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Edward M. Stricker Named University Honors College Dean, Effective July 1

By Patricia Lomando White

Edward M. Stricker—a renowned neuroscience scholar and educator who currently serves as Distinguished University Professor of Neuroscience in the University of Pittsburgh Department of Neuroscience and who, throughout his career at the University, has been known for his commitment to instilling in students his appreciation of and enthusiasm for the development of the life of the mind—has been named dean of Pitt's University Honors College (UHC). His appointment is effective July 1, 2011.

"It would be very difficult to find many other faculty members, here or in other universities, who have built a broad-based record of achievement that equals the record built by Ed Stricker," said University of Pittsburgh Chancellor Mark A. Nordenberg. "In addition to his outstanding accomplishments in research, he was the founding chair of our Department of Neuroscience and has played a key role not only in building that department but in nurturing cooperative efforts in that important field across our campus and with colleagues at Carnegie Mellon University. Even more important, in terms of his appointment as Dean of our Honors College, is his career-long commitment to teaching and mentoring, which is evidenced by his receipt of the highest teaching honors awarded by our University."

"I am delighted that Dr. Stricker has agreed to serve as dean of the Honors College and have great confidence that his scholarly leadership, dedication to undergraduate students, and commitment to excellence will serve us well in his new role," said Patricia E. Beeson, Pitt provost and senior vice chancellor. "He personifies our institutional belief in the value of the highest quality education and the importance of imparting a lifelong interest in learning and research to our students. I very much look forward to working with Dr. Stricker and believe that under his leadership the University Honors College, which already is recognized as one of the finest honors colleges in the country, will continue to foster and inspire excellence."

Stricker's Pitt career began in 1971 as an associate professor of psychology and biological sciences; he was promoted to full professor in 1976 and was named University Professor of Neuroscience in 1986. That special faculty rank recognizes eminence in several fields of study, transcending accomplishments in a single discipline. Prior to joining the Pitt faculty, Stricker served as a faculty member at McMaster University. He also has been a visiting professor of psychiatry at both Johns Hopkins and Cornell universities.

Stricker earned BS and MS degrees in chemistry from the University of Chicago and a PhD in psychology from Yale University. He also held postdoctoral fellowships at the University of Colorado and the University of Pennsylvania.

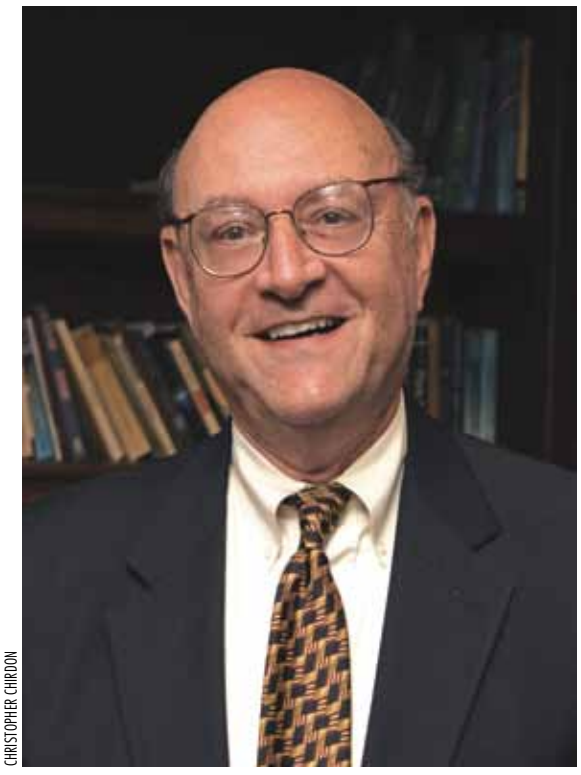
Over the past 25 years, Stricker has been instrumental in the development of the University's nationally recognized neuroscience community. Having served as director of the Behavioral Neuroscience Program from 1983 to 1986, he led efforts to establish a Department of Neuroscience in the School of Arts and Sciences, serving as founding chair of that department for 16 years, from 1986 to 2002. He also served as founding director of the Center for Neuroscience and Schizophrenia (now the Conti Center for Neuroscience of Mental Disorders) and, from 1996 to 2002, as codirector of the University's Center for Neuroscience.

In addition, Stricker has provided leadership to the University more broadly, serving on chancellor's and provost's advisory committees and as chair of search committees for the senior vice chancellor for health sciences (1992-93) and the dean of the School of Arts and Sciences (1997).

Stricker is internationally recognized as a leading expert in homeostatic systems, especially the control of fluid ingestion and the kidneys, and their integration by the brain. For 41 years, he maintained an active research laboratory continuously funded through grants from the National Institute of Mental Health (NIMH) [including 37 years of continuous funding for research on the homeostatic origins of motivation], the National Science Foundation, the National Institute of Neurological Disorders and Stroke, and Canada's National Research Council. He also has received both the prestigious NIMH Research Scientist Award and the NIMH MERIT Award, a symbol of scientific achievement in the research community. His publications include nearly 300 research articles, reviews, and book chapters.

> While Stricker's research accomplishments are outstanding, "Even more important, in terms of his appointment as Dean of our Honors College, is his career-long commitment to teaching and mentoring, which is evidenced by his receipt of the highest teaching honors awarded by our University."
> —*Mark A. Nordenberg*

Throughout his career, Stricker has demonstrated a deep commitment to and appreciation for education—particularly undergraduate education—including a belief in the unique benefits that can result from the involvement of undergraduates in research. Inside and outside the classroom, he has challenged students to aspire to excellence and has provided the encouragement and tools necessary for achieving those aspirations. Recognizing the importance of engaging students early in their careers, he has taught introductory neuroscience each academic year since 1971, along with advanced undergraduate and graduate courses.



CHRISTOPHER CHIRDON

Edward M. Stricker

Stricker also was the founding codirector, in 1992, of the NIMH-funded Undergraduate Research Fellowship Program, which facilitates undergraduate engagement with faculty research and was one key to strengthening a culture of commitment to excellence in undergraduate education within the neuroscience community. In recognition of the impact he has had on undergraduate education at Pitt, Stricker has received both the Chancellor's Distinguished Teaching Award, recognizing distinguished teaching university-wide, and the Bellet Teaching Excellence Award, which honors teaching excellence in the School of Arts and Sciences. He also was honored for distinguished teaching while serving as a faculty member at McMaster University earlier in his career.

A member of the editorial board for Plenum Press' Behavioral Neurobiology series since 1990, Stricker also has been on the editorial boards of *Appetite* and the *American Journal of Physiology* and was consulting editor for the *Journal of Comparative and Physiological Psychology*. From 1999 to 2002, he was president-elect, president, and past president of the Association of Neuroscience Departments and Programs.

Stricker's professional society memberships include the International Congress on the Physiology of Food and Fluid Ingestion, serving as president from 1987 to 1994; Sigma Xi; the Society for Neuroscience; the Society for the Study of Ingestive Behavior; and The American Physiological Society.

Stricker succeeds G. Alec Stewart, UHC's dean since its inception, who passed away in April 2010. Pitt professor of economics Steven Husted has been acting as the college's interim dean since May 2010.

Eight Teaching Proposals Receive Funding From Provost's ACIE

The University of Pittsburgh Office of the Provost's Advisory Council on Instructional Excellence (ACIE) has selected eight teaching proposals to fund under the 2011 Innovation in Education Awards Program.

The awards, begun in 2000 by then-Pitt Provost and Senior Vice Chancellor James V. Maher, encourage instructional innovation and teaching excellence. The ACIE seeks to identify high-quality proposals that show promise for introducing innovative, creative approaches to teaching that can be adapted for use in other courses. Vice Provost for Faculty Affairs Andrew Blair, who chairs the advisory council, observed, "The council continues to be pleased with the quality of submissions, especially those recommended for approval this year by Provost Patricia Beeson. The council has now overseen the 12th round of this competition."

