

# Research Enterprise

August 14, 2014

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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If you have a news item or recent noteworthy research-related achievement that you would like to share, please see the [Research Enterprise Submission Guidelines](#).

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

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## FEATURE STORY

### IUPUI Awarded National Science Foundation Instrumentation Grant to Enhance Interdisciplinary Research Profile and Strengthen STEM Education

The National Science Foundation (NSF) has awarded Indiana University-Purdue University Indianapolis (IUPUI) a \$374,989 grant to purchase an advanced X-Ray Diffraction (XRD) system, through the Major Research Instrumentation Program. The XRD system, which will be housed in and maintained by the Integrated Nanosystems Development Institute (INDI) in collaboration with the Department of Earth Science, enhances IUPUI's shared instrumentation profile, and supports faculty and students across many schools and departments by providing capabilities for a range of interdisciplinary scientific discovery and workforce training.

"The XRD system will support the research of several interdisciplinary faculty researchers, including junior faculty members whose career development will be greatly advanced by the granted XRD system," said Mangilal Agarwal, INDI's director and co-principle investigator. "We're extremely grateful to the National Science Foundation for their investment and excited about the many benefits it will not only bring to IUPUI, but to the community at large."

This powerful instrumentation will increase the ability of investigators at IUPUI to characterize the properties of solid materials, especially of nanoscale-size, for fundamental research projects that provide the basis for applications in Earth



Mangilal Agarwal, Ph.D



Gregory Druschel, Ph.D.

Sciences (ore and energy deposits, water quality, and minerals impacts on human health), Nanotechnology (new materials development for energy, industry, and biomedical applications), and Biophysical research (biological membrane function in biomaterials including amino acids, detergents, and pharmaceuticals).

"This grant reflects the strong collaborative environment for interdisciplinary research at IUPUI. The Schools of Science, Engineering and Dentistry frequently collaborate in research with significant impact on all aspects of our mission (including teaching) and on the local economy," said Simon Rhodes, Dean of the School of Science.

According to Gregory Druschel, principle investigator and professor of geology, characterization of solid state material structure and size is a critical research need for an array of IUPUI researchers. "Acquisition of this system will support research advances in many fields, and stimulate new interdisciplinary links across them. The advanced capabilities of the XRD system will significantly enhance IUPUI's interdisciplinary research profile," said Druschel.

In addition, the XRD system will strengthen STEM education on campus and across Indiana. Courses in science, engineering, and dentistry will provide students with both theoretical and practical understanding of XRD and its applications.

Moreover, this instrument will be used in community outreach including nanotechnology summer discovery camps K-12 students and teachers from across the state. Such outreach activities, coupled with IUPUI's urban placement, impact traditionally underrepresented students in STEM fields. In addition to regional efforts, the proposed XRD system will be integrated into undergraduate mentoring and actively work with underrepresented summer scholars through Indiana University's STEM initiative, which provides research opportunities to students from historically black colleges and universities with limited research offerings.

## ANNOUNCEMENTS

### IUPUI Imaging Research Symposium – October 3

The IUPUI Imaging Research Symposium will be held on October 3, 2014, from 10:00 am to 3:10 pm, in the IUPUI University Library Lilly Auditorium. The objective of this Symposium is to bring together investigators from diverse scientific disciplines with imaging technology experts to explore potential collaborative research opportunities. **Register today at [Imaging Symposium 2014](#).**

This year's event will include a presentation by Dr. Kamlesh Lulla, Chief Scientist for Earth Observations from NASA's Johnson Space Center,



Kamlesh Lulla, Ph.D.  
NASA Johnson Space Center

who will describe recent activities in remote imaging. In addition, several IUPUI investigators will present their imaging-related research activities. These include applications in neuroimaging in Alzheimer's disease, 3D imaging of the human airway, live cell imaging, and molecular probe development for tumor imaging, among other topics. A poster session will provide the opportunity for attendees to interact with several investigators who develop or utilize imaging technologies in their research.

The target audience includes researchers within the IUPUI/IU/PU community as well as academic and industrial investigators within the greater Indiana research community. To learn more about the IUPUI Imaging Research Initiative, go to <http://www.imaging.iupui.edu/index.php>.

### **School of Medicine Professor Receives Prestigious Award**

Daniel Rusyniak, associate professor of emergency medicine, has been awarded the American College of Medical Toxicology's 2014 Outstanding Contribution to Medical Toxicology.

Dr. Rusyniak was recognized for his role in advancing the scientific understanding of methamphetamines, including developing new techniques to detect methamphetamines, and contributions to the understanding of the mechanism by which amphetamines cause life-threatening hyperthermia.

His research has been recognized by a Mentored Clinical Scientists Development Award (K08) and Research Project Grant Program (R01) award from National Institutes of Health, making him one of only a handful of medical toxicologists with NIH funding, according to the ACMT.



