

Pitt Alumnus Elected to Institute of Medicine



Lucile L. Adams-Campbell

University of Pittsburgh alumnus Lucile L. Adams-Campbell has been elected to the Institute of Medicine (IOM), an honor membership organization established in 1970 as a component of the National Academy of Sciences that serves as a national advisory body on matters of health and science policy. Adams-Campbell is associate director for minority health and health disparities research and professor of oncology at Georgetown University Medical Center's Lombardi Comprehensive Cancer Center.

"The election of distinguished Pitt alumnus Lucile Adams-Campbell to the Institute of Medicine is richly deserved recognition for her accomplishments as an internationally respected authority on health disparities," said Pitt Chancellor Mark A. Nordenberg. "Dr. Adams-Campbell has been honored by her alma mater as a Distinguished Alumni Fellow and as the recipient of the Graduate School of Public Health Alumni Society's Distinguished Alumni Award. Having come to know her and her work, I, along with the Pitt community, salute Dr. Adams-Campbell and her groundbreaking research in community health."

Adams-Campbell is one of only 65 new members and five foreign associates announced at the IOM's Oct. 13 annual meeting. Current active members elect new members from among candidates nominated for their professional achievement and commitment to service.

"It is a great pleasure to welcome these distinguished and influential individuals to the Institute of Medicine," said IOM president Harvey V. Fineberg in announcing

IOM's new members and foreign associates. "Members are elected through a highly selective process that recognizes people who have made major contributions to the advancement of the medical sciences, health care, and public health."

"To be recognized by the incumbent membership of the Institute of Medicine for my scientific accomplishments in cancer health disparities and public health is incredible and overwhelming," said Adams-Campbell. "As a member of the IOM and a resident of a city with unparalleled disparities, I will strive to enhance the national focus on health disparities research and prevention education. It is an honor and a privilege to be a part of this phenomenal organization."

Adams-Campbell, who received her PhD in epidemiology from Pitt in 1983 and completed a National Institutes of Health-funded postdoctoral fellowship here before joining Pitt's Department of Epidemiology as an adjunct professor of epidemiology, is an internationally recognized expert on health disparities. She specializes in community health research, interventions, and outreach and has played a leading role in the Washington, D.C., cancer and public health community.

Adams-Campbell studies issues that affect populations at the greatest risk for developing cancer with a focus on prevention. She has participated and led several large cohort studies of African American women and played a leading role in bringing to D.C. the Boston University Black Women's Health Study, the largest study of African American women.

Much of Adams-Campbell's research focuses on energy balance involving diet and exercise. Washington, D.C., has higher-than-average rates of obesity, diabetes, cancer, cancer death, and heart disease, all of which may be affected by diet and exercise, she says. Through community-based interventions, she hopes to decrease obesity and mortality from these related diseases.

Prior to joining Lombardi Cancer Center earlier this year, Adams-Campbell served as director of the Howard University Cancer Center.

Adams-Campbell received her bachelor's and master's degrees from Drexel University. She currently serves as a reviewer for or an editorial board member of eight journals and has published more than 100 peer-reviewed research papers.

Among this year's other IOM honorees is David H. Perlmutter, the Vira I. Heinz Professor and chair of the Department of Pediatrics in the University of Pittsburgh's School of Medicine. (See Oct. 20, 2008, *Pitt Chronicle*)

Adams-Campbell, who received her PhD in epidemiology from Pitt in 1983 and completed a National Institutes of Health-funded postdoctoral fellowship here before joining Pitt's Department of Epidemiology as an adjunct professor of epidemiology, is an internationally recognized expert on health disparities.



Patents Awarded to Pitt Innovators Rise 72% in FY 2008, Report Says

By Lauren O'Leary

A tiny sensor composed of carbon nanotubes that will alert asthma sufferers to impending attacks. Training materials for educators that are changing classrooms around the country. These are just some of the innovations highlighted in the University of Pittsburgh Office of Technology Management (OTM) 2008 Annual Report.

"Innovation commercialization activity at Pitt has continued at a brisk, healthy pace, fueled in part by increased education and awareness efforts, cultural shifts, strides in customer service, and the more than \$642 million in research funding received last year by the University," said Marc S. Malandro, associate vice chancellor for technology management and commercialization at Pitt. "The results of our unique collaboration with Pitt innovators shows that, once again, University faculty, staff, and students are contributing significantly to the betterment of humankind through both their innovations and their participation in the commercialization process."

Last year, according to Malandro, more than 400 Pitt innovators participated in some part of the commercialization process through the OTM and its affiliate, the Office of Enterprise Development, Health Sciences (OED).

As the hub of commercialization activity at Pitt, the OTM works with innovators to bring their ideas from the laboratory to the marketplace. Among the highlights in this year's report, which details advances by the OTM and the OED, are a 72 percent increase in U.S. patents awarded to Pitt

innovators, from 21 in fiscal year 2007 to 36 in FY 2008, and a nearly \$2 million increase in revenue generated from licensed and optioned innovations, from \$7.13 million in FY 2007 to \$9.09 million in FY 2008.

Patent applications increased as well, to 100 in FY 2008, up from 95 in FY 2007, and more than double the number just five years ago, 49.

Three new start-up companies were spun off of Pitt innovations in FY 2008, bringing the total number of startups created since 2003 to 42. Cardiorobotics, Inc., cofounded by Pitt professor of surgery Marco Zenati, is developing highly articulated robotic probes designed for use in minimally invasive surgeries. EPR-Technologies, Inc.,

is using newly developed medical procedures involving emergency hypothermia to put trauma victims in a temporary state of suspended animation until appropriate treatment can be obtained. EPR (Emergency Preservation and Resuscitation) uses a process and equipment developed by Patrick Kochanek,

Xianren Wu, and William Stezoski in Pitt's Department of Critical Care Medicine and Samuel Tisherman in Pitt's Department of Surgery. Prevencio, LLC, was created to use a series of protein signatures to discover signs of vascular disease. The process was developed by William LaFramboise in Pitt's Department of Pathology and Oscar Marroquin, Dennis McNamara, and Suresh Mulukutla in Pitt's Department of Medicine.

A complete PDF copy of OTM's 2008 Annual Report is available at <http://www.otm.pitt.edu>.



Pitt's 2008 OTM Annual Report

Briefly Noted

Pitt Hosts Social Scholar for 2008 Raymond R. Webb Jr. Lecture

The University of Pittsburgh will host Elizabeth Beck, a professor in Georgia State University's School of Social Work, for the 2008 Raymond R. Webb Jr. Lecture at noon Nov. 5 in Pitt's School of Social Work Conference Center.

The lecture, titled "Conflict Transformation, Restorative Justice, and the Role of Social Workers in Addressing Neighborhood Violence," is free and open to the public.

Beck is a coauthor of *In The Shadow of Death: Restorative Justice and Death Row Families* (Oxford University Press, 2007), an in-depth look at the lives of the family members of capital offenders. She has consulted on numerous death penalty cases and conducts training sessions for capital defense lawyers across the country. She teaches courses in social welfare policy, social welfare history, and community development.

Pitt alumnus Raymond R. Webb was an advocate for and practitioner of community mental health. From 1969 to 1989, he directed the Allegheny East Mental Health/Mental Retardation Center, Inc. Webb passed away in March 2006. In his memory, loved ones partnered with Pitt's School of Social Work to create the Raymond R. Webb Jr. Endowed Fund, which provides financial support for graduate students in Pitt's School of Social Work and supports the annual Raymond R. Webb Jr. Lecture.

For more information, contact 412-624-6304 or visit www.socialwork.pitt.edu.

