

Research Enterprise

The Office of the Vice Chancellor for Research (OVCR) publishes the RESEARCH ENTERPRISE to keep the academic community and the community at large informed about research activities, opportunities and development on the IUPUI campus.

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STUDENT RESEARCH ISSUE

This issue of the RESEARCH ENTERPRISE is dedicated to student research on the IUPUI campus. Although only several student research efforts and initiatives are highlighted in this issue, the Office of the Vice Chancellor for Research looks forward to receiving article submissions on undergraduate and graduate research work taking place on the IUPUI campus to highlight in future issues.

The IUPUI Center for Research & Learning Sponsors the Most Successful Summer Research Programs

The IUPUI Center for Research and Learning (CRL) helped sponsor ten summer research programs representing: The Louis B. Stokes Alliance for Minority Participation (LSAMP), The Multidisciplinary Undergraduate Research Institutes Program (MURI), The Ronald E. McNair Scholars Program, The UROP Fellows Summer Program, The Diversity Research Scholars Program (DSRP), Bridges to the Doctorate (T32), The summer Research Opportunity Program (T35), The Summer Research Opportunity Program (SROP), Summer Scholars Institute (IU-HBC STEM), and The IU Cancer Summer Research Program. These programs are funded by federal agencies including the National Science Foundation, the National Institutes of Health, and the U.S. Department of Education, as well as by Indiana University. Over 120 students, ranging, from precollege to graduate levels, participated in full-time scholarly research, beginning in June until August, with faculty members and other senior researchers on campus in their discipline. The mentor/student relationship is the key to success in all these programs. "CRL is most thankful to all faculty mentors and senior researchers who worked with students this past summer to initiate and mentor students in their disciplines," says Kathryn Wilson, the director of CRL.



2008 Summer Posters

Two especially notable highlights from the CRL summer research programs include the IUPUI Summer Research Poster Session and the 2008 Committee on Institutional Cooperation (CIC) Summer Research Opportunities Program 22nd Annual Conference held at Michigan State University. For both events, the IUPUI summer research scholars prepared and submitted an abstract to present posters reflecting their research. The CRL Poster Session provided participants an excellent opportunity to present initial research ideas, works-in-progress and more developed projects in a collegial and supportive setting. Scholars were given an additional opportunity to present their research in a poster session or roundtable format at the 2008 Committee on Institutional Cooperation (CIC) Summer Research Opportunities Program 22nd Annual Conference held at Michigan State University. The IUPUI Summer Research Program participants gained valuable experiences that contributed to honing their research and presentation skills, enhanced application for graduate

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If you have a news item or recent noteworthy research-related achievement that you would like to share, please contact Etta Ward at emward@iupui.edu.

Please be aware that not all news items will be deemed appropriate or timely for publication, but each item will be carefully considered.

study, and expanded professional network beyond the home campus. The CIC conference targeted under-represented students in higher education and/or first-generation college students and encouraged all students to "Advance to Adventure – taking the first step down the exciting path of gaining knowledge through research." Scholars met with over 550 other participants from ten U.S. states and over 175 other universities and colleges.

Faculty Experiences Research Success Working with Undergraduate Researchers



The two students in the picture are: Eddie Shmukler (right, from Biomedical Engineering) and Harikrishna Rajabather (left, from Electrical Computing Engineering). Both are from Engineering and Technology.

Dr. Huanmei Wu has worked with undergraduate students on her translational and inter-disciplinary research on the improvement of cancer patient care using image guided radiation treatment and on transportation active safety data analysis. She worked on five different Multidisciplinary Undergraduate Research Institute (MURI) projects and supervised twelve MURI scholars in the past three years. Her undergraduate students came from different backgrounds, including electrical engineering, biomedical engineering, computer and information technology, health information administration, computer engineering, and business accounting. Dr. Wu's students have various levels of research experience, from freshmen to seniors.

The accomplishments of Dr. Wu's directed undergraduate research have been widely recognized, including peer reviewed conference

publications and highly selective national conference presentations. A full paper was accepted by the American Society for Engineering Education (ASEE) IL/IN section 2007. Two oral presentations were delivered at the 2007 Annual American Association of Physicists in Medicine (AAPM) meeting. One poster was accepted by the 2008 annual American Society for Therapeutic Radiology and Oncology (ASTRO) meeting. In addition, all of her undergraduate students have actively participated in campus wide conferences, such as Undergraduate Research Opportunities Program (UROP) and Solution Center conferences. Because of their hard work, one of her MURI teams was awarded Best MURI Team in 2006.