Daniel Rusyniak, M.D.

Dr. Rusyniak also serves as the vice chair of faculty development in the Department of Emergency Medicine at the IU School of Medicine.

### **School of Science Professor Just One of 13 Jefferson Science Fellows in the Country**

Time spent in the Peace Corps has shaped a lifetime of work for Dr. Gabriel Filippelli.

It worked that way for Dr. Filippelli. The School of Science faculty member's two-year Peace Corps term on a small island atoll in the Pacific Ocean

convinced him that studying the role of Earth's oceans on our environment would be a career worth pursuing.

That career path has put Dr. Filippelli in some prominent professional circles. He is one of just 13 scientists and engineers from across the U.S. to serve as a Jefferson Science Fellow, a program that connects American universities with the U.S. State Department on matters related to the climate and the environment.



Gabriel Filippelli, Ph.D.

His island time profoundly affected Dr. Filippelli and still shapes his worldview. "Surrounded by oceans on all sides, I came to appreciate more deeply the role that oceans play in not only feeding people but also in influencing global climate, in the past, at present, and into the future," he said.

That's one of the reasons Dr. Filippelli has spent much of his career researching climate change and other environmental issues. And for the past decade, he has been an advisor to the Integrated Ocean Drilling Program, a long-term effort that studies the history of the Earth as recorded in sediment and rocks beneath the sea floor.

It also influences his work with the State Department and has given him a greater appreciation of the potential impact of his work.

"My affiliation with the State Department has transformed my understanding of the fundamental role of science in foreign policy," he said. "I have worked closely with science leaders in NASA, NOAA, the National Science Foundation and other federal and international agencies to craft and approve important new policies for environmental protection."

Filippelli considers the work vital in an era that he expects will feature significant climate change. He also believes the team's work will enhance his teaching of IUPUI students.

"This is the first generation of students to fully understand that humans are fundamentally changing the flows of earth, air and water around the planet," Dr. Filippelli said. It also is playing a role in people's health.

The researcher also is the director of the Center for Urban Health at IUPUI, a collaboration linking the School of Science, the School of Liberal Arts, the School of Medicine and the Richard M. Fairbanks School of Public Health.

"The core principle of the Center for Urban Health is to integrate the spheres of environment, community, and health into one consortium," Dr. Filippelli said. "It can serve as a training and research think tank, where, for example, a water scientist, a public health expert and a community leader can work together to improve the health and beauty of a neighborhood stream, opening it up to creative, educational, and economic opportunities not otherwise achievable."



As part of his work for the U.S. State Department, Gabriel Filippelli, far right, met with the President of Kiribati, far left, at a diplomatic luncheon hosted by the secretary of state.

## CENTER SPOTLIGHT

### Komen Bank Part of Major Study

More than 160 institutions were involved in an international project, published today in the journal *Nature*, proving that the age at which girls reach sexual maturity can be influenced by either parent. This is the first time it has been shown that imprinted genes -- a process of temporarily silencing the genes of one parent -- can control the rate of development after birth.



Chunyan He, Ph.D.

The findings come from an international consortium study involving scientists from 166 institutions worldwide, including Indiana University. The researchers identified 123 genetic variations that were associated with the timing of when girls experienced their first menstrual cycle by analyzing the DNA of 182,416 women of European descent from 57 studies.

Indiana University genetic epidemiologist Chunyan He, Sc.D., is one of the 10 lead authors of the consortium article. A member of the Indiana University Melvin and Bren Simon Cancer Center and an assistant professor at the IU Richard M. Fairbanks School of Public Health, Dr. He's research for this paper was made possible by the Komen Tissue Bank at the IU Simon Cancer Center, the only bank of normal breast tissue in the world.

Dr. He said 300 healthy tissue samples from the Komen Tissue Bank and 300 samples of malignant breast tissue from the IU Simon Cancer Center Tissue Procurement and Distribution Core were genotyped and analyzed for the data she contributed to the *Nature* article. This is one of the largest studies using Komen Tissue Bank samples to date, she said. The one-of-a-kind healthy tissue bank at IU was established in 2005 and supported by Susan G. Komen since 2007. Nearly 10,000 women have contributed healthy blood or breast tissue to aid research into the causes of and treatments for breast cancer. Anna Maria Storniolo, M.D., is executive director of the Komen Tissue Bank at the IU Simon Cancer Center.

Dr. He is the seventh author in the list of 204 co-authors for this unique, large-scale collaborative effort to produce scientific findings relevant to cancer researchers and specialists studying other diseases.

"Age of menarche is a marker of timing of puberty in females," the *Nature* article states. "It varies widely between individuals, is a heritable trait and is associated with risks for obesity, type 2 diabetes, cardiovascular disease, breast cancer and all-cause mortality."

