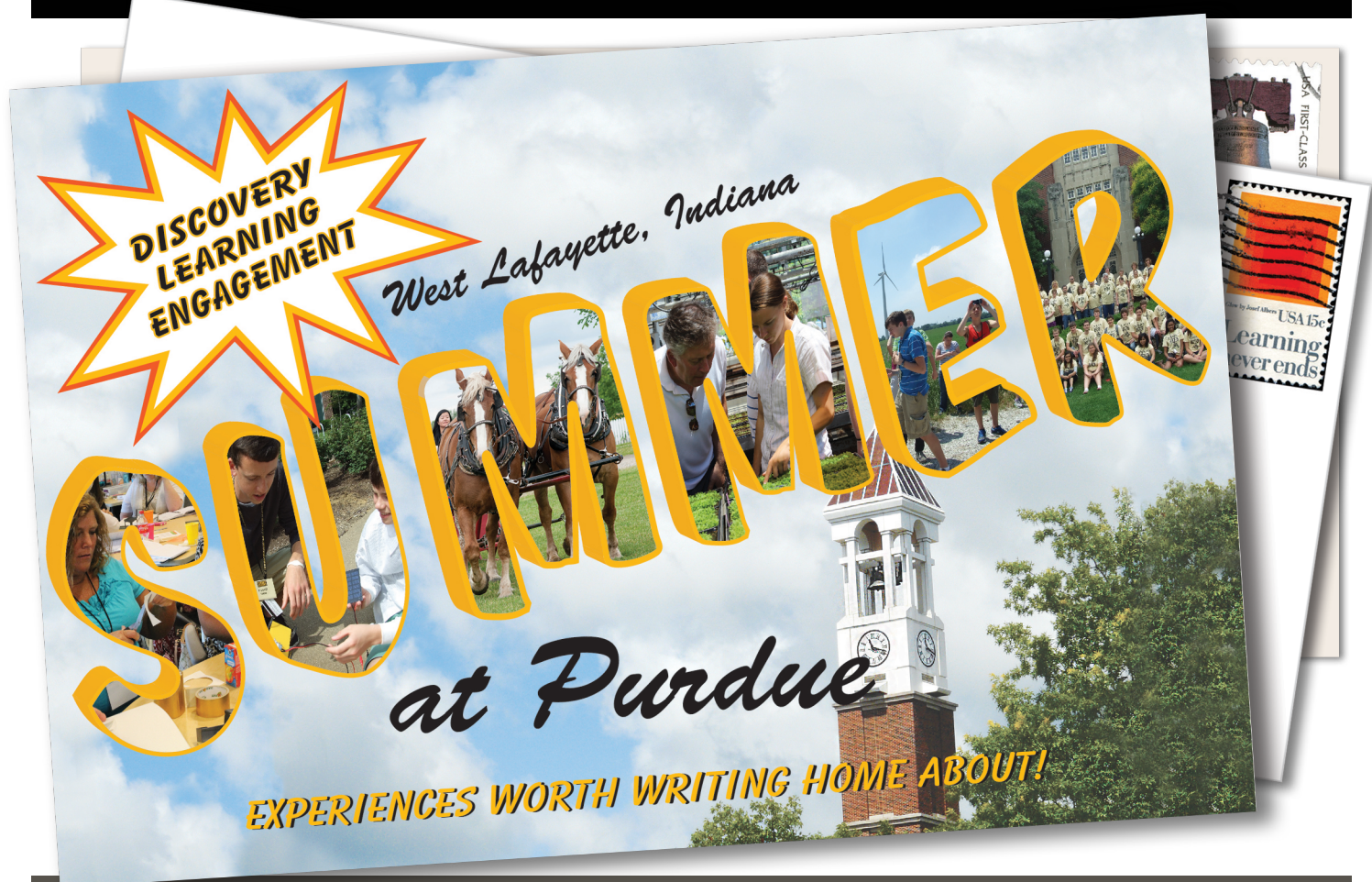


# DIMENSIONS *of* DISCOVERY



## »» Summertime Brings Discovery

### Welcome

**"Summer's lease hath all too short a date." — William Shakespeare**

It may seem that only a short time has passed since students finished the spring semester, and yet that three-month period has yielded much research and teaching productivity. In this issue, learn how summer camps are enhancing STEM education and student research experiences, why IT representatives are holding weekly coffees with researchers, and how new campus and off-campus enhancements are expected to speed commercialization of student and faculty discoveries. ■

**PURDUE**  
UNIVERSITY

The word "summer" typically conjures images of family road trips, ice cream cones and dips in the pool. But for hundreds of students and teachers, summertime 2013 was synonymous with STEM education and student research experiences.

Talented high school students and teachers experimented with miniature solar-powered cars and discovered the might of towering wind turbines as part of the Energy Center's second annual Energy Academy. In the Discovery Learning Research Center, teachers attending Research Goes to School workshops measured glucose concentrations in biomass and discovered uses for mutant plants, while elementary teachers learned how to engineer fun science lessons in Science Learning through Engineering Design workshops.

Students representing 22 nations hitched up draft horses and hiked a modern-day prairie as part of the Borlaug Summer Institute's holistic introduction to global food security challenges. And around campus, undergraduate and graduate students conducted research projects that culminated in poster sessions as part of the Cancer Prevention Research Internship program and Summer Undergraduate Research Fellowships.

Without the typical constraints of a regular school day, these summertime scholars were able to delve into subjects more deeply than often possible, allowing them to better understand how they can advance society and improve people's lives. Turn to the center page spread for a photo essay of memories made and lessons learned. ■

## Inside »

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## Ag Economist Selected for Inaugural Purdue Research Award

**Thomas Hertel**, a Purdue University Distinguished Professor of Agricultural Economics, has been chosen to receive the inaugural Purdue University Research and Scholarship Distinction Award.

The award recognizes university faculty whose recent research or scholarship has made a major impact in their field and who are not eligible for the McCoy Award, which is limited to university research in the natural sciences. The 2013 Purdue University Research and Scholarship Distinction Award comes with a \$4,000 cash award and \$7,000 for his university scholarly activities.

“Thomas Hertel has been a leading scholar in analyzing the dynamic environmental and economic conditions of a global economy based on land use,” says **Richard Buckius**, vice president for research. “His scholarship has significantly impacted the field of agricultural economics and has the potential to impact future generations.”

Hertel is the founder and executive director of the Global Trade Analysis Project, a Purdue-based program that helps researchers and policymakers analyze international trade. GTAP, established in 1992, maintains data on nearly 1 million trade flows linking 130 economic regions around the world. Around 10,000 people in more than 150 countries use the database, which can be used to evaluate such economic activity as how production and employment in one country are affected by economic growth or trade policies in any of the other regions in the database.