—Anthony M. Moore

Pitt Honors College to Host Lecture by International Security Expert

The University of Pittsburgh Honors College will present a lecture titled "How the Next President Can Win the War on Terror," featuring Robert Pape, professor of political science at the University of Chicago, at 2:15 p.m. Nov. 7 in the Honors College, Cathedral of Learning. A Harry S. Truman Scholar, Pape graduated summa cum laude and Phi Beta Kappa, receiving the Bachelor of Arts degree in political science from Pitt's School of Arts and Sciences in 1982.

The event is free and open to the public, but space is limited.

A specialist in international security affairs, Pape has numerous publications, including *Dying to Win: The Strategic Logic of Suicide Terrorism* (Random House, 2005); *Bombing to Win: Air Power and Coercion in War* (Cornell University Press, 1996); "Why Economic Sanctions Do Not Work," *International Security* (1997); "The Determinants of International Moral Action," *International Organization* (1999); "The Strategic Logic of Suicide Terrorism," *American Political Science Review* (2003); and "Soft Balancing Against the United States," *International Security* (2005).

Pape's commentary on international security policy has appeared in *The New York Times*, *Washington Post*, *New Republic*, *Boston Globe*, *Los Angeles Times*, and *Bulletin of Atomic Scientists*, as well as on Nightline, ABC News, CBS News, CNN, Fox News, and National Public Radio. His current work focuses on the causes of suicide terrorism and the politics of unipolarity.

For more information, call Edward McCord, 412-624-6886.

—Patricia Lomando White



Pitt to Host 23rd Annual Polish Festival Nov. 9

Music, dance, and delicious Polish fare are the highlights of the University of Pittsburgh Polishfest, from noon to 5 p.m. Nov. 9 in the Cathedral of Learning Commons Room.

The Nationality Rooms Program and the Polish Nationality Room Committee are sponsoring the free public, family-oriented event.

The 23rd annual Polishfest, held to promote and celebrate Polish culture and traditions, will feature performances by the Lajkonik folk dancers and folk singer Radoslaw Fizek, crafts for children, art demonstrations, cultural displays, egg decorating, and Polish imports, as well as instruction in Polish folk dancing.

In addition, visitors can purchase such authentic Polish dishes as stuffed cabbage, sausage sandwiches and sauerkraut, noodles and cabbage, pierogi, and baked goods. Other items to be sold at the festival include

inlaid wooden boxes, wood carvings, and Polish plates.

Proceeds from the festival benefit the Polish Room Scholarship Fund.

More information is available at 412-624-6150.

—Patricia Lomando White

Three Grapes of Wrath Opera Programs Planned for November

PITT ARTS is planning three programs in November for the Pittsburgh premiere of Pittsburgh Opera's *The Grapes of Wrath*.

On Tuesday, Nov. 11, from noon to 1 p.m. in the William Pitt Union Assembly Room, PITT ARTS will offer a free opera luncheon featuring Ricky Ian Gordon, composer of the *Grapes of Wrath* opera, and the opera's librettist (writer of the text for the score) Michael Korie. Gordon will play and sing some pieces from the opera.

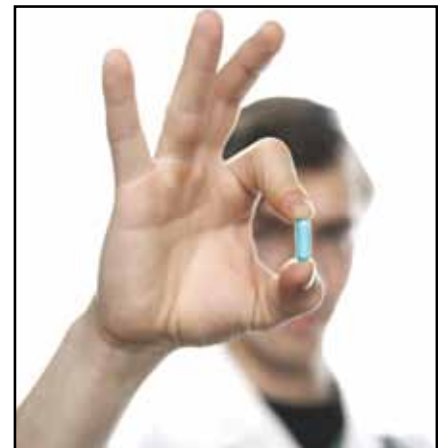
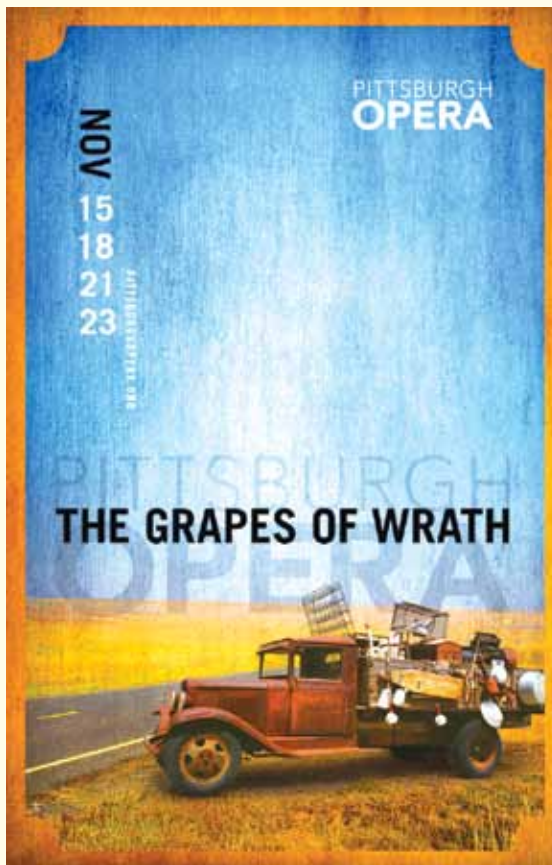
A Pitt music department colloquium on the opera will be held from 4 to 5 p.m. Nov. 14 in Room 132 of the Music Building. The event is free to

the public and a reception will follow. Gordon and Korie will explore the contemporary relevance of the issues and themes in the John Steinbeck novel, such as the foreclosure crisis, economic downturn, and domestic diaspora.

Pitt Night at the Opera for *Grapes of Wrath* will be held Nov. 15, when participants can meet the "Opera Lady," Beth Parker, and the opera's general and artistic director, Christopher Hahn. Free desserts and transportation to the opera are included in the cost of a Cheap Seats ticket for Pitt Night. Reservations should be made at the PITT ARTS office in the William Pitt Union by Nov. 12.

For more information about all three programs, call 412-624-4498 or visit www.pittarts.pitt.edu.

—Annabelle Clippinger



Pitt Researchers Get \$2.7 Million For Radiation Drug

By Courtney McCrimmon

Researchers at the University of Pittsburgh School of Medicine have been awarded \$2.7 million from the Biomedical Advanced Research and Development Authority, Department of Health and Human Services, to develop a radiation mitigator drug that could counter the effects of radiation exposure in case of large-scale public exposure.

The ultimate goal of the contract is to develop an easily administered drug that the Centers for Disease Control and Prevention in the Department of Health and Human Services can store and fly to hospitals and care facilities if and when an emergency occurs.

A team of researchers led by Joel Greenberger, professor and chair of the Department of Radiation Oncology in Pitt's School of Medicine, will develop the GS-nitroxide drug JP4-039, identified by the Pitt research team in 2004 as a radioprotector. Using both mouse-model and human cell and tissue research, they have shown that the drug, when delivered 24 hours after irradiation, enhances cell recovery.

According to Greenberger, JP4-039 can be delivered directly to the mitochondria, the energy-producing areas of all cells. When this occurs, the drug assists the mitochondria in combating irradiation-induced cell death.

"Currently, no drugs on the market counteract the effects of radiation exposure," said Greenberger, whose lab is part of the University's Center for Medical Countermeasures.

PittChronicle

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Homecoming 2008



JIM BURKE/CODDE



1.

JOE KAPELEWSKI/CODDE



2.

MARY JANE BENT/CODDE



3.



