

CSAM NEWSLETTER



COLLEGE OF SCIENCE AND MATHEMATICS

A Spectrum of Possibilities

MSU to Award First D.Env.M.

by Huan Feng and Michael A. Kruge, Earth and Environmental Studies

Dr. Victor Onwueme is the first graduate of MSU's doctoral program in Environmental Management, receiving his degree in January 2008. His dissertation is entitled "Characterization and Assessment of Contaminated Sediments in the Lower Passaic River, New Jersey."

Dr. Onwueme came to MSU with an undergraduate degree in engineering from the Federal University of Technology (Owerri, Nigeria) in September 2002 to pursue a masters degree in the Department of Earth and Environmental Studies. He entered the newly established Environmental Management doctoral program in fall 2003. During the course of his

graduate study, Dr. Onwueme coauthored several publications based on his dissertation research. He was supervised by his advisor, Dr. Huan Feng. Committee members included Drs. Duke Ophori and Mark Chopping (Earth and Environmental Studies- MSU), Dr. William Solecki (Hunter College) and Mr. Eric Stern (USEPA Region 2). Currently, Dr. Onwueme works as a project water resources engineer for MACTEC Engineering & Consulting Inc., a top-ranked ENR engineering firm.

Montclair State University has one of the very few doctoral programs in the nation specifically for environmental management. Nearly half of the stu-

dents in the program are professionals working in federal and state government environmental agencies or in private environmental consulting firms. Currently, there are seventeen students enrolled, of whom five have advanced to doctoral candidacy, while the rest are in earlier stages of the program. Another doctoral milestone was passed in December 2007 when Sandow Mark Yidana successfully defended his dissertation entitled "Management of Groundwater for Productive Uses in the Afram Plains Area, Ghana." He will receive his degree in May 2008. ♦

Antarctic Drilling Recovers Climate Archive

by Sandra Passchier, Earth and Environmental Studies

In the Fall of 2007 the Antarctic Geological Drilling (ANDRILL) program successfully recovered 1138.54 meters of rock core from the Antarctic continental margin. Around 80 scientists, drillers, engineers, technicians, students and educators from four nations (Germany, Italy, New Zealand and the United States) participated in this project. The purpose of the drilling was to retrieve a sedimentary record from the middle Miocene Epoch when, for an extended



Passchier at Antarctica

period, Earth was warmer than today. The drilling took place from a sea ice platform in the McMurdo Sound in the Ross Sea sector of Antarctica.

A group of close to 30 scientists completed work on the initial scientific characterization of the core in Antarctica between early October and early December 2007. These scientists included geologists and geophysicists of a variety of backgrounds. I was invited to join the on-ice science team as a sedimentologist. My

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From Dean Prezant



2008 is a year of special events for CSAM. In Fall 2008 the Passaic River Institute will host the 3rd Passaic River Symposium. Also in the Fall we look forward to being the local host for one day of a multi-day International Conference, sponsored by St. Joseph's Hospital, on Traumatic Brain Injury. But in Spring 2008, the College will host two major symposia that will be part of Montclair State's Centennial Celebration. These events, "The Sokol Forum on the Environment and Sustainability" and "PharmFest 2008," are detailed elsewhere in this Newsletter. The Centennial year, however, brings us to a moment where we might reflect on the many shoulders we stand upon and gives us an opportunity to realize how quickly and how far we've come. Within the College of Science and Mathematics we can look back at the earliest formative years where students read from text books that were absent knowledge of DNA, where technology was driven by steam engines, and where, less than 100 years ago, John Scopes had yet to go on trial. But there were visionaries. About 100 years ago, Albert Einstein was 28 years old and he was getting ideas, and this past May early environmentalist Rachel Carson would have turned 100. A look at a January 1901 article in the Ladies Home Journal [<http://www.yorktownhistory.org/>

homepages/1900_predictions.htm] by mystery novelist John E. Watkins, Jr. predicted: 1) hot and cold air from spigots that cool or warm a house, 2) trains that travel 150 mph, 3) aerial warships carrying weapons able to destroy whole cities, 4) invisible light rays allow doctors to see inside bodies, and 5) a telephone system allowing communication throughout the world. Pretty accurate vision! Here are some of his other predictions: 1) no wild animals except in zoos, 2) all rivers and creeks outfitted with dynamos to produce electricity, and 3) mosquitoes, house flies and roaches essentially exterminated. Our College of Science and Mathematics is currently home to 1,822 students who pursue studies in areas that touch many of these predictions. Our students have plans and dreams and visions framed within realities Mr. Watkins could never suspect: global warming, bioterrorism, a global economy and threats of inestimable pandemics. We all need to work to ensure that our young visionaries have all the options they need and have the full spectrum of possibilities we promise. That takes material support and unfortunately we cannot count on the state. The goal is to lubricate the path to make the conversion from a Watkins to an Einstein, a compiler of projections to an activist making a difference, a predictor to a visionary "doer." We can only do this by helping ensure resources and learning opportunities for the next 100 years and beyond. *Carpe futura.* ♦

