Dr. Peter J. Hudson, Willaman Chair in Biology and Director of the Center for Infectious Disease Dynamics at Penn State, has accepted the position of Director of the Dorothy Foehr Huck & J. Lloyd Huck Institutes of the Life Sciences effective July 1, 2006.

Dr. Hudson received his DPhil in Zoology from the Edward Grey Institute, Magdalen College, University of Oxford, in 1979. He was employed by the Game Conservancy Trust from 1979 to 1995 as a Research Scientist and then the Upland Research Manager. In 1995 he moved to the University of Stirling as a Reader in Wildlife Epidemiology and in 1998 was promoted to a Personal Chair in Animal Ecology. In 2002 he accepted the Willaman Chair in Biology at Penn State.

Dr. Hudson has developed a national and an international reputation in the field of infectious diseases of birds and mammals. He has had consistent funding from NSF and international agencies and has published more than 180 peer-reviewed papers.

continued on next page
The Huck Institutes have been very fortunate in the outstanding leadership provided first by Nina Fedoroff and then by Channa Reddy. I am certain that Dr. Hudson will continue that legacy of imaginative and strategic leadership. Please join us in welcoming Dr. Hudson to his new position. —from Eva J. Pell

Huck Institutes Highlights ——
Huck Staff Awards

Elaine Kunze, Director of Huck’s Flow Cytometry Facility, received the Penn State 2006 Staff Recognition and Appreciation Award. She will be honored on May 22, 2006 at 2:00PM at the Penn Stater

Judith Burns, Janice Kennedy and Elaine Kunze all received ten-year service awards at the Eighth Annual Research and Graduate School Staff Appreciation Program on February 22, 2006, held at the Penn Stater, President’s Hall IV.

Huck Institutes Highlights ——
Shuttle service to and from Hershey

Need to spend the day at UP or Hershey? Try taking the shuttle. Faculty, Graduate Students, Postdocs and staff are encouraged to use the new shuttle service between University Park and Hershey.

The shuttle service runs Monday through Friday excluding holidays.

The College of Medicine Shuttle
• Departs College of Medicine at 6:45 AM and 2:00 PM
• Departs Old Main at 10AM and 4:30 PM
• Departs Nittany Lion Inn at 10:05 AM and 4:35 PM

The University Park Shuttle
• Departs Old Main at 6:30 AM
• Departs College of Medicine at 10:00 AM

Graduate Education ———
Student News Spring 2006

Christopher Cifelli (NS) and his wife Amy just welcomed their first child into the PSU family. Nicholas was born on April 13, 2006.

Joe Dauer, Randa Jabbour, and Glenna Malcolm (ECOL) received the College of Agricultural Sciences Competitive Grant Awards. Each will receive up to $2000 toward research.

Tiffany Bogich (ECOL) received a Gates Cambridge Scholarship. She is one of two students selected from Penn State University and only 40 students nationwide.

Matt Ferrari (ECOL) received the Outstanding Graduate Student Award in the Department of Biology for 2006. The award includes a check for $2,000.

SARAH ASSMANN
Waller Professor of Biology, Acting Co-Director, Penn State Plant Science Center
JOHN BEARD
Professor of Nutrition
WILLIAM HANCOCK
Assistant Professor of Bioengineering
KEVIN MURPHY
Head and Professor of Psychology
C. CHANNA REDDY^ Distinguished Professor and Head, Department of Veterinary Sciences, Director, Huck Institutes of the Life Sciences
JOHN SCHULTZ
Distinguished Professor of Entomology
ERWIN VOGLER
Associate Professor of Medals Materials
KENT VRANA
Professor and Chair, Pharmacology

Huck Institutes of the Life Sciences Faculty Steering Committee:

Huck Institutes of the Life Sciences Deans Advisory Council:

ERIC BARRON
Dean, College of Earth and Mineral Sciences
FRED VONDRACEK
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HAROLD PAZ
Sr. VP for Health Affairs and Dean, Hershey Medical Center
DANIEL LARSON
Dean, Eberly College of Science
HENRY FOLEY
Associate Vice President for Research and Director of Strategic and Interdisciplinary Initiatives
JAY MOSKOWITZ
Vice Dean for Research, Assoc. V.P. for Health Sciences Research
EVA PELL
Sr. Vice President for Research and Graduate Education and Dean of the Graduate School
C. CHANNA REDDY^ Distinguished Professor and Head, Department of Veterinary Sciences, Director, Huck Institutes of the Life Sciences
ROBERT STEELE
Dean, College of Agricultural Sciences
SUSAN WELCH
Dean, College of the Liberal Arts
DAVID WORMLEY
Dean, College of Engineering
Marieke Gilmartin (NEURO) just received a 2006 Wisconsin Symposium on Emotion Fellowship Award to attend that symposium at the end of April. She was one of 85 out of 195 applicants to receive the award. More importantly, Marieke and her advisor just received the D. G. Marquis Behavioral Neuroscience Award 2005 for the best paper published in the journal Behavioral Neuroscience in 2005. The paper is titled Single Neurons in the Medial Prefrontal Cortex of the Rat Exhibit Tonic and Phasic Coding During Fear Conditioning and the authors are Gilmartin, M.R. & McEchron, M.D.

