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Pitt Neuroscience Student From Pennsylvania Awarded Goldwater Scholarship

By Patricia Lomando White

Wen Xu—a University of Pittsburgh Honors College junior majoring in neuroscience in Pitt's School of Arts and Sciences—has been named a 2011 Barry M. Goldwater Scholarship winner for her exceptional independent research. Xu, from McCandless Township, Allegheny County, Pa., plans to pursue an MD/PhD degree. Her career goals include conducting translational research related to neural plasticity and regeneration after injury. She is the 35th Pitt student to have won a Goldwater Scholarship since 1995.

David Wang—a junior from Mt. Lebanon, Pa., majoring in chemistry and applied mathematics with minors in physics and economics—received an Honorable Mention in the Goldwater Scholarship competition. He conducts computational biophysics research under the direction of Lillian Chong, an assistant professor in Pitt's Department of Chemistry. Among his research goals is the simulation of protein folding that will offer insight into engineering novel biomolecules with therapeutic applications.

CHRISTOPHER CHRDON

Wen Xu

"The University of Pittsburgh has an extraordinary record of providing an academic environment in which hard-working, high-achieving students can develop their talents, as is demonstrated by our enviable successes in prestigious national scholarship competitions that involve the very best students from the country's finest universities," said Pitt Chancellor Mark A. Nordenberg. "We congratulate Wen Xu and David Wang for this exceptional achievement."

"The intellectual rigor and commitment that Wen demonstrates in her research and coursework are extraordinary," said Steven Husted, interim dean of Pitt's Honors College and a professor of economics. "Her diverse leadership activities and her enthusiasm for learning extend beyond Pitt's campus into the greater community. Her accomplishments and drive are emblematic of the qualities we have come to expect from our finest students."

The Goldwater Scholarship, established in 1986 by the U.S. Congress in honor of then-Senator Barry M. Goldwater of Arizona, is awarded in either a student's sophomore or junior year. The award goes toward covering tuition, room and board, fees, and books for each student recipient's remaining period of study. Institutions can nominate up to four students for the Goldwater Scholarship.

Since her freshman year, Xu has conducted research in Pitt's Stem Cell Research Center under the guidance of Yong Li, an assistant professor in Pitt's Departments of Orthopaedic Surgery, Pathology, and Bioengineering and the Pitt-UPMC McGowan Institute for Regenerative Medicine. Xu's project aims to assist functional skeletal muscle recovery after injury through the use of growth factor-derived stem cells.

Xu plans to complete a residency in neurology after medical school and earn a PhD in neuroscience. As a translational researcher, she hopes to find a viable treatment method for patients with peripheral nerve damage.

In 2010, Xu received the Chancellor's Undergraduate Research Fellowship through the University Honors College and completed a second summer of full-time research funded by the Honors College Brackenridge Summer Research Fellowship. Both fellowships were in the Molecular Pathology Laboratory in Pitt's Departments of Orthopaedic Surgery and Pathology in the School of Medicine. In 2009, she participated in the Summer Student Research Training Program at Children's Hospital of Pittsburgh of UPMC as a lab assistant to Li.

Xu presented her research as coauthor and second author on two posters at the 56th Annual Meeting of the Orthopaedic Research Society in New Orleans. She is at work on two papers pending publication this spring, the first a review titled "iPS Cells for Neural Regeneration" and the second a research paper with the working title "MMP-1 Induces Stem Cell Populations and Aids in Muscle Recovery Through Innervation."

Xu not only excels in her research endeavors, but she also holds various leadership positions. She serves as an

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Pitt Researchers Work to Reengineer U.S. Power Grid for Better Efficiency, Integration of Renewable Energy

By Morgan Kelly

Imagine a modern nation that works, communicates, and entertains itself via an ever-expanding lattice of fast and efficient high-tech devices but powers this network with an electric system that dates to before many parts of the country even had electricity and leaks nearly as much energy as it transports.

This seemingly incompatible arrangement is in fact how the United States keeps itself plugged in. To bridge our high-tech lives with our early-20th-century generators, a research team in the University of Pittsburgh's Swanson School of Engineering has launched a large-scale project to integrate modern and efficient power-delivery technology into the rapidly growing American grid.

By employing the same simulation technology used to design and engineer electricity grids, the researchers will model an expanded power grid that delivers electricity from the power plant to our homes and businesses with less infrastructure and a more reliable and efficient flow of electricity. This improved infrastructure would not only conserve electricity, but also make it easier to tap into renewable resources, particularly solar and wind power, which are typically generated in remote locations far from consumers.

Lead researcher Gregory Reed, a professor of electrical and computer engineering in the Swanson School and director of the school's Power and Energy Initiative, explained that the problem with power delivery currently is one of consistency. Electricity in the United States is generated, transported, and delivered by alternating current (AC). But modern devices—from renewable power resources and electric vehicles to high-definition televisions, data centers, computers, and many other electrical devices—take a direct current (DC) input, hence the AC/DC converter most consumer electronics need.

Gregory Reed

The more practical choice before the electronic age, AC allows electricity to be delivered over long distances from a central generator such as a power plant; it also was more compatible with early industrial motors and other equipment, Reed said. But AC transmission requires more infrastructure than DC, and because electricity flows on the surface of an AC power line, it results in greater energy loss. DC delivers electricity directly via electronic circuitry without the need for AC's power-leeching transformers and iconic triple-wire steel towers. Plus, DC can be transferred over long distances with far less loss and at higher capacities, significant benefits in an increasingly spread-out society, Reed said.

Reed and his team are working to merge DC into the U.S.'s AC-dominated grid at the transport stage, he said. Only a few universities in North America—including North Carolina State University and the University of Manitoba, top institutions in electric power engineering—are investigating an upgrade of this scale, Reed said. The importance of the team's work is reflected by the significant government and industry support the Pitt project has so far received, including a recent $600,000 support grant from the Commonwealth of Pennsylvania's Ben Franklin Technology Development Authority. Industry supporters include ABB, Inc., and Eaton Corporation, among others.

"We have to expand our electric-power delivery network anyway as our nation becomes more digitized and people live and work further from power sources," Reed said. "It makes sense to take advantage of this time and upgrade to a new, better way to deliver power, instead of just building onto the infrastructure developed nearly 100 years ago. A DC infrastructure is better for taking full advantage of renewable energy resources and more compatible with the ubiquitous DC devices and systems at the consumer level."

Because Reed's research group cannot reconstruct an actual power grid, it has acquired the same high-power simulator programs that are the industry-standard tools for designing and analyzing power transmission systems. Pitt is one of only a few universities licensed to use the full, professional version of the Power System Simulator for Engineering (PSS®E)—provided to the University by Siemens Energy, Inc., as part of a partnership between Pitt and Siemens—and one of only two with access to the commercial version of PSCAD®/EMTDC™, one of the most powerful electromagnetic simulators available.

"By using the same tools used for daily utility operations, long-term planning, and design and development, we can engineer a better electric power system that is realistic in both performance and implementation," Reed said.

"Like the few projects similar to ours, the work we've undertaken is very ambitious because of its scale," Reed continued, "but if we as a nation want to not only conserve energy but also get more out of the power we use, a DC-based infrastructure is an essential step forward."

More information on this project is available on the Pitt Power and Energy Initiative Web site at www.power.pitt.edu.

