

DIMENSIONS *of* DISCOVERY

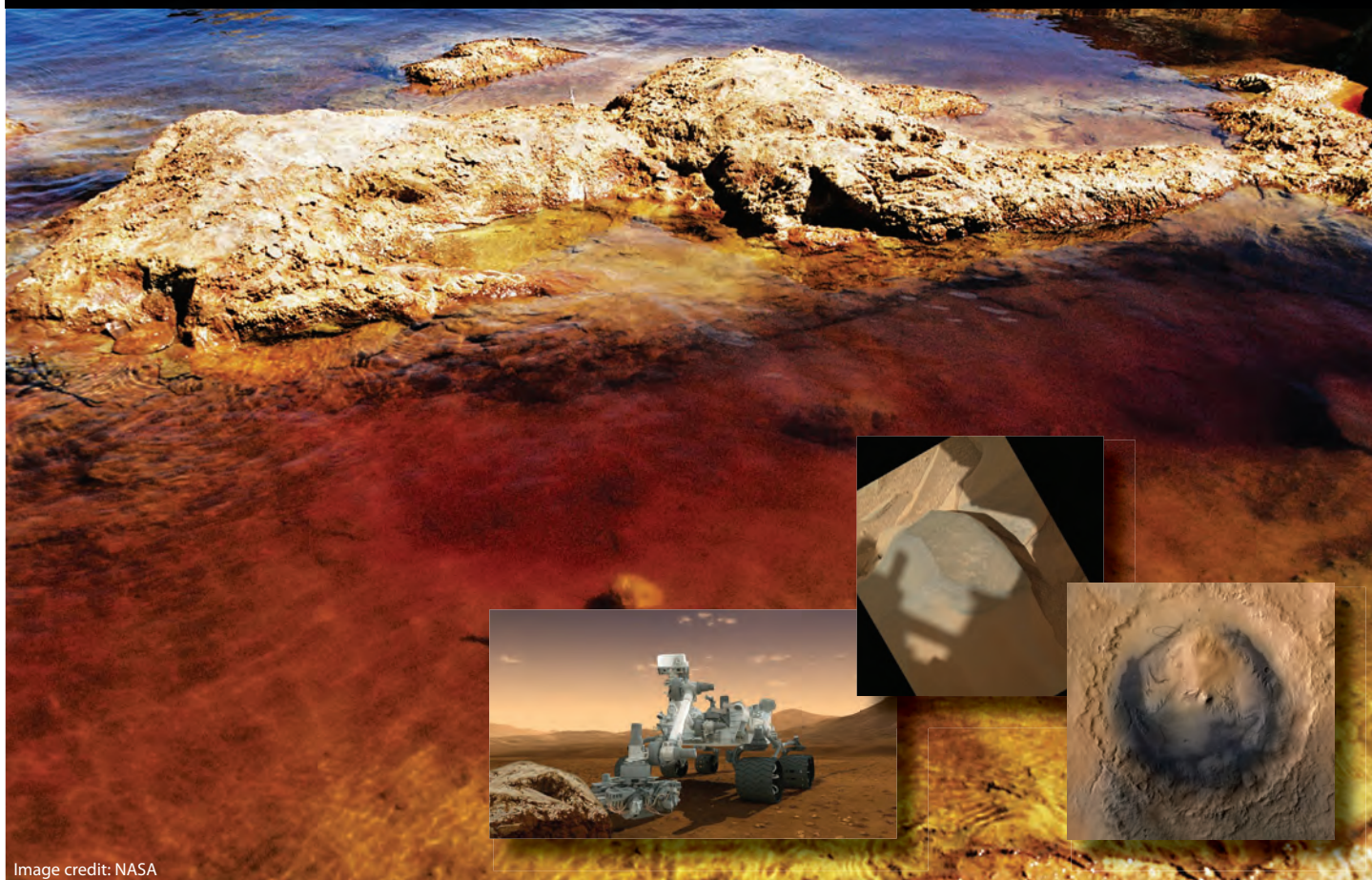


Image credit: NASA

» Other-worldly Research

Welcome

**“Do not go where the path may lead,
go instead where there is no path and
leave a trail.” — Ralph Waldo Emerson**

Whether near (Indianapolis) or far (Mars), Purdue faculty members continue to pave new trails in research. In this issue, explore how an aeronautical and astronautical engineer helped protect the Mars rover during atmospheric entry, how an imaging expert is partnering with University Hospital on an innovative technique for liver cancer detection, and how a veteran in the world of calcium research has helped influence nutritional requirements for everyone from adolescents to older adults. ■

PURDUE
UNIVERSITY

‘Curiosity’ Brings Purdue Professor into Mars Mission

Five years before the Mars Science Laboratory (MSL) plowed through the atmosphere of the red planet at 13,000 miles per hour, Steven Schneider was beginning his own work on the latest rover project.

As a member of a review board evaluating the MSL’s thermal protection system, Schneider helped to ensure that the one-ton spacecraft didn’t burn up in the planet’s atmosphere, which is 100 times thinner than that of Earth. Input from the committee led to a change in the heat shield material.

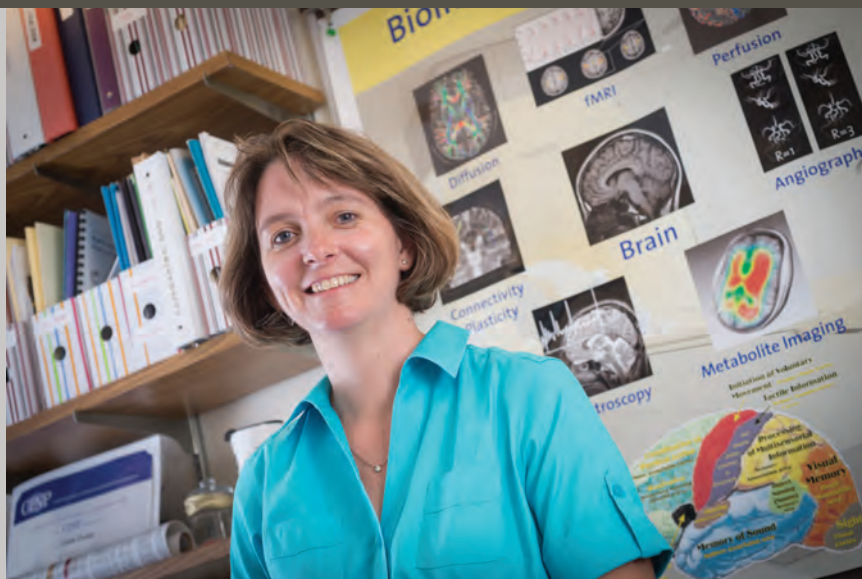
“The heat generated on entry depends on the weight of an object relative to its size, and this was the largest, heaviest probe ever landed on Mars,” says Schneider, a professor of aeronautics and astronautics. “This heat shield faced a very different scenario from past missions, and its engineering was quite complicated. This was the first Mars mission to use a heat shield made from PICA, which can handle a much higher temperature than previously used materials.”