Nicholas Lyssenko (EMPP) has been invited to talk at the Gordon Conference on Molecular and Cellular Biology of Lipids.


Rushang Patel (MM) won the 2nd prize in the Life Sciences category at the 2006 Graduate Exhibition

Emily Rauschert (ECOL) received the Graduate Assistant Outstanding Teaching Award sponsored by the Graduate School.

Alexandra Surcel (CDB) became the proud mother of a daughter, Katrina born on February 3, 2006 - 7lbs 3oz and 20.5 inches long. Alexandra also won a two year NASA Space Grant Fellowship and she received the 2005 Intercollege Graduate Student Outreach Award and a check for $2000. Alexandra presented a poster at the American Society for Cell Biology national meeting in San Francisco in December of 2005.

He will present a poster titled “EP2/cAMP-dependent mechanism for differential regulation of collagen gel contraction by human fetal and adult dermal fibroblasts in response to prostaglandin E2” at the Regenerate World Conference on Tissue Engineering and Regenerative Medicine, Pittsburgh, PA, April 2006.

Aaron received 2 seed grants for a project entitled “Repair of the Tympanic Membrane with a Novel Bioscaffold.” The seed grants were from the Children’s Hospital of Pittsburgh Research Advisory Committee ($10,000) and the National Organization for Hearing Research Foundation ($20,000). Both grants are now active and are for this year. This is a collaboration between the Department of Pediatric Otolaryngology at Children’s Hospital of Pittsburgh and Stephen Badylak, M.D., Ph.D., D.V.M. of the Department of Surgery at the University of Pittsburgh School of Medicine.

Michael Salerno (BSE) had an eventful year. He defended his Ph.D. in Chemical Engineering in June of last year, and officially got his Ph.D. in August. In July, he was married and they are now expecting a baby in a little over a month. In August, they moved across country so he could start a post-doc position working in the Center for Environmental Biotechnology at the Biodesign Institute at Arizona State University, working under Dr. Bruce Rittmann. The Biodesign Institute just won the lab of the year award by R&D magazine. He is working on a project trying to improve the efficiency of methanogenesis in anaerobic digesters to increase methane yield in wastewater treatment plants.

Ricardo Silva (NEURS) is back at Simon Bolivar University in Caracas Venezuela, where he is teaching biophysics, bioengineering and clinical engineering. He was appointed as head of the Biophysics and Bioengineering Lab at this university and is working on the creation of a cellular and tissue engineering laboratory. He was also appointed as head of the organizing committee for the IV Latin-American Conference on Biomedical Engineering that is going to take place here in Venezuela, on September 2007. Ricardo has a new daughter: Anastasia, born February 10, 2006. He is seeking an active research collaboration with PSU in the areas of molecular, cellular and tissue bioengineering, neuroscience and biomaterials.

In June 2005 PennState University was the first university to receive a new DNA-sequencing technology from the company 454 Life Sciences, Connecticut. At this time only 4 other sites, all being large sequencing centers, were given access to the instrument. The arrival of the new sequencing technology marks a new area, as it is the first technology in as many as 29 years that surpasses Sanger-sequencing in though-put and cost, allowing genome scale projects in a single PI’s laboratory. The technology built on pyro-sequencing produces approx. 300,000 reads of 100 bp length within a 4.5 hour run, for one sixth of the reagent cost of regular sequencing. The main advantage however lies in the fact that no cloning and only minimal starting material are required. Also, operating the instrument and preparing the sample can by carried out without the extensive infrastructure and personnel of a sequencing center. The vast amount of sequencing data does however pose a serious challenge to the bioinformatics community of Penn State, which contributes to the development of analysis pipelines for dissecting the data. The availability of the instrument has fostered multiple collaborations among faculty, many of which have already submitted preliminary data from this technology for the funding of larger projects. The instrument is currently used for projects in microbial and plant genomics, transcriptional studies, molecular evolution, as well as ancient DNA studies.