"This study is a great example of team science research in genetic epidemiology," Dr. He said.

The mechanisms that determine puberty's onset remain unclear, Dr. He said. But these findings indicate that hundreds of variants are involved in the timing and point to other mechanisms that may be associated with the timing of puberty and higher risks of adult diseases.

The activity of imprinted genes differs depending on which parent the gene is inherited from; some genes are only active when inherited from the mother, others are only active when inherited from the father. Both types of imprinted genes were identified as determining puberty timing in girls, indicating a possible biological conflict between the parents over their child's rate of development.

Funding for Dr. He's research was provided by the Indiana Clinical and Translational

Sciences Institute Program Development Team Award and the Expression Analysis and Illumina co-sponsored National Cancer GWAS Grant.

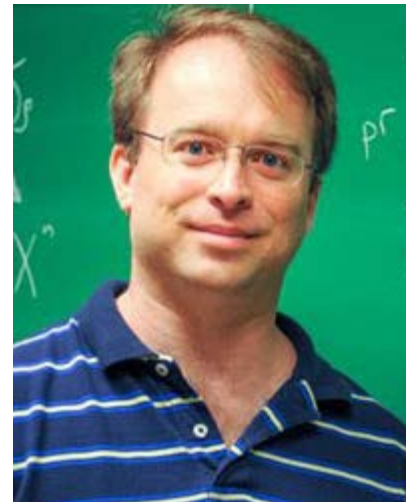
## FACULTY SPOTLIGHT

### IUPUI Mathematician Receives Prestigious NSF Early Career Development Award

Roland Roeder, a mathematician from the School of Science, will receive \$460,000 over the next five years from the National Science Foundation's Division of Mathematical Sciences to support his research in pure math and the training of students from the graduate to high school levels.

The Faculty Early Career Development award is the NSF's most prestigious award in support of junior faculty. It is given to individuals who "exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research."

The award will support Dr. Roeder's research on dynamics in several complex variables, an area of pure mathematics focusing on the theoretical underpinnings of systems that change with time.



Roland Roeder, Ph.D.

"Systems that change with time appear at the core of nearly all scientific endeavors, including biology, chemistry, physics and the social sciences," he noted. "Given the current state of a system, can one predict its future state? How does this evolution of the state of the system depend on the parameters of the system?"

"Many such dynamical systems are far too complicated for a rigorous study, so one often resorts to simpler models, which are hoped to indicate the types of behavior that one should expect experimentally. One venue for such simpler models is the iteration of holomorphic maps, the topic of my NSF-supported research."

According to Dr. Roeder, insights obtained from complex dynamics have already provided a deeper understanding of real-world problems in a variety of fields including the study of magnetic materials and astrophysics.

In addition to supporting Dr. Roeder's research, his CAREER grant will provide research training including tuition and living expenses for one or two doctoral students he will supervise over the next five years. The funding will also enable Dr. Roeder and the Department of Mathematical Sciences to hold two workshops for graduate mathematics students from universities throughout the United States. Each workshop will provide opportunities for students to make presentations and will bring top researchers to IUPUI to speak and interact with the students.

Among the novel aspects of Dr. Roeder's NSF-supported work is his mentorship of extremely talented high school students on research projects and the continuation, along with Jeffrey Watt, Ph.D., associate dean for student affairs and outreach in the School of Science, of their co-organization of the [IUPUI High School Math Contest](#), a highly respected competition that has been held for 17 years and recently expanded to include schools from throughout Indiana.

"You can't do anything properly without logical reasoning and math is the art of logical reasoning," said Roeder, who credits the awakening of his interest in the field as a young teen in Southern California to a local college faculty mentor who worked with motivated high school students. "A major goal of what we are doing here at IUPUI is providing students I like to call Super Stars -- talented high school students

who work extremely hard -- with mentoring and an opportunity to learn advanced math, conduct original research and publish the results. Remarkably, they perform at the level of first-year graduate students."

Roeder credits Pavel Bleher, Ph.D., Chancellor's Professor of Mathematical Sciences at IUPUI, for getting him involved in leading high school students on research projects. The two mathematicians have had an impressive track record of mentoring exceptional students, including a three-person team that won first place in the prestigious 2010 Siemens Competition in Math, Science and Technology and an individual student who was a 2013 Intel Science Talent Search Finalist. Roeder's previous NSF grant provided funding for him to mentor these students.