BrieflyNoted

Pitt Law School Forum on Marcellus Shale Set for April 5

Legal and extraction-industry scholars and experts will bring a spirited parley regarding Marcellus Shale laws and regulations to the University of Pittsburgh with a daylong forum hosted by the University of Pittsburgh *Law Review* and the Pitt School of Law Innovation Practice Institute, which trains lawyers to represent entrepreneurs and start-up companies. The symposium, "Developing the Law of the Marcellus Shale: Innovation for a Prosperous Community, a Safe Environment, and a Common Law," begins at 8 a.m. April 5 in Ballroom B of the University Club.

This event is free to the public except for the lunch session, for which a $10 fee, payable by check, will be charged. More information about the event and scheduled speakers, as well as event registration, is available on the Pitt law school Web site at www.law.pitt.edu/events/2011/04/developing-the-law-of-the-marcellus-shale.

—Morgan Kelly

William Pitt Debating Union to Host April 6 Public Debate On Marcellus Shale Drilling in Pittsburgh

The University of Pittsburgh's William Pitt Debating Union will host a free public debate titled "Should Pittsburgh Permit Marcellus Shale Drilling?" from 6 to 8 p.m. April 6 in Parran Hall Auditorium, Room G-23, Graduate School of Public Health.

Arguing in favor of Marcellus Shale drilling will be Kathryn Zuberbuhler Klaber, president and executive director of the Marcellus Shale Coalition, and Jayson Myers, a Pitt junior majoring in history. Arguing in opposition will be Pittsburgh City Council member Doug Shields, key sponsor of a drilling ban ordinance, and Jeff Kurr, a Pitt senior majoring in finance.

A panel of scientists—including Radisav Vidic, William Kepler Whiteford Professor and Chair in Pitt's Department of Civil and Environmental Engineering—will work with student debaters to shed light on technical aspects of the drilling.

The debate also can be viewed via webstream at http://mediasite.cidde.pitt.edu (scroll down to "William Pitt Debating Union" in the Presentation Catalog window panel). Parking for the event will be at Soldiers and Sailors Parking Garage, Bigelow Boulevard, Oakland, and will cost $5. For more information, contact Pitt communication professor Gordon Mitchell at 412-624-8531 or gordonm@pitt.edu.

—Ashley Gredzinski

Harvard Professor to Deliver CRSP Lecture April 8

Kathyrn Edin, a professor of public policy and management at Harvard University, will deliver a free public lecture at noon April 8 titled "How the Urban Poor Navigate Social Space: Lessons From Chicago's Gautreaux Mobility Program" in the University of Pittsburgh's Center on Race and Social Problems (CRSP), School of Social Work Conference Center, 20th floor, Cathedral of Learning.

The talk is part of the Reed Smith Spring 2011 Speaker Series. Registration is not required; lunch will be provided. For more information, call 412-624-7382 or visit www.crsp.pitt.edu.

Edin's research focuses on urban poverty and family life, social welfare, housing, child support, and nonmarital childbearing. Her talk will refer to the Gautreaux Mobility Program, a housing desegregation project in Chicago initiated by an order from the U.S. Supreme Court in 1976. The court required that the Chicago Housing Authority provide scattered Section 8 housing in the city or suburbs to hundreds of families in isolated public housing projects.

—Sharon S. Blake

Norwegian Supreme Court Justice to Deliver McLean Lecture April 4

Judge Erik Møse, justice of the Norwegian Supreme Court and a former judge on the U.N. International Criminal Tribunal for Rwanda (ICTR), will deliver the University of Pittsburgh School of Law's 19th annual McLean Lecture on World Law at 6 p.m. April 4 in the Barco Law Building's Teplitz Memorial Courtroom.

Møse's lecture is titled "Reflections on the ICTR and International Criminal Justice." The free public event will be followed by a reception in the law school's Alcoa Room; it is jointly sponsored by Pitt's Center for International Legal Education and the Global Solutions Education Fund Pittsburgh.

Erik Møse

Møse presided on the Rwandan Tribunal for 10 years. During his tenure, he served as both vice president and president of the tribunal's judicial bench. Among his other international roles were serving as chair of the Committee of Experts for the drafting of the European Convention for the Prevention of Torture.

This lecture has been approved by the Pennsylvania Continuing Legal Education (CLE) Board for one (1) hour of substantive credit. There is a $25 fee to obtain CLE credit. For more information, call 412-648-7023 or e-mail cile@law.pitt.edu.

—Patricia Lomando White

Pitt Student From PA Receives The Goldwater Scholarship

Xu's scholarships include an Honors College full-tuition scholarship, a Swanson School of Engineering Honors Scholarship, a National Merit Corporation Scholarship, an American Chemical Society College Chemistry Scholarship, and a John Milliken Scholarship.

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undergraduate teaching assistant in Organic Chemistry 2 and is coexecutive vice president for Pitt's chapter of the National Society of Collegiate Scholars, secretary for Pitt's Alpha Chapter of the Lambda Sigma honor society, and public relations cochair for Pitt's French Club.

Xu's scholarships include an Honors College full-tuition scholarship, a Swanson School of Engineering Honors Scholarship, a National Merit Corporation Scholarship, an American Chemical Society College Chemistry Scholarship, and a John Milliken Scholarship.

In addition to pursuing her scholarship and leadership roles, Xu volunteers at UPMC Montefiore and Presbyterian hospitals and is an assistant with Pitt's gross pathology lab, Thomas E. Starzl Transplantation Institute, and anesthesia workroom. In March 2010, she traveled to Peru with International Volunteer Headquarters to work as a medical assistant in health clinics, and in 2008, volunteered with Washington, D.C.'s, Habitat for Humanity.

Among Pitt's 34 other Goldwater Scholarship honorees since 1995 are 2007 Rhodes Scholar Daniel Armanios, 2006 Rhodes Scholar Justin Chalker, and 2007 Marshall Scholar Anna Quider.

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Translational Medicine

From Lab to Clinic:
Multidisciplinary culture puts Pitt ahead of game

Spotlight on **Research**

By Chuck Staresinic

Translational medicine is an old idea with a new urgency and a new level of support, both of which stem from the realization that modern medicine is on the cusp of great things, but only if we can figure out how to translate good ideas from the lab to the clinic. Pitt has created a support structure and a culture that together demonstrate translational medicine is simply the way we do science.

JIM BURKE/CIDDE

Bruce Freeman (middle, standing), the UPMC Irwin Fridovich Professor and chair of the Department of Pharmacology and Chemical Biology in Pitt's School of Medicine, discovered nitro-fatty acid derivatives that may have applications as a drug to treat diabetes and metabolic and inflammatory diseases. He has launched a pharmaceutical startup company through the Pittsburgh Life Sciences Greenhouse to license the University patents and conduct human clinical trials. From left, Francisco Schopfer, a research assistant professor; Freeman; and Gustavo Bonacci, an instructor in the Department of Pharmacology and Chemical Biology.

Simply the Way We Do Science

At Pitt, discoveries in the lab get fast-tracked for the clinic.

Here, in a nutshell, is a fundamental challenge facing modern medicine: How can we best translate scientific discoveries made in the laboratory into cures, therapies, and guidelines for the treatment of patients in the clinic?

Outside the medical and scientific fields, most people don't think about this question. All we know is that the moment we become patients, we want results. We read the newspapers and we know that we are living in a golden age of scientific investigation. So we want our futuristic, life-changing medical care, and we want it now.

Except it's not that easy. And that's where translational medicine comes in. It's an old idea. After all, the University of Pittsburgh has been conducting translational medicine throughout its history.

In one of the most dramatic and well-known examples, a Pitt professor named Jonas Salk, and a team of University researchers with Julius Youngner as senior scientist, developed a killed-virus polio vaccine in 1952. Based on years of laboratory research in virology, immunology, and cell culture techniques, the Pitt polio vaccine underwent nationwide clinical trials and was introduced to the general public in 1955, leading to a dramatic drop in the incidence of this previously unpreventable, devastating disease.

