

DIMENSIONS of DISCOVERY



»» Tackling Grand Challenge Issues

Welcome

"Face new challenges, seize new opportunities, test your resources against the unknown and in the process, discover your own unique potential." — John Amatt

Challenges, opportunities and resources: break down the process of discovery, and it's really a formula of these three elements. In this issue, learn about two faculty members tackling issues in sustainability, new incentive grants to support emerging research at Purdue, and a Windows-based supercomputer cluster that compresses processing time from months to hours. ■

Faculty Discuss Their Work in Diabetes, Cancer, Sustainability at Conference

Research related to diabetes management, breast cancer prevention, improvement of food security in East Africa and the role social networks play in natural disasters was presented during the Grand Challenge conference in April at Purdue University.

"One of the key missions of the Global Policy Research Institute is to support scientific research that addresses grand challenges, whether they are local, state or national, and this event highlighted a variety of these projects," says **Arden L. Bement**, the institute's director.

During the last two years, the Global Policy Research Institute has awarded more than \$400,000 in seed money to support research and the work of around 20 graduate students.

Purdue's Global Policy Research Institute focuses on the university's strengths in science, information technology, data management and systems engineering in collaboration with economics and the social sciences to inform policymakers about critical issues such as food security and health. These incentive award grants also allow graduate students to work on interdisciplinary teams addressing problems with broad impact. ■

Inside »

- 2 Faculty Awards and Honors
- 4 Opportunities, Awards, Plans
- 6 Faculty Profiles
- 8 Undergraduate Research
- 10 Resources
- 13 Sponsored Program Activity
- 14 Events
- 16 Research Services Directory

NSF CAREER Awards

Six assistant professors have received CAREER awards from the National Science Foundation. They are:



G. Cheng

Guang Cheng (statistics) — investigating two classes of bootstrap methods in semi-non-parametric models for quicker and more efficient analysis of massive data sets.



J. Figueroa-Lopez

Jose Figueroa-Lopez (statistics) — identifying some key open problems of Levy processes in statistical analysis and connecting them to parametric estimation and change-point detection for Levy models.



D. Gleich

David Gleich (computer science) — investigating modern numerical matrix methods for network and graph computations in order to turn complex raw data into meaningful information.



M. Kulkarni

Milind Kulkarni (electrical and computer engineering) — exploring how to turn a simple expression of an algorithm into a higher performing version for irregular programs in areas such as data mining and computational biology.



J. Neville

Jennifer Neville (computer science, statistics) — studying the mechanisms that influence the performance of network analysis methods and driving the development of novel methods for complex network domains in areas such as psychology, communications, education and political science.



X. Ruan

Xiulin Ruan (mechanical engineering) — enabling the prediction of thermal conductive and radiative properties of solids from first principles.



X. Tricoche

Xavier Tricoche (computer science) — pioneering a comprehensive approach for the efficient visual analysis of large-scale datasets in the context of multidisciplinary collaborations spanning fluid dynamics, materials engineering, high-energy physics and cardiovascular research.



A. Wasserman

Adam Wasserman (chemistry) — developing and applying electronic-structure methods that extend the reach of quantum-chemical approaches based on Density Functional Theory.

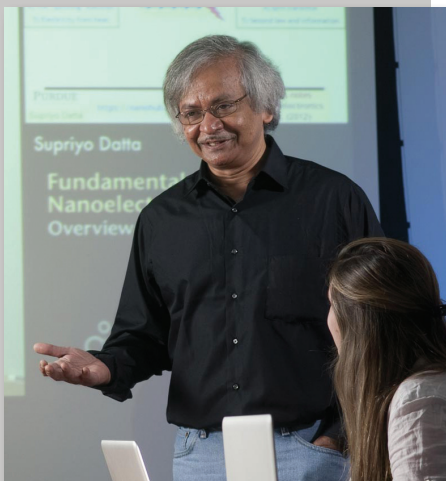
The Faculty Early Career Development (CAREER) Program supports junior faculty members who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of the mission of their organizations. The NSF expects activities to build a firm foundation for a lifetime of leadership in integrating education and research. ■

Distinguished Professor Elected to National Engineering Academy

Supriyo Datta, the Thomas Duncan Distinguished Professor of Electrical and Computer Engineering, has been elected to the National Academy of Engineering (NAE).

Datta was among 66 new members and 10 foreign associates elected to the NAE, one of the highest professional distinctions accorded to an engineer. Members are elected by their peers for distinguished service in business and academic management, in technical positions, as university faculty and as leaders in government and private engineering organizations.

Datta was chosen for membership because of his work in quantum transport modeling in nanoscale electronic devices. ■

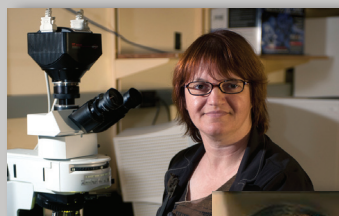


Supriyo Datta

Keck Foundation Awards Grant for Epigenetics Study

Four Purdue faculty members have received a \$1 million grant from the W. Keck Foundation to pursue transformative research in epigenetics. **Joseph Irudayaraj**, professor of agricultural and biological engineering, **Sophie Lelièvre**, associate professor of basic medical science, **Ann Kirchmaier**, associate professor of biochemistry, all from Purdue, as well as **Feng Zhou**, professor of anatomy, cell biology and neurobiology from IUPUI, are the investigators for the grant, the first awarded to Purdue by the Keck Foundation in 20 years.

