on October 11, 2008 to participate in the Saturday Morning Science series with a presentation on remote sensing.

Outreach Activities

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

- 10/2 Two presentations to 400 students in grades K-5 at William Beanes Elementary School (PG County) on living and working in space.
- 10/8 Two presentations to 438 students in grades K through 5 at Cromwell Valley Elementary School (Baltimore County) on living and working in space.
- 10/9 Four presentations to 125 students in grades pre-kindergarten through 7 at the Aberdeen Proving Ground Child Youth Center (Harford County) on living and working in space.
- 10/10 Presentation to 125 first graders at Forest Ridge Elementary School (Howard County) on living and working in space (in cooperation with Professional Development Site student teacher from Towson University).
- 10/13 Three presentations to 100 3rd and 5th graders at Thomas Jefferson Elementary School (Baltimore City) on the space shuttle and recycling in space.
- 10/20 Presentation to 16 seniors from Mercy High School on career planning and the space shuttle during school visit to Towson University arranged by Dr. Vera Smolyaninova in the Physics, Astronomy, and Geosciences Department.
- 10/23 Two presentations to 120 students (grades K-5), parents, and teachers at Waverly Elementary School (Howard County) for their annual Math, Science and Technology Night. (In cooperation with Professional Development Site student teachers from Towson University).

Professional Development Presentations

- 10/17 Keynote address for the 2008 Technology Education Association of Maryland annual conference was held at the Baltimore Museum of Industry. Over 120 science teachers from across Maryland attended.
- 10/23 Keynote address for 2008 Staff Development Conference was held at Towson University on the Hackerman Academy and the importance of our "mission" in education at Towson University. Over 300 staff members from across the University attended.

Advisory Board Participation

- 9/24 National Space Biological Research Institute User Panel advisory board quarterly meeting.
- 10/3 Science and Math Academy Advisory Board meeting at Aberdeen High School (Harford County).
- 10/22 Baltimore City Schools Gifted and Talented Education Advisory Council quarterly meeting.

Invited Lectures

- 10/3 Invited lecture for the Ernst Just/Percy Julian Lecture Series at Coppin State University on Living and Working in Space.

Other Activities

- 9/29 Interview on Maryland Public Television's Direct Connections program. Ten minute segment on experiences as an astronaut and NASA's plans for the future.



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 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, 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.

Additional information about the STEM-TC project can be found on-line at http://www.towson.edu/fcsm/community_engagement/STEM-TC/index.asp

Project Personnel

Since the last newsletter, two new undergraduate learning assistants have joined the STEM-TC project: Joshua Moskowitz (Chemistry) and Alex Siregar (Physics).

STEM-TC Project Teams: Fall 2008 Activities

Activities from different project faculty are highlighted in each newsletter. The following are activity summaries from two STEM-TC faculty for the Fall 2008 semester.

Chemistry

Dr. Sonali Raje's STEM-TC activities:

At the end of every class period, I hold 20 minute problem-solving and discussion sessions. My LAs actively help students by interacting with them as they work individually or in groups to make sense of new concepts. Occasionally, my LAs have come up with different problem-solving strategies like using mnemonics or spontaneous analogies in class to help students understand abstract chemistry concepts. They also help by holding special evening office hours for students who have conflicting schedules during the day. Additionally, my LAs help students in lab to make connections between labs and lecture material to help reify conceptual knowledge instead of focusing on rote problem-solving.

Biology

Dr. Cindy Ghent's STEM-TC activities:

Project title: Dilemma Discussions: A Classroom Initiative to Increase Scientific Literacy in Non-science Majors

Project Synopsis: Students work in groups to discuss topics in biology that are either considered dilemmas or present an ethical issue. After either viewing a short video clip and/or reading a short case study, the groups will work together to come to a consensus of how they feel the issue is best dealt with. This activity is designed to increase critical thinking and takes advantage of active learning and group dynamic skills in an effort to increase scientific literacy. The first discussion was created by the instructor, and served as a model for the learning assistants. The second dilemma was created entirely by the learning assistants.



TOPS (Towson Opportunities in Stem)

TOPS is in full swing for the fall semester. Our current first year and transfer students spent some time bonding on the Campus Recreation Challenge Course. For many, it was their first time participating in such an activity.) These TOPS students are all new to Towson and are pursuing the following majors: MB3, Math Education, Computer Science, Biology, Math and Economics, Pre-Med, Chemistry, and Geology.

We have successfully completed two College Bound Saturday Recruiting Programs which build on The Hackerman Academy Saturday Science programs. The College Bound program introduces high school students to the college experience as well as some of our current faculty and their research areas. To date, students from Randallstown High School, Sparrows Point High School, and Paul Lawrence Dunbar High School have visited campus. Dr. Beth Vaidya from the Department of Biological Sciences spoke with the students about human anatomy, illustrating with real cadavers. Fisher College Dean, Dr. David Vanko provided a live (and lively) discussion about volcanic explosions. These programs were organized by Dr. Jim Saunders of the MB3 program and implemented by Annie McMahan and Tissa Thomas of the TOPS program. Tyrone Smith, Elluz Chong-Qui, and Phylicia Porter, Towson Juniors, hosted our high school guests.



Our current first year and transfer students spent some time bonding on the Campus Recreation Challenge Course. For many, it was their first time participating in such an activity.

The TOPS team also participated in a STEM Open House held at Baltimore City Community College (BCCC) on October 15. Current BCCC students were invited to learn more about STEM majors, pathways to a four-year degree, and career options. The TOPS programs at both BCCC and TU were described as well as the pathway we have developed to help insure their success.

Most recently, Annie McMahan was invited to conduct a series of science workshops at Mercy High School. On October 20 and 21, over 140 high school freshman and juniors participated in the two day interdisciplinary event.