Youngner, Pitt Distinguished Service Professor Emeritus of Microbiology and Molecular Genetics, notes that the speed and scope of the clinical trial of the polio vaccine—involving 1.8 million children in 12 states—could never be replicated in today's regulatory environment. One estimate suggests that it now takes 17 years on average to incorporate new research findings into widespread practice. Translational medicine is the art of improving public health by increasing the rate at which this happens and reducing the time it takes.

"The University has always been strong in translational medicine," says Arthur S. Levine, senior vice chancellor for the health sciences and dean of the School of Medicine. "What is exciting now is that we have a very promising substrate of investigators working in the cutting-edge areas of science that are critical to the advancement of medicine in the 21st century. And we have them here in Pittsburgh, where we have thoughtfully and purposefully cultivated a culture of collaboration and interdisciplinary team science that is rarer in academia than one might think."

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> — *Arthur S. Levine*

Why Translational Medicine? Why Now?

In 2003, the National Institutes of Health released a landmark report—the NIH Roadmap—which laid out three themes for the future of biomedical research. The intention was to advance scientific understanding and to ensure that scientific discovery translates to better health. The three themes read like a how-to manual for translational medicine:

- Deepen our understanding of biology by investing heavily in basic sciences like structural biology, molecular biology, and computational biology;
- Stimulate interdisciplinary research teams so that scientists routinely move beyond the confines of their own disciplines and explore new organizational models for team science; and
- Accelerate medical discovery and bring those discoveries to bear on improving people's health.

Pitt Prescience

When the NIH Roadmap was released, researchers and officials on campus might have thought the University of Pittsburgh had helped draft it. Pitt was already hard at work in these three thematic areas.

Basic sciences research: Since the day he arrived in Pittsburgh in 1998 (after a long career at NIH, significantly), Levine has invested heavily in basic research in biomedical sciences. Building on immunological expertise already in place owing to strong programs in organ transplantation and infectious diseases research, the School of Medicine established the Department of Immunology in 2002. With a handful of high-profile recruits to complement the University's existing expertise in molecular genetics, Levine jump-started a program in the fast-growing field of DNA repair. Soon after came new departments in structural biology, computational biology, developmental biology, and biomedical informatics.

Arthur S. Levine

Interdisciplinary research: Levine's predecessor, the late Thomas Detre, said decades ago that the research programs that would really take off in the future would be multidisciplinary centers of excellence, where common problems would be approached collaboratively from many different perspectives. In later years, Detre would display an alphabetical list of 63 multidisciplinary centers started at Pitt under his tenure—from AIDS to genetics to tissue engineering—indicating his belief that these centers were key to Pitt's rapid climb in the ranks of institutions receiving NIH research support. (Pitt entered NIH's top 10 in 1997 and has been there ever since.)

Clinical Research: To better nurture translational medicine, the University created the Office of Clinical Research (OCR) in 2001. Operating across all six health sciences schools—medicine, public health, pharmacy, nursing, dental medicine, and health and rehabilitation sciences—OCR set out to help researchers collaborate across institutional and professional boundaries and to navigate the administrative complexities and nuances of the research process, allowing them to put their focus on research instead of red tape.

To facilitate the translation of discoveries to the real world, the University of Pittsburgh created the Office of Technology Management (OTM) in 1996. Led by Marc Malandro, associate vice chancellor for technology management, OTM addresses the fact that universities are very good at making discoveries and gathering evidence to answer scientific questions, but the details of commercialization are typically the purview of private industry. OTM ensures that the University interacts with industry to drive research and the translation of research results for the benefit of patients.

One very significant stumbling block in this translation is the early stages of a new technology. Traditional NIH funding mechanisms only provide funding for the development of technology to a certain point.

From Discovery to Business Plan

The classic translational medicine story begins in a laboratory when a basic scientist looks up from the microscope or the latest experimental data and remarks, "Well, that's odd."

In 1990, one such scientist with a puzzled expression was biochemist Bruce Freeman. He was interested in free radicals—those highly reactive oxygen compounds that can wreak havoc on our cells. It had been shown in the lab that nitric oxide (NO) combined with free radicals spin off even more toxic, inflammatory byproducts. But that's not what Freeman found in his experiments.

"When I tried to replicate those test-tube, chemistry-based observations in cell or animal models, we observed that nitric oxide, rather than being pro-inflammatory, had anti-inflammatory properties," says Freeman, who is now the UPMC Irwin Fridovich Professor and chair of the Department of Pharmacology and Chemical

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Translational Medicine

From Lab to Clinic:

Multidisciplinary culture puts Pitt ahead of game

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Biology in Pitt's School of Medicine.

And this wasn't the only laboratory observation to make Freeman sit up and take notice. As he continued to investigate these surprising anti-inflammatory properties of NO, his experiments turned up a new and unusual molecule—a fatty acid with a nitrogen compound branching off from a carbon bond. He'd never seen nor heard of anything like it. These nitro-fatty acids, as they came to be called, are an important element of the anti-inflammatory properties of NO.

Since then, Freeman and many colleagues have painstakingly probed the biochemistry of these compounds. The picture that is emerging suggests they may be a safe, stable, easily produced drug with applications for diabetes and metabolic and inflammatory diseases. Freeman has launched a pharmaceutical start-up company through the Pittsburgh Life Sciences Greenhouse to license the University patents and conduct human clinical trials. Experimenting with several versions of nitro-fatty acids, the company has settled on a few that show evidence of being both powerful and safe. They are currently preparing to produce FDA-approved versions of the compounds for human trials.

An intriguing hint of the potential these compounds have for addressing health problems: In *Nature Structural & Molecular Biology*, Freeman and colleagues showed that their nitro-fatty acid fits a particular receptor in the cell membrane like a key in a lock. The same receptor is the target of the diabetes drug Avandia, but it had been previously unknown what naturally occurring compound might fit this receptor. Avandia's annual global sales have totaled in the billions, but it has recently been associated with negative side effects, including heart attack.

Beyond Medicine

Translational medicine is not limited to the University's six schools of the health sciences. Pitt's School of Arts and Sciences houses numerous hot spots for translational biological and chemical research. Longstanding, productive collaborations with researchers in the health sciences help to ensure that research projects address the entire translational spectrum from laboratory to clinic and back again.

Jeffrey Brodsky, the Avinoff Professor of Biological Sciences, studies species of yeast, one of the most important organisms for laboratory research. Even those who are particularly fond of bread and fermented drinks probably do not think of yeast as a close relative. Many millions of years of evolution separate us from yeast. However, yeast species possess the same intracellular membrane organization as humans—and they are much easier to study in the lab than are human cells.

Of particular interest to Brodsky and his collaborators, yeast and humans share a class of proteins known as "molecular chaperones," which shepherd important biological proteins through the production process within cells. These chaperones also serve as quality-control managers, marking misfolded or otherwise defective proteins for destruction before they can lead to disease. (Cystic fibrosis, diabetes, and some heart, liver, and neurodegenerative diseases can all arise from defects in chaperone-mediated processes.)

Brodsky's numerous publications and active projects include collaborators from Pitt's Schools of Medicine, Pharmacy, Arts and Sciences, and more. With Peter Wipf, Distinguished University Professor, whose home base is the Department of Chemistry, Brodsky has developed a series of selective regulators of chaperone activity to search for candidate drugs that might fix defects in cellular protein-folding processes.