PharmFest 2008

Pharmaceutical Science and Business: The Next 100 Years is the theme for PharmFest 2008. The event, scheduled for April 7, 2008, will be held in the MSU Conference Center in University Hall. The morning begins with welcome remarks by Honorable Bob Franks of the HealthCare Institute of NJ and President Susan Cole. Two paired sessions will begin the day's program followed by lunch with a keynote by Mr. Peter Wilderotter, President of The Christopher and Dana Reeve Foundation, and then a paired session in the afternoon. The sessions are scheduled to correspond to classroom periods which will facilitate the attendance of many students. Each session will be composed of a panel of area professionals and experts with a moderator. Below is the schedule for the day.

9:00 - 9:50	Welcome and Opening Remarks
10:00 - 11:15	Session I: <i>Diversity in the Pharmaceutical Industry</i> – Brad Sheares (Reliant Pharmaceuticals), organizer/moderator
	Session II: <i>Non-traditional Sources of Pharmaceuticals</i> - Anders Hedberg (Bristol Myers Squibb), organizer/moderator
11:30-12:45	Session III: <i>Medicinal Devices</i> - John Siekierka (MSU), organizer/moderator
	Session IV: <i>Pharmaceutical Start-ups</i> - Don Shatinsky (NJ Economic Development Authority), organizer and Raymond P. Thek (Lowensteins Sandler), moderator
1:00-2:15	Lunch and Keynote by Peter Wilderotter
2:30-3:45	Session V: <i>MSU Alumni Making a Difference in Patients' Lives</i> - Ron Califre (Novartis), organizer/moderator
	Session VI: Pharmaceuticals and Aging—Bob Feeney (Eisai), organizer/moderator ♦

DNA Research

The research in the Schelvis laboratory is focused on the structure-function relationship of enzymes. In the research, an array of spectroscopic methods is used. Dr. Schelvis' area of expertise is in Raman spectroscopy, which is a powerful, structural technique. In Raman spectroscopy, inelastic scattered light from a molecule is analyzed and provides a fingerprint of the molecule that relates to its structure. With this information one can characterize and elucidate the changes in structure of enzymes and other biological macromolecules including DNA. Raman spectroscopy requires a laser as intense light source, and, by using a pulsed laser, one can monitor changes in a molecule structure as a function of time and follow reactions within enzymes as they are proceeding.

Dr. Johannes Schelvis' main interest is in enzymes that repair DNA damage that has been induced by ultraviolet light (UV) from the sun, which is one the most significant environmental sources of DNA damage on earth. When UV-light is absorbed by DNA or other molecules in skin cells, cyclobutane pyrimidine dimers or CPDs can be formed in the DNA.

CPDs can block several important cellular processes and have been directly linked to the occurrence of skin cancer. It is of great importance that DNA repair enzymes quickly recognize and repair these DNA lesions. In humans, the main repair mechanism for CPDs is very slow – 24 hours – and involves more than 20 different proteins. Almost all plants and animals, except placental mammals, have enzymes called photolyases that are specialized for and very efficient in the repair of CPDs. Photolyases are blue-light photoreceptors, which form a class of enzymes that utilize the energy of near-UV light to perform or initiate important physiological functions in animals and plants. Photolyases are very similar in structure to cryptochromes, which regulate the circadian rhythm in animals and seedling development and stem growth in plants. Recently, it was discovered that some cryptochromes are also capable of repairing CPD lesions in DNA. Humans have two cryptochromes, and one or both may be capable of CPD repair.

By determining the mechanism by which photolyases and cryptochromes repair CPDs, one can learn how CPDs

may be more efficiently repaired in humans. Dr. Schelvis is interested in the entire process: the structure of the damaged DNA, the recognition of the damaged DNA by the repair enzyme, the changes in the structure of the enzyme and of the DNA when they form a complex with each other, and the repair of the DNA by the enzyme. He is also interested in determining the cause of selectivity of cryptochrome compared to photolyase. Cryptochrome only repairs CPDs on a single strand of DNA, while photolyase repairs CPDs on a single strand of DNA and on double helix DNA, which consists of two DNA strands. This research was initiated by Dr. Schelvis at New York University, and he is now continuing this work at Montclair State University. This research is funded by a grant from the National Science Foundation.

In addition to this research, Dr. Schelvis also has collaborative projects on antibiotic resistance in *Mycobacterium tuberculosis* and on enzymes that are involved in the regulation of blood pressure. ♦

Hewa Language Dictionary

Dr. William Thomas, Director of the New Jersey School of Conservation, is developing a dictionary and phrasebook of the language spoken by the Hewa people of New Guinea, a cultural group he has been working with for the past twenty years. There are over 1000 languages spoken in New Guinea, many of which have not been systematically recorded. In order to facilitate communication across these language barriers, a pidgin/trade language has developed.