PATTY MAGLE

1. Pitt played Rutgers in the Oct. 25 Homecoming game and lost 54-34.

2. Pitt alumni gather in the Cathedral of Learning's Commons Room for a first-ever Welcome Back reception on Oct. 24. 3. Pitt's Graduate School of Public and International Affairs (GSPIA) celebrated its 50th anniversary during Homecoming. Pictured are GSPIA Dean John T.S. Keeler (middle), Donald Stone Jr., and Nancy Stone Dickinson. Stone and Dickinson are the children of GSPIA founding dean Donald Stone. 4. Pitt's African American Alumni

Council gave Sankofa Awards to five Pitt faculty and administrators during an annual awards ceremony on Oct. 26. Honored were (seated, from left) Toi Derricotte, professor of English; Betsy Porter, director of the Office of Admissions and Financial Aid; (standing, from left) Kathy W. Humphrey, vice provost and dean of students; Laurence A. Glasco, a professor of history; and (not pictured) Sandra Murray, professor of cell biology and physiology. Shirley A. Biggs, a professor emerita in the School of Education, accepted the award on Murray's behalf.

2008 AWARDEES OF DISTINCTION

The Pitt Varsity Letter Club honored six former letter winners as 2008 Awardees of Distinction during the club's 48th annual Award Dinner on Oct. 24 in Alumni Hall. The awards honor varsity letter winners who have distinguished themselves in their professions and communities. Pictured are (from left) Rande Stottlemeyer (EDUC '78), wrestling; Nick Generalovich, (PHARM, Class of '68), basketball; Donald Nania (EDUC '78, EDUC '86G), baseball; Rebeca Zuccarelli Verbus (SHRS '74, GSPH '80), gymnastics; Henry Ford (CBA '55), football; and James Covert (A&S '91), football.



PETE MADIA

HOMECOMING ROYALTY

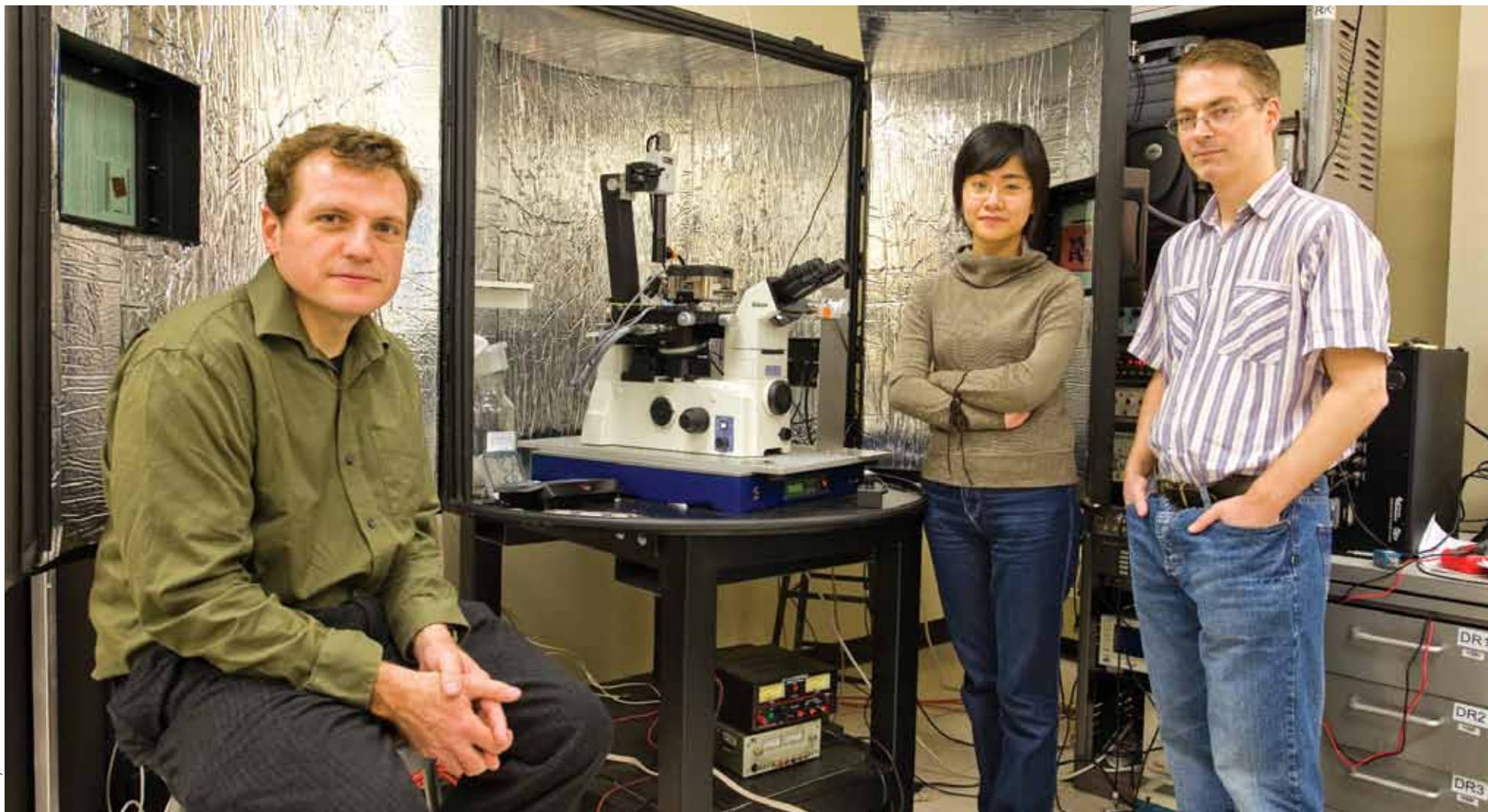
Chancellor Mark A. Nordenberg (far right) and F. James McCarl (CGS '73), president of Pitt's Alumni Association, congratulate Pitt's 2008 Homecoming Queen Sandra Abla and King Akere Ate. The pair was crowned during the half time of Pitt's Oct. 25 football game against Rutgers.



JOE KAPELEWSKI/CODDE

Creative Problem Solving Across Disciplines

Physical sciences and engineering graduate programs approach research from multiple perspectives



JIM BURNEY/CODICE

From left, John Leonard, an assistant professor of mechanical engineering and materials science; Cheng Cen, a fourth-year physics doctoral student; and Pitt physics professor Jeremy Levy are researching oxide nanowires that are only two nanometers wide, created with an atomic-force microscope. Scientists believe nanowires could lead to increasingly smaller computers. "When you're working with experts from other disciplines, you don't have to be an expert in their fields, but you do have to know a little bit about what they do," Levy says.

By Reid R. Frazier

Veronica Miller has spent the past few years as a University of Pittsburgh graduate student learning the intricacies of fluid dynamics, gaining expertise in concepts such as fluid flow and how turbulence is measured.

But Miller, who is pursuing a PhD in mechanical engineering, wasn't content to simply learn the concepts—she wanted to put her new knowledge to good use. So she also is studying renewable energy at Pitt's Center for Energy, focusing in particular on hydroelectric turbines that can be dropped onto a riverbed or ocean floor to harness electricity from underwater currents. An expert-in-training in mechanical engineering, Miller is wading into other fields—environmental economics, ecology, electrical engineering, computer modeling—in an effort to make her research connect to real-world energy needs.

"If I want to tackle something as big as clean energy, I can't just focus on mechanical engineering. In real cases, you have to be more than an expert in just one area," she says.

Miller is one of more than 500 Pitt

PhD students who are gaining expertise in the rapidly changing fields that have grown up in the physical sciences and engineering during the 20th and early 21st centuries. Pitt PhD students are very well grounded in the fundamentals of their chosen fields—chemistry, biology, physics, or a number of engineering specialties—but they are also oriented to addressing problems that are outside of their fields. Their mission to be creative in other areas forces them to master things at the boundaries of their fields and others, to work or consult with experts in other fields, and to synthesize new solutions to problems with an amalgam of all these resources.