Curiosity will function as a mobile laboratory to investigate the current and past environment of Mars’ Gale Crater to determine if it is or ever was capable of supporting life. It is equipped with 10 science instruments and a robotic arm that can drill into rocks, scoop up soil and deliver samples to internal analytical instruments. More information about the mission is available at <http://mars.jpl.nasa.gov/msl/>. ■

Writer: Elizabeth Gardner is communications and marketing specialist for Purdue Marketing and Media.

Inside »

- 2 Clinical Trial Partnerships
- 4 Data Visualization Services
- 5 Awards and Honors
- 6 Awards and Honors
- 8 Excellence in Research
- 10 New Programs and Partnerships
- 12 Resources
- 13 Sponsored Program Year-to-Date Activity
- 14 Events
- 15 Appointments
- 16 Research Services Directory



Photography by Vincent Walter

Researcher Partners with IU on Innovative Detection Techniques

For people with inoperable liver cancer, a few hospitals around the country are offering new hope through internal radiation therapy and stereotactic body radiation. One of those is IU Health University Hospital in Indianapolis, which is piloting groundbreaking technology developed by Purdue's **Ulrike Dydak**.

A former high-energy physicist who has spent the last 15 years working in medical physics, Dydak has created a new method for assessing treatment outcomes. Conventional imaging using CT or MRI can't detect changes in liver tumors until months after treatment begins — often too late for people with a life expectancy of around one year. While conventional MRI images signal from hydrogen nuclei, Dydak's method uses a novel coil wrap to detect phosphorous signal to more accurately assess the patient's progress.

The coil, made of an array of eight loops of conductive wires, wraps around the abdomen and detects the small radiofrequency signals that the liver's metabolites emit after having been excited by the MRI. While traditional phosphorous coils only allow clinicians to see superficially into the liver at disparate points, Dydak's coil allows for the first time a visualization of the energy household of the entire liver.

Dydak's team performs the MRI studies on patients during regular visits to University Hospital, affiliated with the Indiana University School of Medicine. "So far, we have very promising pilot data," says Dydak, an assistant professor of health sciences who is using a Purdue Cancer Center Challenge grant to support her research. If further research bears out, it could lead not only to more personalized radiation plans but also a new method of monitoring treatment in liver cancer that uses phosphorous to seek out biomarkers.

"My goal is to impact clinical care and diagnostic possibilities for cancers," says Dydak. "This research hopefully will allow us to implement better diagnostic techniques to improve individualized patient care." ■

Writer: Angie Roberts is a writer and designer with the Office of the Vice President for Research.

Clinical Trial Tests Researcher's Anti-Cancer Agents

Back in the 1970s, when **Mark Cushman** first began experimenting with the synthesis of natural products for cancer treatment, he serendipitously created a class of anti-leukemia agents called indenoisoquinolines. But when National Cancer Institute researchers concluded one of them was not as effective as other leukemia treatments, the compound was filed away and nearly forgotten.

Then 18 years later, Cushman received an unexpected call from an NCI researcher, who had been running Cushman's agent through a computer program that analyzed its effects against different kinds of cancer cells. "He was very excited and said that indenoisoquinoline had the same cytotoxicity profile as some clinically useful topoisomerase I inhibitors," says Cushman, a Distinguished Professor of Medicinal Chemistry. "He wanted us to send more of the compound to test."

Over the last 10 years, Cushman and his team have been perfecting the anticancer activity of the lead indenoisoquinoline. After synthesizing 500 compounds, he provided two optimized compounds to NCI, where they're being tested against colorectal and other cancers.

Already, results are promising; in one patient with metastasized colon cancer whose lung nodules had not responded to other treatments, physicians discovered a decrease in the size of nodules after just five days of Cushman's agents.

"This is the first evidence of efficacy that we have seen. Other drugs were not working, but our drugs are, so that is good news," Cushman says. "I'm thrilled to be involved in this type of research because it allows us to create organic compounds that don't exist in the known universe – and won't exist unless we put them there." ■

Writer: Angie Roberts is a writer and designer with the Office of the Vice President for Research.



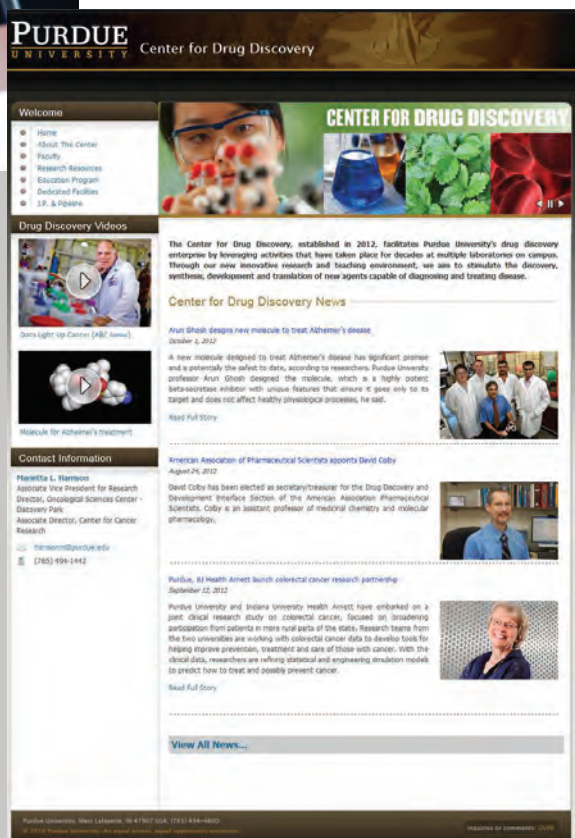
Photography by Vincent Walter

Drug Discovery Website Debuts

Purdue's growing drug discovery enterprise is now highlighted in a new website.

Located at www.purdue.edu/research/pcdd, the website is overseen by the new Center for Drug Discovery. It includes a faculty directory, resources for researchers, dedicated facilities and information on undergraduate and graduate coursework in drug discovery.