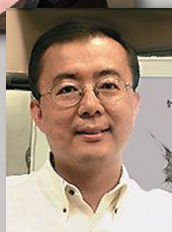
The Keck Foundation's Medical Research Program seeks to advance the frontiers of the life sciences by supporting high-risk basic research. In this particular study, Irudayaraj and his co-investigators will seek to understand how epigenetic marks — chemical additions to the genetic sequence that lead to chronic illness — can govern gene expression at the single cell level. By studying them in a neural stem cell differentiation model and a 3D breast epithelial tissue culture system, the researchers hope to devise ways of resetting key events during neural differentiation or tumor formation in individual cells. ■



Sophie Lelièvre



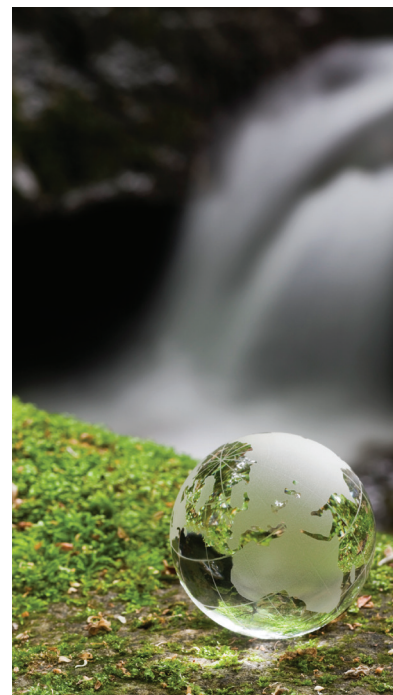
Ann Kirchmaier



Feng Zhou



Joseph Irudayaraj



Continental Ecology Focus of New NSF Grant

The National Science Foundation has awarded a grant to **Gabe Bowen** (PI), associate professor of earth and atmospheric sciences, **Chris Miller**, assistant professor of library sciences, and **Eric Riggs**, adjunct associate professor of geoscience, education and geology, to support their project, Collaborative Research: Integrated Training for Continental Ecology (ITCE): Bridging Scales and Systems with Isotopes.

The \$2,155,000 award in combination with a \$2,187,000 award to collaborators at the University of Utah, will provide training and network building opportunities to more than 150 graduate students and postdocs over five years, preparing future generations of ecologists to use existing and new isotopic data streams from regional to continental scale ecology programs. Data and model synthesis efforts will increase the accessibility of existing large scale isotopic datasets and data analysis tools within and beyond the ecological research community to further help develop the discipline of macrosystem biology. ■



Spring 2012 Global Policy Research Institute Awards Grants for Grand Challenges

Renewable energy, damage from severe drought and the use of solar energy are some of the grand challenge research topics that have received grants totaling \$180,000 from the Purdue University Global Policy Research Institute (GPRI).

“This is the institute’s third year of awarding funds to help faculty members secure larger grants from external agencies and organizations,” says **Arden L. Bement**, GPRI director. “The seed money awarded to these six multidisciplinary teams will help position the researchers to secure more support in the future in service to real needs.”

Professors who received \$40,000 grants and their research projects are:

- » **(Datu) Buyung Agusdinata**, associate research scientist with the system-of-systems in aeronautics and astronautics, “Modeling Framework for Policy Development to Mitigate Drought Impacts in East Africa;”
- » **Srinivas Peeta**, professor of civil engineering and director of NEXTRANS Center, “Policymaking Considering Interdependent Infrastructure Systems: An Economic General Equilibrium Approach;”
- » **Nelson Villoria**, assistant research professor of agricultural economics, “Global Food Price Volatility and Climate Change: Understanding Policy Options and their Trade-Offs;” and
- » **Fu Zhao**, assistant professor of mechanical engineering, “Economic and Environmental Consequences of Widespread Deployment of Solar Photovoltaics: A Computational Approach.”

Professors who received \$10,000 grants and their projects are:

- » **Shirley Dyke**, professor of mechanical engineering and civil engineering, “Workshop Focusing on Global Policies for Infrastructure Monitoring and Management: A Paradigm Shift in Lifecycle Costs and Optimization of Resources,” and
- » **Arvind Varma**, head and R. Games Slayter Distinguished Professor of Chemical Engineering, “US-Mexico Workshop on Sustainable Biofuels Production.”

GPRI focuses on the university’s strengths in science, information technology, data management and systems engineering in collaboration with economics and the social sciences to inform policymakers about critical issues. Incentive award grants provide seed money to researchers while also allowing graduate students to work on interdisciplinary teams addressing problems with local, regional, national and global impact. During the last two years, a total of \$300,000 in seed money has been awarded.

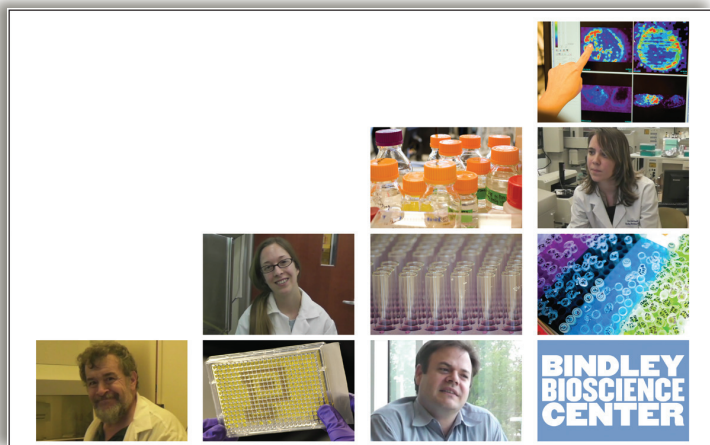
Writer: Amy Patterson Neubert is a health sciences/news writer for Purdue Marketing and Media. ■

New Strategic Plan for Bindley Bioscience Center

A new strategic plan for the Bindley Bioscience Center (BBC) has been developed by a task force of faculty, deans and administrators. The plan is now available online in a media rich format.

The strategic plan outlines the vision for the Bindley Bioscience Center — to be leading innovators in merging life sciences and engineering. The online document also contains the core organizational values of BBC and targeted strategic short-term and long-term goals accompanied by detailed objectives designed to meet those goals.