The examples that follow explore the rich variety of questions that current Pitt science and engineering PhD students are addressing.

The Creative Spark

A key component of a Pitt doctoral program—in any field—is the opportunity for students to look at problems creatively, from various vantage points. "Research isn't just about answering problems at the back of the textbook,"

says Provost and Senior Vice Chancellor James V. Maher. "You have to be able to study a problem, look for holes in the data,

and wonder from where you might be able to draw a solution. It's essentially a creative process."

Peter Koehler, professor and director of graduate studies in physics at Pitt, says research requires scientists to have a certain intellectual fitness to approach a problem from multiple perspectives. For instance, a physicist looks at a CO₂ molecule or cancer cell differently than a chemist does. But both approaches can help advance research on the topic.

"A real skill that needs to be developed is how you define a problem," says Koehler. "You don't want to be too narrow in your training. You always want to keep an eye out for new horizons in research that may not have even been possible when you started."

Quite often, the path to becoming a successful researcher will lead to other fields and disciplines, says Mark Redfern, a professor of bioengineering and associate dean for research in the Swanson School of Engineering. The reason is that many of the most-pressing problems don't fit neatly into intellectual categories.

"Research now often requires com-

"Being a scientist isn't like joining a guild, where you acquire a set of skills and go out and repeat those skills over and over again. You have to be able to go out and digest someone else's scientific understanding and incorporate it into your own line of inquiry."

—Stephen Weber

binning information and techniques from different fields," says Redfern. "The problems we're dealing with are complex and require new and innovative approaches."

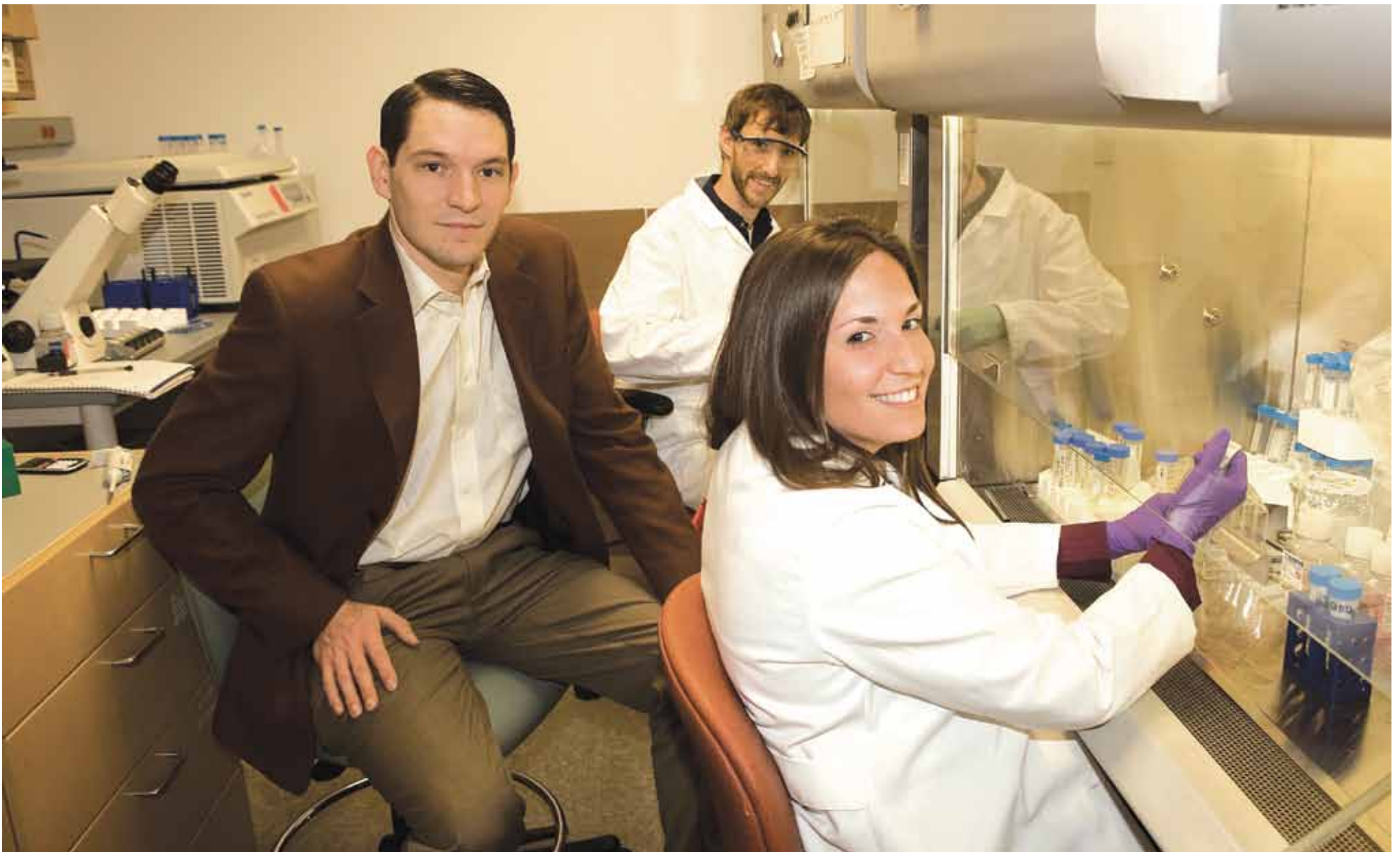
Going Outside a Comfort Zone

Training PhD students to cross disciplinary boundaries is part and parcel of scientific tradition, says David Waldeck, professor and chair in Pitt's Department of Chemistry. "Chemists have often called chemistry the 'central science' because it links physics and math to fields like biology and related sciences."

In recent years, emerging fields like nanoscience and engineering, biophysics, structural biology, and green chemistry have spurred collaboration, offering novel and different ways for scientists to address problems.

To prepare chemistry PhD students for interfacing with these fields, the program requires them to complete a research proposal outside their areas of concentration. "It's a way of learning how to be an independent researcher in a controlled environment," Waldeck says. "How do we know the

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From left, Steven Little, a chemical engineering professor, works with Sam Rothstein, a fourth-year chemical engineering doctoral student, and Jillian Tengood, a fifth-year bioengineering doctoral student. The team is using computer modeling and hands-on experiments to test new ways to deliver drugs for vaccines or healing battlefield wounds.

Continued from page 4

program works? Because students initially say they hate it. But after they've finished, they say they're glad they did it."

Stephen Weber, a Pitt professor and director of graduate studies for the chemistry department, says being prepared to move into an alternate research field is critical for research PhDs.

"That's what a true PhD scientist is—someone who can go into a new field, read about it, learn about it, ask cogent questions about it. That's what we're training our students to do," Weber says. "Being a scientist isn't like joining a guild, where you acquire a set of skills and go out and repeat those skills over and over again. You have to be able to go out and digest someone else's scientific understanding and incorporate it into your own line of inquiry."

In physics, students are encouraged to take courses in related disciplines. In engineering, students should have at least a basic understanding of other disciplines with which they interact, says Laura Schaefer, codirector of the Center for Energy and a professor of mechanical engineering. That means they must know the language of other disciplines: a 'parameter' in engineering could be a 'variable' in chemistry.

"I'll encourage students to take a course in other departments or schools; even the same course could be taught totally differently," Schaefer says.

This type of cross-fertilization is a critical component of graduate education. While a student still needs to be an expert in a specific field to get a PhD, each student realizes that no branch of science exists in a vacuum. Increasingly, students need to

work outside their disciplines to find new lines of inquiry and stay on the leading edge of discovery.