MIKE DRAZDZINSKI/CIDDE

Jeffrey Brodsky, the Avinoff Professor of Biological Sciences (seated), and Peter Wipf, Distinguished University Professor in the Department of Chemistry, are collaborating on a project to search for potential therapeutic agents that inhibit the growth of cancer cells, thwart the replication of specific pathogens, and repair defects in cellular protein folding processes.

In some areas of public health research, the future is now—or, at least a few researchers are already using the tools of translational medicine to address public health concerns of the future. A 2010 paper in *Nature Nanotechnology* is the result of a collaborative effort by a slew of Pitt researchers plus colleagues from other institutions. It explores the biological mechanisms by which carbon nanotubes could be safely degraded before they become a danger to human health.

Carbon nanotubes, which are one-atom thick rolls of graphite 100,000 times smaller than a human hair yet stronger than steel, have a long list of industrial applications. They are used to reinforce plastics, ceramics, and concrete. They are excellent conductors of electricity and heat. But laboratory tests suggest that inhaling carbon nanotubes could result in severe lung inflammation and fibrosis.

Valerian Kagan, a professor of environmental and occupational health in the Graduate School of Public Health, has a long track record of research on nanotubes and health. For this nanotubes study, his collaborators include faculty from the Departments of Structural Biology and Cell Biology and Physiology in the School of Medicine. Another, Alexander Star, from the Department of Chemistry, received one of eight 2010 Outstanding New Scientist awards from the National Institute of Environmental Health Sciences. The Pitt researchers partnered with clinicians and basic scientists from as close as West Virginia and as far away as Ireland and Sweden to conduct this study, which revealed a new route by which carbon nanotubes could be enzymatically biodegraded in the body. Their findings can be used to develop methods for mitigating the inflammation caused by the inadvertent inhalation of nanotubes. Even more intriguing, the researchers raise the possibility that nanotubes can be safely biodegraded after inhalation, suggesting there could be a way to pack them with drugs and turn them into a biodegradable drug delivery system.

Clinical and Translational Science Institute

Independent confirmation of Pitt's leadership position in translational medicine came in 2006, when NIH selected the University of Pittsburgh for inclusion in the first cohort of academic medical institutions to receive a Clinical and Translational Science Award (CTSA).

The CTSA program is an enormous initiative aimed at transforming the research and training environment in this country to enhance the efficiency and quality of clinical and translational research. It calls for a nationwide consortium of academic medical institutions eventually numbering 60. The first cohort included Pitt and 11 other institutions deemed advanced enough to set the standard. (In 2010, the CTSA consortium reached 55 member institutions.)

Totaling $83.5 million, the University of Pittsburgh's CTSA immediately became the single-largest NIH award ever received

"We want to change the culture. One way to do that is to change the way people approach science. We want the basic science researchers to think about the clinical side of the equation and clinical researchers to consider mechanisms of basic science."

—Steven Reis

MARY JANE BENT/CIDDE

Valerian Kagan (left), a professor of environmental and occupational health in the Graduate School of Public Health, and Alexander Star, an assistant professor of chemistry, were part of a research study that showed how carbon nanotubes could be safely biodegraded by an enzyme of inflammatory cells in the body. These nanotubes are one-atom thick rolls of graphite 100,000 times smaller than a human hair yet stronger than steel—and they have many industrial uses. The recent study's findings suggest that it might be possible to pack the nanotubes with drugs, using them as a biodegradable drug delivery system in humans.

Spotlight on **Research**

JOE KAPLEWSKI/CIDDE

Steven Reis is director of Pitt's Clinical and Translational Science Institute (CTSI), which integrates existing programs with innovative new clinical and translational science initiatives under a common umbrella. Almost all of CTSI's pilot funding programs for research require investigators from different disciplines to work together. Reis is also a professor of medicine and associate vice chancellor for clinical research, health sciences.

MARY JANE BENT/CIDDE

Amber Barnato (right) had a question: Are elderly patients more likely to survive their illnesses when they go to hospitals that use more intensive care and life-support? Barnato is a professor of medicine, clinical and translational science, and health policy and management with appointments in the School of Medicine and the Graduate School of Public Health, but she needed a statistician. She linked up with Chung-Chou H. Chang (left), a professor of biostatistics and medicine, who developed a new application of statistics for the study. Their research found some intriguing initial answers: there was a survival benefit with admission to a higher-intensity hospital. Consequently, the National Institute of Aging funded Barnato for a three-year, $500,000 R01 project to investigate further.

by the University. (In 2010, the University submitted its first CTSA renewal application.) With the award, Pitt established a Clinical and Translational Science Institute (CTSI) to serve the dual purposes of integrating existing programs with innovative new clinical and translational science initiatives under a common umbrella and creating an awareness and understanding—initially among members of the biomedical research/health care community, but eventually among the general public as well—of the tangible benefits to health practice that can be realized from clinical and translational research.

"We want to change the culture. One way to do that is to change the way people approach science," says Steven Reis, professor of medicine; associate vice chancellor for clinical research, health sciences; and CTSI director. "We want the basic science researchers to think about the clinical side of the equation and clinical researchers to consider mechanisms of basic science."

"Dr. Reis has led a highly successful effort to establish clinical and translational science as a distinct discipline within and beyond our institution," says Levine. "In the process, we have also trained a cadre of hundreds of multi- and interdisciplinary clinical and translational scientists."

To provide Pitt researchers with support in important areas of expertise (red tape, for example), CTSI has developed nine resource cores. Among them are the following:

• The Regulatory Knowledge and Support Core provides education, training, services, and resources for researchers, health professionals, and even research participants from the community to promote good clinical practice and to facilitate regulatory compliance in clinical and translational research.

• The Translational Technologies and Resources Core promotes the use of a wide range of research core laboratory facilities available at the University that facilitate translational and clinical research; provides support to and augments the capabilities of those core labs; and helps investigators gain access to core facilities that will enable important scientific explorations.

• The Participant and Clinical Interactions Resources Core supports both "bench to bedside" and "bedside to bench" investigators by providing facilities, staff, equipment, and resources to conduct studies according to research protocols in a variety of specialized inpatient, outpatient, and community-based health care settings.

Researchers with an idea can apply for pilot funding through CTSI, but there's a hitch—almost all of the pilot funding programs require investigators from different disciplines to work together.

Sometimes the connections seem obvious, but institutional boundaries had previously worked against collaboration.

"As an example, we had a call for pediatrics research where we required a researcher investigating a disease in children to pair with a colleague who works on the same disease in adults," says Reis.

This simple approach is paying off in creating multidisciplinary teams, he says. CTSI has provided more than $2.5 million in pilot funding to researchers, many of whom say they never had an opportunity to work with their research partners before.

Case Study: Is Calcium Replacement Helping?

While training as a molecular biologist, Matthew Rosengart tracked the influence of calcium and some related proteins on cell function. Then, as a Pitt assistant professor of surgery, he made a bedside observation that calcium levels frequently fall in ICU patients, prompting physicians to order routine calcium replacement. Curious about calcium, Rosengart conducted a comprehensive review of the scientific literature and was somewhat surprised to find evidence that calcium could provoke a deluge of inflammatory cytokines. Following where the evidence led, he designed a lab-based study to probe the effects of calcium administration in septic mice. The striking result was that it was associated with a two- to three-fold increase in mortality, likely related to the disruptive consequences of calcium-dependent proteins on inflammation.

CTSI helped Rosengart to recognize the potential intellectual property value of several of his concepts now under patent review. Rosengart's work garnered an R01 grant from NIH to move the concept back toward the patient's bedside using mice genetically deficient in key proteins to more clearly define calcium/calmodulin signaling as a potential pathway to more effective therapy.