Thomas has founded a program called the Forest Stewards whose mission is to help the Hewa conserve their language, culture and the globally significant forest, by developing partnerships with NGO's and academic institutions

with compatible missions. The dictionary/phrasebook will facilitate communication between researchers from the partner institutions and the Hewa. In 2008-2009 researchers from Conservation International, the Harvard Museum and the South Australian Museum will collaborate with the Hewa to document their biological heritage.

Here's an example of the English to Pidgin to Hewa translation process that takes place:

English: I would like to learn about the animals and trees that can be found in your forests.

Pidgin: Mi laik kisim save long abus na diwai bilong yu-pela.

Hewa: Ana el an meau na wam na me na Hewa no. ♦

Advisory Council – Member Profile

(Editor's note: The following is part of a series that began in the Spring 2006 issue of the CSAM Newsletter, which features a member of the CSAM Advisory Council.)

Patrick Den Boer serves as the Chief Executive Officer of **Q Pharma**, where he directs the overall and strategic management of the company. **Q Pharma** currently consists of four subsidiaries, CSSC, **integrated Pharma Technologies**, **Q Logistics** and **Quality Labs**.

Mr. Den Boer is a recognized expert in the pharmaceutical industry, including areas such as Computer System Validation, PDMA Compliance, Sample Accountability, Sales Force Automation, warehousing and fulfillment and laboratory operations. He has lectured on topics such as "*Regulatory Implications Associated with Global SFA Systems*" and "*Complying with the PDMA and Part 11 Regulations through Validation*."

Mr. Den Boer founded Computer Systems Services and Consulting, Inc. in 1994, and served as president for 10 years. As President of CSSC, Mr. Den Boer built the organization from a small start up IT services company to a global multi-million dollar regulatory compliance solu-



tions firm. **integrated Pharma Technologies** was formed in June 2000 to assist pharmaceutical companies comply with the Prescription Drug Marketing Act, and **Q Logistics** is the natural extension for **iPT** to fulfill sample requests to both Practitioners and Sales Reps. **Q Labs** will do routine stability testing for solid oral dosage forms, mostly chromatography.

Prior to founding CSSC, Mr. Den Boer served as Validation Manager at Warner Lambert (now Pfizer) and Anaquest (now a division of Baxter). He also served in various positions at Lederle Laboratories early in his career. While at Warner Lambert, Mr. Den Boer served on the FDA/Industry Validation Committee. He has been extensively involved in the implementation and validation of laboratory systems, sales force automation systems, warehouse/fulfillment systems and has also advised such companies as Sanofi-Aventis, Boehringer Ingelheim, Hoffmann-La Roche, Wyeth and GlaxoSmithKline.

Mr. Den Boer is a 1985 graduate of Steven's Institute of Technology where he received his B.S. in Chemical Biology. He received his M.S. in Software Engineering from Iona College in 1988. ♦

New Members Join Council

The College of Science and Mathematics welcomes two new members to its Advisory Council.

Andrew J. Higgins, Ph.D., P.E. is Senior Vice President and Chief Engineer of Applied Water Management Group of American Water, the nation's largest private water resource company, headquartered in Hillsborough, NJ. In his position Dr. Higgins oversees all engineering functions, serving as the company's chief technical officer.



He earned a Ph.D. in Environmental Science from

Rutgers University, New Brunswick, NJ, a Masters of Science degree in Environmental Engineering in Civil Engineering from Univ. of Illinois, Urbana-Champaign and BS in Agricultural Engineering and Agricultural Science from Rutgers. Dr. Higgins is widely published and has received a variety of professional awards in the area of sludge management. Currently, Higgins is a part-time lecturer at Cook College, Rutgers University; an adjunct member of the Graduate School, Rutgers University.

Ms. Ellen A. Molner, a native of South Orange, is Vice President/Senior Perfumer at Givaudan Fine Fragrances where she began her career as an in-house trainee over 25 years ago. She has held positions with

International Flavors & Fragrances, Haarman & Reiner and Quest International. She became a full member of the American Society of Perfumers in 1978.

Ms. Molner holds three patents and has distinguished herself as a master perfumer by creating such fragrances



Jennifer Lopez's *Deseo*, Ralph Lauren's *Black Polo* and Calvin Klein's *Obsession Night*. Her creative inspiration comes from experimenting with unusual

molecules, as well as color, textures, food and traveling. ♦

Articulation with NYITCOM Established

By R. Maria Washington, Health Careers Program

Having developed a collaborative working relationship with New York College of Osteopathic Medicine of New York Institute of Technology (NYCOM-NYIT), the Health Careers Program continues to be successful in assisting its students in gaining admission to NYCOM-NYIT, so that the goal of receiving the Doctor of Osteopathic Medicine Degree (D.O.) is realized! Competing and completing a rigorous medical school curriculum, specialties of Health Careers Program graduates include but are not limited to General Surgery, Emergency Medicine, Internal Medicine, and Obstetrics/Gynecology.