Winners of the 2011 awards and summaries of their proposals follow.

Neil Benedict, assistant professor in the Department of Pharmacy and Therapeutics in Pitt's School of Pharmacy and critical care pharmacist for the University of Pittsburgh Medical Center, for a project titled "Innovative Instructional Approach to Foster Self-Directed Learning."

This project will help the School of Pharmacy modify its teaching methods to ensure that students are successfully engaging in self-directed learning. While faculty are to provide a climate of learning that emphasizes self-directed learning principles, the actual process of such learning can be overlooked and its principles assumed, rather than enforced. The project will test a new instructional method that is based on the creation of two "virtual patient" cases as well as social learning in the classroom. The effectiveness of the concept will be measured by comparing test scores of a control group of students who do not assess the virtual cases and a group that does.

Sangyeun Cho, professor in the Department of Computer Science in Pitt's School of Arts and Sciences, for a project titled "Cracking Personal Supercomputing."

Cho's project seeks to expose Pitt's undergraduate students to the fundamentals of the latest personal supercomputing technologies. True supercomputers have massive computing powers and can quickly perform complex simulations and calculations. They are, however, expensive, and access to them is limited. Cho will establish a computer lab within Pitt's computer science department that will provide, without a new investment in hardware, basic personal minisupercomputers for each student. Their addition to the lab—and curriculum—will benefit not only computer science students, but also other Pitt students interested in gaining supercomputing experience inexpensively on personal computers they

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A Century of Change

PHOTOS BY MARY JANE BENT/CIDDE

From left, event cochair David Garnett (A&S '71), a Pitt football player from 1968 to '70; CNN news anchor Fredrica Whitfield; Pitt Chancellor Mark A. Nordenberg; NBC sportscaster and event emcee Bob Costas; Brian Salter (A&S '71), event cochair, Pitt trustee, a Collegiate All-American in Track and Field, a Pitt football player from 1968 to '70, and an NFL player from 1971 to '76; Linda Wharton Boyd (A&S '72, '75G, '79G), president of Pitt's African American Alumni Council; Pitt trustee Herbert P. Douglas Jr. (EDUC '48, '50G), a bronze medalist in the long jump at the 1948 Olympics and one of the first three African Americans to play football for Pitt, in 1945; and Steve Pederson, Pitt athletics director.

From left, Curtis Aiken (CGS '87), Pitt basketball star from 1983 to '87 and Pitt men's basketball broadcaster; Roger Kingdom (CGS '02), Pitt football and track star, winner of two Olympic gold medals (1984 and 1988) in the 100 meter hurdles; and Charles Smith (A&S '88), Pitt men's basketball career-scoring leader and retired NBA player.

By Robert Hill

(This is the introduction to the commemorative program for the "Athletics at Pitt: The Forefront of a Century of Change" centennial celebration of Pitt's Black athletes. The May 10, 2011, event was held in the Petersen Events Center. Robert Hill is Pitt's vice chancellor for public affairs.)

It is clear to Pitt Panther fans and even to casual observers of University of Pittsburgh football and basketball that the presence of African American student-athletes in Panther revenue sports is prominent, commonplace, and often game changing. And we take for granted that Blacks on the women's basketball team and on the track and field team will continue to contribute at spectacular levels.

What is less well known is that the journey of Black Pitt varsity athletes started 124 years after Pitt's establishment in 1787 as the Pittsburgh Academy. The saga began 18 years after mathematical genius William Hunter Dammond became the first African American to earn a bachelor's degree from Pitt in 1893, in engineering with honors.

Although an 1899 Western University of Pennsylvania (today's Pitt) football photograph includes a kneeling Black trainer known simply as Jim, it was only a century ago, in 1911, that Harry Ray Wooten of Oakdale, Pa., and Hubbard Hollensworth of Owego, N.Y., graduated as the University of Pittsburgh's first Black varsity student-athletes. Not much is known about either. But the 1911 Pitt *Owl* yearbook does document Wooten's performance at track meets of the day. And the July 29, 1911, *Pittsburgh Courier* reported that Hollensworth and nine others established the Schenley Heights Tennis Club, also in 1911, in Pittsburgh's Hill District.

Wooten and Hollensworth could not have known that their trailblazing membership on Pitt's track and field team would forge a path for 100 years of African American Pitt student-athlete successors in not only track and field and the aforementioned football and basketball, but also in soccer, baseball, softball, swimming and diving, wrestling, squash, tennis, volleyball, gymnastics, and field hockey. Today, there are more than 500 living African American men and women who have represented Pitt as varsity athletes.

Still, it all began with track and field, setting the stage for Pitt Olympians John Woodruff to win the gold in the 800 meters in 1936; Herb Douglas to win the bronze in the long jump in 1948; Arnold Sowell to place fourth in the 800-meter race in 1956; and Roger Kingdom, Pitt's greatest international athlete of all time, to win the Olympic gold twice in the 110-meter high hurdles, in 1984 and again in 1988.

And the best female Pitt athlete, triple jump queen Trecia-Kaye Smith, won seven NCAA titles and 14 Big East titles.

In football, Pitt history was made again when Jimmy Joe Robinson, joined weeks later by Herb Douglas and Allen Carter, became Pitt's first Black varsity football player in 1945. In 1953, Henry "Model T" Ford became Pitt's first Black quarterback. And, over the strong protests of the Georgia governor, Pitt's Bob Grier made national headlines in 1956 as the first Black student to play in the Sugar Bowl, against Georgia Tech.

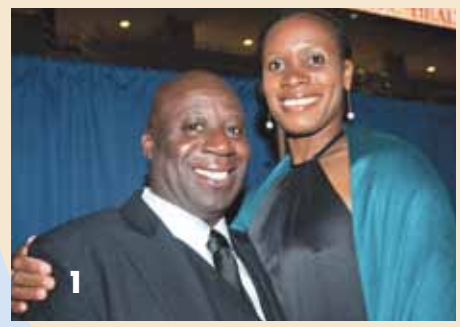
But 20 years later and without protest in 1976, Tony Dorsett—the greatest football Panther in history—won the Heisman Trophy as America's best football player, led the Panthers to their national championship win in the Sugar Bowl against Georgia, and compiled a total of 6,526 yards at Pitt. He has been inducted into the college and professional football halls of fame.

Nearly 30 years after Dorsett's greatest varsity triumph, Larry Fitzgerald was runner-up for the Heisman in 2003 as a Pitt sophomore wide receiver.

Yet another milestone was achieved for Black Pitt student-athletes when Pitt's men's varsity basketball program placed Julius Pegues as a starter on the team in 1955. He and Charles Smith—Pitt's all-time leading men's scorer and a 1988 Olympics bronze medalist—could not have predicted that an all-Black team would capture a No. 1 seed in the 2011 NCAA men's basketball tournament.

During the 1970s, '80s, and '90s, women standouts Wanda Randolph, Jennifer Bruce, Debbie Lewis, and Lorri Johnson—Pitt's all-time leading women's scorer—integrated Pitt women's basketball. Perhaps they inspired Shavonte Zellous in 2010 to score the most points in a season in Pitt women's basketball history.

Appointed by Pitt Alumni Association African American Alumni Council President Linda Wharton Boyd, *A Century of Change* banquet chair Herb Douglas and cochairs Dave Garnett, Bryant Salter, and Jennifer Bruce Scott led a celebration of 100 years of achievements by African American varsity student-athletes that few universities can claim. These heroes may be regarded as Pitt's great Black Panthers.