For more information, please visit www.purdue.edu/discoverypark/bioscience/strategicplan. ■



Clifford Kinley Trust Winners 2012

Eight Purdue faculty members have received Clifford Kinley Trust awards for 2012 to pursue social sciences research. They are:

- » **Alexander L. Francis**, associate professor of speech, language and hearing, and **Joshua Alexander**, assistant professor of speech, language and hearing, College of Health and Human Sciences, "Do Older Adults Attend to Speech Differently than Younger Adults?" \$20,000
- » **Alejandro Cuza-Blanco**, assistant professor of foreign languages and literatures, College of Liberal Arts, "The Effects of Dual Language Instruction on Children's Academic Growth," \$20,000
- » **Melissa J. Remis**, professor of anthropology, College of Liberal Arts, "Biodiversity as Food Security: Nutritional and Social Outcomes of Declining Wildlife on Hunter-gatherers in Protected Congo Basin Forests," \$19,770
- » **Susan DeCrane**, assistant professor of nursing, College of Health and Human Sciences, "Barriers to Pain Management in Older Adult Arthroplasty Patients," \$19,999
- » **Sarah A. Mustillo**, associate professor of sociology, and **Kenneth F. Ferraro**, distinguished professor of sociology, College of Liberal Arts, "Women's Health Limitations and Poverty Risk," 20,000
- » **Shawn D. Whiteman**, associate professor of development and family studies, College of Health and Human Sciences, "Ecologies of Adolescents' Alcohol Use: The Combined Effect of Proximal and Distal Influence Processes," \$20,000

The Clifford Kinley Trust was established in 1978 to fund research relating to human welfare and was activated in 1991 upon Mrs. Kinley's death. Exclusive to the West Lafayette campus and limited to faculty principal investigators, the endowment funds research that uses a social science perspective to explore methods for improving the human condition.

The selection committee generally recommends funding individual projects with a maximum budget of \$20,000. Successful proposals stand alone as independent projects (not a dependent component of a larger program), are grounded in theory and have a clear relationship to the literature. ■



S. DeCrane

S. Mustillo

K. Ferraro

S. Whiteman

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 equipment programs are intended to support faculty working in both laboratory-intensive and non-laboratory-intensive programs who need equipment to advance scholarly activities. The non-laboratory intensive program is designed to support equipment needs in disciplines not driven by instrument-dependent research. Such disciplines may include social sciences, humanities, liberal arts, education, management and libraries. The programs are designed to support both single investigator and multi-investigator research efforts. Eligibility is limited to faculty (research and tenure-track/tenured) on the West Lafayette campus for both single investigator and multi-investigator research efforts.

More detailed program descriptions can be found at www.purdue.edu/research/vpr/rschdev/internal.php. Additionally, program announcements with details on the application and submission process will be sent to associated deans for research and be distributed to the colleges.

For more information, contact **Marietta Harrison**, associate vice president for research, at 494-4231 or harrisom@purdue.edu. ■

Nurturing and Advancing Purdue's Research Enterprise

New Incentive Grant Programs

This spring, the Office of the Vice President for Research announced a new Incentive Grant Program to encourage and stimulate emerging research at Purdue. Research projects in both single disciplines and interdisciplinary areas may receive funding over a two-year period.

The program is intended to support new efforts rather than extensions of ongoing research. "Currently, Purdue supports and sustains research that is being funded by external agencies, but there are also new research ideas that need to be cultivated before reaching the submission milestone," says **Jeff Bolin**, associate vice president for research.

Although start-up support exists for many new faculty members, and seed grants are available in some areas, Purdue has had no comprehensive cultivation system for emerging research. "This program will allow researchers to start new efforts that will be supported over the longer term by other funding sources," Bolin adds.

In late April, the OVPR released a request for proposals describing details of the program and its requirements. Letters of intent to participate in the competition will be due in early September, with proposals due on or around October 1. Funds will be available January 1, 2013.

Purdue faculty and staff members are eligible to submit incentive grant proposals to address emerging grand challenges. All funded project teams are expected to seek support from an external funding agency or to receive support from an outside organization for continuation of their research.

For more details, visit the OVPR website at www.purdue.edu/research/vpr/rschdev/internal.php, or contact Bolin at 496-6350 or jtb@purdue.edu.

Research Equipment Programs

Two Research Equipment Programs have been established to support equipment needs for research and scholarly activities.



Bryan Pijanowski

If a tree fell in the forest and no one was there to hear it, would it make a noise?

That's an age-old philosophical question, but not unlike one that **Bryan Pijanowski** is attempting to answer. While he doesn't doubt the existence of sound in the absence of humans, he is trying to determine exactly what those natural sounds are, and how the presence of people affects them. The answers have far-reaching implications for the planet.

"Human domination of natural habitats has resulted in the loss of biodiversity, robbing areas of their natural sounds," said Pijanowski, a forestry and natural resources professor who last year launched the Global Sustainable Soundscape Network. "The loss of species has been so significant that some are concluding that we are experiencing the sixth extinction event."

Funded through an initial \$500,000 grant from the National Science Foundation's Coupled Natural-Human Systems Program, the network brings together researchers in science, music and psychology to understand how animals interact with each other, even across species.

Some silent newts, for example, follow frog sounds to find the best breeding ponds, while certain species of birds use their incessant chatter to protect habitats. Global habitat modification — such as new construction on previously uninhabited land or the opening up of preserves to human recreation — can result in the loss of sound, unbalancing delicate ecosystems.

"Interactions among species and their competition for acoustic space impact mate selection and predator-prey interactions. As a result, there's the potential to affect population and community dynamics," says Pijanowski, a faculty affiliate with the Center for the Environment.