Taking advantage of other opportunities provided by NYCOM-NYIT, several Health Careers Program students were participants of the institution's Basic Science Summer Program (BSSP), as well.

Aware that many students, at the high school level, are unfamiliar with osteopathic medicine, participants of the Health Careers Six Week Summer

Program, for incoming freshman, are provided an opportunity to visit NYCOM-NYIT. Exposure to osteopathic medicine provides students with a better understanding of the osteopathic philosophy, the use of osteopathic manipulative treatment to diagnose and treat patients, and opportunities within the profession. While visiting the institution, Health Careers Program freshman also interact with administrators and osteopathic students, as well as tour the campus.

In recognition of the Health Careers Program's accomplishments and the successes of its students, the on-going partnership between Montclair State University, through the Health Careers Program, and New York College of Osteopathic Medicine of the New York Institute of Technology made it possible to establish the Eight Year BS/DO Articulation Program, effective June 19, 2007!

Excited and very pleased with the Articulation Document pictured here are (seated l-r) Dr. Barbara Ross-Lee,

VP of Health Sciences and Medical Affairs and Dr. Thomas Scandalis, Acting Dean of Academic Affairs, from NYCOM-NYIT, CSAM Dean Robert Prezant, (standing l-r) Ms. Donna Lorenzo, Director of the Health Careers Program, Mrs. Mary

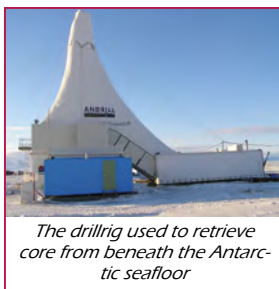


Ann Achtziger, Assistant Dean of Student Affairs, NYCOM-NYIT and Ms. Marie Washington, Academic Advisor/Counselor of the Health Careers Program, MSU. ♦

continued from page 1

task was to prepare the written sedimentary logs from direct observations on the core. These observations included classifications of sedimentary rocks and fossils, which were then sampled by the science team for further analyses.

The sediment cores are composed of coarse-grained rocks deposited near the margins of glaciers, alternating with fine-grained rocks deposited in more open marine environments, which provide evidence for ice advance and substantial retreat during main climate transitions. The science team members will continue to investigate samples from the core in labs at their home institutions in the next few months. I, in collaboration with our students in Earth and Environmental Studies, will conduct



The drillrig used to retrieve core from beneath the Antarctic seafloor

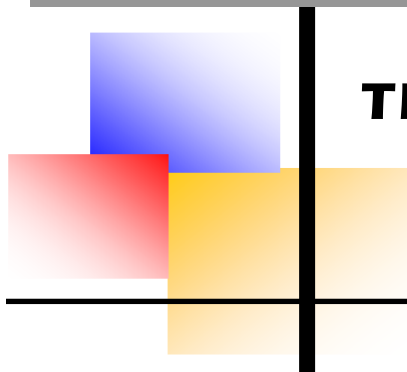
further research on the sedimentology of the cores using a laser particle sizer. The results of these investigations will be discussed further when the science team reassembles at the Antarctic Core Facility at Florida State University in May 2008.

Further information on the Antarctic Geological Drilling project can be found at www.andrill.org.

Note: Dr. Passchier provided a lecture on the initial results of the drilling during the "Focus the Nation" climate awareness event on January 31, 2008. ♦



Split drillcore to be described by sedimentologists



THE MARGARET & HERMAN SOKOL SCIENCE FORUM

March 12, 2008

The Environment and Sustainability – the Next 100 Years

3:00 p.m. Principal Seminar— Sokol Seminar Room (Science Hall)

Mr. Andrés Edwards, founder and president of EduTracks and author of *The Sustainability Revolution: Portrait of a Paradigm Shift*.

4:00 p.m. Student meetings with Edwards and Oppenheimer - Sokol Seminar Room and RI232, respectively

7:00 p.m. The Forum - Kasser Theater

Moderated by **Mr. Ira Flatow**, NPR Science Correspondent, host of Talk of the Nation: Science Friday, President of ScienCentral, Inc. and author of most recent book *Present at the Future: From Evolution to Nanotechnology, Candid and Controversial Conversations on Science and Nature*.

Keynote presentation by Dr. Michael Oppenheimer, Albert G. Milbank Professor of Geosciences and International Affairs in the Woodrow Wilson School and the Department of Geosciences at Princeton University and long-time participant in the Intergovernmental Panel on Climate Change (IPCC) which won the Nobel Peace Prize in 2007, serving most recently as a lead author of the IPCC's Fourth Assessment Report.