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From left, in each photo **(1) Lee McRae** (CGS '88), three-time NCAA Indoor Champion in the 55 meters, and **Trecia-Kaye Smith** (EDUC '99, SHRS '02), Pitt track star from 1996 to '99, seven-time NCAA national champion in long jump and triple jump. **(2) Marcedes Walker** (CGS '08), all-time leading rebounder in Pitt women's basketball history, and **Jennifer Bruce Scott** (NURS '86), event cochair, second all-time leading scorer in Pitt women's basketball history, and 1985 Kodak All-American. **(3) Tony Dorsett** (A&S '77), NFL Hall of Famer, three-time first team All-American, and Heisman Trophy winner; and **William R. "Billy" Knight** (A&S '74), men's basketball All-American, 11-year NBA veteran. **(4) Justin M. Johnson,** retired Superior Court of Pennsylvania judge, and **Larry Fitzgerald** (A&S '06), Pitt football player from 2002 to '04, wide receiver for Arizona Cardinals. **(5) Ashlee Anderson,** Pitt sophomore and women's basketball team member, and **Julius Pegues** (ENGR '59), Pitt's first African American men's basketball player. **(6) Bobby Grier** (KGSB '57), first African American to play in the Sugar Bowl, in 1956; **Herbert P. Douglas Jr.; Wanda Randolph** (A&S '80), holder of Pitt women's basketball's single season rebounding record, and **Rev. James "Jimmy Joe" Robinson** (A&S '51), Pitt's first African American football recruit.

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Action Potential: Probing the Brain Power of Pitt Neuroscience

Spotlight on Research

By Michele D. Baum

Throughout the past two decades or more, Pitt has built itself into a leader in brain research, focusing on its strengths in basic and clinical science. A spirit of collaboration is engendered in this work through the Center for Neuroscience, a Universitywide center encompassing neuroscience on campus.

Although it is a three-pound lightweight, the brain is the human body's uncontested heavy hitter. Its 100 billion neurons control the seat of all knowledge, power the central nervous system, and cradle the soul of our individuality. We have mapped its lobes, nerves, and blood vessels; we have labeled its cells, divided its activities into motor, cognitive, and sensory; and sorted its matters according to color—gray, white, and *substantia nigra* (Latin for black stuff).

Despite these achievements, there are significant gaps in our understanding. But day by day, University of Pittsburgh neuroscience faculty work to unlock the brain's remaining secrets, attracting considerable research support to the University, primarily from the National Institutes of Health (NIH).

Throughout the past two decades or more, Pitt has built itself into a leader in brain research, focusing on its strengths in basic and clinical science. A spirit of collaboration is engendered in this work through the Center for Neuroscience, a University-wide center encompassing neuroscience on campus. The center's diverse and multidisciplinary nature is reflected by the more than 30 different academic departments and centers in which more than 100 faculty conduct neuroscience research. Doctoral and postdoctoral trainees also play a major role in the center's research activities, as do students in the highly successful undergraduate neuroscience major in the School of Arts and Sciences' Department of Neuroscience.

Neuroscience research at the University runs from conducting basic cellular science to developing medications to building prostheses to replace damaged limbs. It includes work done through the Department of Psychiatry in the School of Medicine (and its clinical affiliate, Western Psychiatric Institute and Clinic [WPIC] of UPMC), for decades a national leader among NIH-funded psychiatry departments, which received about $90 million in total research funding in 2010. It also includes work through the Center for the Neural Basis of Cognition (CNBC), a joint venture of the University of Pittsburgh and Carnegie Mellon University that leverages the strengths of each to support a coordinated research and education program of international stature.

The following profiles in neuroscience research by prominent members of our faculty are just a sampling of the exceptional neuroscience enterprise here at the University of Pittsburgh.

Mapping Molecular Messengers

Susan G. Amara, the Thomas Detre Professor and chair of neurobiology and president of the prestigious Society for Neuroscience, studies the transport proteins responsible for the reuptake of neurotransmitter molecules released during chemical neurotransmission in the central nervous system. One family of transporters clears glutamate, a major excitatory transmitter in the brain that limits the temporal and spatial range over which glutamate molecules can signal. Because excessive amounts of glutamate can trigger neuronal cell death, glutamate transporters also protect the brain from the toxic actions of glutamate.

Brain cell death lies at the root of many central nervous system disorders, including ischemia, or stroke; amyotrophic lateral sclerosis (Lou Gehrig's disease); Parkinson's disease; and Alzheimers disease. Understanding cell-death mechanisms could help researchers to identify new drug targets and interventions, says Amara, a member of the National Academy of Sciences and a former Howard Hughes Medical Institute investigator. "We know that extracellular levels of glutamate rise in ischemia," she says. "If we could learn how to enhance glutamate removal, we might be able to protect the brain from stroke damage."

Brain cell death lies at the root of many central nervous system disorders, including Parkinson's disease and Alzheimers disease. Understanding cell death mechanisms could help researchers to identify new drug targets and interventions.

The brain's most common neurotransmitter, glutamate accounts for some 90 percent of brain activity and is known to be involved in cognitive functions, learning, and memory. It is crucial for normal neuron function and survival. Yet system imbalance can lead to surplus glutamate accumulation—also known as excitotoxicity—and cell death.

"How can we prevent the brain from having too much of a good thing?" asks Amara. "By understanding glutamate transporter structure and mechanisms, we hope to develop molecules that increase the rate of different steps in the transport cycle, reduce ambient glutamate and, thus, limit the damage from excitotoxicity."

Among candidate molecules is a neuroprotective compound purified from the paralyzing venom of *Parawixia bistriata,* a social spider native to Brazil. The venom component selectively enhances glutamate transport, and Amara's group is working with chemists to define the configuration of the active compound, given its potential as a basis for the development of new stroke drugs and treatments for other neurodegenerative disorders.

Amara also studies transporters for dopamine, norepinephrine, and serotonin—important neurotransmitters with key roles in regulating brain circuits involved in mood, reward, attention, and activity. Of particular interest are investigations into how certain drugs—including the psychostimulant drugs of abuse amphetamines and cocaine, attention deficit hyperactivity disorder (ADHD), medications like Ritalin, antidepressants like Celexa and Prozac, and other major classes of therapeutic and illicit drugs—affect the brain.

"These drugs have many more actions than we previously thought," explains Amara. "We have always assumed that psychostimulants such as amphetamine and methamphetamine potentiate the actions of neurotransmitters by blocking reuptake, but we never realized that they also have their own specific receptor targets within the cell. Our new work shows that the drugs enter the cell cytoplasm to activate specific signaling pathways and alter the surface distribution of key regulatory molecules involved in neuronal communication." These observations change the way we think about how the brain is altered by repeated drug use and why amphetamines have such a profound and distinct addictive potential.

Other University investigators parse the biochemistry of these cellular-level events for influences that reach beyond physiology to the heart of the human psyche.

Roots of Behavior

Daniel S. Shaw, professor and chair of psychology in the School of Arts and Sciences, has spent more than 20 years probing the foundations of antisocial behavior in children, looking for ways to successfully intervene before it's too late. He leads longitudinal studies to follow children from

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JOE KAPELEWSKI/CIDDE

Susan G. Amara and Alan F. Sved are codirectors of the Center for Neuroscience at the University of Pittsburgh (CNUP), a multidisciplinary center with members whose primary appointments are in 16 different departments. Amara, the Thomas Detre Professor and chair of neurobiology, researches the molecular and cellular biology of neurotransmitter transporters, targets for antidepressant medications, psychostimulants such as cocaine and amphetamines, and other centrally acting drugs. Sved, professor and chair of neuroscience, studies central neural control of the body's autonomic nervous system and cardiovascular function.

Action Potential: Probing the Brain Power of Pitt Neuroscience

Continued from page 3

Daniel Shaw has spent more than 20 years probing the foundations of antisocial behavior in children, looking for ways to successfully intervene before it's too late. "We have funding from the National Institute on Drug Abuse to look at the effects of genetics on brain function, the effects of environment, and the interactions between genetics and environment," he says.