The Search for Energy Solutions

The emergence of research centers in energy, nanoscience, and computer simulation and modeling has accelerated this trend. Gerald Holder, the U.S. Steel Dean of the Swanson School of Engineering, says one of the Center for Energy's purposes is to encourage collaboration between faculty and their graduate students from a variety of disciplines, schools, and departments. The energy question permeates all levels of global society, Holder says, adding that it makes sense to pull as many bright minds into energy research as possible.

"Society's interested in this, and so are the students. What we're trying to do with the center is to focus on creating new technologies by bringing people from around the University together to tackle the big issues," Holder says.

The prospect of working in the alternative energy field attracted Miller to Pitt, where she is trying to determine which turbine designs can harvest the most energy with the least impact on the aquatic environment. The devices work a lot like submerged water wheels or windmills. Because the devices are in water, they are propelled by drag or lift, the same forces that make airplanes fly. The flow of water propels the turbine's blades, which turn a shaft that generates electricity. Using computer-modeling software, Miller is analyzing how a series of turbine designs would impact the aquatic environment.

"If we know how water flows through the turbine device, we can estimate how fish

will swim around them, and whether they'll get stuck in the turbine blades," says Miller, whose research could also lead to the development of a tidal turbine that would generate electricity from currents at the bottom of the ocean floor or tidal estuary.

She's also working on a research proposal with David Sanchez, a graduate student in Pitt's civil and environmental engineering department, to create a remote sensor for pollution in rivers that would measure electrical current fluctuations caused by certain kinds of pollutants. In addition, Miller is working with a Pitt mechanical engineering grad student on a project to install river turbines in Ghana.

"Pitt really fosters an environment where we're thinking about working with people in other fields: I'm not a civil engineer or an electrical engineer, but in order to solve some of these energy problems, I need to be able to work with these kinds of researchers."

Miller enjoys working on a problem that has a solution with an immediate real-world impact. "It's one thing to do all these things on paper; it's another to be able to generate clean, renewable electricity for people who really need it."

Florian Zink, another mechanical engineering PhD student, is researching thermoacoustic refrigeration—using sound waves as a component of cooling systems. Zink needs to understand the physics of acoustic waves in addition to the intricate science of heat transfer and fluid thermodynamics. Zink says his research at Pitt

"Pitt really fosters an environment where we're thinking about working with people in other fields: I'm not a civil engineer or an electrical engineer, but in order to solve some of these energy problems, I need to be able to work with these kinds of researchers."

—Veronica Miller

has opened his eyes to the possibilities for research in alternative energy, a rapidly developing field that is attracting experts in engineering, chemistry, physics, and ecology.

Solutions From the Nano Toolbox

Interdisciplinary research also is prominent in nanoscience at Pitt. The Petersen Institute for NanoScience and Engineering involves dozens of faculty members from various Pitt schools, including the Schools of Arts and Sciences, Engineering, Medicine, Public Health, and Pharmacy. Students from those schools have been able to tap a wide array of tools and faculty collaborations through the center.

Among these faculty members is Jeremy Levy, a professor of physics, who studies "nanostructures at the interface between insulating materials"—popularly termed 'nanowires.' These are thin layers of materials one molecule wide that can conduct electricity. Scientists think these structures could lead to increasingly smaller computers that can be implanted in a variety of places or devices. Levy, who collaborates with materials scientists and chemists, thinks his research is an example of how interdisciplinary approaches are needed in emerging fields like nanoscience.

"These nanomaterials are an area I didn't know anything about two years ago," Levy says. "Because I'm collaborating with other people, I don't know how to make these materials, but I don't have to. I still have to understand what they're doing, but I can con-

Continued on page 6

"One of the Center for Energy's purposes is to encourage collaboration between faculty and their graduate students from a variety of disciplines, schools, and departments."

—Gerald Holder

Creative Problem Solving Across Disciplines

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centrate on another side of the equation.”

Physics PhD students are still expected to have expertise in their field—they must know advanced electromagnetism, classical mechanics, and condensed matter physics. But when they go into fields like nanoscience, they'll also need to know how to cover ground in chemistry, biology, medicine, and materials science, Levy says.

“It's important to be an expert in your own domain: The core task of training students in physics is still important. But you also have to learn how to learn, to learn what is needed to interface with collaborators in other disciplines. It's a matter of becoming aware of what the possibilities are in research. When you're working with experts in other disciplines, you don't have to be the expert in their fields, but you do have to know a little bit about what they do.”

One of Levy's students, Cheng Cen, is studying the electronic characteristics of these nanowires, specifically how electrical charges influence how nanowires behave. She says the research shows the nanowires have the potential to be manipulated into “single-electron transistors”—the tiniest of computing devices. “It's like you're writing on a canvas the width of a couple of nanometers,” says Cen, a fourth-year student. Though she's in the physics department, Cen uses techniques and tools from chemistry and engineering labs. “We have to learn to use a variety of techniques: If it's learning a new chemical process, you have to learn it; if it's using a machine from engineering, you have to do it.”

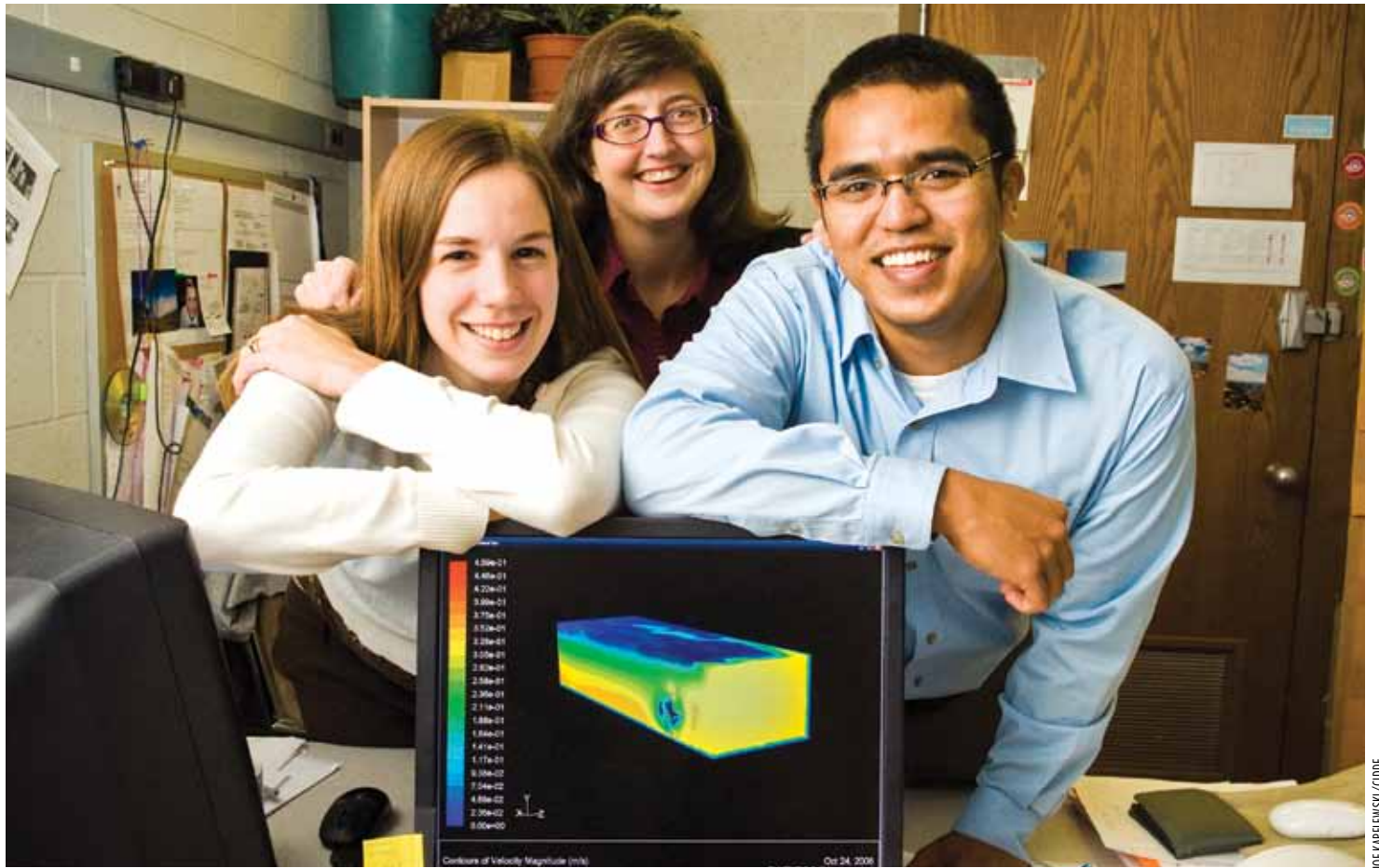
Like Cen, Matt Kofke studies nanomaterials, but from the perspective of a chemist. Kofke, a second-year chemistry PhD student, is researching the optical transmission capabilities of some nanomaterials. Researchers in the field think the interaction of light on nanomaterials could be the key to developing sophisticated biosensors for certain antibodies, the development of more efficient solar cells, and improved fiber-optic communications.