The site also includes a link to a live web cam of the new Drug Discovery Building, scheduled to open in 2014, and a link to Drug Discovery at Purdue, an annual catalogue of Purdue researchers. ■



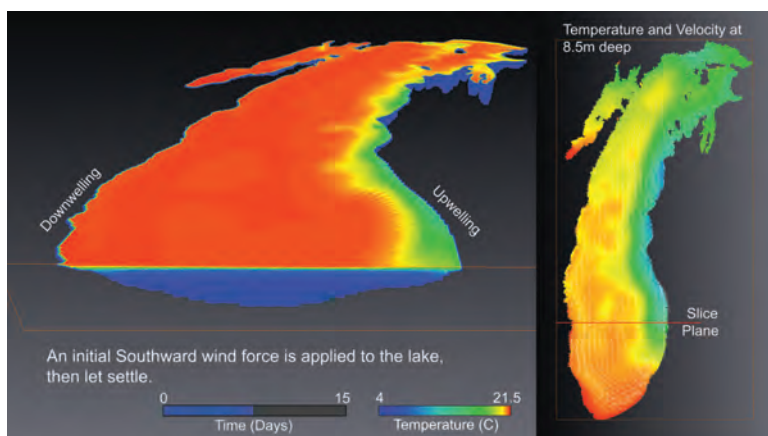
Envision Center Helps Faculty Bring Research Results, Classroom Activities to Life Visually

A New Look on the Great Lakes

Cary Troy traditionally has viewed his data on environmental fluid mechanics of the Great Lakes in numbers or 2-D plots. Thanks to the Envision Center for Data Perceptualization, the civil engineering professor has a new window on his research.

Troy's data has now been turned into 3-D maps with multiple factors and layers, GIS (geographic information system) style. The images are animated and projectable in large display and immersive formats.

"There's really nothing like seeing it in three dimensions," Troy says. "It's not just about pretty pictures. It's about functionality, getting to look at your data so you can actually do the science you want." ■



Animation of the Mars Formation

Our solar system formed 4.5 million years ago, so it's too late to watch Mars coalescing out of the cloud of gas and dust surrounding the young sun — unless you have Purdue's Envision Center for Data Perceptualization.

The ITaP-operated data visualization and multimedia production services center worked with Professor **David Minton**, a Purdue planetary scientist, to create a 3-D animation of a Mars formation theory contrary to the long-held view that the planets formed roughly where we find them today.

The Envision Center helps faculty enhance research and teaching by graphically representing data and information through techniques such as scientific visualization, animation, motion capture and immersive 3-D virtual environments. Besides operating the hardware and software, staff and students at Envision consult on ways to visualize projects and collaborate on grant proposals.

The center uses a blend of technology and art to display information graphically in ways that communicate the complex more effectively, simplify understanding and create a springboard for new insights.

Minton wanted an animation illustrating his theory — that early in the solar system's history there was substantial migration by the planets as they grew — to make it accessible to non-specialists.

"Planet formation theory and orbital mechanics are difficult to visualize for someone without much artistic experience, so I was grateful to have the Envision Center try visualizing my current work," Minton says. "I am very happy with the product. I believe it will allow the results of my paper to be appreciated by a much wider audience."

With Minton's guidance, Envision Center staff created an animation of the formation of Mars consistent with the professor's research using, among other tools, the same software used in making animations for the Discovery or Science channels, not to mention numerous Hollywood blockbusters.

For more information, contact **George Takahashi**, Envision Center technical lead, 49-61862, gtakahas@purdue.edu. ■

Writer: Greg Kline is a science and technology writer, Information Technology at Purdue (ITaP).

Nine Elected as AAAS Fellows

Nine Purdue University professors have been awarded the distinction of fellow from the American Association for the Advancement of Science, the world's largest general scientific society.



The distinction recognizes their notable work to advance science or its applications, and fellows are elected by peer members. The association will present 702 new fellows with the award on Feb. 16 during the association's annual meeting in Boston.

The fellows from Purdue are:

- » **Mahdi Abu-Omar**, professor of chemistry, for distinguished contributions to the field of mechanistic inorganic chemistry, with particular emphasis on atom transfer reactions of oxorhenium complexes.
- » **Nicholas Carpita**, professor of plant pathology, for distinguished contributions to plant biology, particularly structure and biosynthesis of cell walls, gene discovery, and improvement of grasses as lignocellulosic bioenergy crops.
- » **Mark Cushman**, distinguished professor of medicinal chemistry, for outstanding contributions to medicinal chemistry and drug discovery, particularly his impact on fundamental science and delivery of novel therapeutics.
- » **Vincent Jo Davisson**, professor of medicinal chemistry and molecular pharmacology, for important contributions to the understanding and exploitation of molecular specificity in pharmacological systems.
- » **Avtar Handa**, professor of horticulture, for distinguished contributions to the field of postharvest biology, particularly for discovering fundamental knowledge to develop fruit crops with enhanced shelf-life, phytonutrients and yield.
- » **David Nolte**, professor of physics, for distinguished contributions to the field of optical interferometric devices, particularly the development and commercialization of dynamic holographic films, the BioCD and motility contrast imaging.
- » **Ian Shipsey**, the Julian Schwinger Distinguished Professor of Physics, for his contributions to the field of experimental particle physics, particularly for heavy quark physics and leadership in the Compact Muon Solenoid experiment.
- » **Gabriela Weaver**, professor of chemistry, for distinguished contributions to transforming science education at the undergraduate and pre-college levels through the use of inquiry-based pedagogies and innovative technologies.
- » **Howard Zelaznik**, professor of health and kinesiology and associate vice president for research, for distinguished contributions to the fields of psychology and kinesiology, particularly for the development of a theoretical framework in movement timing.

These new AAAS fellows bring the Purdue total to 54.

The tradition of selecting fellows began in 1874. Members can be considered for the rank of fellow if nominated by the steering group of their respective sections, by three fellows or by the association's chief executive officer. Each steering group then reviews nominations within its respective section and forwards a final list to the association's council. The nomination involves all disciplines of science and engineering, which makes it broader than any technical society. Additional information is available at www.aaas.org. ■

Writer: Elizabeth Gardner is communications and marketing specialist for Purdue Marketing and Media.

Nano Expert Honored with UNESCO Medal

Vladimir Shalaev has received a medal from UNESCO (United National Education, Scientific and Cultural Organization) for his work in meta-materials optics and nano-optics.

Shalaev, who is the Bob and Anne Burnett Distinguished Professor of Electrical and Computer Engineering, a professor of biomedical engineering, a professor of physics and the scientific director of nanophotonics of Birck Nanotechnology Center, was one of six experts laureates honored at UNESCO headquarters in October with the UNESCO Medal for the Development of Nanosciences and Nanotechnologies.