Case Study: Survival Rates and End-of-Life Care

Amber Barnato was looking at a statistical nightmare. More than a million elderly patients made 2.3 million visits to 169 hospitals over four years, but they aren't loyal to any one hospital. Her question: If a patient was admitted to a hospital that tended to use more intensive care and life-support for people who died (that is, seemingly wasteful and unwanted treatment), was the patient more likely to survive?

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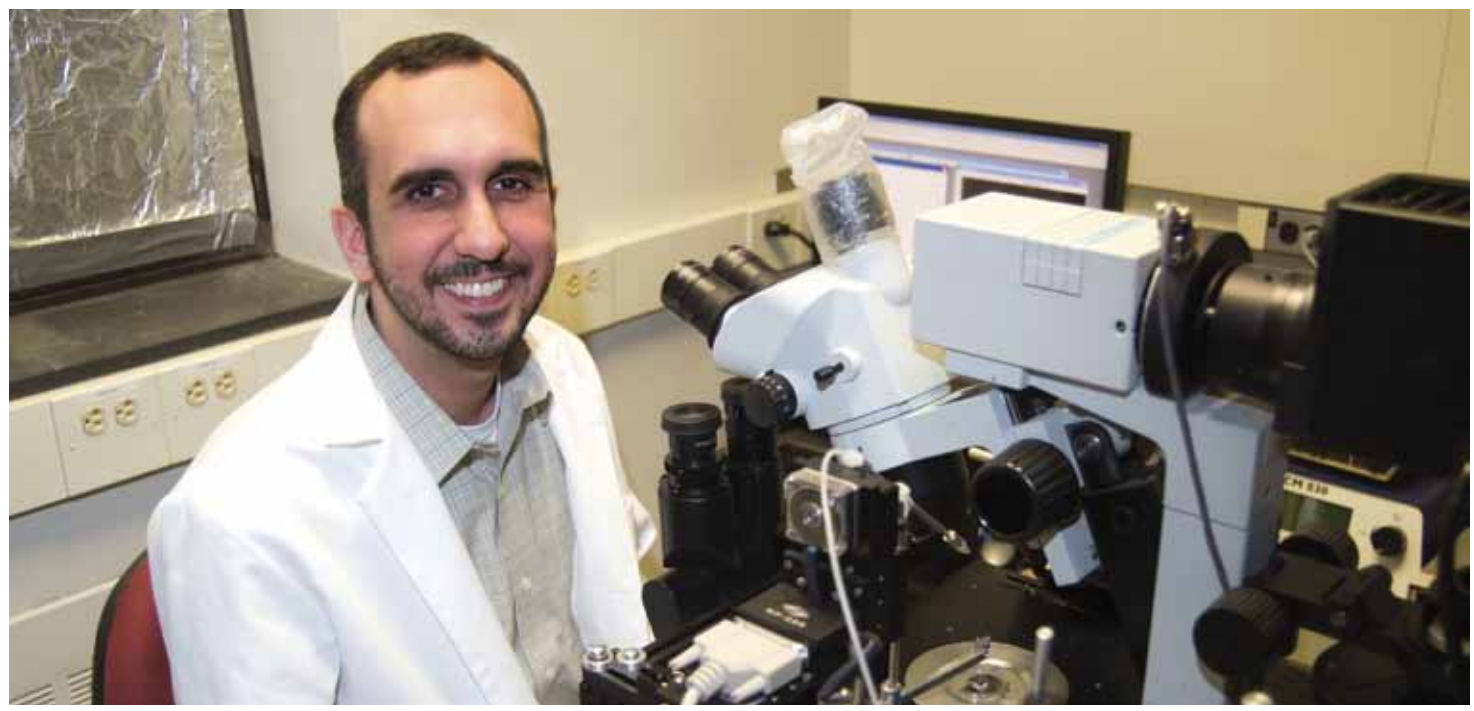

MIKE DRAZDZINSKI/CIDDE

Pitt MD/PhD student Amir Faraji wants to find out whether it's possible to send chemotherapy agents to attack lingering cancer cells in the brain that remain in the post-surgical margins after a tumor is removed. "I'm driven by clinical problems," says Faraji, whose ultimate goal is to unite his passions for neurosurgery, oncology, and chemistry into what he recognizes will be a demanding career as a physician-scientist.

Translational Medicine

From Lab to Clinic:

Multidisciplinary culture puts Pitt ahead of game

Spotlight on **Research**

MIKE DRAZDZINSKI/CIDDE

Some of the largest clinical trials of experimental cancer therapies are carried out by a national network of cancer centers and funded by the National Cancer Institute. Lots of cancer centers take part in these important trials, and the University of Pittsburgh Cancer Institute (UPCI) is no exception, notes Nancy Davidson, Hillman Professor of Oncology and director of UPCI, but she adds, "We pride ourselves on the kind of research that takes an idea out of our laboratories, does its initial testing in the clinic, and gets it to the point where it would go into one of these cooperative group trials."

By creating an institutional culture that places a high value on translational medicine, the University of Pittsburgh strives to contribute to the future of medicine, whether those contributions are giant leaps forward or small steps along the path to better outcomes and better quality of life for patients.

Continued from page 5

Barnato, associate professor of medicine, clinical and translational science, and health policy and management with appointments in the School of Medicine and the Graduate School of Public Health, needed a statistician. Chung-Chou H. Chang, an associate professor of biostatistics and medicine, not only fit the bill, but she also developed a new application of statistics for the study. Together, they found some intriguing initial answers: there was a survival benefit with admission to a higher-intensity hospital. Consequently, the National Institute of Aging took notice, funding Barnato for a three-year, $500,000 R01 project to investigate further.

Case Study: A Hitchhiker's Guide to the Brain

When MD/PhD student Amir Faraji was measuring properties of fluid transport in the brain, he wondered whether it would be possible to hijack some of these properties and deliver compounds *into* the brain—specifically, to convey chemotherapy agents to any nefarious cancer cells lingering in postsurgical margins.

The concept is so novel and the laboratory work so promising that Faraji, a fourth-year student, has filed one patent disclosure based on preliminary data, and he is working on a second.

"I'm driven by clinical problems," says Faraji, whose ultimate goal is to unite his passions for neurosurgery, oncology, and chemistry into what he recognizes will be a demanding career as a physician-scientist. "Now we want to do proof of principle *in vivo*."

University of Pittsburgh Cancer Institute

Some of the largest clinical trials of experimental cancer therapies are carried out by a national network of cancer centers and funded by the National Cancer Institute (NCI). Lots of cancer centers take part in these important trials, and the University of Pittsburgh Cancer Institute (UPCI) is no exception, notes Nancy Davidson, Hillman Professor of Oncology and director of UPCI, but she adds, "We pride ourselves in the kind of research that takes an idea out of our laboratories, does its initial testing in the clinic, and gets it to the point where it would go into one of these cooperative group trials."

There have been significant examples of exactly this type of translational cancer research in Pittsburgh, starting with one that predates UPCI itself. (Founded in 1985, UPCI became an NCI-designated Comprehensive Cancer Center in only five years.) In 1985, Bernard Fisher, a Pitt professor of surgery and 1943 graduate of the University of Pittsburgh School of Medicine, and a team of researchers demonstrated in clinical trials that lumpectomy combined with radiation therapy is as effective as radical mastectomy in treating breast cancer. The news that many women with breast cancer, who might otherwise undergo a disfiguring radical mastectomy, could opt for lumpectomy was a dramatic advance in the treatment of breast cancer. Fisher's group would go on to show the effectiveness of chemotherapy and hormonal therapy (tamoxifen) in preventing recurrence.