Panelists **Mr. Andrés Edwards**, Founder of EduTracks

Dr. Michael Oppenheimer, Professor of Geosciences and International Affairs in the Woodrow Wilson School - Princeton University

Ms. Lisa P. Jackson, Commissioner of the New Jersey Department of Environmental Protection (NJDEP)

Mr. Eric Svenson, Vice President of Environment, Health and Safety of PSEG Services Corporation

Tickets for the evening program are available through the Kasser Theater Box Office at 973-655-5112 and are free to MSU students, staff and alumni and \$10.00 for all others.

High School Students to Study Water Quality

Students and teachers from four New Jersey high schools in three counties will conduct scientific studies of the Passaic River under the guidance of professors and staff from Montclair State University under a new project, Passaic River Environmental Education and Monitoring Organization, (PREMO), established through the Passaic River Institute (PRI). This program is supported by a grant of \$40,000 from the U.S. Environmental Protection Agency (EPA).

High school students from Wallington HS, Passaic Valley HS, Barringer HS, and Newark Academy will receive hands-on training in the science of monitoring water quality along the environmentally-challenged river and its tributaries.

"The program has many benefits for the community. On an educational level, it is a very practical way of engaging high school students in biology, chemistry, math, and computer science concepts that are taught in classrooms," says Kirk Barrett, Director of PRI. "It is also a way of encouraging young people to take an active role in taking care of their local environments, a trait that we hope will become a lifelong habit."

A highlight of the learning experience will be a year-end conference on campus during which the students will share and discuss their findings. "This project will culminate in a sharing of experiences between students and teachers from different learning environments," says Barrett. "It brings together a cross-section of young people who reflect New Jersey's diverse neighborhoods to study together waterways that we share in common."

Teachers from the four schools are receiving advice, training and supplies in aquatic biological and chemical analy-

sis procedures from faculty and staff at the PRI, and now are leading their students to the Passaic River for monthly water-monitoring forays. "Involving teachers and students in a study of the Passaic engages them in experiences that both educate and inspire them," said EPA Regional Administrator, Alan J. Steinberg. "This program gives educators and young people the knowledge and skills they need



to understand their environment and take action to improve it. They will know how to meet an important challenge, being environmental stewards of the Passaic River."

The students are using kits purchased by the EPA grant to measure water quality variables such as dissolved oxygen, water clarity, and phosphorus concentrations. They are also collecting small bottom-dwelling animals, like snails, that indicate pollution levels in a waterbody.

Students are entering their collected data into a Web-based program (www.preemo-msu.org) that allows them to analyze data and compare it with data collected at other sites. The Web site also provides links to relevant educational materials, links to other data sets about the river, and will provide a forum where students can post their impressions and questions about ecology and environmental science. One sampling site is the lake in Essex County's Branch Brook Park, which flows to the Passaic River. "For generations, Essex County Branch Brook Park has been a special place where people of all ages play, relax and enjoy nature every day. Over the last five years, we have worked cooperatively with the public to revitalize our park and upgrade recreation facilities," said Essex County Executive Joseph N. DiVincenzo, Jr. "We are pleased the EPA and Montclair State will utilize Branch Brook Park as an environmental classroom and help students learn about and gain an appreciation of nature." ♦

Doctoral Student Places in Major Competition

Montclair State doctoral candidate in Environmental Management, Seth Xeflide, recently took second place within the graduate student division of the paper competition at the Middle States Geography Meeting. He competed against 13 other M.A., M.S., and Ph.D. candidates from across the region.

Xeflide's paper, "Analysis of Base

Flow Trends in New Jersey," was praised for the clarity with which it explained a very complex topic pointing to the breadth of knowledge he has of the subject. "Seth has all it takes to become a prominent scientist," says Duke Ophori, chair of the Department of Earth and Environmental Studies, and Seth's thesis advisor. "He is intelligent, hardworking, persistent and self-

motivated. This prize is a mark of his high potential in scientific research."

His research was conducted under the supervision of Dr. K. Barrett of the Passaic River Institute and was partially funded by a grant from the National Research Initiative of the USDA Cooperative State Research, Education, and Extension Service. ♦

GK-12 Updates

Mika Munakata Receives \$100,000 NSF Grant

Dr. Mika Munakata has obtained a \$100,000 supplemental grant from the National Science Foundation that adds an interesting and exciting international component to the GK-12 grant. Mika, with the help of Aihua Li who coordinated with colleagues in Beijing, developed the four-year proposal to enhance the GK-12 grant. The funding from NSF, campus sources, and participating school districts will support travel to international locations to establish research collaborations between GK-12 Fellows, their CSAM Research Advisors and international scholars. In addition, Fellows, partner teachers, and grant personnel will visit schools and establish school partnerships with New Jersey middle school classes participating in the grant. The grant also supports visits from the international sites to Montclair. This December - January the project sent a 17-member Montclair contingent to Beijing and Xian, China for two weeks. ♦