Yushi Homma, the Intel talent-search finalist and a recent Carmel (Indiana) High School graduate, will attend Stanford University in Fall 2014 where he plans to major in math or possibly computer science. The 18-year-old Homma has been meeting with Dr. Roeder weekly for almost two years to work on a problem involving polynomials whose coefficients are random variables, a concept not typically covered until upper level college math. While maintaining a full high school course load, on average Homma had been spending about eight hours a week on this math problem, although he admits to ramping up to 20 hours a week in the month before the Intel competition deadline. "I like math," said Yushi Homma, the son of a lawyer and a homemaker. "I began participating in national math competitions in sixth grade but by the time I was 13 or 14 I realized that I preferred research because it was both a cumulative assessment of my math knowledge and a way to expand that knowledge. Working with Drs. Bleher and Roeder has helped launch me into the field."

Under Drs. Roeder and Bleher's continued tutelage, Homma is spending his last summer before college preparing a manuscript for submission to a peer-reviewed professional journal, a task that his mentors say very few high school students can accomplish, although this is the third time their mentees have a paper of this level. Interestingly, two of the other papers were written by the team that was successful in the Siemens competition -- a team that included Yushi Homma's older brother Youkow, currently a math major at Yale University.

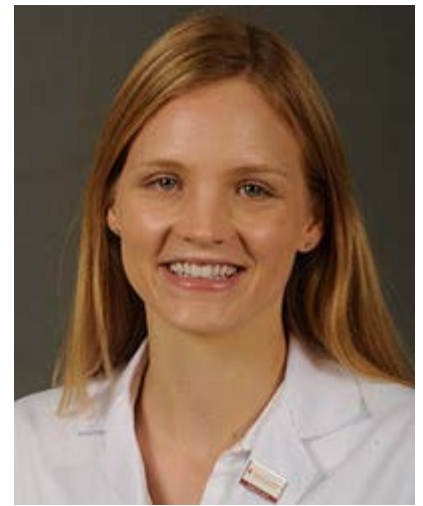
"Roland Roeder is the first math department faculty member at IUPUI to receive this award from the National Science Foundation. Seven current School of Science faculty members now hold this prestigious award, an impressive number that underscores the high quality of the School's faculty and its commitment to education, research and community outreach," said Simon Rhodes, Ph.D., dean of the school. Other NSF CAREER award recipients in the School of Science are faculty members Yogesh Joglekar (physics); Gavriil Tsechpenakis, Murat Dundar and Mohammad Al Hasan (computer and information science); Gregory Druschel (earth sciences); and Haibo Ge (chemistry and chemical biology).

## STUDENT SPOTLIGHT

### **Student Researcher's Work Published in Annals of Internal Medicine**

A study by an IU School of Medicine-South Bend student has attracted attention from national media outlets such as CNN, WebMD and Modern Health Care.

Laura Vater, a second-year student at IUSM-South Bend, is the lead author on a study in the Annals of Internal Medicine analyzing cancer center advertisements that emphasize fear and hope on television and in popular magazines.



Laura Vater

"With these cancer center advertisements, patients are getting the rose-colored glasses version: 'If you come to our center, you're going to live,'" Vater said.

The paper presents evidence that cancer patients may have had the quality of their treatment altered before it begins, influenced by a cancer center.

The study, titled "[What Are Cancer Centers Advertising to the Public? A Content Analysis](#)," argues that that cancer center marketing drives a demand for therapies such as chemotherapy and radiation through emotional messaging that is "long on happy endings or battle cries, but short on information" about treatment option risks and benefits, costs, and potential alternatives.

Although further research is needed, Vater said she is concerned that this sort of advertisement may adversely impact patients' decisions about treatments, and also may lead to inappropriate demand for services in hopes of a cure that may not be possible.

Vater developed the study before entering medical school as a student in the Graduate School of Public Health at the University of Pittsburgh. Her mentor was Yael Schenker, M.D., assistant professor of medicine at the University of Pittsburgh.

A significant amount of research exists on the impact drug company advertising has on patient-doctor relationships, but little or no research exists on the impact of cancer care advertising, according to Vater.

In conducting the study, Vater, Dr. Schenker, and other researchers analyzed the advertising campaigns of the top 102 cancer centers as recognized by the National Cancer Institute. Among these centers, 85 percent use television advertising and 27 percent place ads in popular magazines. The research team reviewed hundreds of magazine ads and some 1,400 television commercials, ultimately analyzing the content of more than 400 video and print advertisements.

The advertisements often referenced specific cancer types, played on fears, evoked hope for survival, and touted "aggressive treatment." Communications that should be part of the doctor-patient relationships, such as alternatives, costs, realistic outcomes, and side effects were rarely discussed.

Although the team acknowledged that emotional content is at the heart of all marketing, Vater said they were concerned these ads contributed to a previously-documented disconnect between patients' understanding of their disease and treatment, and physicians' understanding. These "therapeutic misconceptions," as they are known, are often found at the end of life, when a physician is seeking ways to make a patient comfortable, and the patient is still expecting a cure.