Contact: Stephan Schuster, 814 863 9278, email: scs@bx.psu.edu

Institute News

**Genomics, Proteomics and Bioinformatics**

Experimental Genomics at PennState

In June 2005 PennState University was the first university to receive a new DNA-sequencing technology from the company 454 Life Sciences, Connecticut. At this time only 4 other sites, all being large sequencing centers, were given access to the instrument. The arrival of the new sequencing technology marks a new area, as it is the first technology in as many as 29 years that surpasses Sanger-sequencing in though-put and cost, allowing genome scale projects in a single PI’s laboratory. The technology built on pyro-sequencing produces approx. 300,000 reads of 100 bp length within a 4.5 hour run, for one sixth of the reagent cost of regular sequencing. The main advantage however lies in the fact that no cloning and only minimal starting material are required. Also, operating the instrument and preparing the sample can by carried out without the extensive infrastructure and personnel of a sequencing center. The vast amount of sequencing data does however pose a serious challenge to the bioinformatics community of Penn State, which contributes to the development of analysis pipelines for dissecting the data. The availability of the instrument has fostered multiple collaborations among faculty, many of which have already submitted preliminary data from this technology for the funding of larger projects. The instrument is currently used for projects in microbial and plant genomics, transcriptional studies, molecular evolution, as well as ancient DNA studies.

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**Institute News**

**Master of Biotechnology Degree Program**

The Master of Biotechnology degree program is a Professional Science Masters (PSM) program that prepares students for diverse career opportunities in the biotechnology and related industry.
Institute News

The program is offered by the Biochemistry and Molecular Biology Department in collaboration with the Huck Institutes of the Life Sciences. To date, 36 students have graduated from the program, including the 7 latest graduates of December, 2005. As with the previous graduates, the latest 7 are now employed or pursuing careers of their choice: two joined GlaxoSmithKline, one joined Human Genome Sciences, one joined United Services University of Health Sciences, one remained with Hershey Medical School where he did internship to eventually pursue a medical degree, one went to Bristol Myers Squibb, and one stayed on with the Walter Reed Army Institute of Research.

Professional Science Masters (PSM) degrees like The Master of Biotechnology, the Master of Applied Statistics and the proposed Master of Forensics offered at Penn State are a growing presence in universities in the United States largely due to the efforts of the Alfred P. Sloan Foundation. The Council for Graduate Schools recently received a $1.8 M grant from the Sloan Foundation to work with member institutions towards making PSM a “regular feature of graduate education”. In addition, a bipartisan bill in the Senate called the National Innovation Act of 2005 included a section on supporting PSMs as a means to increase highly scientifically and technically skilled workforce. A national PSM Steering Committee is also currently working on establishing a National PSM Association to advance the interests of the PSM programs. There are currently 101 PSM programs in place in 51 universities in diverse areas of science, and this number will continue to grow. The integration of science and business-related and professional skills is a defining feature of the PSM degrees.

Application materials for the Master of Biotechnology program can be obtained by e-mail requests at: msbiotec@mail.biotec.psu.edu, or can be accessed online at: www.huck.psu.edu/ms/ms.html.

Continuing Education and Outreach Programs

Faculty and Staff Workshops on Techniques in Molecular Biology

The Instructional Laboratory in Molecular Biology continues to offer this workshop every summer to faculty and staff of Penn State and research staff of other organizations. This is a hands-on laboratory course on the basic techniques in purifying DNA, analyzing DNA by restriction enzymes, gel electrophoresis, Southern blotting and hybridization, cloning, DNA sequencing, polymerase chain reaction and also protein immunodetection (western blotting). The 2006 Techniques in Molecular Biology Workshop will be held on May 15-26, 2006. For more information, e-mail lj6@psu.edu or go to www.huck.psu.edu/techniques/workshop.html for registration information and to download the registration form.

Hands-on Workshop in Bioinformatics

This workshop will cover basic techniques in Bioinformatics including biological databases and information retrieval, sequence alignments and homology searches, DNA sequence analysis and gene finding, protein analysis tools and protein structure prediction, high-throughput gene expression analysis by microarrays, and phylogenetic analysis. It is open to anybody from anywhere interested in gaining a working understanding and experience in the practical aspects of bioinformatics. The Fourth hands-on Bioinformatics Workshop will be held on June 5-10, 2006. For more information, e-mail lj6@psu.edu or go to www.cbio.psu.edu/news/workshop/ to download registration form.

Outreach Programs for K-12 Students

K-12 students continue to benefit from the ongoing programs of the Instructional Laboratory in Molecular Biology (ILMB):

- The “Scientist-In–Residence” or “BioResidency” program hosts advanced biology students from the State College Area High School for a 3-day immersion in the ILMB doing hands-on molecular biology work focused on cloning and DNA fingerprinting. This March, the ILMB hosted 30 of these bright SCAHS students.