UNESCO works to advance and promote science in the interests of peace, sustainable development and human security and well-being, in close collaboration with its member states and a wide variety of partners. It is the only United Nations specialized agency with a specific mandate for science. ■



Vladimir M. Shalaev, the Robert and Anne Burnett Professor of Electrical and Computer Engineering at Purdue, with UNESCO Director General Irina Bokova (Bulgaria) and David T. Killian, U.S. Ambassador to UNESCO, at the Award Ceremony at UNESCO Headquarters (October 11, 2012).

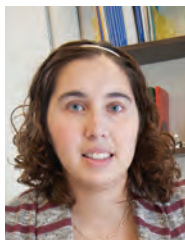
Two Receive NSF CAREER Awards

Two more Purdue faculty members have received Faculty Early Career Development (CAREER) awards from the National Science Foundation (NSF).



Brent Jesiek

Brent Jesiek, assistant professor of engineering education, will investigate how engineering degree programs can develop students to act as boundary spanners who can communicate, collaborate, and coordinate across organizational, disciplinary, geographic, demographic, stakeholder and other boundaries. The project overlaps with NSF's strategic goals of transforming the frontiers through preparation of an engineering workforce with new capabilities and expertise.



Suzanne Bart

Suzanne Bart, assistant professor of inorganic chemistry, will focus on the synthesis, characterization, and reactivity of reduced uranium complexes for small molecule activation. The planned research will test the hypothesis that low-valent uranium alkyls are useful synthons for elusive uranium targets. In terms of the educational plan, Professor Suzanne Bart will continue and expand her initiative to increase the population of women among college age science majors with her ChemTeens conference (formerly High School Day on Campus for Girls). ■

Calcium Expert Honored with McCoy Award

Connie Weaver, the 2012 recipient of Purdue University's top research award, discussed her work on calcium and bone health at the McCoy Distinguished Lecture in November.

Weaver, distinguished professor and head of the Department of Nutrition Science, received the 2012 Herbert Newby McCoy Award, the most prestigious research honor in the natural sciences given by Purdue.

"We are honoring Dr. Weaver for her work on calcium metabolism, which has transformed the way people think about calcium nutrition," said Richard Buckius, vice president for research. "Her research focuses on adolescents' calcium needs, as related to the impact of diet, gender, race and sexual maturity on calcium utilization."

Weaver's talk, "Chasing Calcium into Bones and Beyond," drew hundreds of faculty, staff and students.

Today's calcium requirements for North America and the national recommended dietary guidelines in adolescents are based on Weaver's research findings that the optimal calcium intake is 1,300 milligrams for healthy bone mass. Weaver highlighted how her laboratory has identified calcium levels for healthy bone growth during puberty to prevent osteoporosis later in life. Calcium is one of the four shortfall nutrients targeted by the Dietary Guidelines for Americans Advisory Committee for Americans to increase.

Weaver is an expert in mineral bioavailability, calcium metabolism and bone health, and she is a member of the Institute of Medicine, which is the health arm of the National Academy of Sciences. She has published more than 260 research articles and trained more than 37 doctorate and 18 master's degree students.

Weaver is deputy director of the National Institutes of Health-funded Indiana Clinical and Translational Science Institute. In 2011 she was appointed to the Institute of Medicine's Food and Nutrition Board, and in 2005 she was appointed to the U.S. Dietary Guidelines Advisory Committee, and she served on the National Academy of Sciences Food and Nutrition Board Panel to develop new requirement recommendations for calcium and related minerals.

The McCoy Award, established in 1964 by Ethel Terry McCoy in memory of her husband, is presented annually to a Purdue student or faculty member for outstanding contributions to

the natural sciences. The winner is nominated by colleagues and selected by faculty representatives and the university president. Nominations for the 2013 award are due by Monday, January 28, 2013. For more information, visit www.purdue.edu/research/vpr/funding/research_awards.php. ■

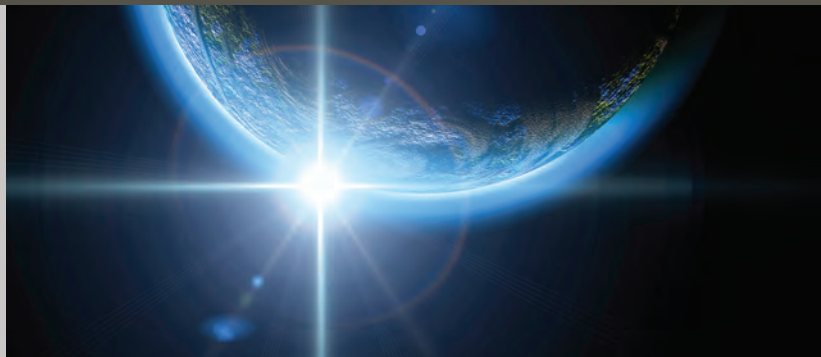
Amy Patterson Neubert is a health sciences and news writer for Purdue Marketing and Media.



(Above) Timothy Sands presents Connie Weaver with the the 2012 Herbert Newby McCoy Award. (Photography by John Underwood)

(Right) Weaver joins Camp Calcium attendees for a milk toast to the benefits of calcium. (Photography by Vincent Walters)





Call for Nominations to the Purdue University Research and Scholarship Distinction Award

The Purdue University Research and Scholarship Distinction Award is a new annual award intended for faculty whose recent research or scholarship has made a major impact on their field and who are not eligible for the McCoy Award, which is limited to research in the natural sciences.

Faculty in all disciplines except the natural sciences whose research has made a recent major impact in their field are eligible to be nominated for the Research and Scholarship Distinction Award. Past McCoy winners are not eligible for nomination. The Research and Scholarship Distinction Award is intended to honor recent past achievement(s) of major impact; the award is not a lifetime-achievement award.

The selection committee places significant weight on the letters of support, particularly those from outside the Purdue community, because they better reflect the impact of the nominee's contribution to their field. Supporting letters from individuals outside Purdue should include a brief statement of the author's expertise and relationship, if any, to the nominee.

To assist the selection committees in understanding the impact and significance of the nominee's work, nominators or their representatives may be invited to make a 10-15 minute presentation and answer questions during the selection committee meeting. The presentation schedule will be developed after all nominations have been received.