Fisher's work was a *tour de force* of translational medicine, particularly with respect to clinical trial design and execution. Like the best translational medicine, it began with a fundamental insight into cancer biology—that cancer was a systemic disease more often than a localized disease—made by Fisher in the surgical research laboratory that he founded at the University of Pittsburgh, then proceeded through rigorous clinical testing, and ended with improved clinical practices that led to better health for the public.

As UPCI celebrates its 25th anniversary, it looks back on extraordinary growth in its translational research program, with some of the most exciting and promising work in the area of cancer vaccines and immunotherapy. Most of us know vaccines as agents that turn the immune system against a foreign invader, such as a virus. But cancer isn't a foreign invader. It's your own cells gone bad. To teach the immune system to target cancer, scientists must first identify molecules that distinguish cancer cells from normal cells. The first clinical trial in the world of a synthetic peptide cancer vaccine—at Pitt in 1993—enrolled patients with very advanced cancer and poor prognoses. Regulators deemed the risk of a vaccine precipitating an immune attack against healthy tissue too great to include patients with better odds. "The first patient died of her advanced cancer within a month of us starting the trial, not even giving the vaccine time to generate an immune response" says Olivera Finn, Distinguished Professor and chair in the Department of Immunology and coleader of UPCI's cancer immunology program.

A lot has happened since then, and cancer immunotherapy is now more realistically expected to prevent cancer, prevent recurrence, or cure cancer in its early stages. A new version of Finn's 1993 vaccine is currently being tested in patients diagnosed with premalignant colonic adenomas, precursors to colon cancer, to prevent adenoma recurrence and progression to cancer. In another example, Theresa Whiteside, professor of pathology, otolaryngology, and immunology, along with professor of immunology Soldano Ferrone, has developed a vaccine able to target a unique molecule that appears on head and neck tumor cells, as well as on the normal cells building blood vessels to sustain it.

Pitt's John Kirkwood, professor and vice chair for clinical research in the Department of Medicine, developed the first adjuvant therapy for patients recovering from melanoma, a disease with a high rate of recurrence. Kirkwood's interferon therapy stimulates the immune system's natural killer cells against melanoma. Kirkwood leads a large, multidisciplinary and multi-laboratory melanoma program at UPCI, funded by a prestigious Specialized Program of Research Excellence (SPORE) grant from NIH. Two other SPORE grants at UPCI support the lung cancer and the head and neck cancer programs.

Finn is currently working on laboratory experiments that define other cancer-promoting conditions that could be controlled with vaccines. People with chronic inflammatory disorders such as inflammatory bowel disease (IBD), for example, are at greater risk for developing cancer at the inflamed site, says Finn. Her group has reported that a vaccine directed against an abnormal variant of a self-made cell protein called MUC1, which is altered and produced in excess in both IBD and colon cancer, has the potential to delay the onset of IBD and, in turn, prevent progression to colon cancer. Their findings, reported in *Cancer Prevention Research* in 2010, suggest that early stages of chronic inflammation might be considered a premalignant condition.

MIKE DRAZDZINSKI/CIDDE

Some of UPCI's most exciting and promising work during its 25 years of existence has been in the area of cancer vaccines and immunotherapy. Olivera Finn, Distinguished Professor and chair of the Department of Immunology and coleader of UPCI's Cancer Immunology Program, for example, developed a synthetic peptide cancer vaccine that has been in clinical trials in patients with various cancers since 1993. The vaccine—which has shown promise in stabilizing disease and prolonging survival without toxicity—is currently being tested in patients diagnosed with premalignant colonic adenomas, precursors to colon cancer, to prevent adenoma recurrence and progression to cancer. Other trials are being planned for prevention of pancreatic and lung cancer.

The Evolution and Revolution of Translational Medicine

By creating an institutional culture that places a high value on translational medicine, the University of Pittsburgh strives to contribute to the future of medicine, whether those contributions are giant leaps forward or small steps along the path to better outcomes and better quality of life for patients.

One of those giant leaps forward—and a seminal moment in the University's history—came in 1984, when Pitt professor of surgery Thomas E. Starzl performed the world's first double transplant operation (simultaneous heart and liver transplantation) on a 6-year-old girl from Texas. In the early days of organ transplantation, no person worked harder than Starzl to develop new surgical techniques and advance experimental immunosuppressive drugs like cyclosporine—all of which were necessary to make these life-saving procedures available to deathly ill patients. Practically overnight, Pittsburgh became the organ transplantation capital of the world.

Dramatic and revolutionary events such as this may be rare, but they owe their provenance to the hard work that yields steady progress over long periods of time. The steady growth of the scientific and clinical enterprise in Pittsburgh over several decades has many observers wondering what dramatic new milestones are on the horizon.

"There has been an evolution—if not a revolution—in the way we conduct research at the University of Pittsburgh," says Levine. "And my own sense is that this process is just beginning to hit its stride."

Happenings

University Art Gallery,
Studio Arts Student Exhibition,
through April 30

Concerts

Brahms' Symphony No. 1 with conductor Herbert Blomstedt and, in Brahms' Piano Concerto No. 1, soloist Garrick Ohlsson, 1:30 p.m. **April 7,** also **April 8-9,** Heinz Hall, 600 Penn Ave., Downtown, Pittsburgh Symphony Orchestra, BNY Mellon Grand Classics, 412-392-4900, www.pittsburghsymphony.org.

Sue Gartland and Jordan Umbach, members of Calliope Songwriters Circle, noon **April 8,** free concert, The Cup & Chaucer Café, ground floor, Hillman Library, Emerging Legends Concert Series Spring 2011, Pitt University Library System, Calliope: The Pittsburgh Folk Music Society, www.calliopehouse.org.

Indonesian Music Concert, 8 p.m. **April 8-9,** Bellefield Hall Auditorium, Pitt Department of Music, 412-624-4125, www.music.pitt.edu.

April in Paris, celebrating an 18th-century spring in Paris with Stephen Schultz, Chatham Baroque, and Andrew Appel, 8 p.m. **April 9,** Synod Hall, Fifth Avenue and North Craig Street, Oakland, Renaissance & Baroque, 412-361-2048, www.rbsp.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Heinz Chapel Choir Spring Concert, 3 p.m. **April 10,** Heinz Memorial Chapel, Pitt Department of Music, 412-624-4125.

Exhibitions

Frick Art Museum, *Storied Past: Four Centuries of French Drawings From the Blanton Museum of Art,* featuring more than 60 drawings produced over a 400-year period, **through April 17,** Frick Art & Historical Center, 7227 Reynolds St., Point Breeze, 412-371-0600, www.frickart.org.

Westmoreland Museum of American Art, *American Landscapes: Treasures From the Parrish Art Museum* and *At the River's Edge: Paintings by Patrick Ruane,* **through April 24,** 221 N. Main St., Greensburg, 724-837-1500, www.wmuseumaa.org.

University Art Gallery, *Studio Arts Student Exhibition,* **through April 30,** Frick Fine Arts Building, 412-648-2430.

Silver Eye Center for Photography, *Future Forward,* members' exhibition, **through May 7,** 1015 E. Carson St., South Side, 412-431-1810, www.silvereye.org.

Carnegie Museum of Art, *Paul Thek: Diver, A Retrospective,* **through May 1,** *You Are Here: Architecture and Experience,* **through May 29,** *Andrey Avinoff: In Pursuit of Beauty,* **through June 5,** *Ragnar Kjartansson: Song,* **through Sept. 25,** 4400 Forbes Ave., Oakland, 412-622-3131, www.cmoa.org.