As the award recipient, Hertel will deliver the keynote address at the Purdue University Research and Scholarship Distinction Distinguished Lecture on November 18 on the West Lafayette campus. More information about this lecture is available on [page 15](#). ■

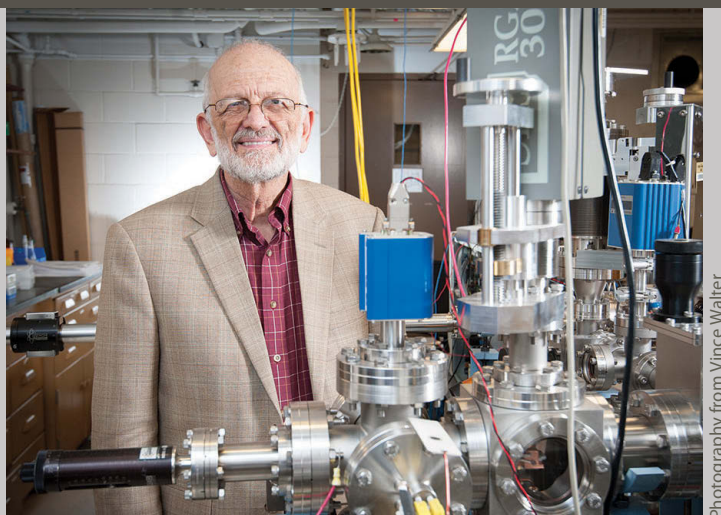
*Writer: Steve Leer is a communications consultant/senior writer with Agricultural Communication Service.*



Photography by Purdue Agricultural Communication/Tom Campbell

Thomas Hertel





R. Graham Cooks

Photography from Vince Walter

## Mass Spectrometry Expert Receives Dreyfus Prize

**R. Graham Cooks**, the Henry Bohn Hass Distinguished Professor of Chemistry, has won the 2013 Dreyfus Prize in Chemical Sciences. He received the international prize in recognition of his innovations in mass spectrometry and analytical chemistry.

The international prize, given biennially by the Camille and Henry Dreyfus Foundation, consists of \$250,000, a citation and a medal. The Dreyfus award ceremony, featuring a lecture by Cooks, will be held at 4 p.m. in Fowler Hall on Tuesday, September 24th.

"Chemical instrumentation has shaped human life in a myriad of positive ways," said Henry C. Walter, president of the Dreyfus Foundation. "Graham Cooks is a consummate innovator, and it is a great pleasure to recognize him with the third Dreyfus Prize."

Cooks is a pioneer in the field of mass spectrometry, which identifies the contents of a sample by measuring the mass of its ions, or electrically charged molecules. Early in his career, Cooks revolutionized the field through the development of tandem mass spectrometry, which allowed for the quantification of the molecules present as well as their identification.

He later developed ambient ionization techniques that paved the way for faster, more portable mass spectrometry devices. Cooks and his collaborator, Purdue associate professor of biomedical engineering and electrical and computer engineering **Zheng Ouyang**, then miniaturized the once sedan-sized mass spectrometer to a shoebox-sized device ready to leave the laboratory. ■

*Writer: Elizabeth K. Gardner is a communications/marketing specialist with University News Service.*

## New Chief Global Affairs Officer Named

**Suresh Garimella**, the R. Eugene and Susie E. Goodson Distinguished Professor of Mechanical Engineering, is the university's new chief global affairs officer.

In his new role, Garimella will develop partnerships with international institutions of higher education and, in collaboration with Purdue Research Foundation, with global businesses. He will support international connections for Purdue faculty and researchers. He also will oversee International Programs, including International Students and Scholars and Study Abroad, and will guide Purdue's Global Policy Research Institute. Garimella formerly was associate vice president for engagement.

"Purdue has a growing role in working to improve life globally," said Purdue President **Mitch Daniels**. "With his engagement position, Suresh has proven his expertise in connecting the university to the international community. As chief global affairs officer, he will broaden that effort. Suresh will be a strong link between Purdue and the world." ■

*Writer: Judith Barra Austin is a communications/marketing specialist with University News Service.*

## Faculty Members Honored with Morrill Awards

Two faculty members have received 2013 Morrill Awards from Purdue University for excellence in teaching, research and engagement.

**George Bodner**, the Arthur Kelly Distinguished Professor of Chemistry, seeks better ways of conveying new chemistry knowledge to students. One of his long-term interests is studying the differences in how experts solve routine exercises and the techniques they use to solve novel problems. A graduate of Indiana University, Bodner worked at the University of Illinois and Stephens College before coming to Purdue in 1977. He is the author of more than 130 papers, eight chemistry textbooks and a book on qualitative research methods for graduate students doing discipline-based educational research.



George Bodner

**Randy Roberts**, a professor of American history, specializes in recent U.S. history, U.S. sports history and the history of popular culture. A graduate of Louisiana State University, Roberts taught at the University of Houston, Sam Houston State University, University of Maryland and Louisiana State University before coming to Purdue in 1988. Roberts has written or co-written over 30 books and consults for the History Channel, ESPN Classic, PBS, BBC, E!TV, HBO, ABC, CBS and NBC. Roberts' most recently published book is *Rising Tide: Bear Bryant, Joe Namath, and Dixie's Last Quarter*. ■



Randy Roberts



Suresh Garimella

## Showalter Trust Expands

Since 1973, Purdue University has received funding from the Ralph W. and Grace M. Showalter Research Trust Fund to promote scientific research in sciences. Now in its 40th year, the Showalter program is expanding.

Thanks to increased funding from the trust, Purdue has added another Showalter Professor and has debuted a Showalter Scholars program, in addition to funding 10 junior faculty members with new investigator grants.

**Charles Bouman** has been named the Showalter Professor of Electrical and Computer Engineering, joining **Kinam Park**, the Showalter Distinguished Professor of Biomedical Engineering. **Catherine Hill**, **Pedro Irazoqui** and **Daisuke Kihara** have been named Showalter Faculty Scholars as part of the University Faculty Scholars Program.

"The Showalter committee has been extremely generous in establishing the faculty program at Purdue and the Indiana University School of Medicine and expanding the professorship program at both universities," says **Marietta Harrison**, associate vice president for research.