MIKE DRAZDZINSKI/CDDE

Daniel S. Shaw, a professor and chair of psychology in the School of Arts and Sciences, and Erika Forbes, assistant professor of psychiatry in the Pitt School of Medicine, are collaborating on a project funded by the National Institute on Drug Abuse. Together with a Duke University researcher, Ahmad Hariri, the trio is studying the effects of genetics and early environment on brain function, and relations between brain function and patterns of early adult substance use.

A complex disorder, schizophrenia frequently results in a lifelong struggle against severe cognitive and social challenges. Current medications primarily target delusions and hallucinations; there are few treatments available that help patients to manage disordered thinking, motivation, or memory.

disadvantaged, troubled families—one set of boys starting at 18 months of age who are now 20 years old, and another group of 10-year-old boys and girls who were initially enrolled at age 2.

"When kids got to age 10, 11, or 12, they were very tough to get out of that problem behavior, and they had burned their parents so many times," he says. "At 10 and 12, you're talking about kids starting to go underground and not just lie and steal, but hurt things. Some of our more precocious kids were using drugs and selling them."

Rich collaborative opportunities have now added a facet of neuroscience to his behavioral research. "We have funding from the National Institute on Drug Abuse to look at the effects of genetics on brain function, the effects of environment, and the interactions between genetics and environment," Shaw says, gesturing so excitedly he practically vibrates with anticipation. "This is my first entry into neuroscience." For the project, he is working with Erika Forbes, assistant professor of psychiatry in the Pitt School of Medicine, and Ahmad Hariri, former director of Pitt's Developmental Imaging Genetics Program, who is currently a Duke University neuroscientist.

"We have over 100 brain scans so far—unusual for this literature—but we have an incredible cohort," says Shaw. "We hope to have a breakout paper when it's all ready [in late 2011]."

Your Brain on Adolescence

For Beatriz (Bea) Luna, a professor of psychiatry in the School of Medicine, and of psychology in the School of Arts and Sciences, there is no question that maturity modifies brain function. Winner of a 2005 Presidential Early Career Award for Scientists and Engineers, Luna uses functional magnetic resonance and diffusion tensor neuroimaging technologies to study how brain mechanisms underlying cognitive skills develop during adolescence—a period often marked by a spontaneous combustion of risk-taking, misjudgments, crisis-level mood swings, and impulsivity.

"As a teenager, I remember thinking that something extremely special was going on and at the same time knowing it was temporary," says Luna, who is also founding director of the Laboratory for Neurocognitive Development at WPIC. "I looked at my parents, and I knew they didn't think in the same way that I did."

Connections between neurons—called synapses—multiply rapidly during the first two years of life, followed by a process to cull superfluous connections and strengthen those used most frequently. Scientists believe this process allows the brain to adapt to an individual's particular environmental needs.

"Adolescence is not a disease," she says with a smile. "It's a necessary time of brain development, where young people should be encouraged to explore, gain experience and independence, and sculpt their future selves."

Selected by the NIH to serve as a member of its Advisory Committee to the Director, Luna also has advised the U.S. Supreme Court on sentencing guidelines for adolescent offenders. "As we understand more and more about how the brain works," she says, "we can try to understand breakdowns that may lead to conditions like ADHD, autism, and mental illnesses like depression and schizophrenia."

A Matter of Mental Health

Molecular neurotransmitter pathways also intrigue David A. Lewis, UPMC Professor of Translational Neuroscience and chair of psychiatry, who investigates pathways' relevance to the devastation of mental illness.

"Brain circuitry abnormalities appear to underlie schizophrenia," says Lewis, who is also director of Pitt's National Institute of Mental Health-funded Conte Center for the Neuroscience of Mental Disorders. "These abnormalities change with development and may generate different symptoms, yet are interconnected."

A complex disorder, schizophrenia affects more than 1 percent of the population. Clinical symptoms typically become apparent in teenagers and young adults, and the disorder frequently results in a lifelong struggle against severe cognitive and social challenges. Symptoms range from disordered thoughts, delusions, and hallucinations to motivational problems and an emotional "absence" called flatness. There can also be difficulties in thinking, attention, and memory.

"That diversity of symptoms clearly suggests that multiple regions of the brain are involved and multiple circuits are disturbed," says Lewis. "Our goal in devising new treatments is to reduce the causes and their negative consequences and to augment the brain's own compensation mechanisms."

Current medications primarily target delusions and hallucinations; there are few treatments available that help patients to manage disordered thinking, motivation, or memory. A troubling susceptibility among many with schizophrenia to fall prey to addictions—perhaps as a form of self-medication—also presents challenges.

Among Lewis' recent publications are studies of the biochemical relationship between the neurotransmitter gamma-aminobutyric acid (GABA) and a key ingredient in marijuana that suggest a biological basis for population studies that connect marijuana use during adolescence with an increased risk of developing schizophrenia. In addition, the course of illness is worse for people with schizophrenia who use marijuana, he says.

Since GABA is known to be reduced in schizophrenia, these findings suggest possible new drug targets that could improve brain function in individuals with schizophrenia.

One of the most studied brain areas is the dorsolateral prefrontal cortex, which houses executive processes and working memory, says Lewis, defining working memory as the ability to remember information transiently and use it to guide behavior or thought.

"Now we are working to decipher the specific components—the molecules, cells, and synapses—and the larger circuits present in the dorsolateral prefrontal cortex that are behind this disturbance," he adds.

Among these components, morphological evidence reveals that some neurons may even be smaller and have fewer dendritic protrusions called spines, which help to transmit electric signals to the neuron. Other neurons exhibit variations in gene product expression.

"There may not be a classic neuropathology of schizophrenia similar to the tangles and plaques characteristic of

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MIKE DRAZDZINSKI/CDDE

Mary Phillips is well known in the field of psychiatric neuroscience, and she specializes in research on bipolar disorder and depression. Phillips, a professor of psychiatry, was the first researcher to associate the human emotion of disgust to an actual site in the human brain. Her research is helping to increase understanding of the complex brain circuitry supporting emotion regulation and how abnormalities in this circuitry may predispose adults and children to different depressive disorders. She has published widely on neuroimaging of brain circuitry for emotion regulation in depressive disorders, including bipolar disorder, major depression, and postpartum depression. Her work in collaboration with Eydie Moses-Kolko, assistant professor of psychiatry, on postpartum depression was recently published in the *American Journal of Psychiatry.*

Spotlight on **Research**

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JOE KAPELEWSKI/CIDDE

David A. Lewis (left), UPMC Professor of Translational Neuroscience and chair of psychiatry, and Anthony A. Grace, Distinguished Professor of Neuroscience in the School of Arts and Sciences, are studying the neurobiology of schizophrenia, a complex mental disorder that affects more than 1 percent of the population. Lewis has focused on integrating information from a cellular analysis of postmortem studies of human patients who had schizophrenia with primate studies. In contrast, Grace's research has used rodent models of schizophrenia based on developmental disruption and recordings from neurons to assess which circuits are likely to be altered in schizophrenia patients. Despite the differences in their research strategies, their findings point to a similar understanding of the nature of the brain abnormalities in schizophrenia.

Alzheimer's disease," says Lewis. "But that doesn't mean there aren't changes in the brain that are, in fact, the basis of the illness."

Neurotransmitters Gone Wild

Brain regions associated with schizophrenia include the hippocampus and prefrontal cortex. Drug use and environmental toxins are implicated in its development; there are also several candidate genes and possible roles for the neurotransmitters dopamine, glutamate, and serotonin. Rodent models of schizophrenia developed at Pitt point strongly to the hippocampus.

"The question is, 'What's wrong?" says Anthony A. Grace, Distinguished Professor of Neuroscience in the School of Arts and Sciences, who helped to develop this study. Among his observations: There is hyperactivity in the hippocampus because of altered GABA transmission that ultimately results in dopamine system overdrive.