In subsequent studies, Vater said she wants to determine whether and how cancer advertising influences patients, and how much cancer centers spend on advertising.



## TRANSLATIONAL RESEARCH IMPACT

### Study: Four Habits Model Prepares Pediatric Nurses for Emotionally Difficult Discussions

A child's illness and hospitalization are extremely stressful for both the child and the parents. A new study reports that the Four Habits Model of Highly Effective Clinicians, a core set of communication skills developed to help physicians communicate with patients, can successfully prepare inexperienced nurses for emotionally difficult conversations with parents of pediatric patients.

The evidence-based Four Habits Model was co-developed 20 years ago by Regenstrief Institute investigator Richard Frankel, Ph.D., a sociologist and medical educator whose current research focuses on facilitating and improving clinician-patient communication in the context of advanced cancer. This is the first time the Four Habits Model's effectiveness has been tested with nurses.



Richard M. Frankel, Ph.D.

The new study, published in the July 2014 issue of Patient Education and Counseling, found that when taught the Four Habits Model, newly licensed nurses reported significant improvements in emotion-focused conversations with parents in four of the five areas measured: preparation, communication skills, relationships and confidence.

"Newly minted nurses, like other newly trained professionals, tend to concentrate on getting the work done," Dr. Frankel said. "Getting the work done is obviously important to patient care, but so is being thoughtful and reflecting on what one is doing, not simply operating in the moment. We don't do a lot of real-world training of nurses, doctors or any type of health professional; we put them in classrooms and provide simulations exercises but don't really give them on-the-job coaching or opportunities to practice important communication and other skills. With exposure to the Four Habits, inexperienced nurses can improve how they interact with both young patients and their parents."

Newly licensed nurses involved in the study did not demonstrate a decrease in their anxiety level, which Dr. Frankel said is not necessarily bad for their relationship with young patients or families.

"All people with responsibility for others experience anxiety," he said. "In lower doses, anxiety can propel you to be vigilant. Vigilance is one of the major ways to prevent accidents and errors. So it is not surprising and actually might be a good thing that people just embarking on a professional career remain somewhat anxious but are able to convert that anxiety into vigilance."

Previous studies by Dr. Frankel and other researchers have shown that the Four Habits Model has a positive long-term effect on both clinician and patient satisfaction. The model is used extensively in the United States and other countries to train physicians. The Four Habits are:

1. Invest in the beginning.
2. Elicit the patient's perspective.
3. Demonstrate empathy.
4. Invest in the end.

Twenty-three skills make up the Four Habits.

Each of the Four Habits contributes to good patient care. For example, eliciting the patient's perspective allows a better understanding of the disease and the person's psychological and social response(s), both of which contribute to improved outcomes, according to Dr. Frankel.

In addition to his Regenstrief appointment, Dr. Frankel is an Indiana University School of Medicine professor of medicine and the inaugural director of the Mary Margaret Walther Palliative Care Research and Education Program at the Indiana University Melvin and Bren Simon Cancer Center.

Additional authors of "The Effectiveness of a Brief Intervention for Emotion-Focused Nurse-Parent Communication" are first author Mark J. Fisher, Ph.D., of the College of Nursing, University of Oklahoma Health Sciences Center; Marion E. Broome, Ph.D., R.N; Barbara M. Friesth, Ph.D., R.N.; and Tracy Magee, Ph.D., R.N., all faculty of the Indiana University School of Nursing.

The researchers note that their findings suggest the use of effective communication skills, such as eliciting parents' perspectives and empathy, may result in increased parent satisfaction. They conclude "teaching nurses how to use a few new habits for nurse-parent communication during an emotionally charged situation is an effective way to shed light on an invaluable relationship in health care, the nurse-parent relationship."

## OVCR Internal Grant Deadlines

### **Enhanced Mentoring Program with Opportunities for Ways to Excel in Research (EMPOWER):**

The Enhanced Mentoring Program with Opportunities for Ways to Excel in Research (EMPOWER) has been developed to support IUPUI faculty who are historically underrepresented and/or excluded populations in their discipline or area of scholarship and historically denied admission to higher education or that discipline, 1) to become successful in sponsored research and scholarly activity, and 2) to achieve significant professional growth and advancement. The program sustains mentorship opportunities through the EMPOWER Grant Program, supporting achievement of excellence in research and scholarly activity, and optimal attainment of academic career goals and objectives. The next EMPOWER application deadline is **September 5, 2014**. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

### **Funding Opportunities for Research Commercialization and Economic Success (FORCES):**

The FORCES program is designed to support IUPUI researchers in the successful transformation of their research findings into commercially viable outcomes. The key goals of FORCES are to support: 1) realization of short-term projects that will enhance commercial value of IUPUI intellectual property assets, by facilitating commercialization of inventions, technologies, or other intellectual property derived from existing research projects, and 2) development of research initiatives that show great promise for commercialization of the research outcomes. The next RTR application deadline is **September 15, 2014**. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