Researchers will coordinate four or five soundscape monitoring sites to collect acoustic data from the Kenai Wildlife Refuge on the Alaskan Kenai Peninsula; the Midwest Temperate Ecosystems centering in the Chicago Wilderness planning area; the Sonoran Desert Region in southern California through northern New Mexico and

south to the Baja Peninsula of Mexico; the Borneo Equatorial Rainforest in Malaysia; and Mediterranean landscapes in Tuscany, Italy.

Pijanowski, who already has a library of 500,000 natural sound recordings taken from sites in Tippecanoe County in Indiana and Costa Rica, is making software tools and sound file examples available to help those interested in becoming involved in the research. To hear some of his recorded natural sounds, go to <http://1159sequoia05.fnr.purdue.edu/bioscience>.

He's confident this project will lead to the creation of soundscape ecology, a new scientific field that will use sound as a way to understand the characteristics of a habitat and to emphasize the environmental significance of natural sounds.

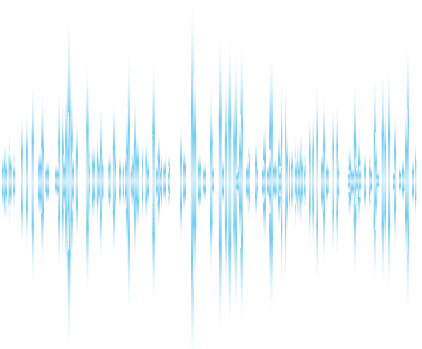
"Our goal is to develop standards and to support research activities to bridge related fields," Pijanowski says. ■

Writer: Phillip Fiorini is a senior writer/editor with Purdue Marketing and Media.

See the story on page 11 about Bryan Pijanowski's collaborations with Information Technology at Purdue for his research.



Bryan Pijanowski



Natural Soundscapes and Tourism

Jonathon Day

When it comes to sustainability in tourism, Australia-born **Jonathon Day** says it's about the triple bottom line.

"In the past, we talked about the benefits of tourism just in terms of money," says Day, an assistant professor in the School of Hospitality and Tourism Management. Increasingly, he says, officials also are focusing on preserving their natural surroundings while also strengthening the local community and its culture.

"In Queensland, we have a beautiful natural environment — the Great Barrier Reef, the rainforest," he says. "Because we've got a lot of people wanting to see them, we've had to be really thoughtful about how to manage that. Tourists can have this tendency to love places to death. But the fact is, we really have a lot of information on how to manage these places in the long term, and we can share that information in ways that can practically help."

Day comes to these conclusions by way of 20 years of industry experience. As a senior destination marketing executive, he has created award-winning marketing and public relations campaigns for such venues as the Great Barrier Reef and New Zealand. After years of jet-setting between Los Angeles and his home country, Day decided to pursue a career in academia, ultimately landing at Purdue because of its land grant-philosophy of practical research.

Since joining the Purdue faculty, Day has leveraged his international industry experiences to study, for example, how Hoosier cities such as West Lafayette, Carmel and Columbus promote sustainability through green practices. These small-scale projects are part of the grand challenge of global sustainability, says Day, who is collaborating with the Purdue Climate Change Research Center to study the impact of unusual weather on hotel profits. As Day says, "It is important that we address these issues systematically — looking at the roles of individuals, tourism-related companies and the managers of destinations — both big and small."

Conversely, he also studies how destinations can help preserve natural and cultural heritage through judicious practices. "Tourism is the largest industry in the world by a lot of different measures, and it can have really negative impacts on culture and environment if not managed well," he says.

Ultimately, says Day, he wants to contribute to all three of tourism's bottom lines: economic, social and environmental. Applying the principles of sustainability to tourism will achieve a win-win-win, he says:

Small Indiana towns can learn ways to preserve their heritage while contributing to economic development. Hotels can save money through energy-conserving measures such as smart room controls, and consumers can be confident they are doing the right thing. ■

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

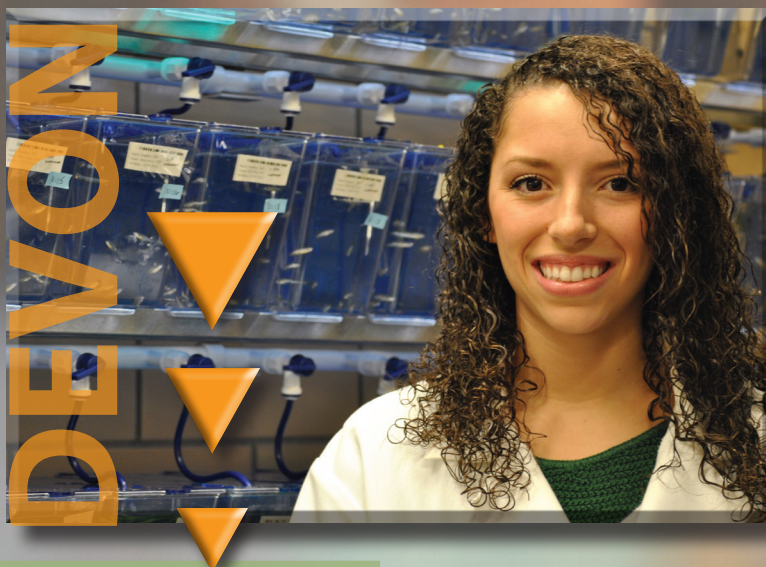


Jonathon Day



»» Undergraduate Research

Undergraduate research is a vibrant enterprise at Purdue, introducing students to the challenges and opportunities of real-world discovery. Here, we highlight five undergraduates seeking to push the limits of knowledge by working alongside world-class researchers.