"Normal GABA activity is essential for proper cortical structure functioning," Grace notes. GABA loss, in turn, disrupts other key brain cell communications involving stimulus recognition and higher cognitive function, he adds.

Grace believes similar neuron and GABA losses in the prefrontal cortex also contribute to cognitive deficits associated with schizophrenia. In addition, other characteristics are exhibited that are consistent with human schizophrenia patients, including amplified startle reflex, altered executive function, and hyperresponsiveness to drugs of abuse like phencyclidine and amphetamine.

"We're working with a chemist at the University of Wisconsin to design drugs specific to the alpha 5 GABA receptor in the hippocampus. These drugs are like Valium and other benzodiazepines in that they amplify GABA. These seem to reverse this physiological and behavioral response and could turn out to be a new antipsychotic," says Grace.

> One of the most studied brain areas is the dorsolateral prefrontal cortex, which houses executive processes and working memory, says Lewis, defining working memory as the ability to remember information transiently and use it to guide behavior or thought.

Pittsburgh Institute for Neurodegenerative Diseases

Located in Pitt's state-of-the-art Biomedical Science Tower 3, the Pittsburgh Institute for Neurodegenerative Diseases (PIND) brings together scientists who are working on degeneration from a number of perspectives. But investigators have one collaborative goal: to conduct successful translational research toward potential therapies for neurodegenerative diseases.

J. Timothy Greenamyre, UPMC Professor of Movement Disorders and vice chair of neurology and PIND director, studies the mechanisms that cause nerve cell death in disorders like Parkinson's, Huntington's, and Alzheimer's diseases.

"What is it in Parkinson's that makes dopamine neurons so vulnerable?" Greenamyre asks, listing mitochondrial abnormalities and systemic exposure to environmental toxins among likely suspects. "Odds are that genetics loads the gun, and something in the environment sets it off."

Considered a world expert on mitochondria, the "power plants" of living cells, Greenamyre becomes particularly passionate about rotenone. A commonly used pesticide, rotenone until recently had support even among organic food producers and home gardeners since it is found naturally in a number of tropical plants. "We used to sprinkle it on our tomato plants," Greenamyre says, grimacing.

Classified as moderately hazardous by the World Health Organization, rotenone targets mitochondria. In studies of a model of Parkinson's disease, researchers found that rotenone "acts systemically, yet is specifically neurodegenerative," says Greenamyre. Based on Greenamyre's work in the laboratory, a recent epidemiological study has confirmed that human exposure to rotenone is a risk factor for the disease.

Other Greenamyre investigations involve reactive oxygen species and alpha-synuclein. "We know that alpha-synuclein is a major player," Greenamyre says of the protein, which is a significant component of Lewy bodies—clumps of proteins that are a clinical hallmark of Parkinson's. Alpha-synuclein is found throughout the central nervous system, but its function in the healthy brain is currently unknown.

Edward A. Burton, assistant professor of neurology and of microbiology and molecular genetics, is developing zebrafish models of progressive supranuclear palsy, a rare brain disorder that causes Parkinson's-like disabilities yet does not respond to Parkinson's medications. Developed through genetic modification, these fish overexpress a form of human neuronal Tau, a protein also associated with Alzheimer's disease and dementia secondary to traumatic brain injury.

"We see age-related progressive neuropathology and motor difficulties in adult animals," says Burton, who has also engineered Tau zebrafish for screening. Using these models, Burton and colleagues hope to identify therapeutic targets for the development of new candidate drugs. Already, he has been able to establish noninvasive evaluation methods that are sensitive to neural dysfunction and could be used to detect repair mechanisms.

Pittsburgh Compound B

Perhaps the most significant diagnostic advance in Alzheimer's research today is Pittsburgh Compound B (PiB). Developed and tested by William E. Klunk, professor of psychiatry, and Chester A. Mathis, professor and director of Pitt's PET Facility, PiB allows clinicians to see amyloid plaques in the living brain of individuals with Alzheimer's and also in those who do not yet exhibit signs of the disease. This finding could lead to earlier diagnosis, illuminate disease progression, and uncover prevention strategies.

PiB imaging can also be used to differentiate Alzheimer's from other forms of dementia and to directly measure the effects of antiamyloid therapies currently in development. For their work, Klunk and Mathis have earned major honors, including the Ronald and Nancy Reagan Research Institute Award for outstanding contributions to research, care, and advocacy for Alzheimer's disease, and the Potamkin Prize, often called the "Nobel Prize" for neurology.

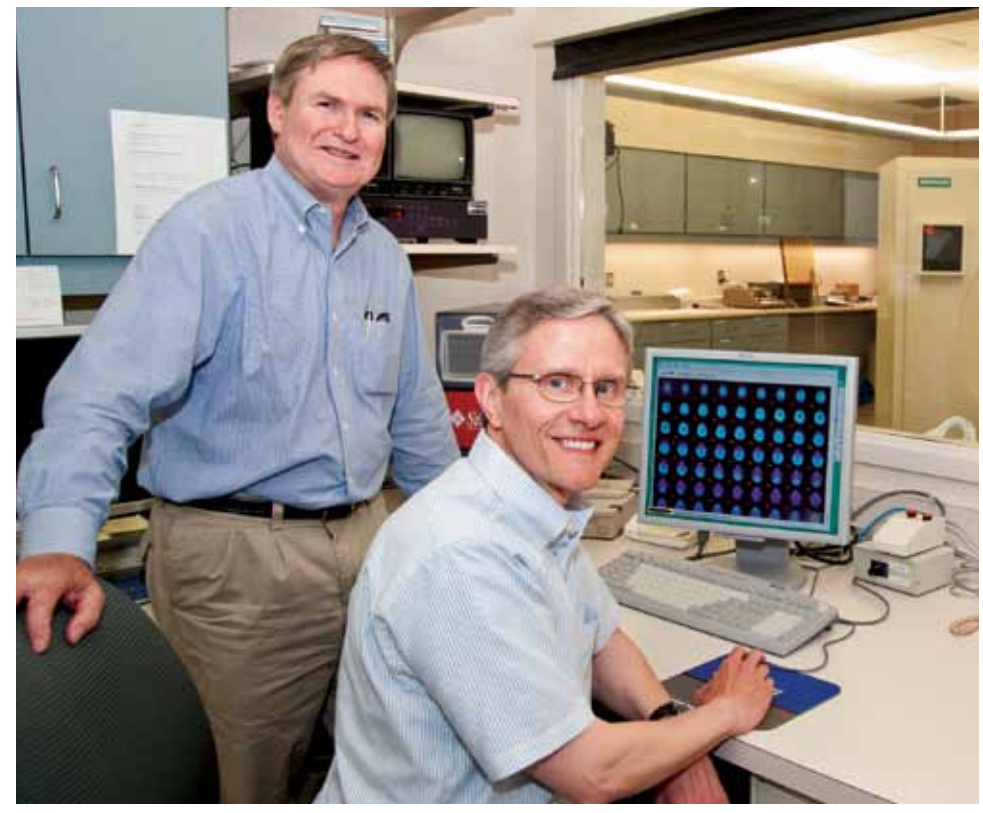
Viral Vectors Blaze the Trail

Peter Strick, professor of neurobiology, uses rabies and herpes simplex viruses to "envision" neural pathways related to movement.

With the viruses revealing chains of synaptically connected neurons, Strick has uncovered new evidence that the brain's basal ganglia and cerebellum are linked to form an integrated functional network. The findings provide a neural basis for a cerebellar contribution to some of the disabling symptoms of basal ganglia disorders like Parkinson's and dystonia and could point to new treatment approaches, Strick and colleagues reported in the May 2010 *Proceedings of the National Academy of Sciences*.