The outcomes of the undergraduate research have benefited both the students' futures and Dr. Wu's external funding. Her MURI scholars are motivated to pursue advanced education. One MURI scholar was accepted by the Indiana University School of Medicine for graduate study. One has worked in a biomedical company. Two others are in the process of applying for graduate study programs. The preliminary results from the MURI projects also helped to strengthen Dr. Wu's external funding applications. She has received one NIH R21 award with the contribution of MURI research.

IUPUI Graduate Student Presents at Posters on the Hill Event

This past spring Andrea Schilling, who is currently a master's degree student in the Department of Earth Science in the Purdue School of Science, was one of 60 students (out of over one-thousand applicants) from across the country invited to present their undergraduate research work during the annual Council on Undergraduate Research Posters on the Hill event. In collaboration with Professor Kathy Licht, Schilling conducted research to characterize sediment composition from outlet glaciers that drain the East Antarctica ice sheet. This work will contribute to understanding this region's past response to global climate change and help modelers make more accurate predictions of Antarctica's response to current global warming trends. It was a tremendous opportunity for Schilling to present her research work at a place where the Capitol building sits and Congress meets. During her visit to Washington, D.C., which was sponsored by the Center for Research and Learning, Schilling also had the opportunity to meet with legislators, including Senator Richard Lugar, (R-IN), to explain the importance of undergraduate research to student learning and the college experience.



Andrea Schilling with Senator Richard Lugar, (R-IN)

UPCOMING OVCR INTERNAL GRANT DEADLINES

RESEARCH SUPPORT FUNDS GRANT (RSFG): The IUPUI Research Support Funds Grant (RSFG) program is designed to enhance the research mission of IUPUI by supporting research projects and scholarly activities that are sustainable through external funding. The next Research Support Fund Grant (RSFG) application deadline is October 15, 2008. For grant guidelines and application forms, go to <http://research.iupui.edu> and click on the appropriate side bar.

INTERNATIONAL DEVELOPMENT FUND GRANT (IDF): The IUPUI International Development Fund (IDF) grant program is designed to stimulate international activities that will lead to external funding. The next IDF grant application deadline is November 15, 2008. For grant guidelines and application forms go to <http://research.iupui.edu> and click on the appropriate side bar.

UPCOMING OVCR SPONSORED WORKSHOPS

Finding Funding

When: Wednesday, October 08, 2008 | 02:00 PM-03:30 PM
Where: University Library, 1126

This session will provide an overview of the various types of external funding sources, identify tools to locate funding opportunities, explain how to design a funding search, and demonstrate a couple of knowledge management systems that contain thousands of funding opportunities available by the university subscription.

[Workshop Registration](#)

DID YOU KNOW?

Campus Facts

- The Indianapolis campus generated \$302.8 million research awards for fiscal year 07-08 placing a close second to Purdue - West Lafayette (\$333.4 million) for Indiana campuses.

National Facts

- The state of Indiana ranked 14th in the US in Industrial R&D in 2006 with expenditures of \$4.86 billion. (NSF data).
- Industry-funded R&D expenditures at universities grew by 11.2 percent in FY07 after three consecutive years of decline and funding by state and local governments grew by 6.1 percent.
- Funding from all nonfederal sources combined grew by 7.8 percent or 5.0 percent when adjusted for inflation in FY07.

CURRENT EXTERNAL FUNDING OPPORTUNITIES

Funding opportunities in this section include selected current grant announcements from federal agencies for new initiatives and changes to existing programs. Announcements with limited scope are not listed here but are, instead, sent directly to IUPUI School Deans. For comprehensive coverage of funding opportunities please use the on-line search tools listed at the end of this newsletter.

