

# DIMENSIONS *of* DISCOVERY



**NEES team members** (front row left to right) Dawn Weisman, Barb Fossum, Julio Ramirez, Debra Nahlik, Melanie Lindsay, Rudolf Eigenmann, Sean Brophy, (back row left to right) Ayhan Irfanoglu, Meagan Kramer, Thomas Hacker, Dave Kotterman, Saurabh Bagchi, and Brian Rohler.

## »» NEES Operations Center Up and Running

### What's Inside

- » Sir John Pendry, Distinguished Discovery Lecture Series speaker, November 17.
- » Doors open to provide researchers access to some of the most advanced laboratories and instrumentation.
- » NEEScomm team wears many hats.
- » Purdue Climate Change Research Center names interim director.
- » New staff join the Office of the Vice President for Research.
- » Storylines give proposals an edge.
- » Training and oversight in responsible ethical conduct of research.
- » NIH changes you need to know about.

### \$105M NSF Award Received

*Earthquakes and tsunami losses be warned: Your devastation could be diminishing, thanks to work now overseen at Purdue University by the new NEES Operations Center, launched in October with a \$105 million, five-year cooperative agreement between the National Science Foundation and Purdue University.*

### Team's Work Begins in Earnest

With temporary offices in Young—soon to be moved to the Discovery Learning Research Center in Discovery Park—the center's primary function of leading, operating and maintaining the five-year-old George E. Brown Jr. Network for Earthquake Engineering Simulation is underway, reports Julio Ramirez.

"We have begun in earnest," says Ramirez, center director, principal investigator and Purdue civil engineering professor. An internationally recognized expert in reinforced-concrete structures, seismic effects and earthquake reconnaissance, he has seen devastation firsthand and evaluated

## NEES (cont'd)

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the consequences to the built environment in his native country, Mexico, and in Colombia, Japan, Turkey and other areas.

Day-to-day operations are overseen by Barb Fossum, deputy center director; Dawn Weisman is director for information technology. The center is in the process of hiring a director for site operations.

The effort assembling the proposal to the National Science Foundation, with help from the Office of the Vice President for Research, was phenomenal, Ramirez says. “You can’t do this with just one or two people. With a proposal of this magnitude, we had many components, and we needed that support framework for organizing our work and making it better.”

Landing the NSF funding was the first step, Ramirez says. “The journey begins with getting the award, but we can’t just drink our champagne and go away. We have five years of hard work ahead, and everybody on the team and Purdue University need to be part of the effort. This type and size of grant needs institutional support pre- and post-award.”

The team has already hosted representatives of 13 of the 14 equipment sites, the NSF and others for a kickoff meeting at Purdue. It’s also working with a previous operations manager for a smooth transition, and begun hiring 20 full-time staff and five graduate students.

### Site Meetings Next

Next up: Ramirez and other members of the team will begin a vigorous schedule traveling to the sites. “We’ll listen and partner with them to improve the efficiency of the network by bringing resources that can help them do their jobs better, so those using the sites can do better research,” Ramirez says.

Then, “We have to build a bridge to the future, deciding what this organization should be in year three, year five, and beyond,” Ramirez says. “This type of organization, working as a network, with a successful cyberinfrastructure, education and outreach, can be a model for other engineering fields. Our core effort goes to helping the researchers and helping educators and learners improve.”

The NEEScomm team, whose name reflects its community and communications involvement, is the new manager for NEES Operations. The NEES Operations Center at Purdue will integrate site operations; IT; and education, outreach and training activities. The team also will collaborate to develop a vision for the network’s future so it can serve future research needs.

“Through NEEScomm’s leadership, the NEES experimental facilities, NEEShub and NEES Academy will provide world-class resources for earthquake engineering researchers, educators, students and practitioners not only in the United States, but globally,” says Joy Pauschke, National Science Foundation NEES program director.

“The universities and institutions participating have had great individual successes, and we hope to bring them together to create a whole that is even greater than the sum of its parts,” says Purdue President France Córdoba.



**Julio Ramirez**, NEES Center director, principal investigator and Purdue civil engineering professor.



Photo courtesy of the Equipment Site at the University of Nevada, Reno.



National Earthquake Hazards Reduction Program.

### Bottom Line: Saving Lives, Mitigating Loss

That's where the leadership of Ramirez, who came to Purdue in 1983 with civil engineering bachelor's, master's and doctoral degrees—earned at the Universidad Nacional Autonoma de Mexico, University of Texas at El Paso and University of Texas at Austin—comes into play.

“My role is to engage the team, the community and the sites with a vision, a common objective that will allow us to do two fundamental things: better research and better education for the future of our profession,” he says.

“I'm excited, happy and humbled, all at the same time, and thankful for the opportunity. The potential of this task we have been charged with is amazing,” Ramirez says. “At the core, the people engaged in this network and the purpose of establishing it is to save lives, to mitigate loss. That's why we're here.” ■

Writer: Kathy Mayer



## The NEEScomm Team *Across campus and around the country, a team is already at work.*

### Purdue University

- » **Principal investigator:** *Julio Ramirez*, NEES Operations Center director, civil engineering
- » **Co-principal investigators:** *Saurabh Bagchi*, cyber-security officer, electrical and computer engineering; *Sean Brophy*, education/outreach/training co-leader, engineering education; *Rudolf Eigenmann*, IT co-leader, electrical and computer engineering; *Barbara Fossum*, deputy center director, Cyber Center; *Thomas Hacker*, IT co-leader, computer and information technology
- » **Also:** *Ayhan Irfanoglu*, IT earthquake expert, civil engineering; *Santiago Pujol*, IT earthquake expert, civil engineering

### Partner Institutions

San Jose State University; University of Florida/Gainesville; University of Kansas/Lawrence; University of Michigan/Ann Arbor; University of Texas/Austin; University of Washington/Seattle; Fermi National Accelerator Laboratory

### NEES Equipment Sites

Cornell University; Lehigh University; Oregon State University; Rensselaer Polytechnic Institute; University at Buffalo-SUNY; University of California: Berkeley, Davis, Los Angeles, San Diego, Santa Barbara; University of Illinois/Urbana; University of Minnesota; University of Nevada/Reno; University of Texas/Austin ■

## NEES (cont'd)



NEES equipment sites

## Eigenmann, Hacker Spearhead Cyberinfrastructure Deployment

Sharing information and running simulations will be critical to the success of NEES Operations, which will draw on Purdue expertise.