GK-12 Presents at the New Jersey Science Convention

The science contingent of GK-12 Fellows and PI Mary Lou West presented at the New Jersey Science Convention on October 10, 2007 in Somerset, NJ. Mary Lou presented an overview of the national GK-12 Program followed by a more detailed discussion of the activities at Montclair. Each Fellow then actively involved the audience in an abbreviated hands-on lesson selected as their favorite from among those they had already presented to middle school students. Mai Soliman discussed the geological rock cycle that included some very interesting and informative graphical aids. She involved the audience in a hands-on activity producing sugar “lava” over candle flames. Sara Saber used slides illustrating fluorescent minerals seen on the Sterling Hill Mining Museum field trip and then explained the physical basis for fluorescence with the aid of people role-playing as neutron, proton, and electron. Cathleen Dale talked about the importance of acidity in rainwater and weathering. Her lesson was about the concept of pH and included some freshly made red cabbage juice that turned three sample liquids into wildly different colors. Several teachers requested copies of the lessons and more details about the materials used to support them. Bill Haines, a partner science teacher from North Arlington presented a teacher’s view of working with a Fellow in the classroom and shared some of his experiences with the audience. ♦

Report of GK-12 Presentation at the Fall 2007 AMTNJ Annual Conference

On Friday October 26, 2007 three mathematics GK-12 Fellows, four partner teachers and PI Ken Wolff presented the session, *Using Field Experiences to Integrate Middle School Math and Science* at the Annual Fall Conference of the Association of Mathematics Teachers of NJ, also at Somerset, NJ. The three Fellows were Daniela Kitanska, Katarzyna Sieminska, and Steven Spero. The four teachers were Dawn Boyer and Dan Mazol from Kearny and Brian Bernstein and Bill Haines from North Arlington. After a brief discussion of the GK-12 project at Montclair, Ms. Boyer and Mr. Mazol presented an overview of the recent field trip to the Sterling Hill Mining Museum. They then described some of their school-based activities that were related to the field trip and what it was like to work with a Fellow. The Fellows then shared some of their lessons and experiences and engaged members of the audience in a hands-on mining lesson created by Daniela. Mr. Bernstein and Mr. Haines closed the session by describing their experiences with the grant and how grant-related activities had affected them and their students. Throughout the presentation, with our encouragement, members of the audience asked questions and otherwise interacted positively with the presenters. ♦

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faculty, students and alumni. Back issues are available
at <http://csam.montclair.edu/newsarchive.php>

Send your comments and news to CSAM at
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Sokol Institute Update

by John Siekierka, Sokol Institute of Pharmaceutical Life Sciences

The Sokol Institute of Pharmaceutical Life Sciences continues to take shape with the appointment of External and Internal Advisory Boards. The External Advisory Board is composed of academic and industrial leaders who will help shape the Institute's direction and provide critical links with industry and academic research institutions. The members of the External Board are Dr. Robert Abraham, Professor, Burnham Institute and VP of Oncology Research,

Wyeth Pharmaceuticals, Dr. Michael Matthews, Chair, Biochemistry and Molecular Biology UMDNJ (Newark), Dr. Ted Torphy, Chief Scientific Officer and VP of the Corporate Office of Science and Technology, Johnson and Johnson and Dr. Warren Levy, CEO, Unigene, Inc, Fairfield, NJ.

The Internal Advisory Board is composed of CSAM faculty who will play an important role in defining the ac-

tivities of the Institute such as, Institute support, mission and appointment of Institute Fellows. The members of the Internal Board are Drs. John J. Siekierka, Jeffrey Toney and David Konas (Chemistry and Biochemistry), Drs. Quinn Vega and Lee Lee (Biology and Molecular Biology), Drs. Dorothy Deremer and Jing Peng (Computer Science), Dr. Diana Thomas (Mathematical Sciences) and Dr. Duke Ophori (Earth and Environmental Studies). ♦

Visit CSAM at
<http://csam.montclair.edu>

Mobility – One Year Later

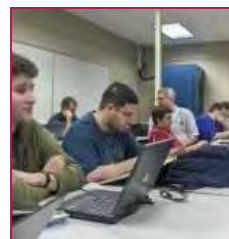
By Stefan A. Robila, Computer Science

In May 2006 the Computer Science Department at Montclair State University was awarded an HP Technology for Teaching grant to encourage the transformation of learning and teaching towards an environment focused on students' discovery through hands on activities. During the 2006-2007 academic year we used the award to overhaul three IT courses: Advanced Web Tools, Web Design and Intranet/Internet Security.