### **(NEW PROGRAM) Imaging Technology Development Program (ITDP):**

The objective of the Imaging Technology Development Program (ITDP) is to provide a source of seed funding to foster multidisciplinary research activities to advance the development of new, innovative, imaging-related technologies, defined as any technology associated with the acquisition of images, display of image information, or quantitative analyses of the information contained within an image. The ITDP application deadline is **October 1**. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

### **(NEW PROGRAM) IUPUI Graduate Student Imaging Research Fellowship (GSIRF) Program:**

The aim of the IUPUI Graduate Student Imaging Research Fellowship (GSIRF) Program is to provide a stable source of funding for graduate students pursuing a doctoral degree focused on imaging technology development within an interdisciplinary, collaborative, research environment. Furthermore, it is anticipated that this program will serve as a means to enhance multidisciplinary research activities among senior investigators. It is expected that the funded GSIRF projects will provide the foundation for securing additional external funding sources to further the new imaging technology and its utilization within the mentors' laboratories. The GSIRF application deadline is **October 15**. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

### **Research Support Funds Grant (RSFG):**

The 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 RSFG application deadline is **October 15, 2014**. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

### **International Development Fund (IDF) GRANT:**

The IDF grant was developed to enhance the international research and scholarly activity focus of the IUPUI academic mission. Generally, the IDF grant serves as venture capital to stimulate additional funding for international research and scholarly activity, which have strong potential to generate indirect cost recovery from extramural sources. The next IDF application deadline is **November 15, 2014**. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

## **Other Internal Grant Deadlines**

### **Research Proposals Sought for New Consortium**

Faculty members interested in funding for research proposals through the [IU Consortium for the Study of Religion, Ethics and Society](#) still have time to submit a proposal.

This is the first call for research proposals from the new consortium. The research proposals are part of the first phase of a two-year thematic initiative -- "Wonder and the Natural World" -- sponsored by the consortium.

Funding of up to \$5,000 for individuals and up to \$10,000 for teams is available. Full-time, tenure-track IU faculty members from any IU campus are eligible to apply, with proposals that cut across disciplines, units, or campuses especially welcome.

The IU Consortium for the Study of Religion, Ethics and Society is an interdisciplinary association of scholars, academic programs, and research centers from the eight campuses of Indiana University. The consortium was launched in January 2014 to leverage IU's strengths in the interdisciplinary study of religion and advance research in key thematic areas.

The deadline for proposals is September 1. Funding awards will be announced at the end of October. Recipients will present their preliminary findings and works-in-progress at a daylong symposium at IU Bloomington in May 2015.

The full call for proposals may be found online on the Department of Religious Studies website. Proposals should be emailed to Abby Gitlitz at [agitlitz@indiana.edu](mailto:agitlitz@indiana.edu). For additional information on the consortium or the funding awards, contact Lisa Sideris at [lsideris@indiana.edu](mailto:lsideris@indiana.edu).

## OVCR Events and Workshops

### OVCR Research Orientation

Target Audience: Faculty

When: Wednesday, August 27, 2014 | 1:00pm - 3:00pm

Where: University Library, Room 1116

This session will provide an overview of research resources, services and support offered to IUPUI faculty by the Office of the Vice Chancellor for Research. Participants will also meet with some current IUPUI faculty members to hear how they were able to achieve success in the early stages of their tenure at IUPUI.

Register: <https://crm.iu.edu/CRMEvents/OVCROrientation082714/>

### OVCR Research Orientation (Repeat Session)

Target Audience: Faculty

When: Friday, September 5, 2014 | 10:00am - 12:00pm

Where: University Library, Room 1126

This session will provide an overview of research resources, services and support offered to IUPUI faculty by the Office of the Vice Chancellor for Research. Participants will also meet with some current IUPUI faculty members to hear how they were able to achieve success in the early stages of their tenure at IUPUI.

Register: <https://crm.iu.edu/CRMEvents/OVCROrientationRepeat090514/>

### Finding Funding

Target Audience: Faculty, Staff, Graduate Students

When: Tuesday, September 23, 2014 | 2:00pm - 3:30pm

Where: University Library, Room 0106

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. This session is hands-on in a computer lab.

Register: <https://crm.iu.edu/CRMEvents/FindingFunding092314/>

### Basic Proposal Development

Target Audience: Faculty and department or school grants administrators

When: Thursday, September 25, 2014 | 11:30am - 1:00pm

Where: University Library, Room 1126

This workshop will focus on the basic essentials of building a successful grant proposal for agencies that fund in health, science, engineering, informatics, technology, and social sciences. A wide-range of topics will be covered from developing a strong foundation for your application to key components of the narrative, the basic budget, writing styles, and interpreting agency guidelines, the necessity for knowing how your proposal will be reviewed, funding limitations, and how to communicate complex ideas in a limited space. You are welcome to bring your lunch.