Co-principal investigators Rudolf Eigenmann, a computer engineering professor, and Thomas Hacker, a computer and information technology professor, will co-lead deployment of the cyberinfrastructure, drawing on HUBzero technology developed at Purdue.

That technology was used in developing the nanoHUB.org cyberstructure. Since its launch, another nine hubs have been created, and a dozen more are expected in the next year.

“The HUBzero technology will allow someone to simply go to a Web site and

instantly view data or run a simulation,” says Eigenmann, who was educated in Switzerland and has since been involved in research on parallel computing, compilers, computation engineering, performance evaluation, parallel architecture and Internet sharing systems.

Educated at the University of Michigan with a number of years experience in industry and academic IT organizations, Hacker brings fundamental cyberinfrastructure development and deployment expertise to the project.

Their counterpart at the University of Texas/Austin, geotechnical engineering professor Ellen Rathje, says the searchable format for data sharing is like a virtual lab notebook. “It’s sort of like Facebook for scientists, but instead of posting vacation photos we’re posting research results.” ■

**Rudolf Eigenmann**, professor of electrical and computer engineering, stands in front of screens displaying the prototype cyberinfrastructure for NEEScomm. (Purdue University photo/Andrew Hancock)



**Sean Brophy**, assistant professor in the School of Engineering Education, co-leader of the NEES Academy



## The Ultimate Challenge

In the last decade, more than 124 earthquakes topping 7 on the Richter scale have shaken the world, toppled buildings and bridges, and caused more than 463,000 deaths. The goal of NEES research is to lessen earthquake and tsunami losses in the future by:

- » **Sharing information and equipment**
- » **Creating a workforce educated in hazard mitigation**
- » **Conducting broader outreach and lifelong learning activities.** □

## NEES Academy: Research-based Education, Outreach and Training Focuses on Mitigating Earthquake and Tsunami Risk

September headlines reporting an earthquake in Indonesia and a tsunami striking the Samoan islands and Tonga have underscored just what's at stake for the NEEScomm team leading the NEES Operations Center at Purdue University and its education, outreach and training (EOT) initiatives. These initiatives will form part of an integrated operations effort across NEES's 14 sites, involving researchers using the sites and the earthquake community at large. Information technology experts from the NEEScomm team and the community will contribute to support these EOT efforts.

Enhanced with community input and offered through the NEES Academy, the EOT initiatives will produce next-generation learning experiences based on engineering education research and learning sciences, says Sean Brophy, assistant professor in the School of Engineering Education, who co-leads the Academy with Thalia Anagnos, professor of general engineering at San Jose State University.

A state-of-the-art virtual institution for cyber-enabled learning, the NEES Academy will offer a rich array of simulations, videos and data sets embedded into educational modules that support learning and instruction. The Academy will be more than simply a digital library of learning resources and data, however. "We want to bring to these learning resources a strong vision for how to design effective pedagogy that incorporates technology," says Brophy.

Users will include (1) researchers involved in designing and running NEES experiments, (2) undergraduate and graduate students engaged in earthquake engineering research through NEES, and (3) practitioners, K-12 learners and teachers, and members of the general public who want to learn more about earthquake engineering.

The Academy's first-year priorities are to develop Web-based learning experiences for geographically distributed learners; to support knowledge building by NEES researchers through mechanisms such as virtual mini-conferences; to explore "telepresence" for research and outreach, enabling the management of experiments and simulations from a distance; and to pilot QuakeQuest—a virtual training experience similar to the virtual world Second Life—as a portal to NEES resources for all NEES-related communities of learning.

"Through the contributions of the stakeholder community and with the support of NEEScomm information technology professionals, the NEES Academy will become the place for earthquake engineering research and education," says Brophy. ■

*Writer: Lisa Tally is communications director for the School of Engineering Education.*



## Marietta Harrison and Jeff Bolin Join Office of the Vice President for Research



Jeff Bolin

Marietta Harrison and Jeff Bolin have each been named associate vice president for research with general responsibility for various aspects of research administration, long-range and annual planning, and oversight of inter- and cross-disciplinary efforts in research.

### Bolin Oversees Research Core Facilities and Centers

Bolin is a professor of biological sciences and has served as associate dean of research for the college of science since 2005. His appointment as associate vice president for research became effective September 1, 2009.

Bolin's specific responsibilities include oversight and administration of:

- » **Research Core Facilities**—chair the Research Cores Committee, coordinate the evaluation, piloting and implementation of core research support facilities.
- » **Research Development Services and Purdue's Centers Policy**—assist in launching new centers, and oversee the research development services activities.



Marietta Harrison

### Harrison Coordinates Cost Share, Internal Competitions

She will continue to serve as director of the Oncological Sciences Center in Discovery Park and as an associate director of the Purdue University Center for Cancer Research. Her appointment as associate vice president for research became effective on October 1, 2009.