Since 1973, the trust has provided Purdue faculty members with nearly \$20 million in funding, including \$885,000 this year. As designated by its benefactors, the trust supports Purdue research in the areas of environmental research, including air and water quality; biochemistry and molecular biology; disease prevention, diagnosis, progression, treatment and control; new technologies for food production, preservation, distribution and safety; and medical and biophysical instrumentation, including analysis of large data sets. ■

## 10 Receive Showalter New Investigator Grants

Ten Purdue faculty members have received new investigator grants from the Showalter Trust this year. They are:

- » **Jason Cannon**, health sciences: "Mechanisms of PhIP-mediated Neurotoxicity and Relevance to Parkinson's Disease"
- » **Chun-Ju (Alice) Chang**, basic medical sciences: "Noninvasive Imaging of miR-200c as a Biomarker for Early Detection of Aggressive Breast Cancer"
- » **Jun Chen**, mechanical engineering: "Development of a Noninvasive, Virtual Stethoscopy Procedure"
- » **Mingji Dai**, chemistry: "Targeting Cancer with Natural and Synthetic Hydropyran/Hydrofuran-containing Macrolides"
- » **T. Joseph Kappock**, biochemistry: "Tracking an Iron-sulfur Cluster through the Cytoplasm through a Novel Yeast Metabolic Screen"
- » **Haley Oliver**, food science: "Transcriptional Regulator of Stress Survival and Virulence,  $\sigma^B$  as a Potential Drug Target in Methicillin-resistant *Staphylococcus aureus* (MRSA)"
- » **Silvia Stan**, nutrition science: "Effect of Garlic-derived Bioactive Compound Diallyl Trisulfide (DATS) on Pancreatic Cancer Stem Cells"
- » **Yue Wu**, chemical engineering: "Reduction of Heat Pollution in Water from Power Industry Using Thermoelectric-based Refrigeration"
- » **Yoon Yeo**, industrial and physical pharmacy: "Zwitterionic Chitosan as an LPS Antagonist for the Treatment of Sepsis"
- » **GuangJun Zhang**, comparative pathobiology: "Identify Novel Cancer Driver Genes on Chromosome 4q and 12q in Human Malignant Peripheral Nerve Sheath Tumors"

New investigator grants support the scientific careers of junior faculty members at Purdue. Eligibility is limited to tenure-track and research faculty on the West Lafayette campus who hold the rank of assistant professor at the time of application. Collaborators may be of all academic ranks. The ten awardees received \$75,000 each for their projects. ■



Photography by Vincent Walter

Rakesh Agrawal

## Purdue Professor Elected to the American Academy of Arts and Sciences

**Rakesh Agrawal**, the Winthrop E. Stone Distinguished Professor in the School of Chemical Engineering, has been elected to the American Academy of Arts and Sciences, one of the nation's oldest and most prestigious honorary societies. He will be inducted during a ceremony Oct. 12 at academy headquarters in Cambridge, Mass.

Agrawal holds 118 U.S. patents, nearly 500 non-U.S. patents and has authored 115 technical papers. In 2011 he received the National Medal of Technology and Innovation from President Barack Obama.

A member of the National Academy of Engineering, Agrawal served on the National Research Council (NRC) panel that issued the report *The Hydrogen Economy: Opportunities, Costs, Barriers and R&D Needs*. He also was a member of the National Research Council's Board on Energy and Environmental Systems. ■



## Mathematics Professors Receive NSF CAREER Awards

Two more Purdue faculty members have received CAREER awards from the National Science Foundation.

**Jianlin Xia**, assistant professor of mathematics, has received \$211,454 for his project, "Structured Matrix Computations: Foundations, Methods and Applications." Matrix computations lie at the heart of most scientific computation tasks, and Xia will systematically extend classical-dense and sparse-matrix computations to data-sparse ones, introducing new structured matrix theories and techniques into scientific and engineering computations. The project will result in practical ways to reveal and use structures, which will further yield fast and reliable algorithms. Understanding the structures will also provide new perspectives to classical challenges in large-scale scientific computing, such as large fill-in, ill conditioning, lack of explicit matrices and repeated solutions with highly varying parameters.

**Erika Birgit Kaufmann**, assistant professor of mathematics and physics, has been awarded \$419,985 for her project, "Physical Properties of New Materials via Mathematics — Methods and Applications." Kaufmann seeks to advance the understanding of physical properties of new nano-materials by applying modern mathematical techniques. Kaufmann will address several new research projects using both analytical and noncommutative geometric methods, providing important insights into the mathematical and physical properties of new nanomaterials. This interdisciplinary effort brings together tools from mathematics and physics and fosters dialogue between the two disciplines. The outcome may be useful in photovoltaics, leading to increased effectiveness of solar cells. ■



Jianlin Xia



E. Birgit Kaufmann

## Purdue Professor Elected to National Academy of Sciences

**Joseph S. Francisco**, the William E. Moore Distinguished Professor of Earth and Atmospheric Sciences and Chemistry, has been elected into the National Academy of Sciences, one of the highest honors given to a scientist or engineer in the United States.

Francisco solved a 40-year search for an unusual molecule that is essential to the atmosphere's ability to break down nitric acid, a compound that causes acid rain. He also mapped the atmospheric breakdown of chlorofluorocarbons, chemical compounds that destroy the Earth's ozone layer, and leads research into the design of environmentally benign materials to replace these harmful compounds.

Francisco co-authored the textbook *Chemical Kinetics and Dynamics* and has published more than 450 peer-reviewed publications. ■

*Writer: Elizabeth K. Gardner is a communication/marketing specialist with University News Service.*



Joseph S. Francisco

Photography by Vincent Walter

## Kamalipour Named Researcher of the Year

**Yahya Kamalipour** has received the Information and Telecommunications Education and Research Association's 2013 Researcher of the Year Award.

Professor and head of Purdue University Calumet's Department of Communication and Creative Arts, Kamalipour studies globalization, media impact, international communication, advertising, cultural diversity, stereotyping, Middle East media and new communication technologies.

He has edited and published 14 global communication-related books, including *Global Communication*, a textbook that has been translated into the Chinese language, and *Media, Power, and Politics in the Digital Age: The 2009 Presidential Election Uprising in Iran*. He also founded the *Global Media Journal*, published twice annually in 19 countries.

Born in Iran, Kamalipour immigrated to the United States in 1972 and joined the Calumet faculty in 1986. ■



Yahya Kamalipour

## Nurturing and Advancing Purdue's Research Enterprise

Research-intensive universities such as Purdue have significant equipment and research infrastructure needs. In an effort to assist faculty and staff in meeting their research equipment needs, the Office of the Vice President for Research has instituted several levels of equipment funding programs.

### University-Level Research Cores Supplemental Funding Program

To meet the challenge to maintain or upgrade existing equipment or acquire new equipment to match the latest scientific and technological advances, this program is designed to support the following types of expenses within university-level research cores: equipment repair, maintenance, upgrade, acquisition and installation; technology acquisition; personnel (with the understanding of the one-time nature of the funding). Deadline: October 10. Visit [www.purdue.edu/research/vpr/funding/cores.php](http://www.purdue.edu/research/vpr/funding/cores.php) for application and submission information.

### Laboratory Research Equipment Program

This program is designed to support research efforts of both single investigator and multi-investigator users, but not for equipment intended to be located in research core facilities. Equipment must meet the Purdue capital equipment threshold value of \$5,000. Support requests are limited to \$100,000 and below. Deadline is September 10. Visit [www.purdue.edu/research/vpr/funding/lab.php](http://www.purdue.edu/research/vpr/funding/lab.php) for application and submission information.

### Non-laboratory Research Infrastructure and Equipment Program

This program is designed to support research infrastructure and equipment needs in disciplines not driven by instrument-dependent research. Such non-laboratory disciplines may include, but are not limited to social sciences, humanities, liberal arts, education, management, and libraries.