Graduating Master of Biotechnology students and their guests enjoy a chat at the LSB Gateway before the graduation ceremonies in December 2005.
• “Graduate Students as Teachers”, a program that fields graduate students to teach concepts in biotechnology and molecular biology hands-on in high school classrooms, was held in late April, 2006. Eighteen wonderful graduate students graciously volunteered: Kristin Black, Amelia Henry, Jenelle Heyer, Laurie Shuman, James McNeil, John Coon, Girish Hemashettar, Jesse Knaub, Sarah Nilson, Erin Rehrig, Emily Hohlfeld, Melissa Wilson, Clayton Coffman, Vid Karmarkar, Suma Rao, Jori Sharda, Jessica Molek and Laura Pomeroy. Any student interested in doing outreach to high school students should contact lje6@psu.edu.

• “A Day in the Lab” program that involves a day’s immersion in the ILMB for high school students is held in both Spring and Fall semesters; this program hosted students from the Indian Valley High School in December 2005.

Indian Valley High School students at the ILMB.

Any K-12 teachers and students interested in participating in or accessing any of these outreach programs at the HILS Instructional Laboratory in Molecular Biology should contact Dr. Loida Escote-Carlson, lje6@psu.edu.

Facility News

X-ray Crystallography Core Facility Renovated

The renovation of the new X-ray core facility housed in 8 Althouse Laboratory, is now complete. We now have a lab space of 1500 square feet area with a lab bench for performing crystallization experiments and two crystallization chambers to setup crystal growth trials at two temperature settings. Researchers from the various departments at Penn State now have access to a facility to grow macromolecule crystals of their interest. An instrumentation grant has been written for external support from NIH to equip the facility with state-of-the-art X-ray instrumentation. If we get funded, we will be able to collect X-ray data in-house. For crystals grown prior to acquiring the new X-ray instrumentation, data sets are planned to be collected from one of the synchrotron centers. The facility is equipped with the required software and has the expertise needed to solve the three-dimensional structures of macromolecules from these data sets.

A potential user group for the core has been formed. This includes about thirty faculty members and researchers from two colleges: College of Agricultural Science, Eberly College of Science and from four departments: BMB, Veterinary Science, Biology and Chemistry. In the coming years we hope to significantly expand the structural biology research done on the University Park campus.

Facility News

Flow Cytometry and Imaging Facility Update

It has been a good spring for the facility. The NIH-Sig grant for a high speed sorter was funded with no budget cuts. They are planning to purchase both a high speed sorter and a replacement benchtop cytometer. A high speed sorter would allow sorting speeds of >30,000 particles per second.

The facility has purchased a new computer for the digital microscope. All of the time-out problems seem to have vanished. The acquisition software is wonderfully fast. They have installed a two-monitor system where the image resides on one monitor and the controlling software on the second. This upgrade has given the busy digital microscope a new lease on life.

Elaine Kunze was elected to the board of ISAC (the International Society for Analytical Cytometry) as an Analytical Councilor.
This means a much bigger presence for the Huck Institutes in the international flow cytometry community. Penn State has always been a large part of flow history (i.e., three previous ISAC presidents have been Penn Staters). We hope to build on this and encourage our researchers to publish in the journal Cytometry, whose editor is a Penn State alumnus.

Focus on Research

Min-Joon Han (MJ), a graduate student in Emine Koc’s lab (BMB), is investigating the role of DAP3 during apoptosis. DAP3 (Death-associated protein 3) has been shown to be involved in apoptosis in mammalian cells, which is also called MRP-S29 (mitochondrial ribosomal protein). To show the location of DAP3, MJ made GFP-fusion protein for DAP3. After transfection, DAP3 shows translocation into mitochondria. HeLa cells (cervical cancer cells) were used for the research. Cells were stained with Mitotracker Red CMXRos (red) to show the location of mitochondria and DRAQ5 (blue) to show cell nuclei. GFP (green) shows the location of DAP3. The image was generated using the Olympus FV300 laser scanning confocal microscope.

Faculty Updates

Gong Chen’s students (Ning Dong, Min Jiang, and Jun Yao) attended the annual Society for Neuroscience meeting in DC and each presented a poster. Min Jiang received the Research Excellence Award from the Biology Department.

Keith Cheng of the Jake Gittlen Cancer Foundation in the Division of Experimental Pathology, Department of Pathology at the College of Medicine, recently made the international news. Dr. Cheng led an international research team that also included Dr. Victor Canfield (Pharmacology) and Dr. Mark Shriver (Anthropology) that discovered a new human skin color gene, SLC24A5 that is perhaps the most important to date. Their work appeared as the cover article for the December 16 issue of Science Magazine. Remarkably, their work strongly suggests that Europeans have a one-letter change in this gene that makes their skin lighter than that of their African ancestors. Interviews have included TV spots on ABC News Tonite, Good Morning America, and CBC (Canada and Europe to air in April), radio interviews for PBS All Things Considered, WITF, British and German public radio, magazines and newspapers including The Scientist, NY Times, Washington Post, and in Europe and S. America. He has presented his work at CalTech, U Minnesota, NIH, and Stanford. The Stanford talks included one for the Bing Public Lecture Series http://daily.stanford.edu/tempo?page=content&id=19464&repository=0001_article. He will also speak in S. Africa, Yale, U Washington, and in Paris later this year. For more details, do a Google search for Dr. Cheng’s web site or “SLC24A5."