Harrison's responsibilities include:

- » **Limited External Submissions**—serve as the Office of the Vice President for Research (OVPR) contact for cost sharing requests and implements new processes as needed.
- » **Internal Competitions**—coordinate the internal solicitations for the Kinley Trust and Showalter Trust competitions and the McCoy Award.
- » **Research Policies**—work with faculty and reviews and revises Purdue research policies. ■

## »» Otto Doering Named Interim Director of PCCRC

**Otto Doering, professor of agricultural economics at Purdue University, has been named the interim director of the Purdue Climate Change Research Center (PCCRC).** His appointment became effective October 2009.

Doering will provide leadership and guidance for the PCCRC, as well as foster collaboration with the Energy Center and the Center for the Environment to enhance the Global Sustainability Initiative in Discovery Park.



**Otto Doering**, professor of agricultural economics

Doering has served in numerous capacities offering direction and service regarding policy issues related to agriculture, resources, energy and the environment. He was director of Purdue University's Energy Policy Research and Information Program, and the first director of Indiana's State Utility Forecasting Group.

His experience with environmental issues includes leading the economic analysis for the National Hypoxia Assessment, co-authoring the National Academies' report on the Mississippi River and the Clean Water Act, the National Research Council's report on Water Implications of Biofuel Production and the National Research Council's report

on Nutrient Control Actions for Improving Water Quality in the Mississippi River Basin.

He also serves on the National Academies' Water Science and Technology Board, on several EPA committees, and the EPA Science Advisory Board. He is a member of the Department of Interior's Invasive Species Advisory Committee and has held advisory positions with the U.S. Department of Agriculture for the 1977, 1990, and 1996 farm bills. In 2005, Doering worked with the Natural Resources Conservation Service on the design and assessment of agricultural conservation programs. He is a past president of the American Agricultural Economics Association and shares a part of the Nobel Peace Prize with the many individuals working on climate change for the Intergovernmental Panel on Climate Change. ■

→|| ONCOLOGICAL SCIENCES  
CENTER EVENTS

### Mechanistic Studies on Vitamin D-Mediated Prostate Cancer Preventions

Epithelial cell cancers result from the accumulation of gene mutations or chromosomal aberrations in cells. These changes lead to the unrestrained cellular proliferation that is the basis for tumor formation. Evidence from populations, animals and cells suggest that high vitamin D status reduces the risk for certain cancers and that calcitriol can suppress cellular proliferation and promote the development of mature epithelial cells. Recent evidence suggests that calcitriol can be formed within the epithelial cells of the colon and prostate (i.e., renal conversion is not necessary). The molecular mechanism for the anti-cancer effects of calcitriol is

not clear. Our lab conducts mechanistic and translational studies on the mechanism of calcitriol-mediated cancer prevention. Our work focuses on the prostate and colon.

- » **Who** James Fleet, Ph.D., Professor, Foods and Nutrition
- » **When** 10:30 a.m.-11:30 a.m. Friday, November 20
- » **Where** Beering Hall, Room 2280

#### 4th Annual Cancer Prevention Fall Retreat

- » **When** Friday, December 4-To be announced
- » **Where** TBD

*For more information contact Kris Swank at [kswank@purdue.edu](mailto:kswank@purdue.edu) or call 494-4674.*

# »» Proposal Writing Priority: The Storyline

## Storylines Answer These Questions

- 1 What is the problem?
- 2 What has already been done to address the problem?
- 3 What gaps remain?
- 4 How do you propose to address these gaps?



**Sally Bond,**  
proposal coordinator

**Maureen McCann,** associate professor  
of biological sciences



→|| RESEARCH DEVELOPMENT

## Developing Problem Overview Critical to Funding Success

Everyone loves a good story, especially proposal review panels.

You can write a story that reviewers will find compelling using the problem overview process, says Sally Bond, proposal coordinator in the Office of the Vice President of Research. The process identifies the problem, reviews what's been done to solve it, points out remaining gaps and outlines how you propose to address them.

» **Reviewers Want Logic, Rationale.** “Program officers and review panels want the logic of a storyline that provides rationale for the questions: Why your proposed initiatives? Why Purdue? If there is no gap, for example, then agencies logically should keep funding what is already working fine.”

Both reviewers and researchers benefit from a well-developed storyline. “Your proposal will be targeted,” Bond says. “And if it’s a team proposal, it is easier to integrate the writing because everyone is telling the same story.”

“Often we know as scientists why we are doing the research we are doing, but it is paramount that we communicate with clarity the problem’s overview to the reader, the proposal’s reviewer,” says Chemistry Professor Mahdi Abu-Omar.

» **Storyline Gives Proposals an Edge.** In today’s competitive funding climate, well-developed storylines give proposals an edge, Bond says. In a 10-week timeline, she may allow three weeks for the storyline. The text could be half a page or multiple pages, depending on the proposal’s complexity.

Maureen McCann, associate professor of biological sciences, says the process is especially effective for multi-investigator proposals.

“Working through the problem overview is tremendously valuable,” she says. “First, because the proposal team achieves consensus for the goals of the project right at the start and everyone is on the same page, and second, because it maps out a framework for writing the proposal introduction.”

» **Spending Time a Good Investment.** Taking time to develop a storyline sometimes frustrates researchers and professors who are passionate about their ideas and research. “It’s tempting to immediately start writing about what you want to do, but the problem overview is a great investment of time,” Bond says.

“First, write out the problem in language that’s understandable to non-specialists. Then research what’s been done—at Purdue and beyond. Your efforts are going to stand on others’ shoulders and probably also build on your own, too.”

» **Identifying Gaps Key.** From this process, gaps emerge. “Identifying gaps gives your proposal purpose and helps you focus on the same ‘north star,’” Bond says.

Those suggestions work, says Abu-Omar. “I find huge value in thinking consistently about the big-picture problem and the scientific gaps. This approach helps us stay on message,” he says.