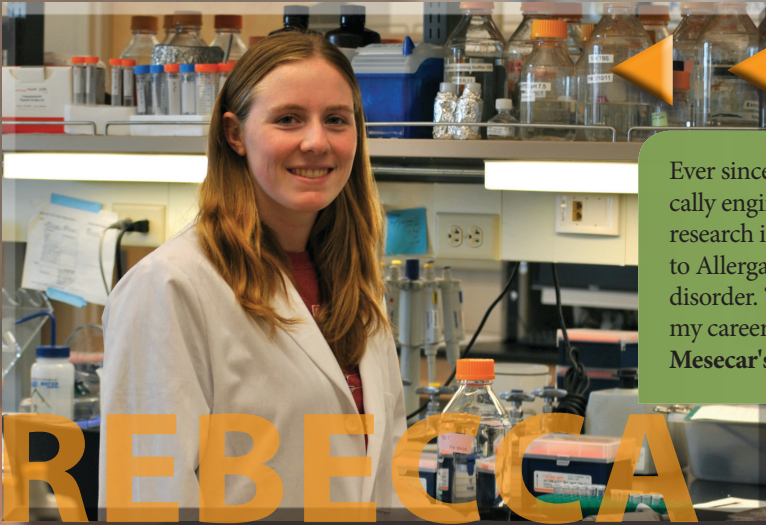


Devon Ptak was first exposed to eye diseases while on a mission trip to Honduras in 2010. "Some of the patients permanently lost their vision because many eye diseases have no known cure," says Ptak, a behavioral neuroscience major. Now, she has received a \$1,500 award from Sigma Xi to study retinal dystrophy. "A better understanding of these disease mechanisms can lead to better treatments," she says. That would improve quality of life for countless people while alleviating financial burdens to societies around the world.

Sean Kearney lightheartedly named his biological discovery "MrGordo" after a stuffed pig in the Buffy the Vampire Slayer television show, but his accomplishment is no laughing matter. As part of a course funded by the Howard Hughes Medical Institute, the agricultural and biological engineering major unearthed a novel bacteriophage from a Purdue flowerbed. Annotated with the National Institutes of Health's GenBank, the phage can be studied by scientists around the world. "The experience taught me to work methodically through problems," he says.



How did psychology major **Milad Alucozai** become the youngest-ever Purdue chapter member in Sigma Xi, the international science and engineering society? He started in high school, winning research awards and working in Purdue labs. As a freshman, he took a first in the Purdue Research Symposium. Today, he's researching neurodegenerative diseases in the Purdue Center for Paralysis Research. "What got me in relates to my ability to juggle a rigorous course load, extracurricular activities and still have time to perform serious, meaningful research," he says.

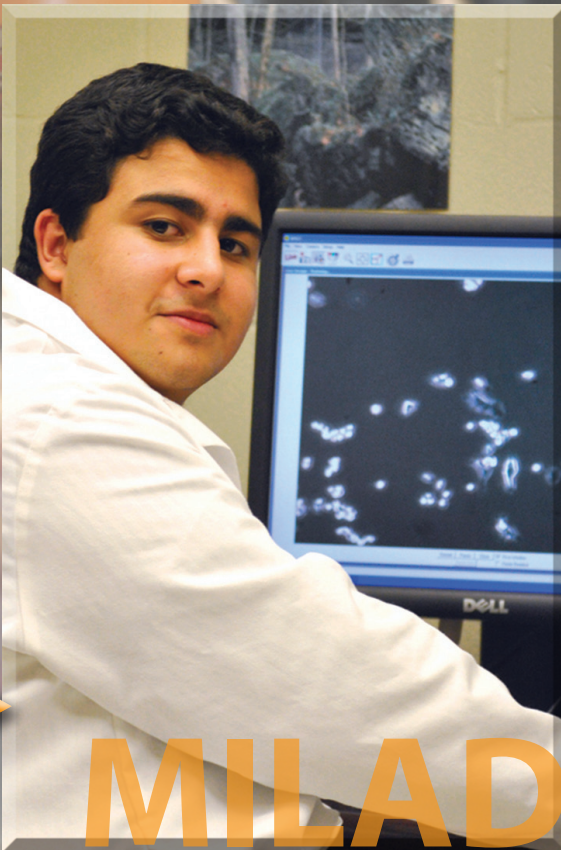


Ever since she stepped into a laboratory to study how soil bacteria genetically engineer plants, biology major **Rebecca Tweedell** has been seeing research in a new light. After interning at a Cargill corn mill, she headed to Allergan, where she researched dry eye disease, an autoimmune disorder. “Each experience taught me new skills that have contributed to my career preparation,” says Tweedell, who now works in Prof. **Andrew Mesecar**’s lab. Her next step is a doctorate in microbiology or pathology.

REBECCA



Afghanistan native and lifelong Tippecanoe County resident **Silai Mirzoy** knows firsthand how socioeconomic status and politics influence access to both food and healthcare, and, ultimately, disease risk. As an intern with Profs. **Sophie Lelièvre** and **Ellen Gruenbaum** of the International Breast Cancer and Nutrition project, she’s examining the factors that influence what women eat. “I want to help women and children stay healthy regardless of socioeconomic status or culture,” says Mirzoy, who will begin medical school this fall. ■



MILAD

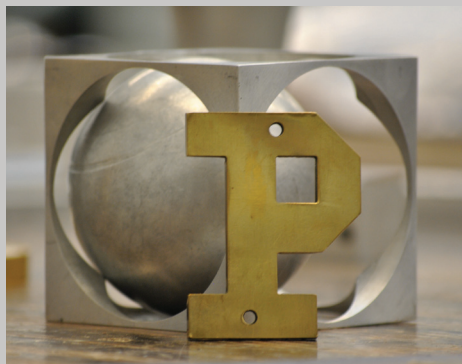
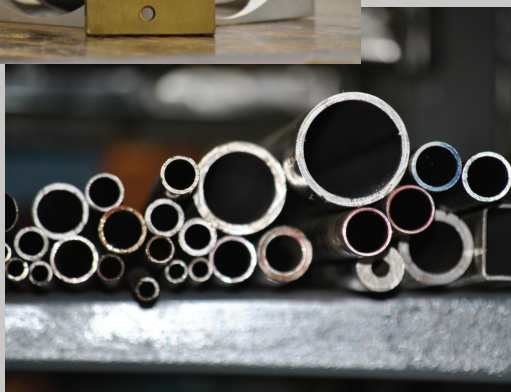


Photo: Rohini Sampooran Swaminathan



Research Machining Services

After 64 years at its old location on Harrison Street, the Central Machine Shop has changed its name to Research Machining Services and has moved into a brand new building. The new facility is in the just-constructed ADM Agricultural Innovation Center located at 694 South Russell Drive, across from MMDC (General Stores). All personnel, phone numbers and emails are the same as before, as is the shop's website www.purdue.edu/DP/Machineshop/.