Mala Chinoy was the featured women’s speaker on March 22, 2006 at the Women’s Month Celebration hosted by Women’s Council of the Hershey Company. She spoke about “Women of India from 6000 years ago to date”. The event was attended by about 90-100 women and a few men from the Hershey Company. She is an invited panelist to discuss “gender biases in academic medicine” at the annual meeting of the Society of Executive Leadership in Academic Medicine (SELAM) on April 21-22, 2006 in Philadelphia. Dr. Chinoy is the invited Managing Editor for a special volume on “Developmental Genes” for an outstanding electronic journal - Frontiers in Bioscience. This volume will include several original research articles from well-established developmental biologists of the world.

Andy Ewing is the recipient of the 2006 Eastern Analytical Symposium Award for Outstanding Achievement in the Fields of Analytical Chemistry. This award is the premier award bestowed by the Eastern Analytical Symposium.

Thomas Gardner, Jack and Nancy Turner Professor of Ophthalmology and Cellular and Molecular Physiology, was named vice chair of research, Department of Ophthalmology.

Ross Hardison, Professor of Biochemistry and Molecular Biology, has been named the T. Ming Chu Professor of Biochemistry and Molecular Biology. He was appointed by the Office of the President, based on the recommendations of his colleagues and Dean Daniel Larson in the Eberly College of Science, in recognition of his national and international reputation for excellence.
in research and teaching. Hardison’s research focuses on the molecular basis of gene regulation and evolution, an area important for fundamental issues in developmental biology and for exploring practical applications. Hardison’s work is part of the worldwide effort to determine and understand genomic DNA sequences from many species, including humans, which is revolutionizing the biological sciences.

**Anita Hopper** received the PSU Distinguished Professor Award recently at the College of Medicine. Anita has also accepted a new position at Ohio State University as Chair of Molecular Genetics, effective Oct. 1, 2006. She will leave PSU sometime between July and October.

**Mark L. Latash** recently received the PSU Distinguished Professor Award

**Bernhard Luscher** had two of his coworkers give birth to their first babies: Shoko Masuda (Neuroscience Grad student) and Nadia Sahir (postdoc).

**Teh-hui Kao** (PLPHY) chair of the Plant Physiology Program and Professor of Biochemistry and Molecular Biology at Penn State University Park, is this year’s winner of the Graduate Program Chair Leadership Award. The award honors faculty members for exemplary leadership that benefits graduate students and faculty in an existing graduate program at the University. The award’s design acknowledges the recipient’s efforts to enhance student recruitment, professional development and placement, and mentoring and promotion of faculty and students in the graduate program. The winner works to enhance his program’s diversity, educational quality, resources and national visibility, and promotes professional ethics and its integration into all elements of graduate programming.

**Mark Kester** received the PSU Distinguished Professor Award recently at the College of Medicine.

**Andrey Krasilnikov** and **Anton Nekrutenko** were recently named Beckman Young Investigators.

**Curt Omiecinski** was recently elected President-Elect of the Toxicology Division of ASPET (American Society for Pharmacology and Experimental Therapeutics) which is a member of FASEB.

**Hong Ma**’s graduate student Asela Wijeratne (Plant Physiology) and his wife Damitha Wickramasinghe (Plant Pathology) greeted their new son, Ravindu Ashan Wjeratne in January. In February, graduate student Alexandra Surcel (CDB) and her husband John Debes (Ph.D. in Astrophysics) welcomed their daughter Katrina Isabel Surcel-Debes. These two newborns make a total of six babies born to members of the lab since last June. In March, they said farewell to post-doctoral fellow Laura Zahn, who took a position as an editor at Science. She and her husband Alex Richter and their son Elliot, recently moved near Washington, DC.

In December, Wuxing Li (Plant Physiology student) was selected to receive the prestigious Alumni Association Dissertation Award in Life and Health Sciences for 2006. Asela Wijeratne received one of the Biology Graduate Student Research Excellence Awards.

In December, **Hong Ma** gave a seminar on genes controlling recombination at Iowa State University. In January, Hong Ma and Laura Zahn presented talks on genes regulating anther cell differentiation and evolutionary and genomic studies of floral regulators, respectively, at the Annual Plant and Animal Genome conference at San Diego, in a session on plant reproduction co-organized by Dr. Jim Leebens-Mack (Research Assistant Professor in Biology) and Hong.