The program is two tiered, designed to support both small (less than \$5,000) and large (up to \$20,000) research infrastructure and equipment needs. The Tier 1 program is administered through the offices of the associate deans for research. The deadline for Tier 1 requests is September 17. The Tier 2 program is administered through the Office of the Vice President for Research. The deadline for Tier II requests is September 17. Visit [www.purdue.edu/research/vpr/funding/non-lab.php](http://www.purdue.edu/research/vpr/funding/non-lab.php) for application and submission information for the Tier 1 and Tier II programs. ■

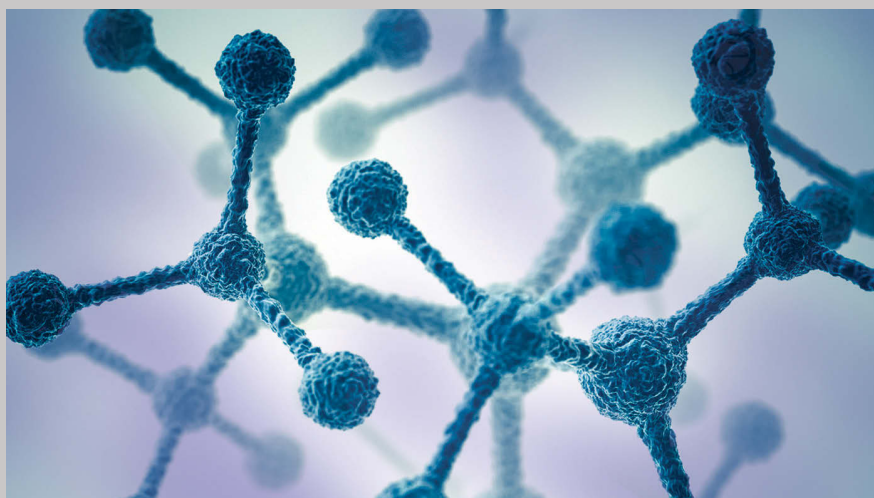
## Research Incentive Grants – Emerging Interdisciplinary Challenges

- » **Yong Chen, Daniel Elliot, Chris Green and Yuli Lyanda-Geller;** physics, electrical and computer engineering, “Optically Synthesizing Novel Atomic and Molecular Quantum Matter—an Emerging Research in Atomic, Molecular and Optical (AMO) Physics,” \$290,449.
- » **Ananth Grama and Markus Lill;** computer science, medicinal chemistry and molecular pharmacology, “Network Analysis Aided Drug Repurposing for Degenerative Diseases,” \$291,360.
- » **Shihuan Kuang, Ji-xin Cheng, Wayne Campbell and Jinghua Wang;** animal sciences, biomedical engineering, nutrition science, “Dissecting Stem Cell Fate by Novel Imaging Microscopy and Single Cell RNA-seq,” \$299,061.
- » **Alejandra Magana, Lynn Bryan, Edwin Garcia and Nick Giordano;** computer and information technology, curriculum and instruction, materials engineering, physics, “Learning Quantum Mechanics through Modeling-Based Instruction: Advancing STEM Education across Scale and Disciplines,” \$300,000.
- » **Corey Neu, Gert Breur and Thomas Talavage;** biomedical engineering, veterinary clinical sciences, electrical and computer engineering, “Next-Generation Orthobiologics for Joint Repair,” \$300,000.
- » **Bryan Pijanowski, Nadine Dolby, Dave Ebert, Carlos Morales, Robert Nowack, Dan Shepardson and Richard Thomas;** forestry and natural resources, curriculum and instruction, electrical and computer engineering, computer graphics technology; earth, atmospheric and planetary sciences, visual and performing arts, “Global Soundscapes: Science, Engineering and Education Research to Preserve Earth's Acoustic Heritage,” \$300,000.
- » **Maria Sepulveda, Jennifer Freeman and Linda Lee;** forestry and natural resources, health sciences, agronomy, “Environmental and Health Assessment of Perfluorinated Compounds,” \$298,889.
- » **Daniel Suter and Arvind Raman;** biological sciences, mechanical engineering, “An Integrated AFM Platform for Cellular Dynamics and Mechanics,” \$300,000.
- » **Sherry Voytik-Harbin, Greg Buzzard, Bumsoo Han, Corey Neu, Kinam Park, Ann Rundell, Cagri Savran and Mervin Yoder;** (IUSOM) biomedical engineering, mathematics, mechanical engineering, biomedical engineering, biomedical engineering, biomedical engineering, mechanical engineering, biochemistry and molecular biology, “Integrative Tissue Systems Biology and Engineering: In-vitro 3D Models of Vascularized Human Tissues,” \$300,000.
- » **Laurel Weldon, Patricia Boling, Patrice Buzzanell, Chris Earley, Rachel Einwohner, Dan Kelly, Maren Linett, Margo Monteith, Jennifer Neville, Venetria Patton, Alice Pawley, Leigh Raymond, Chris Sahley, Mangala Subramaniam;** political science, communication, management, sociology, liberal arts, English, psychological sciences, computer science, engineering education, political science, biological sciences, sociology, “Diversity and Inclusion: Implications for Science and Society,” \$289,317. ■



## Research Incentive Grants – Single-Discipline Research

- » **Gary Cheng**, industrial engineering, “Nano-machine Shop: Scalable Manipulation of Multi-dimension Nanostructures,” \$100,000.
- » **Qi Feng** and **J. George Shanthikumar**, management, “Development of Adaptive Data-Driven Stochastic Modeling Approach and its Application to Strategic Supplier Sourcing Decisions,” \$93,266.
- » **Jennifer Freeman**, health sciences, “Role of Exposure to Environmental Chemical Stressors in Generating Spontaneous Copy Number Variants (CNVs),” \$100,000.
- » **Qingyou Han**, mechanical engineering technology, “Ultrasonic Vibration Assisted ECAP for the Fabrication of Bulk Nanostructured Metals and Alloys,” \$99,766.
- » **Helen Patrick** and **Panayota Mantzicopoulos**, educational studies, “Evaluating Effective Teaching with a Content-Independent Measure: Does Subject Matter Make a Difference in Kindergarten?” \$99,977.
- » **Mohamed Seleem**, comparative pathobiology, “Teaching an Old Drug a New Trick; Revealing Antimicrobial Mechanism of Action of Statins,” \$99,095.
- » **Preeti Sivasankar** and **Jessica Huber**, speech, language and hearing sciences, “Respiratory and Laryngeal Interactions in Determining Phenotypes for Voice Disorders,” \$97,274.
- » **Kevin Vaughn**, anthropology, “An Archaeological Analysis of the Emergence and Evolution of Ancient Pilgrimage Behavior,” \$99,606.
- » **Val Watts**, **Karin F. K. Ejendal** and **Catherine A. Hill**, medicinal chemistry and molecular pharmacology, entomology, “Development of a Receptor-Mediated  $\beta$ -arrestin Signaling Assay Platform Using Bimolecular Fluorescence Complementation (BiFC),” \$94,676.
- » **Yu Xia**, chemistry, “Stereo-Structural Analysis of Glycans with Single-Sugar Resolution Via Mass Spectrometry,” \$100,000.
- » **Jin-Rong Xu**, botany and plant pathobiology, “The Regulatory Functions of PRP4 Kinase in RNA Splicing,” \$90,613. ■



## Associate Deans of Research

Associate deans for research work closely with their deans, department heads, faculty, and graduate students and the Office of the Vice President for Research to facilitate research program development for their school or college.