"The machine shop became a part of the Discovery Park family in 2010, and the new name better reflects its affiliation and mission," says **Kris Davis**, manager.

Research Machining Services is equipped and staffed to perform work requiring precision machining, machining on large work pieces, and specialized fabrications which cannot be performed economically in departmental machine shops. Past projects have included fabrication of a prototype stainless steel jet fuel injection chamber for aeronautical and astronautical engineering, design and fabrication of prototype fish habitat tanks for the Aquaculture Research Center, design and fabrication of a closed environment growth chamber for horticulture and NASA, and design and fabrication of laser enclosures and precision mounts for the Bindley Bioscience Center. ■

Timing Regulatory Applications with Proposal Submissions

Many external funding agencies require evidence of Institutional Review Board (IRB) or Purdue Animal Care and Use Committee (PACUC) approval before release of funds to Purdue. Some sponsors such as NIH refer to this as a just-in-time process. In these cases, the investigator or administrative contact is asked to provide the date of IRB or PACUC protocol approval only if a proposal is likely to be funded.

Other less standardized requests for regulatory information exist and could require additional measures. For example, some sponsors prefer the title of a regulatory protocol be identical to that of the project proposal. Additional requirements can include obtaining signatures from the IRB or PACUC chair or additional verification forms to further affirm that the work is approved.

Optimally, IRB or PACUC protocol applications should be submitted to the appropriate committee shortly after a proposal is submitted to a sponsor. Thus, following proposal submission, it is in the investigator's best interest to have a regulatory plan for IRB or PACUC protocol submission in place for experiments requiring regulatory oversight. Deadlines for providing this information can be short; having approval in advance will assist the investigator in securing the funding upon request from the sponsor.

Purdue's standard practices for providing regulatory approval information to a sponsor ascertain that projects involving human subjects or vertebrate animals are congruent with approved regulatory protocols. In the event that you are contacted directly by a sponsor for regulatory information, please contact the Office of Research Integrity and Regulatory Affairs (vprrregulatory@purdue.edu), or your SPS proposal specialist. ■

Writer: Ianthe Bryant Gawthrop is director of research regulatory compliance in the Office of the Vice President for Research.

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New Windows-based Cluster Supercomputer Now Available to Purdue Researchers

Forestry and natural resources Professor **Bryan Pijanowski** studies how people and land affect ecosystems, examining such issues as projected loss of prime farmland to urbanization and the potential effects of climate change on fish habitats.

His research involves computer modeling, sometimes on a national scale and at resolutions as fine as every 30 meters. The work can involve hundreds of gigabytes to terabytes of data to begin with, trillions of data points and software that in some cases will only run in Microsoft Windows.

In the past, that could mean running a model for months on a desktop computer. But with a new cluster supercomputer using the high-performance computing version of Windows, now available to Purdue researchers through ITaP, Pijanowski can get results in just a few hours, along with more detailed and accurate modeling.

"We could actually run the entire world at 30-meter resolution if we wanted," Pijanowski says. "To do cutting-edge research at this scale puts us at the head of the line."

ITaP built the Windows HPC cluster to make high-performance computing accessible to more campus researchers, along with additional research computing software. "We want to serve everybody," says Preston Smith, manager of research support for the Rosen Center for Advanced Computing, ITaP's research computing unit.

The new cluster runs Windows HPC Server 2008 R2, the latest version of Microsoft's operating system for high-performance computing. Windows HPC is an alternative to Linux-based clustering software packages, with similar features such as cluster management tools, a job scheduler and a message passing interface (MPI) library.

Through community clustering, faculty partners and ITaP make more computing power available for Purdue research projects than faculty and campus units could afford individually. Community clustering also maximizes resources by sharing computing power among faculty partners whenever it is idle. Researchers always have ready access to their share and potentially more if they need it.

If you're interested in the Windows HPC cluster, contact rcac-cluster-purchase@purdue.edu for more information. ■

Purdue's New Top-ranked Research Supercomputing Cluster Up and Running Fast

Alina Alexeenko thinks Purdue's new Carter community cluster should give her lab a lot more computing power to study rarified gas flow problems — which can span topics from spacecraft exhaust plumes to tiny micro-electro-mechanical systems, or MEMS, devices — at half the cost of some high-end servers she uses.

Carter is ready for full production and available to any Purdue researcher or research group. More details are available on the Carter cluster information website, www.rcac.purdue.edu/userinfo/resources/carter. To order, visit the Carter cluster order website, www.rcac.purdue.edu/order.

Purdue faculty researchers who have tested Carter report that it can speed up the time to results for many research applications and enable more complex simulations.

Alexeenko, assistant professor of aeronautics and astronautics, and her students have tested Carter with simulations involving the effects of particles in the atmosphere after a large meteor strike. They also have studied the vacuum systems used to remove water from pharmaceuticals developed in solution to stabilize them for life on the shelf.

"The results have been encouraging," says Alexeenko, who uses the Coates and Hansen community clusters in addition to her servers. "Basically, it's about three times faster than what we have now."