Register: <https://crm.iu.edu/CRMEvents/BasicProposalDev092514/>

### Nine Golden Rules to Succeed in Research and Scholarship

Target Audience: Faculty

When: Friday, October 31, 2014 | 11:00am - 1:00pm

Where: University Library, Room 1126

This session will reveal the Nine Golden Rules on how to succeed in research and scholarship. It is focused toward new and early career investigators; however, mid career faculty should find information of interest as well.

Register: <https://crm.iu.edu/CRMEvents/NineGoldenRules103114/>

### **Ins and Outs of Applying for NIH Funding**

Target Audience: Faculty and grant administrators

When: Friday, November 7, 2014 | 9:00am - 12:00pm

Where: University Library, Lilly Auditorium

How to prepare and submit grant proposals to the National Institutes of Health (NIH) is the focus of presentations by representatives of the Office of the Vice Chancellor for Research, the Office of Research Administration and NIH awardees on the IUPUI faculty. The workshop will provide an overview of the Institutes, their mission, priorities and NIH programs that cut across disciplines. Specific topics include a description of the various funding mechanisms and their appropriateness for each career stage, attributes of high quality proposals, and resources available within the University to support proposal development. Highlighting the event is a panel discussion by current NIH reviewers who will provide an in-depth look into the peer review process.

Register: <https://crm.iu.edu/CRMEvents/NIHFunding110714/>

### **Developing Complex, Multi-Investigator, Multi-Institutional Proposals**

Target Audience: Senior Faculty with Previous External Funding

When: Thursday, November 13, 2014 | 11:30am - 1:00pm

Where: University Library, Room 1126

The current funding environment favors large, complex, multi-institutional, multi-investigator projects. However, organizing a successful submission takes a great deal of planning and teamwork. What works best in which situation? Should you use a "Red Team Review"? What role does the RFP serve to organize the writing efforts? Professional proposal writers and editors will discuss these and a number of related issues at this session. You are welcome to bring your lunch.

Register: <https://crm.iu.edu/CRMEvents/ComplexProposals111314/>

## **Other Events and Workshops**

### **IUPUI Arts and Humanities Institute (IAHI) Fall 2014 Lineup**

For more details and to register, visit [http://www.iupui.edu/~iahi/?page\\_id=39](http://www.iupui.edu/~iahi/?page_id=39).

#### **Grant Writing Workshop: IU New Frontiers in the Arts and Humanities Grant Program**

DATE: September 3, 2014

TIME: 12:00 PM – 1:30 PM

LOCATION: IUPUI Arts and Humanities Institute, Conference Room, University Library 4th Floor

This session will provide participants with an overview of the IU New Frontiers in the Arts and Humanities Grant Program. It will offer information on how to apply and,

more importantly, how to develop a competitive proposal. Faculty recipients and members of the New Frontiers grants advisory groups will be present to answer questions.

[Register](#)

### **Sixth Annual Indiana CTSI Meeting -- September 26**

Mark your calendars! The sixth annual meeting of the Indiana Clinical and Translational Sciences Institute will be Friday, September 26, at the [Hine Hall Auditorium](#) on the IUPUI campus in Indianapolis.

This free event is an opportunity to learn more about the Indiana CTSI, participate in poster presentations and breakout sessions, and meet new colleagues and collaborators. Anyone who wants to learn more about the Indiana CTSI is welcome.

Additional information will be posted to the Indiana [CTSI HUB](#). Questions can be directed to [info@indianactsi.org](mailto:info@indianactsi.org)

## **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 instead are sent directly to IUPUI School Deans. For comprehensive coverage of funding opportunities, please use the online search tools listed below.

### **DEPARTMENT OF DEFENSE**

**Medical Clinical and Rehabilitative Medicine Research Program- Reconstructive Transplantation Research Award:** This opportunity challenges the scientific community to design innovative research that will foster new directions for and address neglected issues in the field of reconstructive transplantation (RT), specifically vascularized composite allotransplantation (VCA)-focused research, also known as composite tissue allotransplantation (CTA). VCA refers to the transplantation of multiple tissues such as muscle, bone, nerve, and skin, as a functional unit (e.g., a hand or face) from a deceased donor to a recipient with a severe injury. Applications from investigators within the military Services and applications involving multidisciplinary collaborations among academia, industry, the military Services, the Department of Veterans Affairs (VA), and other Federal Government agencies are highly encouraged. Though the RTR Award mechanism supports groundbreaking research, all projects must demonstrate solid scientific rationale with military-relevant utility. The intent of the RTR Award is to support projects that will accelerate the movement of promising ideas in RT into clinical application. The mechanism is intended to support both new and established scientists across a broad spectrum of disciplines in research projects that are likely to have a major impact on RT. *Deadlines: Pre-application: October 15, 2014; Application: October 29, 2014.*