Tell a story, these professionals emphasize. It can lead to a happily-ever-after ending to the proposal process. ■





**NSF Building**  
4201 Wilson Boulevard  
Arlington, Virginia

## ➤ NSF Issues Final Rule on Responsible Conduct of Research (RCR) Education

### →|| RESEARCH ADMINISTRATION

Current and prospective principal investigators of projects supported by the National Science Foundation (NSF) should be aware that, on August 20, 2009 (74 FR 42126-42128), NSF issued its implementation of Section 7009 of the America COMPETES Act, which requires that each institution applying for financial assistance from NSF for science and engineering research or education must have developed a plan to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduate students, graduate students and postdoctoral researchers participating in the proposed research project.

Under NSF's implementation, effective January 4, 2010, when Purdue submits a proposal to NSF, Sponsored Program Services (SPS) must certify that the institution has such a plan. PIs are not required to describe training plans in proposals submitted to NSF or to report on completion of the plans in annual reports, but institutions must provide the training plans to NSF on request and are required to verify completion of the plans by undergraduates, graduate students, and postdoctoral researchers supported by the NSF.

The Office of Research Administration (ORA) has initiated discussions with Purdue's Graduate School and college associate deans for graduate education to develop a model RCR training plan for discussion. We are speaking with representatives of our peer institutions to gain the benefit of parallel discussions in progress on their campuses. ■

Writer: Peter Dunn

Questions concerning the NSF RCR education requirement may be directed to Associate Vice President for Research Peter Dunn ([pedunn@purdue.edu](mailto:pedunn@purdue.edu)).

### →|| RESEARCH ADMINISTRATION

## New Purdue Postdoc Association Holds Kickoff Meeting

On September 24, 2009, the date of the first National Postdoc Appreciation Day sponsored by the National Postdoctoral Association, the Purdue Postdoc Association held a call-out and first organizational meeting at the International Center.

The goals of the new organization are to provide a source of information and assistance for Purdue's postdoctoral community, to provide a venue for postdocs to connect with each other, and to provide a forum for postdocs to obtain professional training and career development advice.

The group's organizers, postdocs Kris Villez, Valentina Trinetta, and Ana Juan Garcia, collected contact information from those in attendance and challenged the group to step up and become engaged with the new organization. Faculty sponsors Peter Dunn and Jon Story, and Vice President for Research Richard Buckius spoke briefly about the importance of postdoctoral researchers to the Purdue research enterprise. □

*For more information, Purdue postdocs should contact the organizers: [kvillez@purdue.edu](mailto:kvillez@purdue.edu), [vtrinett@purdue.edu](mailto:vtrinett@purdue.edu), or [anajuan@purdue.edu](mailto:anajuan@purdue.edu).*

## Wayne T. and Mary T. Hockmeyer Hall of Str



*Structural biology, a discipline that involves the use of ultramodern imaging technology to probe the inner workings of cells, viruses, proteins and other tiny but pivotally important elements of the living world, has become one of the most promising fields of science in recent years.*

Purdue's Markey Center for Structural Biology, led by Michael Rossmann, the Hanley Distinguished Professor of Biological Sciences, has had many breakthroughs during the past 40 years, including fundamental insights into how important groups of human viruses infect cells, build themselves, and are recognized by the human body.

The team also has achieved important breakthroughs in understanding the structure of membrane proteins, which are the gateways into and out of cells. The research team has been housed for years in the basement of Lilly Hall.

With the construction of the new \$33 million Wayne T. and Mary T. Hockmeyer Hall for Structural Biology, the team now has a facility that will provide it with many more advantages in location, equipment and resources.

"Thanks to the Hockmeyers and the hundreds of others who contributed to make this facility a reality, Purdue researchers are positioned to remain at the forefront of advancements in structural biology," says Purdue President France A. Córdova. "This facility for this innovative and respected research team will be a boon to fundamental science and, hopefully, the development of new drugs and a healthier world. The beautiful new building also advances Purdue's 'Discovery with Delivery' mission, fostering innovation in the life sciences that can have a lasting impact on our world."

Wayne T. and Mary T. Hockmeyer Hall for Structural Biology was dedicated in October.

# Structural Biology Opens for Research

## Research at the Forefront

Located next to the Martin C. Jischke Hall of Biomedical Engineering and adjacent to the Bindley Bioscience and Birck Nanotechnology centers in Discovery Park, Hockmeyer Hall will—by its presence—further establish a formidable research corridor for helping lead Indiana’s advancements in the life sciences.

“Structural biology is the cornerstone of the new era of biological sciences,” said Wayne Hockmeyer, a Purdue alumnus and founder of biotechnology company MedImmune. “It has expanded into new fields, such as nanomedicine, in its investigation of widespread and devastating diseases. This building reflects that expansion as structural biologists will now be neighbors with biomedical and nanotechnology engineers.”

The three-story, 65,690-square-foot building houses 16 offices for structural biology faculty, 33 offices for students and staff, and three conference rooms. About 150 faculty, staff and researchers will use the facility when it becomes fully operational. In addition, it will provide researchers access to some of the most advanced laboratories and instrumentation, ensuring that Purdue remains at the forefront of structural biology.

“The Wayne T. and Mary T. Hockmeyer Hall of Structural Biology extends the potential of our university to significantly impact human health around the globe. It is a breathtakingly exciting addition to our campus and the College of Science,” said Jeffrey Roberts, the Frederick L. Hovde Dean of Purdue’s College of Science. “This new building provides spectacular laboratories, as well as meeting and study spaces for professors and their students. Hockmeyer Hall will be a powerful magnet as Purdue attempts to recruit the world’s best researchers to campus and to retain those who are already here. Hockmeyer Hall will be a place of field-defining research in the biological sciences.”