**College of Agriculture** — **Karen I. Plaut**, associate dean of agriculture, director of agricultural research programs, professor of animal science, 494-8362 or [kplaut@purdue.edu](mailto:kplaut@purdue.edu)

**College of Education** — **James D. Lehman**, associate dean for discovery and faculty development, professor of curriculum and instruction, 494-8474 or [lehman@purdue.edu](mailto:lehman@purdue.edu)

**College of Engineering** — **Melba M. Crawford**, associate dean of engineering for research, professor of agronomy, civil and electrical and computer engineering, chair of excellence in earth observation, 496-3224 or [mcrawford@purdue.edu](mailto:mcrawford@purdue.edu)

**College of Health and Human Sciences** — **Dorothy Teegarden**, associate dean for research and graduate programs, professor of nutrition science, 494-8246 or [teegarden@purdue.edu](mailto:teegarden@purdue.edu)

**College of Liberal Arts** — **Hyunyi Cho**, associate dean for research and graduate education, professor of communication, 494-3655 or [fhco@purdue.edu](mailto:fhco@purdue.edu)

**Krannert School of Management** — **Ananth Iyer**, director of HUB-U, Susan Bulkeley Butler Chair in Operations Management, professor of management, 494-4514 or [aiyer@purdue.edu](mailto:aiyer@purdue.edu)

**College of Pharmacy** — **Eric L. Barker**, associate dean for research, associate professor of medicinal chemistry and molecular pharmacology, 494-9940 or [barkerel@purdue.edu](mailto:barkerel@purdue.edu)

**College of Science** — **Elizabeth J. Taparowsky**, associate dean for research and graduate education, professor of biological sciences, 494-7978 or [taparows@purdue.edu](mailto:taparows@purdue.edu)

**College of Technology** — **Richard Voyles**, associate dean for research, professor of electrical and computer engineering technology, [rvoyles@purdue.edu](mailto:rvoyles@purdue.edu)

**College of Veterinary Medicine** — **Harm HogenEsch**, associate dean for research and professor of immunopathology, 496-3467 or [hogenesch@purdue.edu](mailto:hogenesch@purdue.edu)

**The Graduate School** — **Phillip E. Pope**, senior associate dean and professor in forestry and natural resources, 494-4586 or [ppope@purdue.edu](mailto:ppope@purdue.edu)

**Libraries** — **D. Scott Brandt**, associate dean for research, professor of library science, 494-2889 or [techman@purdue.edu](mailto:techman@purdue.edu) ■



# » Summer Discovery and Engagement at Purdue



Energy - wind farm tour 2013



Using a Slinky to dem



in front of the Memorial Union



lab coats and safety glasses

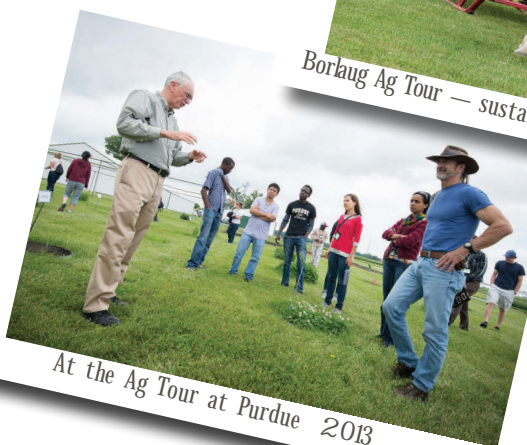


*Energy Academy —  
sharing Purdue research  
with high school students  
and teachers*

*U.S. Borlaug Summer  
Institute on Global  
Food Security*



Borlaug Ag Tour — sustainable horse-powered farming



At the Ag Tour at Purdue 2013



Ag Tour -Purdue 2013



Summer of 2013



SLED workshop — summer 20





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*Poster sessions by  
student researchers*

Undergraduate Student Recognition

SURF at Purdue University 2013

Discussing the poster, Purdue

2013 poster session at Purdue U.

*Research Goes to School — delivering  
biofuels research lessons to high school  
classrooms*

Summer 2013 at Purdue

2013 Cancer

*Science  
Learning  
through Engineering  
Design (SLED) — training  
pre- and in-service  
elementary teachers*

Research Goes to School-Life Cycle

Carbon Cycle Activity - 2013

SLED -Purdue - Summer 2013

Lego Chemical Bonds Activity

Glucose Meter Lab Activity



## Purdue Extends Land-Grant Mission with New Entrepreneurial Resources

Purdue University was founded more than 140 years ago on the premise that it would teach practical skills to support the evolving needs of the United States. That mission naturally extends to entrepreneurship, says Entrepreneur and Professor **Joe Pekny**.

"This is the 21st century land-grant university," explains Pekny, newly appointed interim director of the Burton D. Morgan Center for Entrepreneurship (BDMCE). "We do all the things we used to do — help educate students, research and help the community, and support agriculture, engineering, and the arts and sciences. But now we have interpreted that mission to include doing as much as possible for the community — to translate research and have as much impact as possible."

By adding more depth and breadth to entrepreneurial services already available through Purdue and the Purdue Research Foundation (PRF), leaders hope to understand and speed the laboratory-to-marketplace pipeline. "We want to educate students, faculty and staff," says Pekny, who co-founded Advanced Process Combinatorics Inc. in 1993 based on research he developed at Purdue. "If you're a Purdue entrepreneur or a Purdue faculty member wanting to translate work to practical impact, or to fundamentally understand the translation process, come and see us."

New entrepreneurial initiatives include:

- » **Deliberate Innovation for Faculty (DIFFs):** These seasoned faculty-entrepreneurs will serve as mentors in helping faculty move ideas to commercialization and will fundamentally study the translation process. Inaugural DIFFs are **Gerry McCartney**, Purdue's chief information officer; **Alyssa Panitch**, entrepreneur, professor and associate head of biomedical engineering; and **Ernesto Marinero**, who joined Purdue in February after a successful career in industry. The DIFF program is supported closely through a partnership with Krannert Business School and eight MBA students.

### Five Purdue Innovations Receive More Than \$200,000 from Trask Innovation Fund

Purdue researchers have received more than \$200,000 through the Trask Innovation Fund to help commercialize their innovations in the fields of chemistry, engineering, and speech, language and hearing sciences. They are.