Nomination packets should be submitted electronically to Sherri Neibert (neiberts@purdue.edu) by Tuesday, January 22, 2013. Nominations may be made by any member of the university. The nomination should include:

- » A concise summarizing statement, not more than two pages in length, which describes the impact and significance of the nominee's recent work leading to nomination for the Purdue University Research and Scholarship Distinction Award.
- » A *curriculum vitae* of the nominee.
- » A complete list of all scholarship and creative works during the five-year period preceding January 1, 2013.
- » Copies of scholarship and creative works materials that substantiate the impact of the contribution.
- » Any additional supporting information that the nominator considers to be significant.
- » No more than five letters supporting the impact and significance of the nominee's contribution to their field. ■

VPR Names Equipment Grant Recipients

More than 40 grants have been issued by Purdue University as part of the new Research Equipment Grants program. Principal investigators for the grants are:

Laboratory Equipment Awards

- | | |
|------------------------|-----------------------|
| » Kolapo Ajuwon | » N. Athula Kulatunga |
| » Alexandra Boltasseva | » Russell Main |
| » Bryan Boudouris | » Susan M. Mendrysa |
| » Keith Cherkauer | » David Thompson |
| » Jean Chmielewski | » You-Yeon Won |
| » Jane Frankenberger | » Clifford Weil |
| » Jennifer Freeman | » Juan P Wachs |
| » Robert Geahlen | » Jeffrey Youngblood |
| » Matthew D. Ginzl | » Rebecca Packer |
| » Ann Kirchmaier | |

Non-laboratory Equipment Awards

- | | |
|------------------------|------------------------|
| » Elena Benedicto | » Michael McNamara |
| » Evelyn Blackwood | » Kevin J. Mumford |
| » Susan Britsch | » Jill Newton |
| » Rebecca G. Bryant | » Matthew Ohland |
| » Ayse Ciftci | » JoAnn Phillion |
| » Ann M. Clark | » Paul Preckel |
| » Alexander L. Francis | » Melissa J. Remis |
| » Elaine J. Francis | » Ala Samarapungavan |
| » Doran C. French | » Heather Servaty-Seib |
| » Hank Kraebber | » Christopher Slaten |
| » Judith Lysaker | » Susan C. South |
| » Youli Manzticopoulos | » Oliver Wendt |

Research Equipment Programs were established to support equipment needs for research and scholarly activities. Equipment is essential to the foundation and advancement of research intensive universities like Purdue. While a portion of the equipment funding comes from private and public sources, researchers often need internal funds to fill existing gaps.

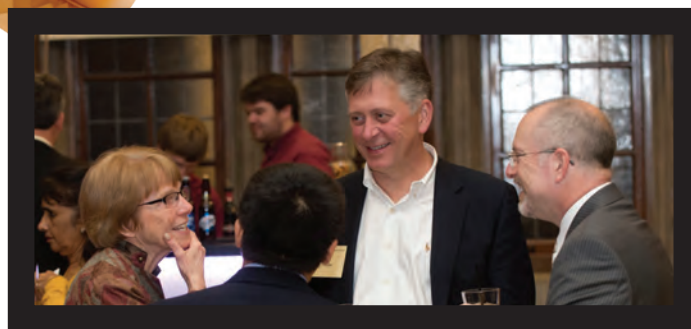
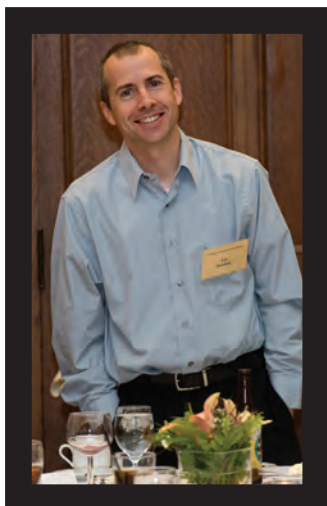
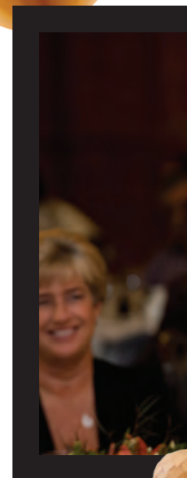
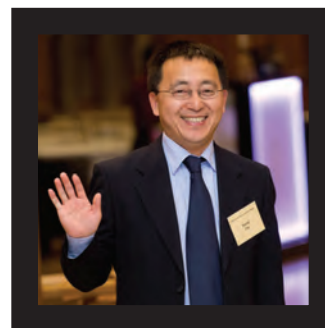
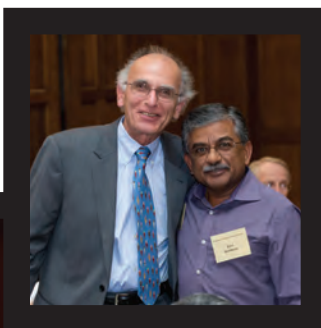
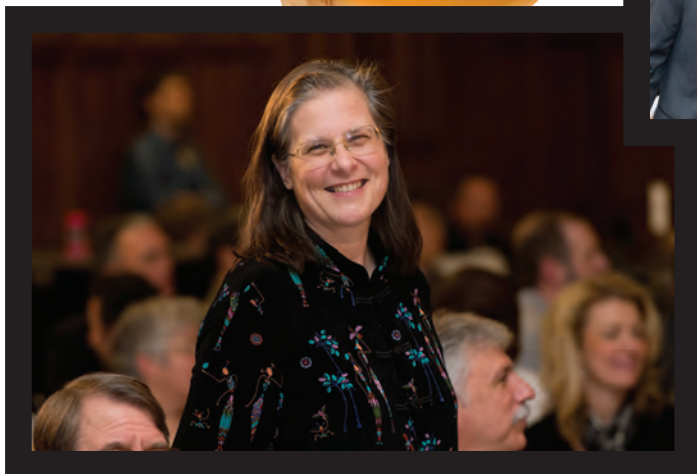
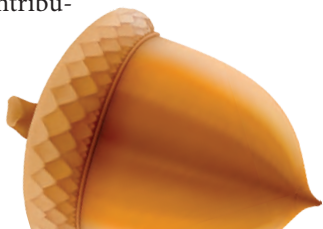
The Non-laboratory Equipment program was designed to support equipment needs in disciplines not driven by instrument-dependent research. Such disciplines include social sciences, humanities, liberal arts, education, management and libraries. ■