Eight specialized laboratories and eight general laboratories will facilitate work in protein production, cell and virus culture, large molecule crystallization, X-ray diffraction, nuclear magnetic resonance spectroscopy, electron microscopy, and analytical and biophysical instrumentation.

*(continued on page 12)*

Hockmeyer Hall has 65,690 square feet on three floors.



## Charting the Impact: Purdue’s Markey Center for Structural Biology

Purdue’s Markey Center for Structural Biology group, a part of the College of Science’s Department of Biological Sciences, studies a diverse group of problems, including cellular signaling pathways, RNA catalysis, bioremediation, molecular evolution, viral entry, viral replication and viral pathogenesis.

Researchers use a combination of X-ray crystallography, electron cryomicroscopy, NMR spectroscopy, and advanced computational and modeling tools to study these problems.

Recent examples of work by this research group:

- » A team including researchers Michael Rossmann, Richard Kuhn and Timothy Baker mapped the structure of the dengue virus, knowledge that could prove important to the development of antiviral drugs. Dengue, a relative of West Nile virus and yellow fever, is spread by mosquitoes and kills more than 24,000 people annually. The group also determined the structure of the immature dengue particle while still within its cellular host, an achievement that could shed light on the virus’ development process.
- » Rossmann’s team analyzed the structure of the baseplate of the T4 virus, which commonly infects *E. coli* bacteria. The baseplate is a complex structure made

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of 16 types of proteins that allows T4 to attach itself to the surface of *E. coli*. The team also obtained clearer pictures of how the baseplate alters its shape as T4 prepares to pierce *E. coli*'s cell membrane. The team took images of the baseplate from different moments in the process, which resembles a flower opening, and transformed them into a brief animated movie, helping scientists understand how infection occurs.

- » Kuhn and Rossmann's team determined the structure of the West Nile virus using cryo-electron microscopy and determined the orientation of the major surface proteins in the viral particle. Because these proteins allow the virus to invade a host cell, the research could be a step forward in combating the deadly mosquito-borne disease. In addition, the team found the precise location where antibodies bind to the virus and were able to offer a theory of how the antibody disarms the virus—crucial information for the development of a vaccine.
- » A group led by Jue Chen, named an investigator for the Howard Hughes Medical Institute in 2008, is studying the process by which special proteins, called ABC proteins, open and close pathways into cells—permitting or denying materials entrance into the cell. This opening and closing is an integral part of the metabolic process and could be applied to drug delivery and cancer treatment. □



Mary and Wayne Hockmeyer (at left) and Purdue President France A. Córdoba (far right) look over a portrait of the Hockmeyers being held by Matt Bartlett and Sheila Miller, members of the Purdue Foundation Student Board.

(continued from page 11)

The Markey Center for Structural Biology team has four electron microscopes, three of which are advanced high-end cryoelectron microscopes that allow researchers to see nearly down to the molecular level. Each microscope takes up a small room, and the slightest vibrations can disturb the images produced.

Through a \$300,000 gift, the Science Women of Purdue became the first group of women in Purdue's history to raise funds for a named space on the West Lafayette campus. For their contribution, the laboratory space that will house the electron microscopy suite will be named in their honor to inspire future generations.

### Investment in the Future

The state-of-the-art design also facilitates the flexible and nimble interaction and collaboration necessary for a new generation of structural biologists and researchers.

The building's larger, integrated laboratories allow the team to group high-end instruments so that researchers can easily move between laboratories and branch out into research techniques they may not have used. All of these advantages make Purdue highly attractive in recruiting top faculty, researchers and graduate students, thereby helping the University maintain its strong position at the forefront of this vital and growing field.

"The Wayne T. and Mary T. Hockmeyer Hall for Structural Biology reestablishes Purdue among the nation's top-tier structural biology research facilities for addressing the challenge of prevention and treatment of widespread disease," says Richard J. Kuhn, professor and head of the Department of Biological Sciences and director of the Bindley Bioscience Center. "It also becomes a strong recruitment and retention tool for faculty, researchers and students in this growing field." ■

Writer: Phillip Fiorini, senior communications and marketing specialist, Office of Marketing and Media

# Discovery Lecture Series

## Discovery Lecture Series Highlights Nanotechnology and Metamaterials

- » **What** Transformation Optics at Optical Frequencies presented by Sir John Pendry
- » **When** 3:30 p.m. Tuesday, November 17
- » **Where** Burton D. Morgan Center for Entrepreneurship in Discovery Park, Rm 121

### Sir John Brian Pendry



John Pendry is a condensed matter theorist. He has worked at the Blackett Laboratory, Imperial College London, since 1981. He began his career in the Cavendish Laboratory, Cambridge, followed by six years at the Daresbury Laboratory where he headed the theoretical group. He has worked extensively on electronic and structural properties of surfaces developing the theory of low energy diffraction and of electronic surface states. Another interest is transport in disordered systems where he produced a complete theory of the statistics of transport in one-dimensional systems.

In 1992 he turned his attention to photonic materials and developed some of the first computer codes capable of handling these novel materials. This interest led to his present research, the subject of his lecture, which concerns the remarkable electromagnetic properties of materials where the normal response to electromagnetic fields is reversed leading to negative values for the refractive index. This innocent description hides a wealth of fascinating complications. In collaboration with scientists at The Marconi Company he designed a series of 'metamaterials' whose properties owed more to their micro-structure than to the constituent materials. ■

For more information please contact [dpengage@purdue.edu](mailto:dpengage@purdue.edu) or call 765.494-3662. Event sponsors are Purdue's Discovery Park, Purdue College of Engineering and the Purdue College of Science.

Talk is free and open to the public.