- » **Corey Neu**, assistant professor, biomedical engineering, \$50,000, "Critical Advancement to a New AFM/NMR Instrument."
- » **Thomas Siegmund**, professor, mechanical engineering, \$33,626, "Metamaterial Sound Insulation Panels."
- » **Byunghoo Jung**, associate professor, electrical and computer engineering, \$49,548, "Wireless Positioning and Tracking Technology for Indoor Location Based Services."
- » **Oliver Wendt**, assistant professor, speech, language and hearing sciences, \$50,000, "Development of SPEAK more! A Language Training App for Individuals with Severe Autism."
- » **Ji-Xin Cheng**, associate professor, biomedical engineering, \$50,000, "Fast Spectroscopy Imaging by Parallel-detection of Stimulated Raman Scattering."

The Trask Innovation Fund is managed by the Purdue Research Foundation. The next round of proposals is due September 13. See <http://otc-prf.org/node/337> for more information. ■

- » **Foundry:** An entrepreneurship and commercialization hub for Purdue innovators interested in forming a startup or licensing their discoveries, the foundry will be located on the second floor of the BDMCE. The PRF-managed unit will offer assistance with product ideation; market analysis; business plan development; funding sources, including SBIR grant writing; legal instruction; advice from alumni and faculty entrepreneurial mentors; and guidance from Purdue Entrepreneurs-in-Residence.



The Foundry will build upon long-standing activities already available at the center, including the Certificate in Entrepreneurship and Innovation, Technology Realization Program, Entrepreneurial Leadership Academy, and business plan competitions. "The Foundry is an integral part of our center and will help us turn the center into the nexus of entrepreneurial activity on campus," Pekny says.

- » **Discovery Park Partners Facility:** Located less than a mile from Discovery Park at 1601 State St., the Discovery Park Partners Facility will be used by corporations interested in partnering with Purdue on research projects and for faculty, staff and student entrepreneurs who have founded a company and want easy access to Purdue research facilities.

"Faculty members who have founded businesses have asked for private office space where they can conduct proprietary transactions," explains **Al Rebar**, senior associate vice president for research and executive director of Discovery Park. "The Partners Facility will provide the privacy they need to work on their businesses and still be close enough to their research facilities on the Purdue campus to advance their innovations." It's a joint effort of PRF and Discovery Park.


- » **Anvil:** Located in the basement of the Discovery Park Partners Facility, the Anvil will provide resources for students, faculty and staff innovators who seek collaborative work space. "There are a lot of students forming their own companies in their dorm rooms, and the Anvil will bridge the gap between an idea in a dorm room and a startup in the Purdue Research Park," says undergraduate and entrepreneur **Mike Asem**, who help to create the Anvil. ■




The Office of the Vice President for Research has a new quick reference card for export controls. Download it at [www.purdue.edu/exportcontrols](http://www.purdue.edu/exportcontrols) or cut it out below.



## OFFICE OF THE VICE PRESIDENT FOR RESEARCH EXPORT CONTROLS IN ACADEMIA: A Complex Puzzle

 Research results that are not intended for publication, such as those generated for military research or under a contract with publication restrictions, may require additional safekeeping.

 More than just Customs! Before you ship an item outside the U.S., contact us.

 Activities with certain countries can be limited, especially countries sanctioned or embargoed by the Office of Foreign Assets Control (OFAC).

 International travel requires special considerations. See [www.purdue.edu/exportcontrols/travel](http://www.purdue.edu/exportcontrols/travel) for important resources before you leave.

### KEYWORDS

Contact us if you find them!

- Export Control Classification Number (ECCN)
- United States Munitions List (USML) Item
- International Traffic in Arms Regulations (ITAR)
- "Controlled" or "Sensitive" technology
- Export Administration Regulations (EAR)
- "Controlled, Unclassified" technical data

Contact [exportcontrols@purdue.edu](mailto:exportcontrols@purdue.edu) for assistance

[www.purdue.edu/exportcontrols](http://www.purdue.edu/exportcontrols)

**PURDUE**  
UNIVERSITY

8/2013

## Lilly Day to Encourage New Partnerships

A perfect storm of events is bringing industry and academia closer together, says **Geanie Umberger**, assistant vice president for research.

"Federal dollars are decreasing and people are looking to other sources of revenue. Conversely, big blockbuster drugs are going off-patent and internal R&D activities are decreasing in industry," says Umberger, who works in the Office of the Vice President for Research. "It's becoming more important for industry to reach out to academia because a fair number of innovations and activities are happening here."

That's the reasoning behind the inaugural Lilly Day, scheduled for September 30 at Eli Lilly and Company in Indianapolis. Focused on applied technologies, the event will pair Lilly hosts with Purdue faculty members in areas such as industrial pharmacy, chemistry, chemical engineering and materials engineering. Along with presentations from both organizations, the event will provide networking time for forging new partnerships.

"We don't expect that all 50 Purdue faculty members who participate will walk away with a contract," says Umberger. "But we are hoping that new collaborations will occur as a result of this important event."

Umberger is currently recruiting faculty participants. If you're interested, contact her at [gumberger@purdue.edu](mailto:gumberger@purdue.edu) or 496-3723. ■

## ITaP Coffee Break Consultations Offer Help with Supercomputing

"Coffee Break Consultations" with ITaP Research Computing (RCAC) staff are informal meetups with benefits for new and experienced high-performance computing users or Purdue researchers just thinking about adding supercomputing to their research toolbox.

Graduate student **Brett Lahner** started attending the weekly, one-hour gatherings to help with bioinformatics-related research in Professor **Brian Dilkes'** plant genetics lab.

"The clusters seem rather arcane and mysterious to a person accustomed to working primarily on a PC and I was hoping to get some insight," Lahner says. "Also, I want to get specific questions answered from time to time. It is sometimes quicker and easier when you can talk to someone and get immediate feedback."

Research computing staff started the coffees as another way to assist users of Purdue's Community Cluster Program research supercomputers, including the new Conte cluster, the nation's fastest campus supercomputer. Faculty, staff and students who have an interest in high-performance computing, even if they're not yet using it, are welcome.

The coffees take place from 2 to 3 p.m. Tuesdays at various meeting places around campus, such as Starbucks in the Purdue Memorial Union and the Venture Cafe at the Burton D. Morgan Center for Entrepreneurship.

"A lot of problems are much easier to solve, and it's easier to teach people, if they're sitting across the table from you," says **Preston Smith**, manager of research support for RCAC.

Besides getting questions answered, Lahner benefits from listening to discussions at the gatherings.

"Later, when I come across a topic in my work, I'm thinking, 'Oh yeah, he was talking about this.' It helps to get a sense of the context," Lahner says.

For information on the current meeting place, visit [www.rcac.purdue.edu/coffee](http://www.rcac.purdue.edu/coffee). Email questions to [rcac-help@purdue.edu](mailto:rcac-help@purdue.edu). ■

*Writer: Greg Kline is a science and technology writer for Information Technology at Purdue.*

## Purdue-led NEES Recognized as a 2013 Computerworld Honors Laureate

The International Data Group's Computerworld Honors Program has named the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) as a 2013 Laureate.