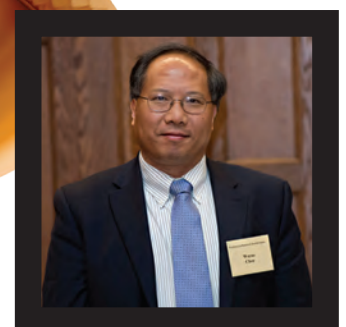
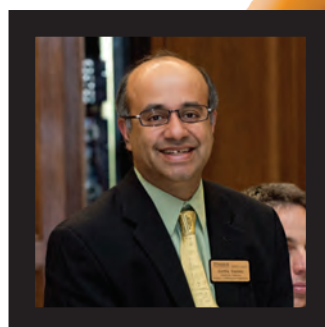
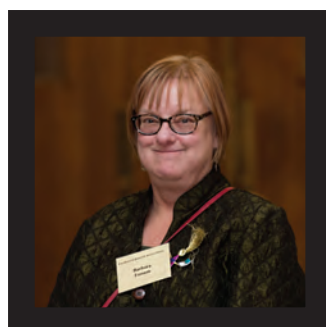
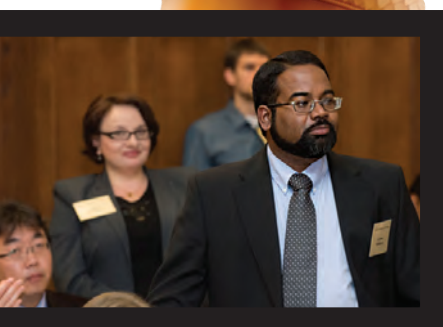
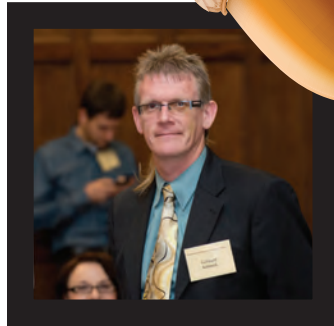
» Excellence in Research

Nearly 300 Purdue faculty and staff gathered in November for the Excellence in Research Awards dinner, celebrating the accomplishments and contributions of Purdue's research community.

Among the honorees were faculty members who had received college or school awards for outstanding research in 2012, along with Seed for Success honorees — principal investigators and co-investigators garnering awards of \$1 million or more. Of the 198 principal investigators and co-investigators working on one of the 70 Seed for Success projects, 49 investigators earned their bronze acorn award in recognition of their contribution in acquiring a \$1 million dollar or more award for the first time. ■

Photography by John Underwood





»» New Programs and Partnerships

Purdue Gets \$5.2 Million to Develop New Biofuel Process

If Purdue University researchers have their way, the term “biofuel plant” will take on a whole new meaning.

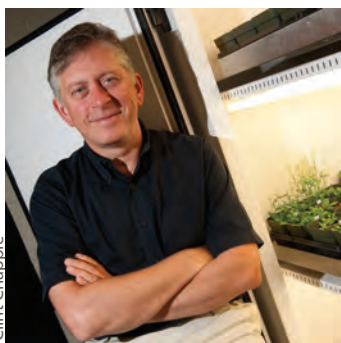
A team received a \$5.2 million U.S. Department of Energy grant to develop a plant that can make substances that could be used directly as a biofuel. The idea is to reroute carbon that plants currently use to make lignin — a barrier to cellulosic ethanol production — and turn it into a biofuel.

“Scientists have been focused on getting the sugars out of cell walls and using microorganisms to ferment those sugars into fuel,” said **Clint Chapple**, the grant’s principal investigator and a distinguished professor of biochemistry. “We want to take advantage of a plant’s metabolic pathways to make biofuel directly.”

Co-investigator **Natalia Dudareva**, a distinguished professor of horticulture, will focus on increasing phenylalanine production in plants.

John Morgan, an associate professor of chemical engineering, will analyze the results of these efforts and develop mathematical models to determine the most efficient methods for rerouting phenylalanine and for making phenylethanol. ■

Writer: Brian Wallheimer is a research news writer with Agricultural Communication Service.



Clint Chapple



Natalia Dudareva



RCHE Project Targets Infusion Pumps for Better Patient Safety

The Regenstrief Center for Healthcare Engineering (RCHE) is working with several major Midwestern hospitals to establish safety standards for infusion pumps, which have become commonplace in the past decade for administering medications to patients.

RCHE, which just received an additional \$10 million in funding from the Regenstrief Foundation to pursue healthcare delivery improvement research, has partnered with hospitals in Indiana, Iowa, Illinois, Nebraska and Wisconsin to launch the Infusion Pump Informatics Community at Purdue. Through its web-based tool, users can easily share analysis, data reporting and best practices for what are known as “smart pumps.”

“Infusion pumps have allowed for a greater level of control, accuracy and precision in drug delivery, thereby reducing medication errors and contributing to improvements in patient care,” says RCHE director **Steve Witz**. “At the same time, infusion pumps have been associated with safety problems. We believe the Regenstrief Center can help bring together key players in hospitals to address this national concern by putting research into practice.”

Infusion pumps offer a variety of programmable designs to intravenously deliver nutrition, fluids and drugs like pain medications, insulin and cancer treatments. An estimated 2 million are in hospitals and clinics, and thousands more are used by patients in their homes.

Despite their advantages, the FDA reports that infusion pumps were linked to more than 56,000 adverse event reports from 2005-2009, including at least 500 deaths.

A team led by **Ann Christine Catlin**, a research scientist in the Rosen Center for Advanced Computing, developed the web-based tool called the Infusion Pump Informatics System. The initiative uses Purdue’s innovative HUBzero platform to host tools, tutorials, Q&A forums, and other educational and research resources, all accessible via a webpage. ■

Writer: Phillip Fiorini is a senior communications/marketing specialist with Purdue Marketing and Media.

Photography by Vincent Walter



Purdue Leads FAA Center on General Aviation

Purdue University is a lead institution for a Federal Aviation Administration Air Transportation Center of Excellence for general aviation.

The Center of Excellence Partnership to Enhance General Aviation Safety, Accessibility and Sustainability (PEGASAS) focuses research and testing efforts on safety, accessibility and sustainability to enhance the future of general aviation.

"The United States has the largest and most diverse general aviation community in the world, with more than 300,000 aircraft registered to fly through American skies," Transportation Secretary Ray LaHood said in a statement. "This innovative partnership with academia and industry will help us take general aviation safety to the next level."

Purdue's effort involves the colleges of Engineering and Technology, in particular the schools of Aeronautics and Astronautics and Mechanical Engineering and the Department of Aviation Technology.

PEGASAS research and development efforts cover a broad spectrum of general aviation safety issues, including airport technology, propulsion and structures, airworthiness, flight safety, fire safety, human factors, system safety management, and weather.

William Crossley, professor of aeronautics and astronautics, directs the PEGASAS center. Also helping lead the Purdue effort are **Karen Marais**, assistant professor of aeronautics and astronautics, who works on effective communication among the researchers and their FAA colleagues, and **John Young**, a professor of aviation technology, who organizes PEGASAS education and technology-transfer activities. ■

Writer: Judith Barra Austin is a communications/marketing specialist with Purdue Marketing and Media.

Purdue, IU Health Arnett Launch Colorectal Cancer Research Partnership

Purdue University and Indiana University Health Arnett have announced a joint clinical research study on colorectal cancer, focused on broadening participation from patients in more rural parts of the state.