NATIONAL INSTITUTES OF HEALTH

IMPACT OF HEALTH COMMUNICATION STRATEGIES ON DIETARY BEHAVIORS

The focus is on the development and implementation of effective communication strategies related to diet and health. Promoting interdisciplinary research, conducted at multiple levels (e.g., individual, community/environment, and policy) and across diverse populations and evaluating effective communication approaches for changing dietary behaviors are goals. Proposed projects should address issues such as improving understanding of new advances or information in the area of dietary intake and health promotion, integrating this new information with the prevailing evidence on the relationship between dietary intake and health, and increasing people's ability to positively change dietary behaviors. It should be noted that in addition to consumption of food and non-alcoholic beverages, moderate alcohol consumption is also considered a dietary behavior. Of considerable concern are: consumer confusion due to conflicting results of studies on moderate alcohol consumption and chronic diseases, how one should balance competing risks and choices about including moderate drinking as part of a healthy diet.

Standard application deadlines apply. Learn more at: <http://grants.nih.gov/grants/guide/pa-files/PA-08-239.html>

MECHANISMS OF ADVERSE DRUG EFFECTS IN CHILDREN

The focus is on the role of ontogeny and the characterization of pharmacogenetic and developmental variations of drug metabolizing enzymes (DMEs), transporters, ion channels, receptors and signaling pathways that are responsible for drug toxicity in the pediatric population. Research on the role of ontogeny in the production of, and immune responses to, reactive metabolites and research on the efficiency of detoxification mechanisms are particularly emphasized. The development of adequate animal and in vitro models to spur discovery of the mechanisms of

hypersensitivity reactions in children and the identification of toxicity biomarkers are an important part of this initiative. Another important objective will be to determine whether, within the developmental continuum between birth and adolescence, there are periods of increased vulnerability to drug toxicity. Application deadlines are January 21, May 21, September 21, 2008. <http://grants.nih.gov/grants/guide/pa-files/PAR-08-248.html>

NATIONAL SCIENCE FOUNDATION

GRADUATE RESEARCH FELLOWSHIP PROGRAM (GRFP)

The Graduate Research Fellowship provides three years of support for graduate study leading to research-based master's or doctoral degrees and is intended for students who are in the early stages of their graduate study. An estimated 900 – 1,600 fellowships will be awarded in this competition. The current stipend is \$30,000 and \$10,500 provided to the institution for tuition and fees.

Application deadlines are from November 3, 2008 to November 12, 2008 depending on the subject area. http://www.nsf.gov/pubs/2008/nsf08593/nsf08593.htm?govDel=USNSF_25

CHEMISTRY-MATERIALS RESEARCH - MATHEMATICAL SCIENCES SOLAR ENERGY INITIATIVE

The purpose of the CHE-DMR-DMS Solar Energy Initiative is to support interdisciplinary efforts by groups of researchers to address the scientific challenges of highly efficient harvesting, conversion, and storage of solar energy. Groups must include three or more co-Principal Investigators; one must have demonstrated high expertise in chemistry, a second in materials research, and a third in mathematical sciences. The goal here is to create a new modality of linking the mathematical with the chemical and materials sciences to develop transformative paradigms in an area of much activity but largely incremental advances. Successful proposals will offer potentially transformative projects and new concepts based on the integrated expertise and synergy from the three disciplinary communities.

Required pre-proposal deadline is December 16, 2008. http://www.nsf.gov/pubs/2008/nsf08598/nsf08598.htm?govDel=USNSF_25

PROACTIVE RECRUITMENT IN INTRODUCTORY SCIENCE AND MATHEMATICS (PRISM)

The program will fund innovative, potentially transformational partnerships between the mathematical sciences and other science or engineering disciplines that widen the cross section of the mathematical sciences to which freshman and sophomore students are exposed and that provide these students increased opportunities for research experiences involving the mathematical sciences. Proposals must include a Principal Investigator from a department of mathematical sciences and at least one co-Principal Investigator from another science or engineering department.

Application deadline is February 16, 2008. http://www.nsf.gov/pubs/2008/nsf08596/nsf08596.htm?govDel=USNSF_25

CYBER-ENABLED DISCOVERY AND INNOVATION (CDI)

CDI is NSF's bold five-year initiative to create revolutionary science and engineering research outcomes made possible by innovations and advances in computational thinking. Computational thinking is defined comprehensively to encompass computational concepts, methods, models, algorithms, and tools. Applied in challenging science and engineering research and education contexts, computational thinking promises a profound impact on the Nation's ability to generate and apply new knowledge. Collectively, CDI research outcomes are expected to produce paradigm shifts in our understanding of a wide range of science and engineering phenomena and socio-technical innovations that create new wealth and enhance the national quality of life.