**Andrea Mastro** recently received the Stepping Stone Award from the Pennsylvania Breast Cancer Coalition at the Keystone Breast Cancer Conference in Harrisburg, Pennsylvania.

**Masatoshi Nei** was awarded the 2006 Thomas Hunt Morgan Medal. The Genetics Society of America annually honors members who have made outstanding contributions to genetics. The Thomas Hunt Morgan Medal recognizes a lifetime contribution to the science of genetics.

**Frank Pugh** is to receive the Penn State Faculty Scholar Medal for Outstanding Achievement in Life and Health Sciences.

**Frank Ritter** made three presentations at the APS spring meeting. The abstracts for the two posters and one presentation are at [http://acs.ist.psu.edu/papers/](http://acs.ist.psu.edu/papers/) (search for ‘psychosomatic’)

**Jill P. Smith** has been invited to be the keynote speaker at an NIH symposium on Crohn’s disease April 7th. Also her lab has 2 presentations at Digestive Disease week at the Los Angeles Convention center in May.

**Shao-Cong Sun** discovered a novel mechanism regulating T lymphocyte development (Nature Immunology, in press). This work, led by a postdoctoral fellow, Dr. William Reiley, revealed an essential role for protein ubiquitination/deubiquitination in controlling the signaling events driving T-cell development. This also represents a productive collaboration between Dr. Shao-Cong Sun and Dr. Chris Norbory, both being members of the Immunobiology Graduate Program of the Huck Institute.

**Ian Zagon** received the PSU Distinguished Professor Award recently at the College of Medicine.
New Co-Funded Faculty

Reginald B. Adams, Jr. joined the Department of Psychology as an Assistant Professor during the spring semester of 2006. He received his Ph.D. from Dartmouth College in 2002. Dr. Adams is interested in how we extract social and emotional meaning from nonverbal cues, particularly via the face. His work addresses how multiple social messages (e.g., emotion, gender, race, age, etc.) combine and interact to form unified representations that guide our impressions of and responses to others. Of particular interest is the functional correspondence between static and expressive cues; at a fundamental level both signal basic intentions to approach-avoid, dominate, and/or affiliate. Although his questions are social psychological in origin, his research draws upon visual cognition and affective neuroscience to address social perception at the functional and neuroanatomical levels. Before coming to PSU, he was awarded a National Research Service Award (NRSA) from the National Institute of Mental Health to train as a postdoctoral fellow at Harvard and Tufts Universities.

Aimin Liu joined the Department of Biology as an Assistant Professor of Biology during the spring semester of 2006. He received his Ph.D from New York University Medical Center, NY, in 2000. His research interests are Biogenesis and function of cilia in signal transduction and mammalian embryonic development. Cilia are microtubule-based cell surface organelles. His recent research indicated that intraflagellar transport (IFT) proteins, which are involved in ciliogenesis, play critical roles in mouse embryogenesis and Hedgehog (Hh) signal transduction. Currently, research in his lab continues to address cilia-related biological questions. First, they are investigating the molecular mechanism by which IFT proteins regulate Hh signaling. His lab is also in the process of discovering a novel cilia related gene in mouse and characterizing the corresponding mutant phenotype. Another focus of the lab is on cell polarity regulation and how it relates to the biogenesis and function of cilia.

Tony Jun Huang joined the Department of Engineering Science and Mechanics as the James Henderson Assistant Professor during the fall semester 2005. Dr. Huang received his Ph.D. degree in Mechanical and Aerospace Engineering from the University of California, Los Angeles (UCLA) in 2004, and his B.S. and M.S. degrees in Energy and Power Engineering from Xi’an Jiaotong University, Xi’an, China, in 1996 and 1999, respectively. He completed one year postdoctoral studies at UCLA. His research interests include Biomedical NanoElectroMechanical Systems (Bio-NEMS), Nanomaterials/Nanodevices, and Micro/Nano fluidics.

Dawn Luthe joined the Department of Crop and Soil Sciences as Professor of Plant Stress Biology during the Spring 2006 semester. Dr. Luthe received her Ph.D. from the University of Wisconsin, Madison in 1976. Her long-term research interest is to learn how plants respond to environmental stresses at the physiological, biochemical and molecular levels. Because plants are fixed in their environment, they cannot move to avoid biotic assaults from insect herbivores and plant pathogens or unfavorable abiotic conditions such as extreme temperature fluctuations. The two major areas of research in her laboratory are focused on understanding how corn defends itself against herbivory by caterpillars and the aflatoxin-producing fungus, Aspergillus flavus. In the past her laboratory has shown that insect-resistant maize lines accumulate a unique cysteine protease in response to caterpillar feeding. The protease is localized in the phloem and accumulates near the feeding site. They have shown that the protease attacks the insect peritrophic matrix, a structure that separates the food bolus from the midgut and protects the midgut from chemical and physical damage and assists in nutrient assimilation. They are also investigating signaling pathways that lead to the accumulation of the protease in the plant. In the case of A. flavus accumulation, they are using proteomics to analyze the proteins that accumulate in tissues of the developing maize ear and comparing those proteins in genotypes of maize that are resistant and susceptible to aflatoxin accumulation and systems biology to examine global patterns that may be indicative of resistance.