Carter ranked 54th on the latest TOP500 list of the world's most powerful supercomputers and was among the half dozen most powerful machines at U.S. academic institutions. It was the most powerful on a U.S. campus where the research computing facilities are not part of a federally funded laboratory. ■

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

Drug Discovery and Cancer Research Directories

The Office of the Vice President for Research (OVPR) has created two directories that showcase drug and cancer efforts at Purdue.

The directories, which include descriptions of individual researchers' key interest areas, are designed to promote collaboration within Purdue as well as with corporate partners such as pharmaceutical companies. They are available for download from the OVPR website under the "Publications" navigation bar at www.purdue.edu/research/vpr/publications.

Marietta Harrison, associate vice president for research, is working with faculty members and OVPR staff to update the documents for 2012. If you are currently not listed but would like to be included, please contact Harrison at 494-1442, 494-4231 or harrisom@purdue.edu. ■



habri *central*
Resources for the Study of the Human-Animal Bond

New Web Resource to Facilitate Study of Bond between Humans and Animals

Purdue University Press and the School of Veterinary Medicine have developed a new online resource to further the study of the human-animal bond.

HABRI Central will serve as a comprehensive bibliography and repository of scholarly material, an online publishing platform for peer-reviewed content and a virtual collaborative community for those involved in human-animal bond studies. Built upon Purdue's HUBzero® platform, the site will give researchers, practitioners and other professionals easy access to a comprehensive database of published and previously unpublished materials in human-animal bond studies, including audiovisual material and datasets, as well as text.

An editorial board of internationally acclaimed experts in the field will ensure that content is relevant to the community of human-animal bond scholars.

"Evidence-based study of the human-animal bond is an interdisciplinary field of research conducted by a widely spread network of researchers. With its powerful and proven tools for building scholarly communities across national and disciplinary boundaries, HUBzero® is the ideal partner to help us build HABRI Central," says **Charles Watkinson**, director of Purdue University Press, who is overseeing the project with Professor **Alan Beck**, director of the Purdue School of Veterinary Medicine's Center for the Human-Animal Bond.

The project is the first to be funded by the nonprofit Human Animal Bond Research Initiative (HABRI) Foundation, the founding sponsors of which are the American Pet Products Association, PETCO and Pfizer Animal Health. The collaborators will receive a grant of \$831,535 for the project.

For more information contact **Christopher Charles**, HABRI Central project manager, (765) 516-0609 or cccharle@purdue.edu. ■

Sponsored Program Year-to-Date Activity

Awards by Sponsor

July 1, 2011 to March 31, 2012

SPONSOR	FY2012 (YTD 3/31/2012)		FY2011 (YTD 3/31/2011)		% Change	
	NO.	\$ AMOUNT	NO.	\$ AMOUNT	NO.	\$ AMOUNT
National Science Foundation	230	75,330,138	236	81,662,662	-3%	-8%
Dept. of Health and Human Services	203	31,545,064	220	47,617,593	-8%	-34%
Dept. of Defense	214	24,892,849	213	26,410,765	0%	-6%
Dept. of Energy	94	11,560,758	100	26,742,783	-6%	-57%
Dept. of Agriculture	116	20,349,344	125	26,867,071	-7%	-24%
National Aeronautics and Space Administration	51	4,952,876	40	4,322,576	28%	15%
Other Federal	63	7,113,016	100	9,352,621	-37%	-24%
Dept. of Education	19	3,998,225	20	8,742,903	-5%	-54%
Environmental Protection Agency	20	1,510,189	20	1,588,331	0%	-5%
Dept. of Transportation	24	4,426,931	12	2,877,765	100%	54%
Agency for International Development	5	233,713	18	2,489,357	-72%	-91%
Total Federal	1,039	\$185,913,103	1,104	\$238,674,427	-6%	-22%
Industrials and Foundations	1,276	54,611,671	1,223	49,327,320	4%	11%
State/Local Governments	117	11,730,987	140	18,473,090	-16%	-36%
Purdue Research Foundation/ Purdue University	405	4,546,152	412	6,848,302	-2%	-34%
Foreign Governments	25	2,171,780	16	6,734,688	56%	-68%
Total Non-Federal	1,823	\$73,060,590	1,791	\$81,383,400	2%	-10%
Total Purdue System-wide	2,862	\$258,973,693	2,895	\$320,057,827	-1%	-19%

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.



MAY

2012 Agricultural Research Award Presentation and Seminar: We All Live in a Watershed — Environmental Sustainability Challenges in Indiana and Beyond

- » **When** May 7, 3 p.m.
- » **Where** Dean's Auditorium, Pfendler Hall
- » **Contact** Wendy Madore, wmadore@purdue.edu
- » **Where** www.ag.purdue.edu/arp/Pages

Indrajeet Chaubey has been selected to receive the 2012 Purdue University Agricultural Research Award. This is the highest honor awarded to midcareer faculty members through the office of the Associate Dean of Research, College of Agriculture. Chaubey receives the award in recognition of the exceptional contributions he has made in the field of soil and water engineering.

10th Annual Advanced Manufacturing Summit

- » **When** May 30, 9 a.m.-4 p.m.
(registration begins at 8 a.m.)
- » **Where** Purdue Memorial Union, South Ballroom
- » **Contact** Kathy Walters, 494-2758, kw@purdue.edu
- » **Where** www.conf.purdue.edu/summitx

Top federal, state and industry officials will gather at Purdue University for the 10th annual Advanced Manufacturing Summit, which will focus on reinvigorating U.S. manufacturing with an emphasis on small and midsize companies. It will include several sessions featuring high-ranking officials from federal funding agencies. The final session will be conducted town-hall style, with a panel of experts answering audience questions.