"I've always been interested in the nature of volition," says Strick, also codirector of the Center for the Neural Basis of

Continued on page 6



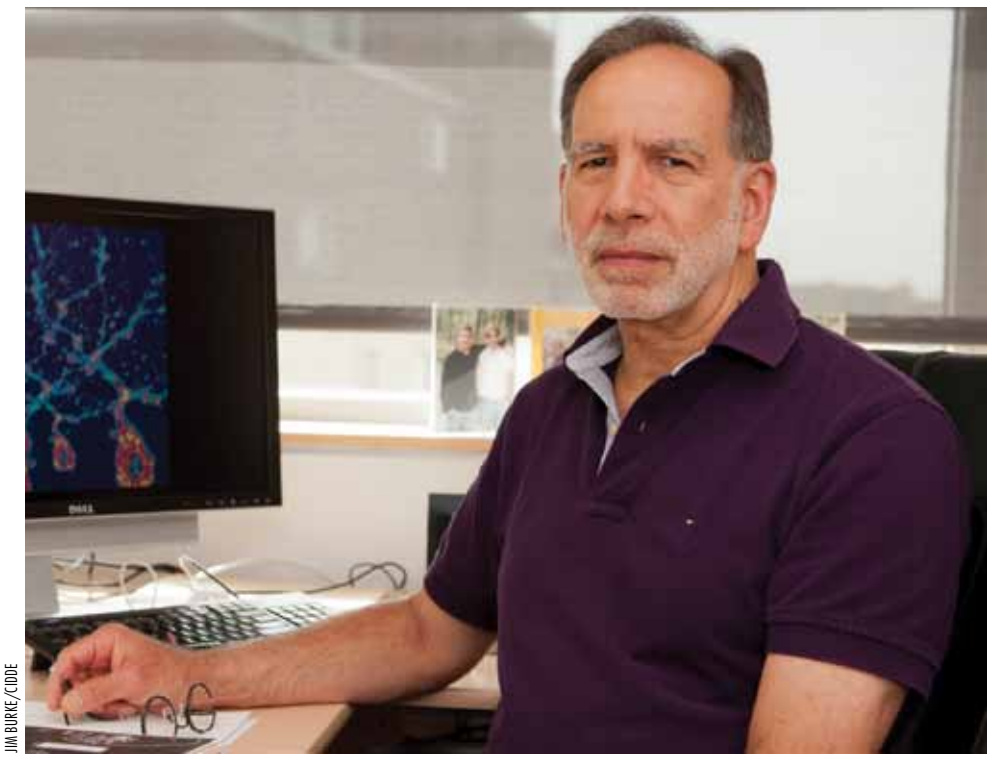
MARY JANE BENT/CIDDE

Chester A. Mathis (standing), professor and director of the PET Facility in the Department of Radiology, and William E. Klunk, professor of psychiatry, developed Pittsburgh Compound B (PiB), perhaps the most significant diagnostic advance in Alzheimer's research today. PiB allows clinicians to see amyloid plaques in the living brain of individuals with Alzheimer's and also in those who do not yet exhibit signs of the disease. This finding could lead to earlier diagnosis, illuminate disease progression, and uncover prevention strategies.

Action Potential: Probing the Brain Power of Pitt Neuroscience

Spotlight on Research

Continued from page 5



JIM BURKE/CIDDE

Peter Strick, a professor of neurobiology as well as director of the Systems Neuroscience Institute, codirector of the Center for the Neural Basis of Cognition, and a VA Senior Research Career Scientist, is researching areas of the brain that control movement and cognition. He said he has always been interested in the nature of volition and neural circuits.

Cognition. "How is it that when I want to move my finger, it moves?' What regions of the brain are involved in that?"

Strick investigates the essential connections between function and physiology, cognition and behavior. Using viral markers, Strick can work neuron to neuron, linking neurons like individual cars that together give purpose to a speeding train.

"We can work out the circuitry," Strick says, listing potential investigations to further elucidate the connection between the basal ganglia and cerebellum. "There's growing evidence, for example, of cerebellar involvement in addiction and fear response," he continues, adding that knowing how such connections work could lead to new treatments not only for addictions, but also for post-traumatic stress disorder.

In previous work, Strick mapped a new area of the cerebral cortex that has evolved to enable humans and other higher primates to perform fine motor tasks. His findings show that the brain's primary motor cortex has adjacent "old" and "new" regions. But unlike the older, less direct region more active in lower animals, this newer region directly controls spinal motor neurons to activate shoulder, elbow, and finger muscles, refining movements required for complex tasks like playing a musical instrument. In recognition of his seminal findings in neural tracing studies, Strick was elected a Fellow of the American Academy of Arts and Sciences in 2004.

Strick investigates the essential connections between function and physiology, cognition and behavior. Using viral markers, Strick can work neuron to neuron, linking neurons like individual cars that together give purpose to a speeding train.

Translational Science and Stroke

"There are so many diseases where neurons die—degenerative diseases like Huntington's, traumatic brain injury, stroke," Robert M. Friedlander, professor and chair of neurological surgery, says with a sigh. "Causes may differ, but many of the pathways mediating cell suicide are shared. As we better understand these pathways, we can be better prepared to develop novel therapies for these often devastating and untreatable diseases."

Perhaps the most significant diagnostic advance in Alzheimer's research today is Pittsburgh Compound B (PiB). PiB allows clinicians to see amyloid plaques in the living brain of individuals with Alzheimers and also in those who do not yet exhibit signs of the disease. This finding could lead to earlier diagnosis, illuminate disease progression, and uncover prevention strategies.

Friedlander's lab works with models of stroke, spinal cord injury, Huntington's disease, multiple sclerosis, and ALS, testing drug libraries for potential new uses. Experiments have shown that the antibiotic minocycline appears to delay disease progression, along with the hormone melatonin and the antiglaucoma drug methazolamide. Clinical trials with minocycline are now under way.

The third-most common cause of death, stroke is the leading cause of disability in the United States. Triggered by blood-flow disruptions, a severe lack of oxygen catapults the immediately involved nerve cells into metabolic collapse and necrosis. Neurons further downstream suffer low-oxygen stress, activating an endogenous cell-death pathway and leading to cell self-destruction (apoptosis.)

Considering the devastation caused each year by stroke—the American Heart Association estimates that someone suffers a stroke every 40 seconds, on average, and dies every four minutes—it is vital to seek more and better treatments.

"Often it is difficult to stand out in many areas, but at Pitt, neuroscience has enough breadth to truly excel," Friedlander says. "We also bring that to clinical practice."

Because sometimes you just have to resort to the scalpel. At Pitt, intracranial aneurysms are evaluated by a multidisciplinary team of neurosurgeons and neurologists, including experts in microvascular and endovascular surgery. Some brain and spinal cord tumors can be treated endoscopically—literally through the nose, with microsurgery, or radiosurgery. Subspecialists are additionally trained in complex and minimally invasive techniques for spine, skull base, neuro-oncologic, pediatric, chronic pain, and stereotactic surgery, as well as acute stroke intervention.

Building a Brain-Computer Connection

One of the bravest of new worlds, though, may be found in the laboratory of Andrew B. Schwartz, professor of neurobiology. Working with Michael L. Boninger, professor and chair of physical medicine and rehabilitation, Schwartz and colleagues are getting nearly $7 million over the next three years from the NIH and the Defense Advanced Research Projects Agency to test a multifunctional prosthetic limb with spinal cord injury patients. The prostheses, mounted on wheelchairs, will be controlled by the patients' brains through implanted electrodes connected to a computer.

"There's a lot of work that we have to do, but the good thing is that we're pretty sure it's going to work," says Schwartz, whose confidence is perhaps understandable given a landmark 2008 *Nature* article he authored on the subject.

The newest trial will encompass three patients with different connectors. The first patient will have two, the second patient will have one, and the third patient will test a wireless telemetry version of the interface. In a companion project, additional patients will test an electrocorticography (ECoG) version of the interface using a grid placed on the surface of the motor cortex for up to 29 days. Neural activity captured by ECoG will be translated by a computer processor to allow the patient to control computer cursors, virtual hands, computer games, and assistive devices such as a prosthetic hand or a wheelchair.