Na Xiong joined the Department of Veterinary and Biomedical Sciences as an Assistant Professor of Molecular Immunology during the fall 2005 semester. Dr. Xiong received his Ph.D. in Pathology from Case Western Reserve University in 1997 and his B.S. and M.S.
in Biochemistry from East China University of Science and Technology. Dr. Xiong’s research interest is in development and function of gamma/delta T cells, an important class of immune cells.

**News Releases**

**Paz to lead College of Medicine and Medical Center**

Harold Louis Paz, M.D., M.S., dean of the Robert Wood Johnson School of Medicine in New Brunswick, N.J., has been appointed to lead Penn State Hershey Medical Center and Penn State College of Medicine effective April 24, 2006. Paz will fill the role of Penn State’s Senior Vice President for Health Affairs, Dean of the College of Medicine, and Chief Executive Officer (CEO) of the Medical Center. Paz has been Dean of the Robert Wood Johnson School of Medicine for ten years, during which time, he has overseen the development of a major cancer center and child health institute, participated in the creation of a children’s hospital, oversaw significant expansion in medical research, increased community partnerships and advances in medical education. (The Crescent, March 8, 2006).

**News Releases**

**Harbaugh named Associate Director for Clinical Neuroscience**

Robert Harbaugh, M.D., F.A.C.S., F.A.H.A., chair, Department of Neurosurgery, and Professor of Engineering Science and Mechanics, Penn State University, was recently appointed as the Assoc. Director for Clinical Neuroscience of the Penn State Hershey Neuroscience Research Institute (PSHNR). He will join Thomas Uhde, M.D. (Director) and Robert Milner, Ph.D. in helping to lead the Institute. PSHNR was founded in 2004 to promote neuroscience research, research training and treatment of individuals with disorders of the nervous system. The Penn State Neuroscience Institute of Penn State University Park and the PSHNR work together to advance the field of neuroscience and to continue serving the community. (The Crescent, March 8, 2006)

**News Releases**

**New Tools Developed for Studying Neurodegenerative Brain Disorders**

21 March 2006—Penn State researchers have created an elegantly simple model of an axon—the extension of a neuron that communicates with other neurons—and have used this model to reproduce a change in the axon’s shape that is characteristic of neurodegenerative disorders such as Alzheimer’s and Parkinson’s diseases. This achievement is the first of its kind in a highly simplified biophysical model system. The model provides a novel avenue for investigating the specific mechanisms that contribute to complex brain diseases. It also provides a means of discovering new kinds of drugs for the treatment of these disorders. The research will be described in a paper to be published in the 4 April 2006 issue of the Proceedings of the National Academy of Science.

This model, produced in the laboratory of Paul S. Weiss, Distinguished Professor of Chemistry and Physics at Penn State, has the essential features of an axon, including a lipid membrane that encloses a “cytoskeleton” scaffolding, which produces the axon’s shape. The outer membrane was prepared to contain a very small amount of dye molecules that are sensitive to ultraviolet light. Shining light on the artificial axons initiated a photochemical reaction that produced highly reactive “free radicals” and triggered a catastrophic oxidative-stress reaction. The result was that the previously protruding microtubule cytoskeleton collapsed into a constricted and deformed structure resembling a string of beads—the same morphology observed during the degeneration of actual neurons.

Surprisingly, the model reproduced this highly characteristic “beading” or “pearling” even though it does not include proteins that were previously thought to be essential for causing this kind of axon destruction. “One of the beauties of a simplified model is that it allows you to ask very simple questions, which sometimes are difficult to answer in a complex living system, and sometimes to get surprising answers,” Weiss said. “What makes this model so exciting is that it generates many more questions than it answers,” Weiss said. “It will allow us to test hypotheses of how damage occurs, and importantly, how we might prevent it. There is a real opportunity to come up with novel therapeutic treatments.” “There is tremendous urgency right now to determine which processes cause the destructive mechanisms that we see in neurodegenerative diseases,” said coauthor and Assistant Professor of Veterinary and Biomedical Sciences, Anne Milasincic Andrews. “Our study shows that oxidative stress, whatever its origin, is capable of causing the cytoskeleton of this artificial system to collapse in the same way that it does in diseased or aging brains.” One of the future experiments planned by the team is to induce oxidative stress in the presence of key proteins thought
to be involved in the underlying causes of the brain patholo-
gies associated with Alzheimer’s and Parkinson’s diseases to see
whether these proteins accelerate the damaging effects of oxida-
tive stress.