Purdue's Discovery Park and Indianapolis-based Lilly Endowment are co-sponsoring the free lectures. Lilly Endowment provided a \$1 million gift to Purdue in 2005 to fund the Discovery Lecture Series. □

**Nanotechnology and Metamaterials**

DISCOVERY LECTURE SERIES  
PURDUE UNIVERSITY

TUESDAY, NOVEMBER 17  
BURTON MORGAN CENTER RM 121  
3:30 PM – 5:00 PM  
RECEPTION TO FOLLOW

Transformation Optics at Optical Frequencies  
**Sir John Pendry** Imperial College, UK

**ABOUT JOHN PENDRY:**  
John Pendry is a condensed matter theorist. He has worked at the Blackett Laboratory, Imperial College London, since 1981. He began his career in the Cavendish Laboratory, Cambridge, followed by six years at the Daresbury Laboratory where he headed the theoretical group. He has worked extensively on electronic and structural properties of surfaces developing the theory of low energy diffraction and of electronic surface states. Another interest is transport in disordered systems where he produced a complete theory of the statistics of transport in one-dimensional systems.

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Presented by:  
**PURDUE UNIVERSITY**  
**Discovery Park**  
Purdue College of Engineering  
Purdue College of Science

**FOR MORE INFORMATION:**  
Please contact [dpengage@purdue.edu](mailto:dpengage@purdue.edu) or call 765.494.3662.  
Event sponsors are Purdue's Discovery Park, Purdue College of Engineering, and the Purdue College of Science.

→|| RESEARCH ADMINISTRATION

## Regulatory Review of Sponsored Research Proposals

Principal Investigators (PIs) please note: all sponsor awards and pending proposals involving research with human subjects, vertebrate animals or recombinant DNA/biohazards are reviewed by the Sponsored Programs Regulatory Administrator prior to account establishment. Upon submission, proposal records are labeled in the COEUS database under the "Special Review" tab if research subject to regulatory oversight is planned for the project. This action helps to flag the proposal for regulatory review if the proposed research is funded.

During review, the regulatory administrator reads the specific aims and compares them to IRB, PACUC or IBC protocols identified by the PI. This process helps to ensure that all research subject to regulatory oversight has been approved by the appropriate campus committee(s). If questions arise during the course of the review, the regulatory administrator will contact the PI in an e-mail message, and copy the pertinent business office. Communication between the PI and the administrator is essential, as all regulatory matters must be resolved prior to allowing the PI to access sponsored funds. □

Writer: *Ilanthe Bryant-Gawthrop*  
For questions on the regulatory review process, please contact *Ilanthe Bryant-Gawthrop*, regulatory administrator for sponsored programs in the Office of the Vice President for Research at [ibg@purdue.edu](mailto:ibg@purdue.edu).



Ilanthe Bryant-Gawthrop

→|| RESEARCH ADMINISTRATION

## Export Controls

Export controls are U.S. federal statutes that restrict access of non-U.S. persons (individuals who are *not* U.S. citizens or legal permanent residents of the U.S.) to certain commodities, technology, technical data and software for national security purposes. As the name implies, export controls were originally intended to regulate the physical transfer of certain commodities and technology out of the U.S.

In the mid-1990s, however, the statutes were revised to also regulate the transfer of technology, technical data and software to non-U.S. persons by communication anywhere in the world. Such communication to a non-U.S. person, even in the U.S., is deemed to be an export of the technology, technical data or software to their country of citizenship.

The two principal export control statutes are the Export Administration Regulations (EAR) administered by the U.S. Department of Commerce, which regulate export and deemed export of dual-use technologies identified in the Commerce Control List, and the International Traffic in Arms Regulations (ITAR), which regulate export and deemed export of defense articles and defense services identified on the U.S. Munitions List. Many commodities and technologies that are used in or subject to study in the context of Purdue research projects are potentially subject to restrictions imposed by these export controls.

It is important to note that these U.S. export control statutes *do not restrict* most university research. Technology, technical data and software that are in the public domain are *not subject* to export controls. Likewise, the results of "fundamental

research" as defined in the statutes are *not subject* to export controls. For these purposes, "fundamental research" is defined as basic and applied research in science and engineering, where the resulting information is ordinarily published or shared broadly with the scientific community. The most important characteristic of research that makes it "fundamental" in the context of export regulations is the *absence* of constraints on free and open publication at the discretion of the investigator.

## Confidential or Proprietary Information

So, when is Purdue research not "fundamental" and therefore subject to export controls?

Purdue research is not "fundamental" when the University has accepted restrictions on our (your) ability to share the results of research or share technical data, technology or software obtained from the sponsor and used in the research. These restrictions may take the form of a requirement for prior approval of publication by the sponsor or the designation of technology, technical data or software obtained from the sponsor as confidential and/or proprietary.

Confidential or proprietary information must be

identified by the sponsor and is generally accompanied by a confidentiality or non-disclosure agreement that specifies the recipient's (Purdue's and the investigator's) responsibilities to restrict access to or release of the confidential information to certain defined parties and/or specific circumstances.

Confidential or proprietary information is, by definition, not in the public domain and, by agreement, may not be shared through free and open publication. As a result, confidential or proprietary information is *always* subject to the U.S. export regulations. Restrictions that apply will depend on the content of the information. As is the case for any information subject to export control restrictions, a Technology Control Plan approved by the Office of Research Administration (ORA) may be required to ensure that access to the controlled information is managed appropriately.

### Restrictions May Vary

Confidentiality or non-disclosure agreements sometimes restrict access to the information to only the persons who have agreed to and signed the document. Other agreements will allow the signatories of the agreement to share the information with project personnel, collaborators and others that need to know the information to conduct the project. PIs should be aware that U.S. export statutes take precedence over the terms of confidentiality agreements. If the technical data protected by a non-disclosure agreement is restricted by export controls, this restriction may prevent the PI from sharing information with certain non-U.S. persons who are members of the project team. If access to the confidential information is essential to conduct the project, this restriction on access to confidential information may limit the ability of certain non-U.S. persons to participate in a project that is otherwise "fundamental research."