Kofke has had to learn concepts of wave physics, materials science, and engineering along the way. The research has involved reading a lot of textbooks in other fields, and, when he's stumped, asking someone for help. “That's generally the best way to learn, and it's worked pretty well for me,” he says. “The most important thing to learn in graduate school is how to independently direct your own research, to solve your own problems without relying on someone else doing it for you.”

Brett Allen is studying carbon nanotubes—tiny straw-like structures largely made up of carbon atoms. Scientists think these structures could have widespread use in medicine and energy. Allen, a third-year chemistry PhD student at Pitt, has studied nanotubes' possible use as a biosensor for a gas that is common in the breath of asthmatics. This could be used as a diagnostic tool. He also is studying the possibilities for nanotubes to be used in carbon sequestration—the process of taking CO₂, the most abundant greenhouse gas, out of the atmosphere, to slow the effects of global climate change. The ability to look

“You look at the societal problems we're facing—energy, the environment, health care, and medicine. These are large, complex problems. The teams that tackle them have to be interdisciplinary because we're working on problems that are all over the map. We have to find expertise and opportunities at every turn. And for grad students at Pitt, that opportunity can be found throughout the University.”

—Larry Shuman



Designing hydroelectric turbines that can harness electricity from underwater currents is the focus of research being done by Veronica Miller, (left) a third-year doctoral student in mechanical engineering; Laura Schaefer, (center) professor of mechanical engineering; and David Sanchez, a third-year graduate student in civil and environmental engineering. Computer modeling and simulation assists them in their research.

at a research problem like nanotubes from various disciplines—chemistry, biophysics, materials science—is critical in being ready to follow the research wherever it leads, Allen says.

“Graduate school really focuses you on critical thinking—you're taught to not just memorize things but to understand all the variables that can go into a problem,” Allen says. “A lot of the research in my field is brand-new. If you don't have the ability to think through what's going on, you're never going to be able to understand what's happening when you stumble on something new.”

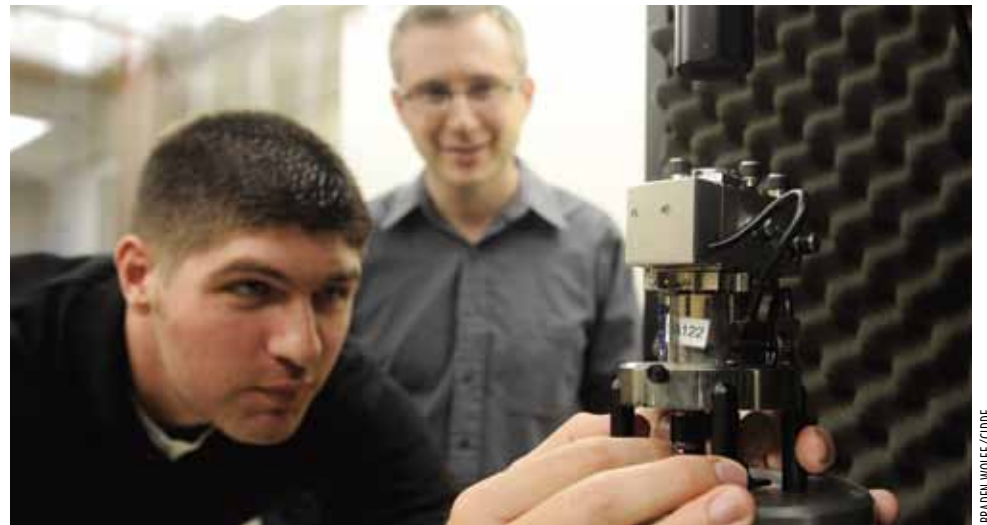
Computer Simulation for Complex Phenomena

In another nascent area of scientific research—computer modeling and simulation—Pitt students also are taking an interdisciplinary approach to solving big scientific questions.

Sam Rothstein, a fourth-year PhD chemical engineering student, is using computer modeling to test ways to deliver drugs to AIDS patients and people with osteoporosis. Currently,

many of these drugs require daily or even twice-daily injections. Researchers want to make drugs that require only weekly or monthly injections. Rothstein designed a model that predicts how quickly drugs are released in the body with different types of delivery systems (“vehicles”). Having developed a model that works in the lab, he will soon test the system in a real-world setting.

With computer modeling, Rothstein says, he can make progress solving problems faster than he would using only a lab. “The two problems I'm working on, a sustained-



Brett Lee Allen (left), a third-year doctoral student in analytical chemistry, works with an atomic-force microscope, which allows researchers to visualize carbon nanotubes—tiny wires with diameters 100,000 times smaller than a human hair. Allen is working with Alexander Star (right), a Pitt assistant professor of chemistry, to use carbon nanomaterials for medical and energy applications, including sensors for greenhouse gases.

release medication and a single-injection vaccine, have a combined 50 years of research, and no one has come close to creating a better delivery system,” Rothstein says. “Computer modeling is a way to examine more parameters, more possibilities, than the normal benchtop approach.”

Rothstein has taken an interdisciplinary approach to his research—a full semester of medical school courses and sessions with computer-modeling faculty to develop his simulations. The approach works because it allows researchers like Rothstein to make faster progress on the question they're addressing. Instead of working on one part of the problem, like modeling a drug-delivery system, Rothstein can also take the results from his model and perform an experiment in the lab to take the research to the next level.

“I can talk to people who are experts in modeling, and I can talk to people who are experts in application. Being an interdisciplinary researcher means I can move the project forward,” Rothstein says.

Looking to the Future

The goal for students like Rothstein, Miller, Cen, and others is to help solve the big scientific problems of the 21st-century. To accomplish this, they have to master the tools and logic of their own disciplines while maintaining the intellectual acuity to understand and collaborate with scientists in other fields. That is what has fueled the great scientific discoveries of the past, and it is what funders like the National Science Foundation are looking for, says Larry Shuman, professor and senior associate dean for academic affairs in Pitt's Swanson School.

And it's what Pitt is instilling in its PhD students in the physical sciences and engineering, Shuman says: “You look at the societal problems we're facing—energy, the environment, health care, and medicine. These are large, complex problems. The teams that tackle them have to be interdisciplinary, because we're working on problems that are all over the map. We have to find expertise and opportunities at every turn. And for grad students at Pitt, that opportunity can be found throughout the University.”