The study also revealed many specifics about the process of axon
collapse. For example, the degradation rate is faster when the lip-
ids comprising the membrane have more multiple bonds (they are
more highly unsaturated). The researchers also added free-radical
scavengers, such as vitamins C, E, and K, to the model system
and found that these vitamins delayed or prevented the degrada-
tion of the cytoskeleton. “These antioxidant vitamins neutralized
the free radicals before they had a chance to degrade the model
axon,” Weiss explained.

“Simple models also allow us to build more complicated hypoth-
eses, which later can be tested in complex living systems, such as
laboratory animals. We plan to build into our model the different
brain chemicals that have been implicated in neurodegenerative
processes to see which are the good and bad actors—which are the
most effective in promoting the radical attack from the membrane
to the interior of the axon and which are the best at disabling free
radicals.”

One of the types of neurons that degenerate in diseases such as
Alzheimer’s disease and that also contribute to depression and
anxiety disorders are neurons that produce the neurotransmitter
serotonin. Andrews and her colleagues have made a specific model
of serotonin-axon degeneration using a chemical neurotoxin.
Evidence of serotonin axon damage, including beading and pearl-
ing, was published recently by Andrews and her colleagues in the
journal Neuropharmacology. This study used antibodies to label
serotonin axons so that the degenerative process could be visual-
ized. The researchers injected mice with the chemical neurotoxin,
2'-NH2-MPTP, that Andrews discovered and has been studying
for nearly two decades. “This latest study shows conclusively
that this toxin destroys serotonin-transmitting neurons,” Andrews
said, “and it currently is one of the best models to destroy this
type of neuron. We clearly observed evidence for axonal collapse
into the beaded structures in the brains of these animals a short
time after we gave them the neurotoxin.”

Neurodegenerative disorders typically involve many different
types of neurons that produce different neurotransmitter chemi-
cals. “Our chemical model of neurodegeneration gives us a tool to
disable just one type of neuron so we can begin to tease apart how
each neurotransmitter system participates in these complex disor-
ders,” Andrews said. “We then can study the behavioral effects of
the degeneration of each system and can test the effectiveness of
potential therapeutics to prevent or reverse the damaging effects.”

Other researchers involved in the paper to be published in the
Proceedings of the National Academy of Science include Anne E.
Counterman, previously an NIH postdoctoral fellow in the Weiss
laboratory and now a researcher at Yale University; and Terrence G. D’Onofrio, a former graduate student in chemistry in the Weiss group, who is
currently a scientist at the U.S. Army laboratory at Edgewood. The scientists who worked on the stud-
ies published in Neuropharmacology include Beth A. Luellen, a former neuroscience graduate student
in the Andrews group who is now a postdoctoral fellow at the Penn State Neuroscience Institute;
Matthew E. Szapacs, a former chemistry graduate student in the Andrews group who currently is a
postdoctoral fellow at the Vanderbilt University School of Medicine; and Christopher K. Matede-
erese, a former chemistry undergraduate student researcher in the Andrews group who is now a
graduate student in chemistry at the University of North Carolina at Chapel Hill.

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News Releases

Applying Math and Counting Cups
Taken from The New York Times, Tuesday, March 14, 2006
Vital Signs – Eric Nagourney

Is there such a thing as too much coffee? A recent
study suggests there is. Researchers from Penn
State have found that when volunteers were asked
to perform difficult mathematical computations in
a stressful situation, they did better after they were
given the amount of caffeine found in two cups of
coffee. But when volunteers were given twice as
much caffeine, their performance slipped.

The researchers, who presented their findings at
a meeting this month of the American Psychoso-
matic Society, came across the effect as they were
looking for a better way to measure how the body
reacts to caffeine under stress.

The main interest, said the lead researcher, Laura
Cousino Klein, was whether a simple test for an enzyme in saliva would provide insight into changes in the volunteers’ bodies that could have health implications.

The researchers found that the levels of the enzyme, alpha amylase, did rise during the experiment, suggesting that when people drink caffeine while under stress, their bodies may be experiencing a small-scale flight-or-fight response. Over the long term, this can lead to health problems.

In this case, the stress came not from a sudden attack by a wild animal but from the volunteers’ being asked to count backward from a four-digit number by 7’s and 13’s while the researchers pressured them to go faster.

The lesson is not that coffee is bad for you. But people, Dr. Klein said, should be “cautious about how much caffeine you are drinking when you are stressed.”

– submitted by Frank Ritter.