Investigators who receive confidential or proprietary information in the context of their Purdue research should be aware of potential export control obligations that apply to this information.

### Assistance Available

If you receive confidential or proprietary information and need assistance in identifying export restrictions that may be applicable or in developing a technology control plan, or have other questions regarding export controls, please contact Michael Reckowsky, ORA's Research Security Administrator ([mreckowsky@purdue.edu](mailto:mreckowsky@purdue.edu)). ■

*Writers: Michael Reckowsky and Peter Dunn*

*Michael Reckowsky is research security administrator for the Office for the Vice President for Research. Peter Dunn is associate vice president for research and director of university research administration and compliance.*

**As a result, confidential or proprietary information is *always* subject to the U.S. export regulations.**



**Michael Reckowsky**, research security administrator for the Office of the Vice President for Research



**Peter Dunn**, associate vice president for research and director of university research administration and compliance



## Changes to NIH *New and Competing* Application Forms and Instructions

Effective January 2010

NIH has announced changes to the PHS 398 Application Package and the SF 424 Grants.gov Application Package. The changes are summarized in this article. The full announcement can be found at <http://grants.nih.gov/grants/guide/notice-files/not-od-09-149.html>.

### Restructured Application Forms and Instructions

New, restructured versions of the paper PHS 398 (New and Renewal) and electronic SF424 (Grants.gov) application packages and instructions will be available by December 2009. Applicants must use the new application packages for submissions targeting due dates on or after January 25, 2010. Changes include a significantly shorter page limit and restructured application packages. New forms can be found on the NIH Forms and Applications Web page at <http://grants.nih.gov/grants/forms.htm>.

## Summary of Changes

### New Application Structure and Timing

- » Applications submitted on or after **January 25, 2010**, **MUST** use the new forms and instructions to avoid being delayed or not reviewed (except AIDS related applications, which won't be transitioned until 05/07/2010).
- » New Funding Opportunity Announcements (FOA's) will be published between now and December 2009. They will not contain accompanying Grants.gov packages.
- » In December, the new Grants.gov packages will be available for download for most activity types. Applicants must then return to the FOA to download the new package for due dates on or after January 24, 2010.
- » The new application package will be identified as ADOBE\_FORMS\_B.

### Shortened Page Limits for Research Strategy Section

- » Current page limits that are less than 25 will be limited to 6.
- » Current page limits that are greater than 25 will be limited to 12 pages.
- » If the FOA requires page limits that differ, the FOA should be followed.

*A table of revised page limits can be found at [http://enhancing-peerreview.nih.gov/page\\_limits.html](http://enhancing-peerreview.nih.gov/page_limits.html).*

### Consolidation of Three Sections of Current Research Plan Into One

- » The background and significance, preliminary studies, and research design and methods will become one section 'Research Strategy' within the Research plan.
- » The form within Grants.gov will be restructured to reflect this change.
- » Investigators should review updated information on <http://grants.nih.gov/grants/guide/notice-files/not-od-09-149.html>.

### Resources Section

- » The resources section will require a description of how the scientific environment will contribute to the success of the project, identify unique features of the environment and, for early stage investigators, the institutional investment in the success of the investigator.

### Biographical Sketch

- » A new personal statement will be incorporated as Part A.
- » Applicants should limit the list of selected peer-reviewed publications to 15.
- » These changes are effective October 1 for progress reports so investigators may begin to include the new format in competing applications prior to January 25, 2010.

*Clarification for timing and page limits is available at <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-10-002.html> ■*



## Changes to NIH *Continuation* Application Forms and Instructions

### Summary of Changes

#### New All Personnel Report

- » The Senior/Key Personnel Report is being replaced with an All Personnel Report. The PI should always be listed on the form. Any person who participates for at least one person month regardless of pay status must be included on the report. All individuals with a postdoc role must have an eRA Commons user ID (<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-09-140.html>).

#### New Data on Trainee Success Required for Training Grant Progress Reports

- » For annual progress reports for institutional training grants, Table 12A has been modified to collect data related to completion dates and time to degree for Ph.D. students supported by the Treasury grant described in NIH Guide Notice OD-09-141 (<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-09-141.html>).

#### Inclusion of Changes to Innovative Potential

- » If applicable, PI's are asked to address any changes to the innovative potential of the project as part of the Progress Report Summary, Section B.

#### Changes to the Biographical Sketch

- » The biosketch should now include a Personal Statement in Section A and limit the list of publications to 15 or less.

#### Human Embryonic Stem Cells

- » A new item is added to the progress report summary under D. Plans (<http://grants.nih.gov/grants/guide/notice-files/NOT-OD-09-139.html>). ■

*Effective October 2009*

NIH has announced changes to the PHS 2590 Continuation Progress Report and eSNAP Progress Reports. The changes are summarized in this article with a link to the full announcement provided.

#### Revised PHS 2590 (Non-Competing Continuation Progress Report) Now Available

Newly revised, Continuation Progress Report instructions and forms are now available and will be required for all annual reports due on or after October 1, 2009. Corresponding changes to the eSNAP module in the Commons will also be released. Investigators should read the new instructions carefully when completing the progress reports. New forms can be found on the NIH Forms and Applications Web page.



→|| RESEARCH DEVELOPMENT

## Grantsmanship Workshops Scheduled

For the 2009-10 academic year, the Office of the Vice President for Research (OVPR), together with Sponsored Program Services (SPS), has developed a series of grantsmanship workshops, with the intended audience being new faculty or others new to the research process at Purdue.