"We want the patient to use the robotic arm to reach out, grab objects, and interact," says Schwartz, explaining that the sensory cortex of one patient's brain will also be stimulated by an implanted electrode array, allowing him or her to "feel what the robot hand is doing."

These examples only hint at an intensity of neuroscience expertise that the University of Pittsburgh shares with few institutions. Arthur S. Levine, senior vice chancellor for the health sciences and dean of the School of Medicine, says he can envision the future development of a Neuroscience Research Institute similar to the current University of Pittsburgh Cancer Institute. Such a center could support, recruit, and focus the collaborative brain power of talented faculty to further reveal the organ that Luna calls "this wonderful machinery that holds the secret of who we are."

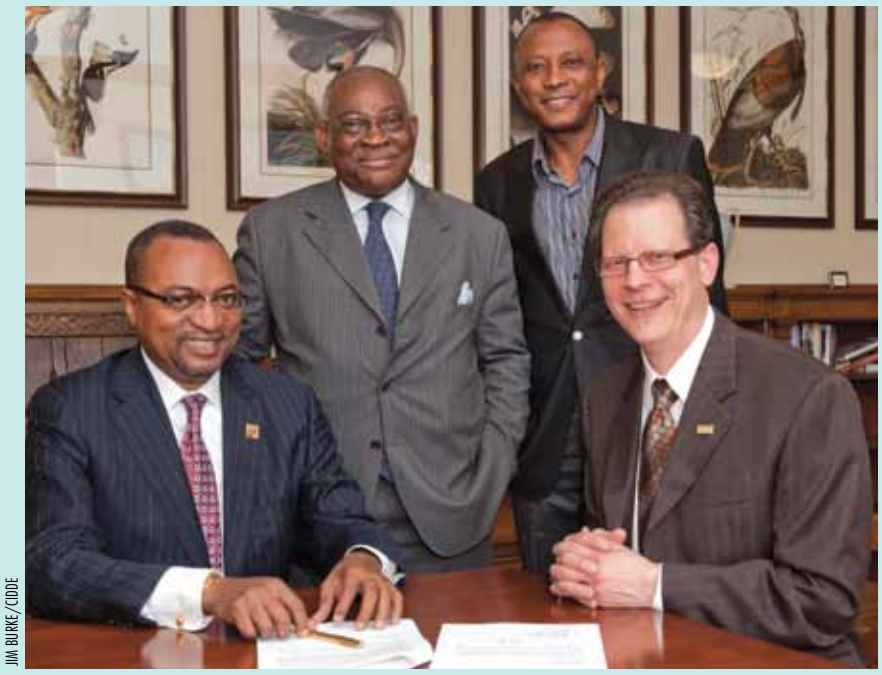
"The brain is the wonderful machinery that holds the secret of who we are."
—Beatrice Luna

JOE KAPLEWSKI/CIDDE

Andrew Schwartz (above), professor of neurobiology, and Michael L. Boninger, professor and chair of physical medicine and rehabilitation, are working with spinal cord injury patients to test a multifunctional prosthetic limb that is mounted on a wheelchair. The prostheses will be controlled by the patients' brains through implanted electrodes connected to a computer.

Newsmakers

PAYING IT FORWARD



JIM BURKE/CODE

Robert O. Agbede (ENGR '79, '81G), president and CEO of Chester Engineers Inc., in Moon Township, pledged $50,000 to support a need-based scholarship for students from underrepresented groups—including African Americans and African émigrés—aspiring to the STEM (science, technology, engineering, and mathematics) fields. Agbede developed the fund to mark the 100th anniversary of Chester Engineers, which he acquired in 2003 and transformed into the largest Black-owned environmental engineering firm in the United States. The scholarship continues his dedication to paying forward the financial support he received as a young Nigerian immigrant pursuing a career in engineering. His company also supports the ACS-Chester Engineers Scholarship, an endowed gift established in 1944 that is currently worth $1.3 million. A May 18 pledging ceremony at Pitt's University Club included Agbede (left, seated); Pitt Vice Chancellor for Institutional Advancement Albert J. Novak Jr. (right, seated); Akin Iroko (right, standing), CEO of TVL Consulting Limited, a Nigerian strategic management firm; and Emmanuel Chike Nwanze (left, standing), current president of the Institute of Directors, a Nigerian business organization, and CEO of Icon Stockbrokers Limited in Nigeria. Nwanze and Iroko were part of a Nigerian delegation participating in a weeklong program on leadership, ethics, and corporate governance hosted by GSPIA's Johnson Institute for Responsible Leadership.

Memorial Service for Dr. Thomas Detre Set For June 5 in Heinz Memorial Chapel

A memorial service celebrating the life of Dr. Thomas Detre will be held at 1 p.m. Sunday, June 5, in Heinz Memorial Chapel. Dr. Detre was the academic leader whose ambition and determined efforts helped propel the University of Pittsburgh's schools of the health sciences to international prominence and the architect behind the transformation of the University's teaching hospitals into UPMC.

Dr. Detre was 86 years old when he passed away Oct. 9, 2010, following a long illness. Since 2004, he had held the titles of Emeritus Distinguished Senior Vice Chancellor for the Health Sciences and Emeritus Distinguished Service Professor of Psychiatry at the University of Pittsburgh.

Dr. Thomas Detre

During Dr. Detre's tenure as the University of Pittsburgh's senior vice chancellor for the health sciences, he established an innovative funding cycle of driving dollars from clinical practice into interdisciplinary research and then applying the results of those endeavors to clinical advances. This approach led to the growth of the University's medical arm and the ultimate realization of what is now UPMC, and it positioned the University to become one of the nation's top 10 recipients of research support from the National Institutes of Health (NIH), a status it has maintained since 1997.

To RSVP, or for additional information, please contact Carol Holbay at 412-647-1784 or at holbayca@upmc.edu.

Memorial donations may be made to the Katherine Detre Scholarship Fund in Pitt's Graduate School of Public Health. For more information, contact Apryl Eshelman at 412-624-5639 or Eshelman@pitt.edu.

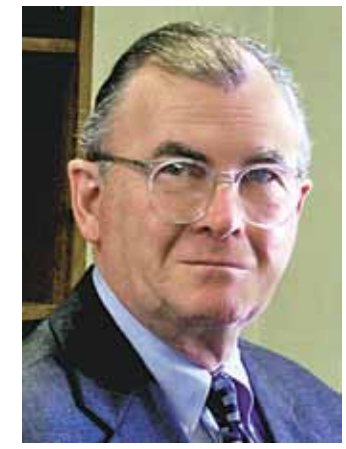
Eight Teaching Proposals Receive Funding From Provost's ACIE

Continued from page 1

can readily access.

Lydia B. Daniels, lecturer and codirector in Undergraduate Programs for the Department of Biological Sciences in the School of Arts and Sciences, for a project titled "Losing the Lecture: Student-Centered, Inquiry-Based Learning in an Entry Level Biology Course."

This project aims to bring the process of guided discovery into the large biology lecture classroom to more effectively develop the questioning and reasoning skills needed by the next generation of scientists. Specifically, the project seeks to shift the teaching of science from the passive-lecture model to a student-centered model focused on developing reasoning skills, an understanding of evidence, and a grasp on how the scientific process generates new knowledge via hypothesis testing. In an effort to develop students' skills in applying knowledge to solve problems, class times will be devoted to interactive and collaborative activities.



Andrew Blair

Christinger Tomer, professor in the Library and Information Sciences Program of Pitt's School of Information Sciences, for a project titled "Information Professionals and Student Interactions."