Research teams from the two universities are working with colorectal cancer data to develop tools for helping improve prevention, treatment and care of those with cancer. With the clinical data, researchers are refining statistical and engineering simulation models to predict how to treat and possibly prevent cancer.

"Cancer won't be eradicated in a single laboratory by an individual researcher," said Dr. Wael Harb, director of Oncology and Research for IU Health Arnett in Lafayette and a partner in the Purdue-IU research advocacy effort. "We all must come together to assist the research that's being done to give doctors the tools they need to better diagnose and treat cancer."

The research partnership, with a goal to consent 100 cancer patients, expands the university-led Cancer Care Engineering project, which was launched by Purdue in partnership with the Indiana University Melvin and Bren Simon Cancer Center in 2006 through \$5 million in funding from the U.S. Department of Defense, the Walther Cancer Foundation and the Regenstrief Foundation.

"Here in a community setting like Lafayette-West Lafayette, that's where 90 percent of cancer patients are treated," said Marietta Harrison, associate vice president for research at Purdue and director of Discovery Park's Oncological Sciences Center who is leading the Purdue portion of the partnership with IU Health Arnett.

Since the clinical study gained federal approval on July 31, the cancer study has gained more than a dozen participants. ■

Writer: Phillip Fiorini is a senior communications/marketing specialist with Purdue Marketing and Media.



Photography courtesy of IU Health Arnett



HRPP, IRB Assist Investigators with Human Research

The Purdue University Human Research Protection Program (HRPP), part of the Office of the Vice President for Research, works in partnership with the research community to ensure the safety and welfare of human participants involved in research studies. To support this mission, the HRPP coordinates training for investigators on human subject research, provides information on privacy law and regulation, helps educate human subjects on their rights and responsibilities, and reviews all human research activities at Purdue through Institutional Review Boards (IRBs).

In accordance with federal regulations, IRBs are comprised of members with expertise in science, ethics and non-scientific areas. The IRBs strive to ensure diverse representation by recruiting members from various fields of study on campus as well as community members not affiliated with Purdue. There are currently three IRB committees: the Biomedical IRB, the Social Sciences IRB, and the Community Health Research IRB.

For assistance with pre-planning and applications for human research, please visit our office in Young Hall, Room 1032. IRB staff members are available to consult with all faculty, staff and student researchers. Walk-in hours are Monday, 9:30-11:30 a.m.; Tuesday, 2-4 p.m.; and Thursday, 9:30-11:30 a.m. Other hours are by appointment.

You also may contact us at 494-5942 or irb@purdue.edu, or refer to our website for more information: www.purdue.edu/research/vpr/rschadmin/rschoversight/humans/index.php. ■

Writer: Elizabeth Campbell is director of the Human Research Protection Program.

The Final Rule: Impacts to Proposal Submissions and Award Set-Up

In August 2011, the Department of Health and Human Services (DHHS) issued the Final Rule revising existing regulations regarding the standards and procedures which institutions that apply for Public Health Service (PHS) funding are required to follow to “ensure that there is no reasonable expectation that the design, conduct or reporting of PHS-funded research will be biased by any Investigator Financial Conflict of Interest (FCOI).” Institutions were required to be in compliance with the Final Rule by August 24, 2012.

Purdue began preparing for compliance with the Final Rule in 2011 with the issuance of a university policy, Individual Financial Conflicts of Interest (III.B.2), which was later revised in August 2012. This policy expands requirements for completion of a Financial Interest Statement (FIS) and disclosure and review of Significant Financial Interests (SFIs) to all externally sponsored funding.

The following are some major points of interest for researchers at Purdue:

- » Definition of Investigator: “A project director, a principal investigator of a research project and any other person, regardless of title or position, who has responsibility for the design, conduct or reporting of research or project results at or involving Purdue, including employees, subgrantees, contractors, subcontractors, collaborators and consultants.”
- » Required PRIOR to Proposal Submission (PHS Proposals):
 - SFI Disclosures: Every investigator must complete a FIS for every proposal before submission to a PHS agency. The Principal Investigator (PI) is responsible for identifying all investigators per the above definition early in the proposal development process.
 - Travel Disclosures: For PHS proposals, investigators are required to disclose information about their “sponsored or reimbursed travel” not paid from an institutional account. Travel disclosures should be completed at the same time as the FIS.
- » Non-PHS Proposals: Every investigator must complete a FIS prior to award set-up.
- » Training: All investigators on PHS funds are required to complete training prior to award set-up. This training must be renewed at least once every four years.

Sponsored Programs Services (SPS) and the Office of the Vice President for Research (OVPR) implemented the Purdue Disclosure Database (PDD) to manage the disclosure and review process. Investigators receive notifications from the PDD requesting completion of their FIS at various stages of a project beginning at the proposal stage through award set-up. The PI is copied on all notifications that are sent until the FIS is completed by the investigator.

For more information, see the following web references:

- The Final Rule: www.gpo.gov/fdsys/pkg/FR-2011-08-25/pdf/2011-21633.pdf
- DHHS Resources: <http://grants.nih.gov/grants/policy/coi/>
- Purdue Policy: www.purdue.edu/policies/ethics/iiib2.html
- Purdue Resources: www.purdue.edu/research/vpr/rschadmin/coi/disclosure_fin_int.php ■

Writer: Amanda Hamaker is assistant director of Sponsored Program Services, pre-award.

>> Sponsored Program Year-to-Date Activity

Awards by Sponsor

July 1, 2012 to October 31, 2012

SPONSOR	FY2013 (YTD 10/31/2012)		FY2012 (YTD 10/31/2011)		% Change	
	NO.	\$ AMOUNT	NO.	\$ AMOUNT	NO.	\$ AMOUNT
National Science Foundation	140	30,682,512	150	43,793,710	-7%	-30%
Dept. of Health and Human Services	82	12,735,628	116	17,463,898	-29%	-27%
Dept. of Defense	78	8,776,853	78	9,410,951	0%	-7%
Dept. of Energy	45	10,978,934	46	4,938,550	-2%	122%
Dept. of Agriculture	74	12,976,055	76	15,383,392	-3%	-16%
National Aeronautics and Space Administration	44	4,821,871	32	3,098,926	38%	56%
Other Federal	36	4,472,417	43	4,093,818	-16%	9%
Dept. of Education	17	2,726,321	17	3,530,029	0%	-23%
Environmental Protection Agency	11	830,025	14	1,189,106	-21%	-30%
Dept. of Transportation	2	373,878	14	456,380	-86%	-18%
Agency for International Development	7	517,260	3	158,713	133%	226%
Total Federal	536	\$89,891,753	589	\$103,517,473	-9%	-13%
Industrials and Foundations	547	19,093,456	532	19,359,099	3%	-1%
State/Local Governments	39	4,332,420	62	6,387,571	-37%	-32%
Purdue Research Foundation/ Purdue University	214	3,112,485	276	3,952,078	-22%	-21%
Foreign Governments	23	1,998,390	8	741,104	188%	170%
Total Non-Federal	823	\$28,536,751	878	\$30,439,852	-6%	-6%
Total Purdue System-wide	1,359	\$118,428,503	1,467	\$133,957,325	-7%	-12%

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/ or scan the QR code at right to view on your mobile device.