*Each of these events is scheduled for Tuesdays, from 11:30 a.m.-1 p.m., with box lunches provided by the OVPR. Below is the listing of dates and topics. Further information about each workshop will be available closer to the time of the event.*


- »» **December 8** Industry Research and Collaboration
- »» **January 19** Post-Award Services for Researchers: Departmental, College, SPS and OVPR
- »» **February 23** Discovery Park, Policy Institute, and working with the OVPR on large proposal development
- »» **March 23** Management of Intellectual Property

On Thursday, April 15 the OVPR will bring back Robert Lucas of the Institute of Scholarly Productivity, for a daylong workshop on scholarly writing and its application to grant proposals.

Each of these events will be posted on the OVPR events Web site at [www.purdue.edu/research/vpr/](http://www.purdue.edu/research/vpr/). Registration will be required, along with choices for box lunches. ■

→|| FACULTY EXPERTISE

## Community of Science A Great Resource

 The Community of Science (COS) is the largest single repository of research funding information on the Web. Three of its databases of particular value to researchers are COS Expertise, COS Funding Alert and COS Funding Opportunities. All can be accessed at [www.cos.com](http://www.cos.com) or through the OVPR Web site. □

*For questions about or assistance setting up profiles and/or funding alerts, contact Sue Grimes at 494-5858 or [sgrimes@purdue.edu](mailto:sgrimes@purdue.edu).*

### SPONSOR

- »» National Science Foundation
- »» Dept. of Health and Human Services
- »» Dept. of Defense
- »» Dept. of Energy
- »» Dept. of Agriculture
- »» National Aeronautics and Space Administration
- »» Other Federal
- »» Dept. of Education
- »» Environmental Protection Agency
- »» Dept. of Transportation
- »» Agency for International Development

### Total Federal

- »» Industrials and Foundations
- »» State/Local Governments
- »» Purdue Research Foundation/Purdue University
- »» Foreign Governments

### Total Non-Federal

### Total Purdue System-wide

# [www.purdue.edu/research/vpr/](http://www.purdue.edu/research/vpr/)

# Program Year-to-Date Activity

## Awards by Sponsor

July 1, 2009 to September 30, 2009

	FY2010 (YTD 09/30/2009)		FY2009 (YTD 09/30/2008)		% Change	
	NO.	\$ AMOUNT	NO.	\$ AMOUNT	NO.	\$ AMOUNT
	205	58,526,100	136	35,078,944	51%	67%
	93	18,756,931	78	14,947,742	19%	25%
	59	6,928,362	42	6,415,555	40%	8%
	43	22,346,210	42	5,857,569	2%	281%
	57	6,030,934	50	5,617,083	14%	7%
	22	1,713,810	29	1,882,352	-24%	-9%
	34	2,907,220	24	3,046,921	42%	-5%
	10	2,419,864	12	2,216,879	-17%	9%
	4	479,543	4	700,205	0%	-32%
	12	3,801,908	10	2,359,500	20%	61%
	6	828,148	6	226,788	0%	265%
	<b>545</b>	<b>\$124,739,029</b>	<b>433</b>	<b>\$78,349,537</b>	<b>26%</b>	<b>59%</b>
	356	17,796,101	525	24,931,635	-32%	-29%
	48	7,009,595	43	3,366,110	12%	108%
	216	3,002,240	131	2,072,055	65%	45%
	6	342,424	7	561,981	-14%	-39%
	<b>626</b>	<b>\$28,150,361</b>	<b>706</b>	<b>\$30,931,781</b>	<b>-11%</b>	<b>-9%</b>
	<b>1,171</b>	<b>\$152,889,391</b>	<b>1,139</b>	<b>\$109,281,318</b>	<b>3%</b>	<b>40%</b>

Data provided by Sponsored Program Services

### Comprehensive monthly awards list includes search and sort capabilities

A list of sponsored program awards received is available online and includes additional awards, known as B-awards, which were not previously published in print.

A search and sort Excel file version of the awards is also available online. Please visit the OVPR Web site at [www.purdue.edu/research/vpr/](http://www.purdue.edu/research/vpr/) for access to the awards.

→|| PURDUE UNIVERSITY, OFFICE OF THE VICE PRESIDENT FOR RESEARCH

Hovde Hall  
610 Purdue Mall  
West Lafayette, IN 47907-2040

## »» Research Services Directory

- » General Information & Questions; 494-9806
- » Vice President for Research; 494-6209; Richard O. Buckius, rbuckius@purdue.edu
- » Discovery Park; 496-6625; Alan Rebar, rebar@purdue.edu
- » Industry Research and Technology Programs; 494-0743; John Schneider, jas@purdue.edu
- » Research Development; 494-6706; Christine King, hcking@purdue.edu

### Research Administration

- » Research Integrity; 494-3996; Peter Dunn, pedunn@purdue.edu
- » Conflict of Interest; 496-1763; Voichita Dadarlat, voichi@purdue.edu
- » Export Controls; 494-1852; Michael Reckowsky, mreckowsky@purdue.edu
- » Human Subjects; 494-5942; Kristine Hershberger, kh@purdue.edu
- » Animals; 494-7206; Lisa Snider, ldsnider@purdue.edu
- » Biohazards; 494-1496; Bob Golden, rwgolden@purdue.edu

### Award Information

- » Sponsored Program Services; 494-1055; www.purdue.edu/sps
- » Proposal Information, Transmittal to Agency; 494-6204; proposal@purdue.edu

### Technology Commercialization

- » Patent & Copyright Information; 588-3475; Karen White, otcip@prf.org

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If you would like to be on the mailing list, please email Linda Howell at [lahowell@purdue.edu](mailto:lahowell@purdue.edu) or Pam Burroff-Murr at [burroff@purdue.edu](mailto:burroff@purdue.edu).