This project will create a forum for students in Pitt's Master of Library and Information Sciences (MLIS) program to interact with information professional alumni. The MLIS program has 200 students who are enrolled full- or part-time either oncampus or online. This project will develop six edited video recordings of alumni presentations that focus on specific topics and fields of practice within the MLIS curriculum. Alumni guest speaker presentations will be followed by one week of student/presenter online discussions. The interaction is intended to help students develop professional insights and skills beyond the traditional classroom experience.

> "The council continues to be pleased with the quality of submissions, especially those recommended for approval this year by Provost Patricia Beeson. The council has now overseen the 12th round of this competition."
>
> —*Andrew Blair*

Mary Lou Leibold, assistant professor and academic fieldwork educator in the Department of Occupational Therapy within Pitt's School of Health and Rehabilitation Sciences (SHRS), and **Nancy A. Baker**, professor in SHRS' occupational therapy department, for a project titled "Maximizing Clinic Readiness Through Classroom Learning."

This project's goal is to ensure that occupational therapy students are able to perform accurate and efficient upper-extremity assessments and that the students are "clinic" ready, not just "classroom" ready, for the task. Such an assessment requires both high-level cognitive and psychomotor skills; Leibold and Baker said they have identified a need to develop a stepped learning program. The new method will comprise six components, each progressively more complex, including such steps as having students watch a professional perform an upper-extremity assessment, practice an assessment on fellow classmates, and study their own upper-extremity assessments, which will be videotaped.

Jingtao Wang, assistant professor in the Department of Computer Science in the School of Arts and Sciences, for a project titled "Software as a Service for Mobile Computing."

Wang's project involves creating a new upper-level undergraduate course to give students the technical know-how to build effective mobile applications for mobile phones and portable Internet tablets. While many students today may have expertise in building effective desktop graphical user interfaces, those skills are no longer applicable to such mobile devices as the iPhone, Android, and iPad. The project also includes three other facets: identifying, creating, and maintaining a library of mobile interface design patterns; exploring the usage of a class-specific question-and-answer Web site for sharing knowledge and expertise; and creating a community of mobile developers at Pitt.

Amy Williams, assistant professor of composition/theory in the Department of Music in the School of Arts and Sciences, for a project titled "Collaboration in Music and Dance."

Williams and members of Attack Theatre, a professional dance troupe, will design and teach a new graduate course on collaborations in music and dance. The class will culminate in two public performances of new works created by graduate composers enrolled in the course. According to Williams, working collaboratively is enormously eye-opening for artists, but composers at Pitt rarely have the opportunity to create work together with artists outside the music department. The project is intended to help students develop common vocabularies for analyzing and assessing each other's works—as well as to build bridges between the University and the wider artistic community in Pittsburgh. The course will ideally be offered every three years.

Eunice E. Yang, assistant professor in mechanical engineering technology at Pitt-Johnstown, for a project titled "Use of a Spiral Curriculum to Enhance Learning in an Engineering Technology Measurements Course."

This project will develop an integrated curriculum for the Engineering Measurements I course at Pitt-Johnstown. Currently, the course teaches experimental design, data analysis, and sensor theories in three weekly lectures, while students gain data acquisition experience using sensors to measure pressure and other values in one weekly lab. The course will be taught using a more spiral approach instead of through lectures that progress sequentially through a breadth of topics. The new curriculum will require students to use prior knowledge of engineering as well as new concepts learned to solve problems during lab sessions. This method will require students to work as a team to design and perform experiments to address experimental objectives.

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Happenings

The Marvelous Wonderettes,
CLO Cabaret, through October 2

Concerts

Itzhak Perlman Performs and Conducts, featuring works by Bach, Tchaikovsky, and Mendelssohn, 7:30 p.m. **May 25,** Heinz Hall, 600 Penn Ave., Downtown, www.pgharts.org.

Alash Ensemble, Tuvan throat singers from Central Asia, 7:30 p.m. **May 26,** First Unitarian Church, 605 Morewood Ave., Shadyside, Calliope: The Pittsburgh Folk Music Society, Silk Screen, 412-361-2262, www.calliopeshouse.org.

Ravel's Great Waltz, with Manfred Honeck conducting, Nancy Goeres, bassoon, 8 p.m. **June 3-4,** Heinz Hall, 600 Penn Ave., Downtown, www.pgharts.org.

Exhibitions

Carnegie Museum of Art, *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.

Heinz History Center, *Ben Franklin: In Search of a Better World,* explores personal side of one of our founding fathers, **through July 31;** *America's Best Weekly: A Century of* The Pittsburgh Courier, **through Oct. 2;** 1212 Smallman St., Strip District, 412-454-6000, www.heinzhistorycenter.org.

Lectures/Seminars/Readings

"Transplantation and Children: Outcomes and Opportunities for a Lifetime," George V. Mazariegos, Jamie Lee Curtis Endowed Chair in Transplantation Surgery, Pitt School of Medicine, 4:30 p.m. **June 2,** Scaife Hall Lecture Room 6, Provost's Inaugural Lecture Series, www.provost.pitt.edu.

Miscellaneous

CourseWeb Level 2, workshop on application of Blackboard 9.1 Learning Management System's Web-based instructional technologies to enhance student participation and encourage active learning, 9 a.m. **May 25,** B23 Alumni Hall, Pitt CIDDE, register online at www.cidde.pitt.edu.

Basic Issues in Health Care Ethics, consortium, 8 a.m.-4 p.m. **June 7,** La Roche College, 9000 Babcock Blvd., McCandless, Pitt Consortium Ethics Program, Pitt Schools of Medicine and Social Work, Center for Continuing Education in the Health Sciences, 412-647-5834, www.pitt.edu/~cep.

TIES Informational Luncheon for Researchers and Research Assistants, talk on Text Information Extraction System (TIES), Rebecca Crowley, director, Department of Biomedical Informatics Graduate Training Program, Pitt School of Medicine, 11 a.m. **June 7,** Presbyterian Hospital South, Conference Room M3901, open to Pitt and UPMC faculty, staff, and students, registration required, http://ties.upmc.com/register/index.html, 412-623-4753

Opera/Theater/Dance

The Marvelous Wonderettes by Roger Bean, a return to the '50s and '60s, **through Oct. 2,** CLO Cabaret, 719 Liberty Ave., Downtown, 412-281-3973, www.pittsburghclo.org, PITT ARTS Cheap Seats, 412-624-4498, www.pittarts.pitt.edu.

Pitt PhD Dissertation Defenses

Yeonhee Kim, Graduate School of Public Health's Department of Biostatistics, 1 p.m. **May 26,** "Statistical Methods for Discovering Biomarkers Subject to Detection Limit," 308 Parran Hall.

Elia M. Crisucci, School of Arts and Sciences' Department of Biological Sciences, 2 p.m. **May 26,** "The Roles of the Saccharomyces Cerevisiae Paf1 Complex in Regulating Transcriptional Repression," A219B Langley Hall.

Sarah Wheeler, School of Medicine's Cellular and Molecular Pathology Graduate Program, 11 a.m. **May 31,** "EGFRvIII Expression and Signaling in HNSCC," 1105 Scaife Conference Center.

Felicia Bayer, Graduate School of Public Health, 1 p.m. **May 31,** "Of Diabetes Care in a U.S. Manufacturing Cohort: A Comparison of Quality Indicators as Predictors of Diabetes Complications," 109 Parran Hall.

Matthew Kendrick, School of Arts and Sciences' Department of English, 3 p.m. **June 2,** "Rude Mechanicals: Staging Labor in the Early Modern English Theater," 501 Cathedral of Learning.

Itzhak Perlman Performs and Conducts, Heinz Hall, May 25

Ravel's Great Waltz, Heinz Hall, June 3-4

PUBLICATION NOTICE The next edition of *Pitt Chronicle* will be published June 6. Items for publication in the newspaper's *Happenings* calendar (this page) 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.