August Wilson Center for African American Culture, *In My Father's House*, mixed-media exhibition about how African Americans collect and preserve their culture, **through June,** 980 Liberty Ave., Downtown, Pittsburgh Cultural Trust, 412-456-6666, www.pgharts.org.

Heinz History Center, *America's Best Weekly: A Century of* The Pittsburgh Courier, **through Oct. 2,** 1212 Smallman St., Strip District, 412-454-6000, www.heinzhistorycenter.org.

Film

The Boy Who Plays on the Buddhas of Bamiyan (Phil Grabsky, 2004), free screening of film that won Golden Hugo for Best Film, Cinematography, and Editing at the 2003 Chicago International Film Festival, 4 p.m. **April 6,** 1500 Posvar Hall, Pitt Ford Institute for Human Security, drc51@pitt.edu.

Let the Right One In (Tomas Alfredson, 2008), free film screening, 7:45 p.m. **April 6,** 3415 Posvar Hall, Contemporary Queer Cinemas Public Film Series Spring 2011, Pitt Women's Studies Program, 412-624-6485, www.wstudies.pitt.edu.

Heinz Chapel Choir Spring Concert,
Heinz Memorial Chapel,
April 10

Lectures/Seminars/Readings

"Reflections on the ICTR and International Criminal Justice," Erik Møse, justice of the Norwegian Supreme Court, 6 p.m. **April 4,** Teplitz Memorial Courtroom, Barco Law Building, McLean Lecture on World Law, Pitt School of Law, 412-648-7023, cile@law.pitt.edu. (See page 2).

"Developing the Law of the Marcellus Shale: Innovation for a Prosperous Community, a Safe Environment, and a Common Law," daylong forum featuring legal and extraction-industry scholars and experts, 8 a.m. **April 5,** Ballroom B, University Club, Pitt Law Innovation Practice Institute, *University of Pittsburgh Law Review*, www.law.pitt.edu.

"Belief Here, Doubt There—What Do You Really Think?" Brad Armendt, associate professor in Arizona State University's School of Life Sciences, 12:05 p.m. **April 5,** 817R Cathedral of Learning, Pitt Center for Philosophy of Science, 412-624-1052, www.pitt.edu/~pittcntr/.

"Imaging the Waves of a Silent Past: The Role of Performance Decisions in Shaping the Musical Space of Hildegard von Bingen's *Ordo Virtutum,"* Michael Gardiner, postdoctoral fellow in Pitt's Department of Music, 4:30 p.m. **April 5,** Pitt Humanities Center, 602 Cathedral of Learning, Pitt Medieval and Renaissance Studies Program, www.medren.pitt.edu.

"Should Pittsburgh Permit Marcellus Shale Drilling?" public debate presented by Pitt's William Pitt Debating Union, 6 p.m. **April 6,** G-23 Parran Hall, www.comm.pitt.edu. (See page 2).

"The Khmer Rouge Tribunal: Justice vs. Impunity," Sopheada Phy, Heinz Fellow, noon **April 7,** 4130 Posvar Hall, Asia Over Lunch Series, Pitt Asian Studies Center, University Center for International Studies, 412-648-7370, asia@pitt.edu.

"This Time Will Be Different: A Dataset on Financial Crises," Carmen Reinhart, a professor of economics in University of Maryland's School of Public Policy and Department of Economics, 3-4:30 p.m. **April 7,** Information Sciences Seminar Room 501, Pitt World History Center's Dataverse Design Seminar, www.worldhistory.pitt.edu.

"Looking Small to See the Big Picture: Explaining Feudists, Racist, and Grassroots Activists," Kathleen M. Blee, Pitt Distinguished Professor of Sociology, 4:30 p.m. **April 7,** 2500 Posvar Hall, Provost's Inaugural Lectures, Office of the Provost, 412-624-5750.

Lydia Davis, author, 8:30 p.m. **April 7,** Frick Fine Arts Auditorium, Pittsburgh Contemporary Writers Series, Pitt Department of English, Pitt Book Center, University of Pittsburgh Press, 412-624-6508, www.english.pitt.edu.

The American Association for Italian Studies Annual Conference, Pitt's Department of French and Italian Languages and Literatures, in collaboration with the Honorary Consul of Italy in Pittsburgh, **April 7-9,** Holiday Inn University Center, 100 Lytton Ave., Oakland, www.aais-pittsburgh2011.com.

"How the Urban Poor Navigate Social Space: Lessons From Chicago's Gautreaux Mobility Program," Kathryn Edin, professor of public policy and management, Harvard University, noon **April 8,** School of Social Work Conference Center, 2017 Cathedral of Learning, Reed Smith Speaker Series, Pitt's Center on Race and Social Problems, 412-624-7382, www.crsp.pitt.edu. (See page 2).

Miscellaneous

Grade Center Level 1 (Bb8), workshop to learn strategies for maximizing efficiency with grading on Courseweb, Pitt's implementation of the Blackboard's Learning Management System, 10 a.m. and 2 p.m. **April 5,** B23 Alumni Hall, Pitt CIDDE, register online at www.cidde.pitt.edu.

"Diversifying Your Funding Portfolio," Barbara L. Folb, Pitt public health informationist and librarian, 3-5 p.m. **April 5,** S120 Thomas E. Starzl Biomedical Science Tower, Pitt Office of Academic Career Development's Postdoctoral Professionalism Series Spring 2011, register at www.oacd.health.pitt.edu.

Introduction to Courseweb, workshop on getting familiar with using Courseweb, 6 p.m. **April 6,** also 1 p.m. **April 7,** B23 Alumni Hall, Pitt CIDDE, register online at www.cidde.pitt.edu.

Buy-It-Green University of Pittsburgh Supplier Showcase, featuring more than 20 Pitt-contracted suppliers and departments that will showcase their green themes, products, and innovations, with keynote speaker Yalmaz Siddiqui, director of environmental strategy for Office Depot, 10 a.m.-2 p.m. **April 7,** William Pitt Union, Pitt Purchasing Services, www.bc.pitt.edu/purchasing/buyitGreen.

What's New in Blackboard 9.1, informational session for current Courseweb (Bb) 8 users to explore new Black Board 9.1 system, 10 a.m. **April 8,** B23 Alumni Hall, Pitt CIDDE, register online at www.cidde.pitt.edu.

Third Annual Inclusive Voices Luncheon, signature event of Program to Aid Citizen Enterprise (PACE), which brings together individuals from different backgrounds, fields, and disciplines to explore ideas with community leaders in various fields, 11:30-1:30 p.m. **April 8,** Omni William Penn Grand Ballroom, 530 William Penn Place, Downtown, PACE works with neighborhood-based nonprofits that support African American and economically disadvantaged communities, reserve tickets by calling 412-562-0290, www.pacepgh.org.

Opera/Theater/Dance

Bad Hamlet by Lillian DeRitter and Anthea Carns, free, 2 p.m. **April 3,** Bellefield Hall Auditorium, Pitt Humanities Center, 602 Cathedral of Learning, Pitt Medieval and Renaissance Studies Program, www.medren.pitt.edu.

As You Like It by William Shakespeare, directed by Sam Turich, **through April 10,** Charity Randall Theatre in Stephen Foster Memorial, Pitt Repertory Theatre, Department of Theatre Arts, 412-624-6568, www.play.pitt.edu.