CDI seeks ambitious, transformative, multidisciplinary research proposals within or across the following three thematic areas: From Data to Knowledge: enhancing human cognition and generating new knowledge from a wealth of heterogeneous digital data; Understanding Complexity in Natural, Built, and Social Systems: deriving fundamental insights on systems comprising multiple interacting elements; and Building Virtual Organizations: enhancing discovery and innovation by bringing people and resources together across institutional, geographical and cultural boundaries. With an emphasis on bold multidisciplinary activities that, through computational thinking, promise radical, paradigm-changing research findings, CDI is unique within NSF.

http://www.nsf.gov/pubs/2008/nsf08069/nsf08069.jsp?govDel=USNSF_25

DEPARTMENT OF DEFENSE

APPLIED BIOMEDICAL RESEARCH

The US Special Operations Command is soliciting pre-proposals focused on applied biomedical research topics that may be of interest to Special Operations Forces (SOF)-relevant aspects of medical care, particularly related to: combat casualty management (card diagnostics, micro labs, and rapid assays, enhanced mass casualty response; pain management, rapid wound healing); medical aspects of mission planning (medical aspects of foreign internal defense (FID) missions, integrated and automated pre-mission and in route medical hazard/threat identification, assessment and mitigation); biomedical training; environmental protection (vibration/shock injury, diving procedures, equipment and injuries), exercise and mission related physiology (human performance enhancements/mission extenders; prevention of musculoskeletal injuries), field diagnostic and care equipment; and medical information management systems.

Pre-proposals accepted anytime. <http://fedbizopps.cos.com/cgi-bin/getRec?id=20070628a7>

FOUNDATION OPPORTUNITIES

MACARTHUR FOUNDATION

DIGITAL MEDIA AND LEARNING: This competition seeks to identify and promote individuals and institutions taking advantage of digital or new media and using these technologies as platforms for new kinds of participatory learning. Participatory learning should be the primary goal in all proposals. The technological approach should advance the learning objective. The most competitive proposals will enable participatory learning by promoting the possibility of scalable, many-to-many interactive learning activities. Awarded projects will be deeply collaborative in their structure, design, and motivation. Innovation and Participatory Learning awards will range from \$30,000 to \$250,000, with up to \$1.8 million awarded in total. Young Innovator awards will range from \$5,000 to \$30,000, with up to \$240,000 awarded in total.

Application deadline is October 15, 2008. <http://www.dmlcompetition.net/innovation-pl.php>

BILL & MELINDA GATES FOUNDATION

This is a \$100 million initiative to encourage unconventional global health solutions. Initial grants will be \$100,000 each, and projects showing promise will have the opportunity to receive additional funding of \$1 million or more. Grant proposals (2 page maximum!) are being accepted online on the following topics: Create new vaccines for diarrhea, HIV, malaria, pneumonia, and tuberculosis, Create new tools to accelerate the eradication of malaria, Create new ways to protect against infectious diseases, Create drugs or delivery systems that limit the emergence of resistance, Create new ways to prevent or cure HIV infection, Explore the basis for latency in tuberculosis.

Application deadline is November 2, 2008. <http://www.gcgh.org/explorations>

LIMITED SUBMISSION OPPORTUNITIES

NATIONAL SCIENCE FOUNDATION

MAJOR RESEARCH INSTRUMENTATION PROGRAM (MRI)

The MRI program assists in the acquisition or development of major research instrumentation that is, in general, too costly for support through other NSF programs. For proposals over \$2 million, requests must be for the acquisition of a single instrument. For proposals requesting \$2 million or less, investigators may seek support for instrument development or for acquisition of a single instrument, a large system of instruments, or multiple instruments that share a common or specific research focus.

http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf08503

IUPUI may submit no more three (3) applications to this program. The internal competition deadline is September 30, 2008. For instructions on the internal competition, go to <http://ovpr.indiana.edu/lmsub/LimSubDetail.asp?Number=992>. Questions can be directed to Etta Ward at 278-8427 or emward@iupui.edu.

PEW CHARITABLE TRUSTS

PEW SCHOLARS PROGRAM IN THE BIOMEDICAL SCIENCES

This program is designed to support young investigators of outstanding promise in the basic and clinical sciences relevant to the advancement of human health. An award of \$70,000 per year will be provided to sponsoring institutions for use by the Scholar over the four-year period, subject to annual review of the Scholar's progress. As of November 1, 2008, candidates must hold full time appointments at the rank of assistant professor or equivalent on the faculty of the sponsoring institution. On July 1, 2009, they must not have been in such an appointment for more than three years.