The courses were originally taught in a traditional setting with lecture style instruction. The courses underwent significant revisions that included content, topic sequencing and creation of new hands on activities, assignments and projects based on the tablet PCs' interactive functionality. Many of the class activities were redesigned,

ranging from minor to substantial modifications (development of new interactive exercises, tests and evaluation tools). A common thread in the selected courses is the drive for collaboration and interaction in analyzing problems and designing solutions and the need to stimulate students' creativity and initiative. The technology enhanced the student learning experience, resulting in better understanding of technical topics and improved professional skills. The tablets were used in Fall as wireless reconfigurable devices for the Advanced Web Tools course. In Spring, we used available software (i.e., Ubiquitous Presenter) enhancing the faculty's ability to manage content delivery and interact with students through ink annotation submissions throughout the course. An important

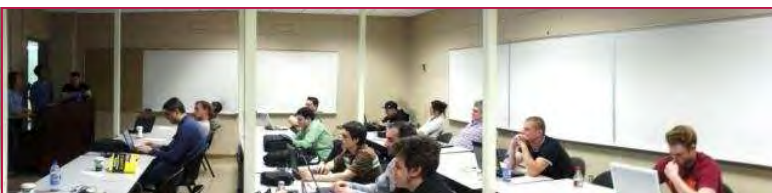
hands-on tasks. With IT support the tablets were re-imaged to accommodate a variety of web applications and



security tools. Most of the time the students were introduced to the applications during the class time. They were provided with

download, install and test information. The classroom exercises were followed by take home assignments.

Evaluation of our activities, revealed an overwhelming positive appreciation from the students and strong support for inclusion of mobile computing throughout the curriculum. We hope to expand our efforts in additional computing courses. A full description of our work together with relevant examples is available online at <http://pages.csam.montclair.edu/~robila/Mobility/>. ♦



component of the courses was the student's ability to work on

Physics News

By Mary Lou West, Mathematical Sciences

Our new portable data-taking instrumentation (PASCO GLXplorer) has been used in several physics courses, most recently in PHYS-240 (Electricity and Magnetism) where the students recorded and analyzed the discharge time-constants of various capacitor circuits. These students carried out individual projects such as soldering

and assembling small robots and a theremin (electronic musical instrument), driving oscillating electrical/magnetic systems through resonance states to chaos, and investigating ferrofluids.

The Physics Club has been active this fall. They attended seminars presented by Dr. D. Hamden on how baseballs respond to heat and Dr. R. Dorner on little homopolar motors. A Halloween party followed the opening of the academic year party where people were encouraged to dress as their favorite experiment. (Tim Buli came as a current-carrying wire). Student Sam Petrocelli organized the club members in assembling and decorating 12-inch model rockets, launching them, and calculating their maximum height from timing measurements. Dr. E. Ma gave a beautiful slide show on his trip to Taiwan and China last summer. The scenery was magnificent. The final meetings featured presentations of student projects.

Comet Holmes has amazed the observational astronomy students. This faint comet exploded on October 24, becoming nearly a million times brighter in less than 24 hours. We took images of it as it moved across Perseus and expanded and faded. This tiny snowball, smaller than Montclair, has thrown out a dust cloud which has become much bigger than the sun.

Weekly Public Telescope nights have attracted many students, families, and a cub scout pack to view Comet Holmes, the moon, Jupiter, globular clusters, the Pleiades, and exploded stars. Students in MSU mythology classes have also come to tell us ancient stories about Taurus, Orion, and Cygnus. ♦



Ferrofluid hedgehog by Tim Buli

Publications

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Yu, D. (2007). "Modeling housing market dynamics in the city of Milwaukee: a geographically weighted regression approach." *GIScience and Remote Sensing*, 44: 267-282. ♦

Kudos

A \$30,000 grant has been awarded from the New Jersey Water Resources Research Institute for a proposal from the team of **Josh Galster, Huan Feng and Kirk Barrett** (Passaic River Institute) entitled "Identifying the source of excess fine-grained sediments in New Jersey rivers using radionuclides."

Dr. **Stefanie Brachfeld** (Earth & Environmental Studies) received a five-year \$247,456 grant from the NSF Antarctic Integrated Systems Science for "Collaborative Research in IPY: Abrupt Environmental Change in the Larsen Ice Shelf System, a Multidisciplinary Approach, Cryosphere & Oceans, Marine and Quaternary Geosciences, & Marine Ecosystems."

Dr. **Carl Bredlau** (Computer Science) presented "JVMVIEWER: An Interactive Bytecode Interpreter For Java," at the 23rd Annual CCSC (Consortium of Computing Sciences in Colleges) Eastern Conference in October 2007.

Dr. **Mark Chopping** (Earth & Environmental Studies) received a three-year \$192,994 grant from the NASA Earth System Science Research Using Data and Products from the Terra, Aqua, and AC-RIMSAT Satellites program for "A New Approach for Mapping Woody Plants in the Southwestern United States."