JUNE

H.C. Brown Centennial Celebration

- » **When** June 3-9
- » **Where** Purdue University
- » **Contact** Prof. P. V. Ramachandran, 493-5303, boram13@purdue.edu
- » **Website** www.chem.purdue.edu/brown100
- » **Register** i.i.3dhwebdev.com/purdueconf/brown

The Department of Chemistry is celebrating the centennial year of Professor and Nobel Laureate Herbert C. Brown's birth with a series of programs, including the 29th Herbert C. Brown Lectures in Organic Chemistry (June 9) and the 13th Boron Americas Conference (June 3-6), which will feature the versatility of the boron in all areas of chemistry.

International Union of Theoretical and Applied Mechanics Summer School on Biomechanics of Tissue and Tissue-Cell Interaction

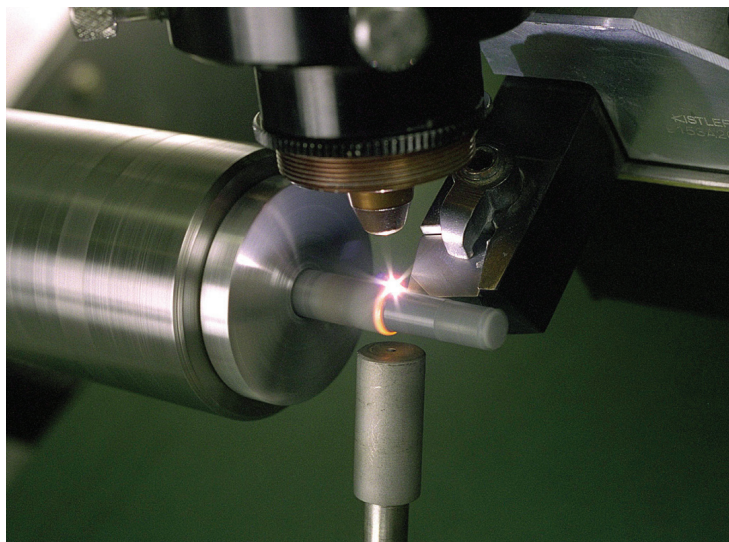
- » **When** June 5-8
- » **Where** Purdue University
- » **Contact** Prof. Thomas Siegmund, 494-9766, siegmund@purdue.edu

The goal of the summer school is to introduce participants to the state-of-the-art tissue in the biomechanics of bone, ligament, tendon and soft tissue, to interactions between mechanical loading and cellular response, and to the mechanics of interaction between extracellular matrices and cells, to the micro- and nano-scale deformation and failure processes of skeletal tissues, as well as to relevant biomedical image modalities.

National Institute for Pharmaceutical Technology and Education (NIPTE) Research Conference: Understanding Excipient Performance — Key to Successful QbD Formulation Design

- » **When** June 13 and 14, 8 a.m.-6 p.m.
- » **Where** White Oak, Silver Spring, Md., FDA Conference Facilities
- » **Contact** Prabir K. Basu, 847-685-6641, pbasu@nipte.org
- » **Website** www.nipte.org

Among other activities, NIPTE faculty and collaborators will discuss excipient product performance, demonstrate the Excipients Database (<https://pharmaHUB.org>), and develop strategies for advancing the database.





8th International Purdue Symposium on Statistics: Diversity in the Statistical Sciences for the 21st Century

- » **When** June 20-24, 8:30 a.m.-5 p.m.
- » **Where** Stewart Center
- » **Contact** Diane Martin, 494-3141, martind@purdue.edu
- » **Website** www.stat.purdue.edu

The International Purdue Symposium on Statistics is a venerable tradition, an event that has been held every five years at Purdue since the late 1960s, in an effort to further the development and promotion of the field of statistics.

AUGUST

Fourth Annual Indiana Clinical and Translational Science Institute Meeting

- » **When** August 31
- » **Where** University Place Conference Center & Hotel, 850 W. Michigan St., Indianapolis
- » **Contact** Samantha Scahill, 317-278-2874, info@indianactsi.org
- » **Website** www.indianactsi.org

This annual event provides an opportunity to learn more about the Indiana CTSL, including its funding and support programs, from local, state and national representatives. Participants also will hear from researchers supported by the institute, explore poster presentations, and meet new colleagues and collaborators. This event is free.

Overview of Services of the OVPR and SPS

- » **When** August 21, 11 a.m.-1:30 p.m.
- » **Where** Stewart Center, Room 322
- » **Presenters** Sue Grimes, Amanda Hamaker, Jessica Lawrence and Peter Dunn
- » **Contact** Sue Grimes, 494-5858, sgrimes@purdue.edu
- » **Website** www.purdue.edu/research/vpr/rschdev/calendar_grantsmanship_events.php

This workshop will allow new faculty to learn about the resources available to assist with proposal development, submission and awards. Presenters will include representatives from Research Development, SPS Pre- and Post-Award, and OVPR Research Integrity.

SEPTEMBER

NIH Overview: Institute/Center Mission and Strategies

- » **When** September 11, 11:30 a.m.-1:00 p.m.
- » **Where** Stewart Center, 322
- » **Presenter** Perry Kirkham
- » **Contact** Sue Grimes, 494-5858, sgrimes@purdue.edu
- » **Website** www.purdue.edu/research/vpr/rschdev/calendar_grantsmanship_events.php

This workshop will provide an overview and an update on the various institutions of the NIH. It will also address their individual missions and plans, possible funding mechanisms and how to position yourself for a successful NIH-funding career.

HUBBUB 2012!

- » **When** September 24-25, 9 a.m.- 5 p.m.
- » **Where** IUPUI University Place Conference Center and Hotel, 850 West Michigan St., Indianapolis
- » **Contact** Diana Hancock, 494-0840 or Nikki Huang, 494-0840, hubbub@hubzero.org
- » **Website** www.HUBzero.org

This 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. ■

→|| OFFICE OF THE VICE PRESIDENT FOR RESEARCH

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- » 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

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

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