JANUARY

Translating Research into Tangible Products (ABE 691): Life of a Faculty Entrepreneur — Discovery, Development, Translation

- » **When** Thursday evenings beginning January 10
- » **Where** Burton D. Morgan Center for Entrepreneurship, Room 121
- » **Contact** Michael Ladisch, 494-7022, ladisch@purdue.edu, or Nathalie Duval Couetil, 494-7068, natduval@purdue.edu

The course will introduce graduate students and faculty mentors to the intellectual, financial and management processes involved in translating research into tangible products through university initiated, early stage commercialization. Instructors and guest speakers will illustrate the start-up process through case studies and address other related topics. Registration is required for this three-credit course.

Developing Research and Creating Change in Population Health

- » **When** January 24, 10 a.m.
- » **Where** Stewart Center, Room 314
- » **Contact** rc@purdue.edu

David Kindig, M.D., Ph.D., professor emeritus, emeritus vice chancellor for Health Sciences, University of Wisconsin, has focused his career on population health science. Among his many accomplishments, he was the co-PI on the Robert Wood Johnson Foundation's MATCH program (Mobilizing Action Toward Community Health), and co-director of its Health and Society Scholars program.

FEBRUARY

How to Use NIH Data for your Strategic Advantage

- » **When** February 12, 11:30 a.m.-1 p.m.
- » **Where** Stewart Center, Room 322
- » **Contact** Perry Kirkham, pkirkham@purdue.edu
- » **Website** www.purdue.edu/research/vpr/rschdev/events.php

This workshop provides a look at NIH funding strategies, submission strategies, analysis of award data and why this matters to your submission.

2013



2013 Burton D. Morgan Business Plan Competition

- » **When** February 19, 2013
- » **Where** Burton D. Morgan Center for Entrepreneurship
- » **Contact** BDMCenter@purdue.edu, 494-1335
- » **Website** www.purdue.edu/discoverypark/entrepreneurship/programs/competition/bdmcompetition

MARCH

Purdue Lectures in Ethics, Policy, and Science: Ethics and Energy Policy

- » **When** March 19, 5:30-7 p.m.
- » **Where** Lawson Computer Science Building, Room 1142
- » **Contact** bioethics@purdue.edu

Dale Jamieson, director and professor of environmental studies, New York University, will discuss "Reason in a Dark Time: Ethics and Politics in a Greenhouse World."

APRIL

NanoDays 2013

- » **When** April 25-26, 9 a.m.-3 p.m. both days
- » **Where** Birck Nanotechnology Center
- » **Contact** Angie Sigo, angie@purdue.edu, 496-8327
- » **Website** www.nano.purdue.edu/nanodays

This event for students in grade K-12 involves educational activities about nanoscale science and engineering. ■

2013 Regenstrief Center for Healthcare Engineering Research Speaker Series

- » Lunch, 11:30 a.m.; presentation from noon to 1 p.m.
- » **Where** Mann Hall, Room 203
- » **Contact** rche@purdue.edu

Reducing Readmissions

- » **When** February 7

Mark Lawley, professor of biomedical engineering, and Theresa Knotts, PHA associate director – Lean Healthcare, will discuss Purdue Healthcare Advisors' success in reducing readmissions.

Acute Hospital Discharge Planning

- » **When** February 22

Pratik Parikh, assistant professor of industrial and human factors engineering at Wright State University, and Nan Kong, assistant professor of biomedical engineering at Purdue, will discuss a joint project in acute hospital discharge planning.

Perceptions of Patient-Centeredness

- » **When** March 7

Brandon Pope, assistant research scientist in industrial engineering, and Bart Collins, clinical associate professor of communication, will discuss their work focus—ing on patient and provider perceptions of patient-centeredness.

Nursing Workarounds Regarding Infusion Pumps

- » **When** March 28

Benjamin Dunford, assistant professor of management, will discuss his research on nursing workarounds regarding IV infusion pumps.

Spousal and Family Influence in Care Transitions

- » **When** April 11

Melissa Franks, assistant professor of human development & family sciences, will present her research on spousal and family influence in care transitions.

Registration for this speaker series is not required unless participants are bringing large groups. An abstract of each presentation will be available at the RCHE website closer to the presentation date. ■

New Associate Vice President for Research



Howard Zelaznik has joined the VPR team as the new associate vice president for research.

A professor of health and kinesiology, Howie has been serving as associate dean for research and graduate programs in the College of Health and Human Sciences since January 2011. He

previously was chair of the Institutional Board and the University Senate, and also has served as a Provost Fellow.

In his new position, Howie will focus on protection of research subjects program, overseeing research involving human participants; research, teaching or testing involving vertebrate animals; chemical, biological and radiological hazards, and development of system-wide policies. ■

Provost Fellow Joins VPR



Duane Dunlap has joined the OVPR as a Provost Fellow for the 2012-13 academic year. A professor in the College of Technology and Purdue's associate dean for Statewide Technology, he will be focusing on corporate and industry relations. Working with the associate and assistant vice

presidents for research, Duane will help strengthen industrial relationships, organize strategic corporate visits, assist faculty with development of industrial research relationships and assist with sponsored program research and contracting. ■

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>> 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
- » Proposal Information, Transmittal to Agency; 494-6204; proposal@purdue.edu

Technology Commercialization

- » Patent & Copyright Information; 588-3475; Elizabeth Hart-Wells, otcip@prf.org

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OVPR Releases Annual Report

Today's global challenges require bold decision-making, fueled by ingenuity and focused on long-term objectives: the health and welfare of people, the sustainability of our planet and the preservation of cultural values to maintain human diversity. Purdue University researchers are on the forefront of these initiatives, which are highlighted in the 2011-12 annual report of the Office of the Vice President for Research.

Entitled *People Planet Preservation*, the report addresses advances made in such areas as breast cancer detection, agricultural initiatives for food and biofuels, and ice melting in the Arctic and Antarctic. It is available online at www.purdue.edu/research/vpr/publications. Comments are welcome.

If you'd like a hard copy of the report, contact Cindy Larson at cindylarson@purdue.edu. ■