Happenings

Bonus Show:

LYSISTRATA



BY ARISTOPHANES
Directed by Kait Wittig

"Make love, not war" is the message of Aristophanes' raunchy political comedy from 411 BC. How do the Athenian women bring about an end to the unpopular Peloponnesian War? By withholding sex—how else?! More than two millennia later, Aristophanes' classic romp rings true with a naughty and hilarious flair.

Lysistrata, Pitt Repertory Theater, through November 9

"The Silk Road and Early Connections With the Korean Peninsula," Sarah Nelson, University of Denver professor of anthropology, 2:30 p.m. **Nov. 4**, Seminar Room, Frick Fine Arts Building, Pitt's Department of the History of Art and Architecture, University Center for International Studies, Asian Studies Center, www.ucis.pitt.edu.

"In the Shadow of Naram-Sin: Interpretive Paradigms and Biases in the Study of Some Mesopotamian Royal Monuments," Melissa Eppihimer, doctoral candidate in Harvard University's Department of the History of Art and Architecture, noon **Nov. 5**, Room 203 Frick Fine Arts, History of Art and Architecture Colloquium, Pitt's Department of History of Art and Architecture, 412-648-2400, www.haa.pitt.edu.

"The Whole World Is Our Country: Race, Ethnicity, and Internationalism in Jewish and Italian American Anarchism, 1890-1940," Kenyon Zimmer, doctoral candidate in Pitt's Department of History, 4 p.m. **Nov. 5**, 3703 Posvar Hall, Pitt's Department of History, www.pitt.edu/~pithist.

"How to Cope With Stress for Better Physical and Mental Health," Bruce S. Rabin, Pitt professor of pathology and psychiatry, 6-8 p.m. **Nov. 5**, Carnegie Library, 7101 Hamilton Ave., Homewood, 2008-09 Mental Health and Wellness Lecture Series, Western Psychiatric Institute and Clinic, register with Mary Fisher at 412-383-2732.

Paul Rusesabagina, humanitarian and feature character of film *Hotel Rwanda*, 8 p.m. **Nov. 5**, Heinz Hall, 600 Penn Ave., Downtown, Robert Morris University's Pittsburgh Speakers Series, 412-392-4900, www.pittsburghspeakersseries.org.

"Impact of Incarceration on Communities," panel discussion, 8:30-10 a.m. **Nov. 6**, Duquesne University School of Law, Room 203 Hanley Hall, 900 Locust St., Uptown, Pennsylvania Prison Society, RSVP at 215-564-6005 ext. 112, www.prisonersociety.org.

"International Human Rights Narratives and Women's Health," David Barnard, Pitt professor of medicine, noon **Nov. 6**, Room 113 Barco Law Building, Pitt's Center for Bioethics and Health Law, Grand Rounds Fall 2008, 412-647-5700, www.pitt.edu/~bioethic.

"Not a Pittsburgh Idea: History and the Eponymous Nickelodeon," Michael Aronson, author, lecture and book signing, noon **Nov. 6**, Room 501 Cathedral of Learning, 412-624-6551.

"Simian Amphibians: The Mermaid Trade in Early Modern Japan," Martha Chaiklin, Pitt professor of history, noon **Nov. 6**, 4130 Posvar Hall, Asia Over Lunch Lecture Series, Asian Studies Center, 412-648-7370, www.ucis.pitt.edu/asc.

"Mrs. Polonius Goes to Italy: An Intimate Guide to Shakespeare's Europe," Julia Reinhard Lupton, University of California at Irvine professor of English and comparative literature, 4 p.m. **Nov. 6**, G24 Cathedral of Learning, Department of French and Italian Languages and Literatures, 412-624-5220, www.frenchanditalian.pitt.edu.

"The Formation of Helagell, SW-Iceland, a Monogenetic Subglacial Hyaloclastite Ridge: Sedimentology, Hydrology, and Ice-Volcano Interaction," Herdis Schopka, doctoral candidate in Cornell University's Department of Earth and Atmospheric Sciences, 4 p.m. **Nov. 6**, 203 Thaw Hall, Fall 2008 Colloquium Series, Pitt's Department of Geology and Planetary Sciences, www.geology.pitt.edu/colloquium.html.

Reading on Mars, literary readings celebrating *Life on Mars*, the 2008 Carnegie International, 7:30 p.m. **Nov. 6**, Carnegie Library Lecture Hall, 400 Forbes Ave., Oakland, American Shorts Reading Series, 412-622-8866, www.pittsburghlectures.org.

"Hopeless Return and Endless Mourning: The Principles of Hope in Lee Chang-dong's Secret Sunshine," Seung-hwan Shin, doctoral candidate in Pitt's Department of English, 2 p.m. **Nov. 7**, 4130 Posvar Hall, Pitt's Department of East Asian Languages and Literatures, Asian Studies Center, www.pitt.edu/%7edeall.

"Iron Chef Around the World: Japanese Food Television, Soft Power, and Cultural Globalization," Gabriella Lukacs, Pitt professor of anthropology, 3 p.m. **Nov. 7**, 3106 Posvar Hall, Pitt's Department of Anthropology, 412-648-7500, www.pitt.edu/%7Epittanth.

"Doom, Gloom, and Prosperity: 45 Years of Environmental Predictions," Tim Savisky, Pitt-Greensburg assistant professor of biology, 7 p.m. **Nov. 10**, Mary Lou Campana Chapel and Lecture Center, Pitt-Greensburg, 724-836-7741, www.upg.pitt.edu.

Miscellaneous

Musuhalsa, music from Peru, Bolivia, and Ecuador, free lunch, noon **Nov. 5**, Nordy's Place, Lower Level, William Pitt Union, Artful Wednesdays, PITT ARTS, 412-624-4498, www.pittarts@pitt.edu.

Global Links Medical Supplies Volunteer Day, organize medical supplies for distribution to needy countries, 5:30-7:30 p.m. **Nov. 5**, Bloomfield, 412-624-7709, www.comrel.pitt.edu/CRO-volunteerpoolform.html.

Teaching Excellence Fair, showcases grant award winners from 2007-08, 9 a.m.-1 p.m. **Nov. 7**, Connolly Ballroom, Alumni Hall, Provost's Advisory Council and Center for Instructional Development and Distance Education, 412-383-9729, www.cidde.pitt.edu.

School of Health and Rehabilitation Sciences Open House, for prospective undergraduate and graduate students, 10 a.m.-1 p.m. **Nov. 8**, Forbes Tower, 412-383-6556, www.shrs.pitt.edu/openhouse.

Teaching Workshop, Survival Skills and Ethics Workshop, 10 a.m.-3 p.m. **Nov. 8**, Lecture Room 2, 4th Floor, Scaife Hall, Pitt's Survival Skills and Ethics Program, register at www.survival.pitt.edu or call 412-578-3716.

Hee-Sun Kim and K'Arts Korean Music Ensemble, traditional and contemporary Korean music and dance, free, 8 p.m. **Nov. 10**, Bellefield Hall Auditorium, Pitt Department of Music, 412-624-4125, www.music.pitt.edu.

Opera/Theater/Dance

Cinderella, by Richard Rodgers and Oscar Hammerstein II, **Nov. 6-9**, Byham Theater, 101 Sixth St., Downtown, Pittsburgh Musical Theater, 412-539-0900, www.pittsburghmusicals.com.

Lysistrata, political comedy, through **Nov. 9**, Studio Theatre, Room B-72 Cathedral of Learning, Pitt Repertory Theatre, 412-624-7529, www.pitt.play.edu.

Mamma Mia! musical, through **Nov. 9**, Benedum Center, 719 Liberty Ave., Downtown, PNC Broadway Across America, 412-456-6666, www.broadway-acrossamerica.com.