The annual awards program honors visionary applications of information technology promoting positive social, economic and educational change.

Based at Purdue's Discovery Park, NEES is a collaborative 14-site research project that aims to improve structural seismic design and reduce the damaging effects of earthquakes and tsunamis. NEEScomm is the operations unit at Purdue and the NEEShub website is based on Purdue's HUBzero platform. ■

## HUBzero to Unveil New Pinterest-style Features at Conference

The latest version of HUBzero, featuring new Pinterest-style information sharing, a new course delivery system supporting online education and a new mechanism for publishing interactive databases, will be released at HUBhub 2013.

The two-day HUBzero users conference will be September 5-6 at the Sheraton Indianapolis City Centre Hotel, 31 W. Ohio St., Indianapolis. It's designed for researchers, educators and IT professionals engaged in building and using cyberinfrastructure.

The event will include hands-on tutorials and presentations by academic, government and small company representatives. Sessions are available for novice and intermediate users as well as those interested in establishing a hub using the open source software.

For more information and to register, visit [hubzero.org/hubhub](http://hubzero.org/hubhub). ■

Learn more at [hubzero.org/hubhub](http://hubzero.org/hubhub)

Purdue faculty, staff, and students get a discounted registration rate of \$80. Contact [hubhub@hubzero.org](mailto:hubhub@hubzero.org) for coupon code.



## >> Sponsored Program Year-to-Date Activity

### Awards by Sponsor

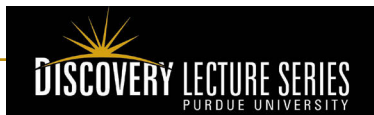
July 2012/July 2013

SPONSOR	FY2014 (YTD July 2013)		FY2013 (YTD July 2012)		% Change	
	NO.	\$ AMOUNT	NO.	\$ AMOUNT	NO.	\$ AMOUNT
National Science Foundation	30	5,160,195	21	4,288,099	43%	20%
Dept. of Health and Human Services	36	4,747,721	29	6,353,906	24%	-25%
Dept. of Defense	10	784,371	20	1,801,126	-50%	-56%
Dept. of Energy	10	2,390,465	9	1,844,682	11%	30%
Dept. of Agriculture	14	798,849	4	306,492	250%	161%
National Aeronautics and Space Administration	8	529,031	10	1,816,122	-20%	-71%
Other Federal	5	459,303	7	1,110,917	-29%	-59%
Dept. of Education	2	565,468	5	663,696	-60%	-15%
Environmental Protection Agency	2	303,431	3	414,813	-33%	-27%
Dept. of Transportation	1	190,330				
Agency for International Development	1	13,600				
<b>Total Federal</b>	<b>119</b>	<b>\$15,942,763</b>	<b>108</b>	<b>\$18,599,852</b>	<b>10%</b>	<b>-14%</b>
Industrials and Foundations	146	6,365,863	136	5,534,140	7%	15%
State/Local Governments	11	1,236,522	7	854,214	57%	45%
Purdue Research Foundation/ Purdue University	263	8,014,117	94	1,495,287	180%	436%
Foreign Governments	2	72,898	3	219,713	-33%	-67%
<b>Total Non-Federal</b>	<b>422</b>	<b>\$15,689,399</b>	<b>240</b>	<b>\$8,103,354</b>	<b>76%</b>	<b>94%</b>
<b>Total Purdue System-wide</b>	<b>541</b>	<b>\$31,632,163</b>	<b>348</b>	<b>\$26,703,206</b>	<b>55%</b>	<b>18%</b>

Data provided by Sponsored Program Services

A comprehensive monthly awards list, including search and sort capabilities, is available online. Please visit the OVPR website at [www.purdue.edu/research/vpr/](http://www.purdue.edu/research/vpr/) or scan the QR code at right to view on your mobile device.





[www.purdue.edu/discoverypark/dls/](http://www.purdue.edu/discoverypark/dls/)

## This Just In: Latest Discoveries in the Universe

- » **When** September 19, 7 p.m.
- » **Where** Elliott Hall of Music

One of America's foremost authorities on space science, Neil deGrasse Tyson will base his discussion on the most recent, noteworthy, and exciting events in space science. It's a talk tailored to Tyson's mission to ensure that science remains a lively, vivid topic in American discourse. Admission is free.

## Shedding Light on America's Energy Future

- » **When** October 24, 3:30 p.m.- 4:30 p.m.
- » **Where** Fowler Hall, Stewart Center

The Energy Center is pleased to welcome Jim Rogers the Chairman and President of Duke Energy as the Discovery Lecture Series Speaker.

## SEPTEMBER

## HUBhub 2013: The HUBzero Conference

- » **When** September 5-6, 8:30 a.m.- 5:30 p.m.
- » **Where** Sheraton Indianapolis City Centre Hotel
- » **Contact** Nikki Huang, [hubhub@hubzero.org](mailto:hubhub@hubzero.org), 494-0524
- » **Website** [hubzero.org/hubhub](http://hubzero.org/hubhub)

The two-day symposium will have presentations and workshops showing how the unique HUBzero open source software solution has empowered a wide spectrum of projects in nanotechnology, healthcare research, and other areas of engineering and science. Faculty, staff and students receive a discounted rate of \$80. Contact Nikki Huang (above) to request a coupon code. Conference registration fee includes all sessions, opening reception on the evening of Sept. 4th, breakfast and lunch on Sept. 5th and 6th, and dinner on Sept. 5th.

## Bindley Industry Town Hall

- » **When** September 6, 8 a.m.-5 p.m.
- » **Where** Burton D. Morgan Center for Entrepreneurship
- » **Contact** Stephanie Bonebrake, [stephb@purdue.edu](mailto:stephb@purdue.edu), 494-0497
- » **Website** [www.purdue.edu/discoverypark/bioscience/index.php](http://www.purdue.edu/discoverypark/bioscience/index.php)
- » **Facebook** [www.facebook.com/bindleybiosciencecenter](http://www.facebook.com/bindleybiosciencecenter)

Bindley Bioscience Center will host its first annual Bindley Industry Town Hall. Industry leaders will participate in a panel discussion to identify areas of growth and strategies that can be utilized to meet that growth and upcoming challenges.

## Oak Ridge Associated Universities — The University Value Proposition

- » **When** September 16, 2-3 p.m.
- » **Where** Burton D. Morgan Center for Entrepreneurship, Room 121
- » **Contact** Cindy Ream, [cream@purdue.edu](mailto:cream@purdue.edu), 494-0015

Dr. Arlene Garrison, vice president of university partnerships at Oak Ridge Associated Universities (ORAU) will present. She is responsible for enhancing ORAU's scientific research opportunities and expanding partnerships with universities, national laboratories and private industry. Under her direction, the University Partnerships office provides awards to ORAU member universities, identifies and promotes funding opportunities by facilitating inter-institutional relationships, and leverages relationships with other organizations to support increased funding for scientific research and education.