IUPUI may submit no more three (3) applications to this program. The internal competition deadline is September 23, 2008. For instructions on the internal competition, go to <http://ovpr.indiana.edu/lmsub/LimSubDetail.asp?Number=994>. Questions can be directed to Etta Ward at 278-8427 or emward@iupui.edu.

OTHER OPPORTUNITIES

TEL AVIV UNIVERSITY DAN DAVID PRIZE

The DAN DAVID PRIZE annually awards 3 prizes of US\$ 1 million each for achievements having an outstanding scientific, technological, cultural or social impact on our world. Each year fields are chosen within the three Time Dimensions - Past, Present and Future. The laureates for a given year are chosen from these fields. The Dan David Prize is unique in its flexible definition of dynamically changing fields of human knowledge and in its process of fostering the next generation of scholars. The laureates annually donate 20 scholarships of \$15,000 each to outstanding doctoral students throughout the world, in the chosen fields.

Nomination deadline is November 30, 2008. <http://dandavidprize.org/>

2008 Honda Initiation Grant (HIG) Symposium

Investigators are invited to attend the Honda Initiation Grant Technical Horizon Symposium to be held in Cary, North Carolina on November 12, 2008. The HIG is a university outreach program designed to develop collaborative research activity between Honda and members of the academic community. and you are cordially invited to attend. The HIG program annually awards research grants in amounts up to \$100,000 along a broad variety of research areas including automotive, materials,

computer and robotics, safety, intelligent vehicle, and environmental technologies. At the symposium, many top scientists, executives, and associates from Honda will be on hand to meet with you to collaborate in areas of potential combined interest. For more information, go to: http://www.honda-ri.com/HRI_Us/about-us/honda-initiation-grant/hig-2008-symposium

LAWRENCE LIVERMORE NATIONAL LABORATORY FELLOWSHIPS

The purpose of this prestigious postdoctoral fellowship program is to pursue cutting-edge science and stimulate cross-fertilization of ideas. Fellowships are awarded to candidates with exceptional talent, scientific track records, and potential for significant achievements. Typically two to four fellowships are awarded each year. This fellowship has a three year term. After this period, the fellows may consider any career options, including staying at the Laboratory.

Application deadline is November 3, 2008. <https://fellowship.llnl.gov/>

IDENTIFYING FUNDING OPPORTUNITIES

On-line search tools are available to IUPUI investigators who are interested in identifying funding opportunities in their areas of interest. Several are listed below:

Community of Science (COS): COS is a primary on-line search tool for identifying funding opportunities. To take advantage of this tool, register at <http://www.cos.com/login/join.shtml>. Once you have completed the short registration process, you can personalize your search by selecting the option entitled "launch your workbench". You can access federal, local, corporate, foundation, nonprofit and other funding opportunities using key terms and save the results of up to 20 searches and have them delivered to you weekly via email.

National Institutes of Health (NIH) "NIH Guide": To take advantage of this search tool, register at <http://grants.nih.gov/grants/guide/listserv.htm>. It allows you to receive discipline specific funding opportunities that are delivered to you weekly via email.

National Science Foundation (NSF) "MyNSF": To take advantage of this search tool, register at <http://www.nsf.gov/mynsf/>. It allows you to receive discipline specific funding opportunities that are delivered to you weekly via email.

Federal Business Opportunities "FedBizOpps": FedBizOpps is the single government point-of-entry for Federal government procurement opportunities over \$25,000. To take advantage of this search tool, visit <http://vsearch1.fbo.gov/servlet/SearchServlet>. Opportunities found at this site include, but are not limited to, presolicitations and special notices for research and service contracts for specific projects and some national centers and surveys that would not be found in Grants.gov and may not be found in the Community of Science.

Limited Submission Funding Opportunities: Occasionally a funding agency places a limitation on the number of proposals that can be submitted from a campus or university system. For a description of the upcoming "limited submission" funding opportunities, as well as guidelines and application forms, go to: <http://ovpr.indiana.edu/lmsub/lmsub.asp> or contact Etta Ward in the IUPUI Office of the Vice Chancellor for Research: emward@iupui.edu or 317.278.8427.

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