Long Story Short, by Brendan Milburn and Valerie Vigoda, through **Nov. 16**, Pittsburgh City Theatre, 1300 Bingham St., South Side, 412-431-2489, www.citytheatrecompany.org.

The Lady With All the Answers, by David Rambo, **Nov. 13-Dec. 14**, O'Reilly Theater, 621 Penn Ave., Downtown, Pittsburgh Public Theater, 412-316-1600, www.ppt.org.

I Love You, You're Perfect, Now Change, by Joe DiPietro and Jimmy Roberts, through **Feb. 1**, Theatre Square Cabaret, 655 Penn Ave., Downtown, CLO Cabaret Theater, 412-325-6766, www.clocabaret.com.



Hillman Library Audubon print, through November 17

Pitt PhD Dissertation Defenses

Eric Hartman, Graduate School of Public and International Affairs, "Educating for Global Citizenship through Service-Learning: A Theoretical Account and Curricular Evaluation," 9 a.m. **Nov. 3**, 3200 Posvar Hall.

Sudeshna Dasgupta, Graduate School of Public Health, "Association of Paraoxonase-2 Genetic Variation With Serum Paraoxonase Activity and Systemic Lupus Erythematosus," 10 a.m. **Nov. 3**, 628A Parran Hall.

Ben Laurence, School of Arts and Sciences' Department of Philosophy, "Ideal Theory as Democratic Theory," noon **Nov. 5**, 1001D Cathedral of Learning.

Tao Song, Graduate School of Public Health's Department of Biostatistics, Development and Comparison of Different Methods of Evaluating Free-Response Roc Systems," 11 a.m. **Nov. 4**, 325A Parran Hall.

Concerts

Michael Cavanaugh Sings the Music of Billy Joel & More, Nov. 6-9, Heinz Hall, 600 Penn Ave., Downtown, PNC Pittsburgh Symphony POPS! Series, 412-392-4200, www.pittsburghsymphony.org.

Emerson String Quartet, featuring works by Haydn, Shostakovich, and Dvorak, 8 p.m. **Nov. 10**, Carnegie Music Hall, 4400 Forbes Ave., Oakland, Pittsburgh Chamber Music Society, 412-624-4129, www.pittsburghchambermusic.org.

Exhibitions

Phipps Conservatory and Botanical Gardens, *Fall Flower Show*, through **Nov. 9**, One Schenley Park, Oakland, 412-441-4442, www.phipps.conservatory.org.

Hillman Library, Audubon Print, *White-breasted Black-capped Nuthatch*, through **Nov. 17**, 412-648-7715.

Frick Fine Arts Building, *Department of Studio Arts Faculty Exhibition*, through **Nov. 21**, University Art Gallery, Pitt's School of Arts and Sciences, 412-648-2430, www.studioarts.pitt.edu.

Silver Eye Center for Photography, *Eloquent Eggs & Disintegrating Dice: Photographs by Rosamond Purcell*, through **Nov. 29**, 1015 E. Carson St., South Side, 412-431-1810, www.silvereye.org.

Frick Art and Historical Center, *From Michelangelo to Annibale Carracci: A Century of Italian Drawings*, through **Jan. 4**, 7227 Reynolds St., Point Breeze, 412-371-0600, www.frickart.org.

Andy Warhol Museum, *1958*, through **Jan. 11**, 117 Sandusky St., North Side, 412-237-8300, www.warhol.org.

Carnegie Museum of Art, *55th Carnegie International*, through **Jan. 11**; *Worlds Away: New Suburban Landscapes*, through **Jan. 18**; 4400 Forbes Ave., Oakland, 412-622-3131, www.cmoa.org.

Mattress Factory, *Inner & Outer Space*, through **Jan. 11**, 500 Sampsonia Way, North Side, 412-231-3169, www.mattress.org.

Free at Last? Slavery in Pittsburgh in the 18th and 19th Centuries, through **April 5**, by the University of Pittsburgh at the Senator John Heinz History Center, 1212 Smallman St., Strip District, 412-454-6000, www.pghhistory.org.

Films

Las Doce Sillas (1962), directed by Tomas Gutierrez Alea, 7:30 p.m. **Nov. 5**, Frick Fine Arts Auditorium, Latin American Film Series, Pitt's Center for Latin American Studies, www.amigosdelcinelatinoamericano2008.blogspot.com.

We Never Got the Welcome Home: Western Pennsylvania Vets Remember Vietnam (2008), produced by Northern Cambria High School students in cooperation with Pitt-Johnstown professor of history Paul Newman, 7 p.m. **Nov. 10**, Pitt-Johnstown Living/Learning Center's Heritage Hall, Pitt-Johnstown's Department of History, 814-269-2987.

Lectures/Seminars/Readings

"(Not) Measuring the Unmeasurable: Strategies for Assessment in the Humanities," Sherry Lee Linkson, Youngstown State University professor of English and American studies, 4:30 p.m. **Nov. 3**, 501 Cathedral of Learning, Pitt's Department of English, 412-624-6506, www.english.pitt.edu.

"The Relativity of Inertia and Reality of Nothing," Alexander Afriat, University of Urbino (Italy) professor of geometry, force, and general covariance, 12:05 p.m. **Nov. 4**, 817R Cathedral of Learning, Lunchtime Talk, Pitt's Center for Philosophy of Science, 412-624-1052, www.pitt.edu/~pittent.

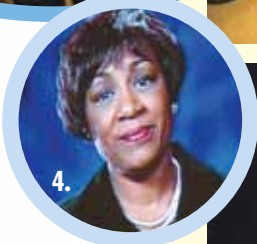


Fall Flower Show Phipps Conservatory, through November 9



Free at Last? Slavery Exhibition Reception

The University of Pittsburgh's pioneering exhibition *Free at Last? Slavery in Pittsburgh in the 18th and 19th Centuries*, opened with an Oct. 24 reception and program at the Senator John Heinz History Center. Below, wax figures portray slaves Ellen—in disguise—and William Craft, a married couple who made an ingenious escape to freedom in 1848. The exhibition runs through April 5.



1. Pitt Chancellor Mark A. Nordenberg (left) and author Marcus Rediker, Pitt professor and chair of the Department of History; **2.** High school student Amani Davis viewing a wax figure of Henry Highland Garnet, who escaped in 1829 with nine of his siblings from Maryland to Pennsylvania; **3.** Robert Hill, Pitt vice chancellor for public affairs and executive-in-charge of the exhibition; and **4.** Valerie McDonald Roberts, who discovered the original documents that prompted the exhibition, in video during the program.



Top: Panels displaying Allegheny County's vintage documents, which contain 55 slavery-related records; above, visitors viewing the exhibition.

Left: Rev. Johnnie Monroe (left) of Grace Memorial Presbyterian Church, which is recognized in the exhibition and was recognized during the reception for its 140th anniversary, and Pitt professor emeritus Greg Morris, a Grace Memorial parishioner.



Left: During the reception, three Pitt professors signed copies of slavery-related books they wrote or edited. Marcus Rediker (foreground), Pitt professor and chair of the Department of History; Laurence A. Glasco (middle), a professor of history and history director of the exhibition; and Seymour Drescher, University Professor of History and Sociology.

PUBLICATION NOTICE The next edition of *Pitt Chronicle* will be published Nov. 10. Items for publication in the newspaper's *Happenings* calendar (see page 7) should be received six working days prior to the desired publication date. *Happenings* items should include the following information: title of the event, name and title of speaker(s), date, time, location, sponsor(s), and a phone number and Web site for additional information. Items may be e-mailed to chron@pitt.edu, faxed to 412-624-4895, or sent by campus mail to 422 Craig Hall. For more information, call 412-624-1033 or e-mail robinet@pitt.edu.