A positive review of "The Sprinkler Problem: A Mathematician Waters the Lawn" by Dr. **Mike Jones** (Mathematical Sciences) and Jan Stonick appeared in Media Highlights of the November 2007 issue of *The College Mathematics Journal*. He organized the 7-hour AMS Special Session on Voting Theory at the 2008 Joint Meetings. Dr. Jones gave a talk at Towson University in Maryland (Dec. 2007) on "A Sports Trilogy: The Application of Mathematics to Football, Golf, and Horse Racing" and "Successful Mentoring of Undergraduate Students on Research Projects" as part of the MAA Session on Research and Professional Development Activities for Math Majors at the Joint Meetings of the American Mathematical Society (AMS) and Mathematical Asso-

ciation of America (MAA). Furthermore, Dr. Jones was re-appointed for another 3-year term as a member of the Editorial Board of the MAA Spectrum (book) Series.

CSAM mathematics Junior, **Cihan Karabulut**, won a prize in the Undergraduate Student Poster Competition held in the AMS/MAA National Meeting in San Diego for his poster titled "Solving Diophantine Equations Using a Partial Differential Equation." His research is funded by an NSF CURM mini grant with Dr. A. Li as faculty mentor.

In September 2007 Dr. **Aihua Li** (Mathematical Sciences) organized and chaired a special session, "Algebraic Methods and Algorithms in Modeling Discrete Dynamical Systems," at the Sixth European Congress on Modeling & Simulation held in Ljubljana, Slovenia. Her presentation in the special session is titled: "Algebraic Methods in Multivari-

ate Polynomial Interpolation" and in October she gave a short presentation on "Conductive Paths" in the Graph Theory Day 54 conference at Manhattan College.

Mr. **Kevin Olsen** (Chemistry & Biochemistry) completed a report, "Anthropogenic PAH distribution in the sediments found within Gateway NPS as Determined by Thermal Extraction GC/MS," for the National Park Service for the sediment chemistry of the Gateway National Recreation Area.

Dr. **Robert S. Prezant** (Dean) presented "Population snapshots: Laternulid bivalves of Kungkrabaen Bay, Thailand" coauthored with C. Sutcharit and K. Chalermwat at the January 2008 meeting of Society for Integrative and Comparative Biology in San Antonio, TX and "Is molluscan biodiversity enhanced in a Northern New Jersey urban pond?" with E.J. Chapman and **R. Shell** at the 2007 Meadowlands Symposium II. Dean Prez-

ant also organized and presented within a panel session on *Academia and Industry* at the 2007 CCAS meeting. He was also recently appointed as a member of the Hudson Bay at 400 years planning council and with Mark Heimedinger is the recipient of a \$7,500 Investors Savings Bank Foundation Undergraduate Research Initiative grant.

Dr. **Danlin Yu** presented two collaborated papers, "Tobacco outlet density in New Jersey: Exploring the impact of non-normality on spatial non-stationarity in GWR analyses" and "Modeling urban growth with Geographically Weighted Multinomial Logistic Regression" in the 54th North American Regional Science Association International (RSAI) Annual Conference Savannah, Georgia. He also as faculty advisor for the Montclair State University Summer 2007 Campus Mapping Project: Integration of Survey, AutoCAD, Remote Sensing and GIS Data. ♦

Calendar of Events

March 12, 2008

Margaret & Herman Sokol Science Seminar
Mr. Andrés Edwards, Author
"The Sustainability Revolution"
3:00 p.m.—Sokol Seminar Room

March 12, 2008

Margaret & Herman Sokol Forum
"The Environment and Sustainability:
The Next 100 Years"
7:00 p.m.- Kasser Theater

March 27, 2008

CSAM Seminar in Computer Science
Pal Asija, Attorney
"International Intellectual Property Strategy
for Cutting/Bleeding Edge Technologies"
4:00 p.m. –Sokol Seminar Room

April 7, 2008

PharmFest
9:30 a.m. - University Hall

April 10, 2008

CSAM Seminar in Biology & Molecular Biology

Dr. Bonnie Bassler, Princeton University
"Understanding How Bacteria Communicate"
4:00 p.m. – Sokol Seminar Room

April 14, 2008

PharmFest– Career Fair
9:30 a.m. - Student Center

April 24, 2008

CSAM Seminar in Chemistry & Biochemistry
Dr. Mark Whitener, MSU
"Cancer Chemotherapy Through the Eyes
and Veins of a Chemist"
4:00 p.m. – Sokol Seminar Room

May 3, 2008

2nd Annual Student Research Symposium
9:00 a.m.—University Hall

May 16, 2008

CSAM Convocation
7:00 p.m. - Amphitheater

May 16, 2008

MSU Commencement