## NIH Overview: Institute/Center/Mission and Strategies

- » **When** September 17, 11:30 a.m.-1 p.m.
- » **Where** Stewart Center, Room 310
- » **Contact** Mary Ryker, [mlryker@purdue.edu](mailto:mlryker@purdue.edu), 494-9322
- » **Website** [www.purdue.edu/research/vpr/rschdev/events.php](http://www.purdue.edu/research/vpr/rschdev/events.php)

The workshop will provide an overview and update on the various institutions of the NIH. Knowledge and familiarity with NIH institutes can be a tremendous advantage during the writing, submission and post-review phases of your proposal. We will address the individual missions and plans, as well as possible funding mechanisms and positioning yourself for a successful NIH-funded career. Registration is required and will be available on the OVPR website one month prior to the workshop. Lunch is included.

## The Women's Global Health Institute Annual Meeting

- » **When** September 26
- » **Where** Purdue University
- » **Contact** Li Yuan Bermel, [liyi@purdue.edu](mailto:liyi@purdue.edu), 496-9316
- » **Website** [www.purdue.edu/discoverypark/WGHI](http://www.purdue.edu/discoverypark/WGHI)

Updates on the institute since its launch in March 2012, featuring the 2013 awardees of the Mildred Elizabeth Edmundson Research Grant, will be presented. Participants will meet the Institute's External Advisory Council and Internal Steering Committee and discuss opportunities in creating training programs and research teams in women's health. Pilot grant opportunities will be announced.



## OCTOBER

### Finding the Right Opportunities and Developing Grant Proposals Workshop

- » **When** October 17, 11:30 a.m.-1:30 p.m.
- » **Where** Stewart Center, Room 310
- » **Contact** Sue Grimes, [sgrimes@purdue.edu](mailto:sgrimes@purdue.edu), 494-5858
- » **Website** [www.purdue.edu/research/vpr/rschdev/events.php](http://www.purdue.edu/research/vpr/rschdev/events.php)

Writing a proposal can sometimes seem like an overwhelming task. Finding an opportunity that provides a good fit for your research takes time and, once you find a match, that blank piece of paper makes you ask, "Where do I even begin?" This workshop, hosted by OVRP's Research Development Services staff, will provide you with tools and resources to help make the proposal writing process easier. Registration is required and will be available on the OVRP website one month prior to the workshop. Lunch is included.

## NOVEMBER

### How to Write a NIH Proposal or Resubmission: Strategies, Grantsmanship and Review Process

- » **When** November 5, 11:30 a.m.-1 p.m.
- » **Where** Stewart Center, Room 310
- » **Contact** Mary Ryker, [mlryker@purdue.edu](mailto:mlryker@purdue.edu), 494-9322
- » **Website** [www.purdue.edu/research/vpr/rschdev/events.php](http://www.purdue.edu/research/vpr/rschdev/events.php)

This workshop will address submission and grantsmanship strategies, and examine the review process. Knowledge of and familiarity with NIH mechanisms and review procedures can be a tremendous advantage during the writing, submission and post-review phases of your proposal. Registration is required and will be available on the OVRP website one month prior to the workshop. Lunch is included.

### Write Winning Grants

- » **When** November 15, 8 a.m.-4:30
- » **Where** Stewart Center, Room 302
- » **Contact** Sue Grimes, [sgrimes@purdue.edu](mailto:sgrimes@purdue.edu), 494-5858
- » **Website** [www.purdue.edu/research/vpr/rschdev/events.php](http://www.purdue.edu/research/vpr/rschdev/events.php)

David Morrison, of Grant Writers' Seminars and Workshops, LLC, will return to the Purdue campus for this popular grantwriting seminar. Contact Sue Grimes (above) to learn more about the seminar and subsequent opportunities. Registration is required and will open in early October. ■



### DISTINGUISHED LECTURE

**Research and Scholarship Distinction Award**  
by Thomas Hertel

"Global Change and the Challenges of Sustainably Feeding a Growing Planet"

- » **When** November 18, 1:30 p.m.
- » **Where** Fowler Hall

### Reception

- » **When** November 18, 2:30 p.m.
- » **Where** Stewart Center Art Gallery



### DISTINGUISHED LECTURE

**Herbert Newby McCoy Award**  
by Andrew Weiner

"Ultrashort Optical Pulse Generation with Arbitrary Waveforms"

- » **When** November 18, 3:30 p.m.
- » **Where** Fowler Hall

### Reception

- » **When** November 18, 4:30 p.m.
- » **Where** Stewart Center Art Gallery

→|| 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 Buckius, rbuckius@purdue.edu
- » Discovery Park; 496-6625; Alan Rebar, rebar@purdue.edu
- » Research Core Facilities; 496-1938; Jeff Bolin, jtb@purdue.edu
- » Cost Sharing; 494-0702; Mary Millsaps, millsaps@purdue.edu
- » Internal Competitions; 494-4231; Marietta Harrison, harrisom@purdue.edu
- » Industry Research and Technology Programs; 494-0743; John Schneider, jas@purdue.edu
- » Research Development: Workshops, Competitions; 494-5858; Sue Grimes, sgrimes@purdue.edu
- » Research Development: Proposal Coordination/Writing; 496-1985; Sally Bond, sbond@purdue.edu
- » Research Integrity; 494-3996; Peter Dunn, pedunn@purdue.edu
- » Research Regulatory Compliance; 494-7458; Ianthe Bryant-Gawthrop, ibg@purdue.edu
- » Research Quality Assurance; 496-6653; Michael Szczepanski, mikes@purdue.edu
- » Conflict of Interest; 496-1763; Voichita Dadarlat, voichi@purdue.edu
- » Export Controls; 494-1852; Michael Reckowsky, mreckowsky@purdue.edu
- » Protection of Research Subjects; 496-3824; Howard Zelaznik, hnzela@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](http://www.purdue.edu/sps)
- » Proposal Information, Transmittal to Agency; 494-6204; [proposal@purdue.edu](mailto:proposal@purdue.edu)

### **Technology Commercialization**

- » Patent & Copyright Information; 588-3475; Elizabeth Hart-Wells, [otcip@prf.org](mailto:otcip@prf.org)

**Co-editors** » Pam Burroff-Murr, [burroff@purdue.edu](mailto:burroff@purdue.edu); Angie Roberts, [akroberts@purdue.edu](mailto:akroberts@purdue.edu)

**Layout** » Linda A. Howell, [lahowell@purdue.edu](mailto:lahowell@purdue.edu)

**Proofing** » Cindy Larson, [cindylarson@purdue.edu](mailto:cindylarson@purdue.edu)

**Contributing Writers** » Judith Barra Austin, Elizabeth Gardner, Ianthe Bryant-Gawthrop, Steve Leer, Greg Kline, Angie Roberts

**Photography** » Tom Campbell, Andrew Hancock, Sayanti Mukhopadhyay, Vincent Walter

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