The Amish Project, written by and starring Jessica Dickey, based on the 2006 shooting at an Amish schoolhouse in Lancaster, Pa., **through May 8,** City Theatre, 1300 Bingham St., South Side, 412-431-2489, www.citytheatrecompany.org.

Pitt PhD Dissertation Defenses

George Fraser, School of Medicine's Neurobiology Graduate Program, 2 p.m. **April 4,** "New Frontiers in Population Recording," 6014 Biomedical Science Tower 3.

Kalyan C. Tirupula, School of Medicine's Molecular Biophysics and Structural Biology Graduate Program, 1 p.m. **April 4,** "Structure-Function Studies of the Metabotropic Glutamate Receptor Type 6 (mGlur6) and Comparison With Rhodopsin," 1018 Biomedical Science Tower 3.

A.S.M Ali Ashraf, Graduate School of Public and International Affairs, 10 a.m. **April 5,** "Coalition Burden-Sharing and the War in Afghanistan," 3430 Posvar Hall.

Curtis Good, School of Education's Department of Administrative and Policy Studies, 1 p.m. **April 6,** "The Turner and Colodny Cases: Academic Freedom at the University of Pittsburgh, 1934 and 1961," 4321 Posvar Hall.

Angelica JoNel Starkey, Graduate School of Public Health's Department of Behavioral and Community Health Sciences, 2 p.m. **April 6,** "Financial Distress and Depressive Symptoms Among African American Women: Exploring the Role of Religious Coping," Family Resources, 2nd Floor Stevenson Building, 141 S. Highland Ave., East Liberty.

Ana Souza, School of Health and Rehabilitation Sciences' Department of Rehabilitation Science and Technology, 10 a.m. **April 7,** "Impact of Mobility Aids on People With Multiple Sclerosis," 6081 Forbes Tower.

Kira Leishear, Graduate School of Public Health's Department of Epidemiology, 1:30 p.m. **April 7,** "Changes in Vitamin B12, Homocysteine, and Neurological Function in Older Adults," 5th-floor large conference room, Bellefield Professional Building, 130 N. Bellefield Ave., Oakland.

Richard Pelikan, School of Arts and Sciences' Intelligent Systems Program, 2:30 p.m. **April 7,** "Analytical Techniques for the Improvement of Mass Spectrometry Protein Profiling," 5317 Sennott Square.

Veronica Kozar, School of Education's Department of Administrative and Policy Studies, 3:30 p.m. **April 7,** "Accountability From the Inside Out: A Case Study of Isolation and Autonomy," 4321 Posvar Hall.

Christopher Frey, School of Arts and Sciences' Department of Philosophy, 1 p.m. **April 8,** "Presence To Self: An Essay on the Phenomenal Origins of Intentionality," 1001B Cathedral of Learning.

Amy Herrick, Graduate School of Public Health's Department of Behavioral and Community Health Sciences, 3:30 p.m. **April 8,** "Syndemic Processes Among Young Men Who Have Sex With Men (MSM): Pathways Toward Risk and Resilience," Stoner Conference Room, Keystone Building, 3520 Fifth Ave., Oakland.

Let the Right One In,
Posvar Hall,
April 6

University of Pittsburgh
PittChronicle
University News and Magazines
University of Pittsburgh
400 Craig Hall
200 South Craig Street
Pittsburgh, PA 15260

Watching Watson Win

IBM's Watson visited Oakland on March 30 and showed off its mental prowess during a mock game of *Jeopardy!* where it faced off against student teams from the University of Pittsburgh Honors College and Carnegie Mellon University (CMU). Pitt's team came in second, CMU's third, and Watson won—again. In February, the computer, which has powerful analytical capabilities, trumped *Jeopardy!* champions Ken Jennings and Brad Rutter. Named after IBM founder Thomas J. Watson and built by IBM scientists, the computer's public face resembles a large electronic tablet. The mock match, played in CMU's McConomy Auditorium, was preceded earlier in the day by information technology symposiums on Pitt's and CMU's campuses.

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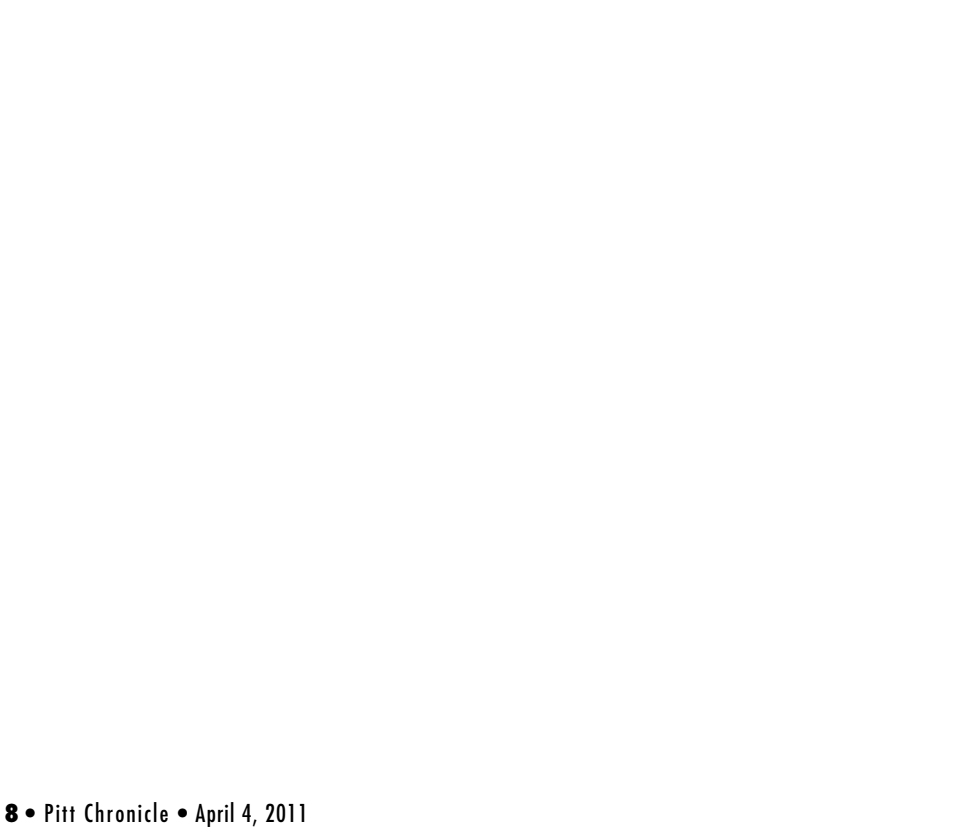

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1. Pitt Chancellor Mark A. Nordenberg delivered opening remarks for the panel discussion titled "Natural Language Process in the World of Business, Law, and Medicine" in the University Club. **2.** Participants in the University Club discussion were (from left) David Ferrucci, principal investigator of the DeepQA/Watson Project for IBM; Eric Nyberg, a professor in CMU's Language Technology Institute; Diane Litman, a Pitt computer science professor and a senior research scientist in Pitt's Learning Research Development Center who is a leading authority on natural language processing; and discussion moderator, Bernard Meyerson, vice president for innovation and global university relations for IBM. **3.** Watson and Pitt's mock *Jeopardy!* team (from left), Brian Sisco, a junior majoring in computer science with a minor in math; Danielle Arbogast, a junior majoring in political science and communication with a minor in legal studies; and Richard Kester, a senior majoring in history and neuroscience with a minor in chemistry.

PUBLICATION NOTICE The next edition of *Pitt Chronicle* will be published April 11. Items for publication in the newspaper's *Happenings* calendar (see page 7) should be received at least two weeks prior to the event 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.