***NOTE:*** All faculty, researchers, and scientists on continuing contracts at IU interested in applying for Department of Defense funding are eligible for assistance by the consulting firm Cornerstone Government Affairs, arranged by the Vice President for Research. Those interested in securing assistance from Cornerstone must submit a two-page summary of their research project and a CV or bio sketch to the VP for Research Office at [vpr@iu.edu](mailto:vpr@iu.edu). Prior to submission, the IUPUI Office of the Vice Chancellor for Research is offering preparation assistance with the two-page summaries. For more information, contact Ann Kratz, [akratz@iupui.edu](mailto:akratz@iupui.edu).

### **NATIONAL ENDOWMENT FOR THE HUMANITIES**

**Digital Projects for the Public:** NEH's Division of Public Programs supports

activities that engage millions of Americans in understanding significant humanities works and ideas. At the center of every NEH-funded public humanities project is a core set of humanities ideas developed by scholars, matched to imaginative formats that bring humanities ideas alive for people of all ages and all walks of life. The Digital Projects for the Public program supports projects such as websites, mobile applications, games, and virtual environments that significantly contribute to the public's engagement with humanities ideas. Projects must be analytical and deeply grounded in humanities scholarship in a discipline such as history, religion, anthropology, jurisprudence, or art history. Digital Projects for the Public grants support projects that are largely created for digital platforms. While these projects can take many forms, shapes, and sizes, you should apply to this program primarily to create digital projects or the digital components of a larger project. NEH is a national funding agency, so these projects should demonstrate the potential to attract a broad, general audience. Projects can have specific targeted audiences (including K-12 students), but they should also strive to cultivate a more inclusive audience. *Deadline: June 11, 2015.*

## NATIONAL INSTITUTES OF HEALTH

**Immune and Inflammatory Mechanisms in Alzheimer's Disease (R01):** The goal of this FOA is to establish the role of the brain innate immune system, the systemic immune system, and the crosstalk and changes with age between the two in the development and progression of Alzheimer's disease (AD). An interdisciplinary and integrative research approach to identify the cell networks and mediators of the brain and systemic immune and inflammatory systems is expected to give greater insight into the etiological mechanisms underlying Alzheimer's disease. Such characterization should include studies on the genetic, epigenetic, molecular and cellular underpinnings of the physiological immune and inflammatory responses in AD. Development of cell or functional markers of, and tools to manipulate or track peripheral and CNS immune cells, would help establish the role of distinct immune cells in AD. The contribution of aging processes in the brain (e.g., microglial senescence) and in peripheral immune/inflammatory networks (e.g., chronic low level inflammation) in the initiation and/or progression of AD should be considered. Applicants to this FOA must emphasize the multidisciplinary and integrative research approaches taken to identify the cell networks, mediators, and pathways of the brain and systemic immune and inflammatory systems that influence the development and progression of AD.

Areas of research interest include, but are not limited to: 1) Characterize in a systematic, integrative way the cell networks-monocytes, macrophages, microglia, astrocytes, neurons and signaling factors that regulate brain immune/inflammatory function across the AD spectrum. 2) Identify genetic, epigenetic and molecular pathways, including function of AD risk gene loci, mediating immune/inflammatory networks in AD. Are pathway changes drivers of disease or in response to AD pathophysiology? 3) Compare, in a limited manner, immune/inflammatory processes in AD with other age-related neurodegenerative diseases to identify AD-specific mechanisms. 4) Establish the crosstalk between systemic and brain immune systems-cells, intercellular activators and mediators, effector functions in AD. Consider when and where crosstalk occurs. 5) Define the contribution of age-associated chronic inflammation, immune cell senescence, and/or immune system deficits as comorbidity factors in AD. *Deadlines: December 29, 2014, letter of intent; January 29, 2015, submission.*

**Stem Cells and Alcohol-Induced Tissue Injuries (R01):** This opportunity encourages applications to study human and non-human stem cells involved in alcohol-induced tissue injuries. Alcohol abuse is known to cause pathology in a number of organ systems. Disorders most commonly associated with chronic alcohol consumption include alcoholic liver disease (ALD), pancreatitis, cardiovascular disease, neural damage, endocrine dysfunction, osteoporosis, cancer, and immune dysfunction. The objective of this FOA is to understand the role of stem cells in alcohol-induced tissue damage and recovery, particularly how they are influenced by

alcohol metabolism and their role in alcohol-related cancers. *Deadline: February 5, 2015.*

**Development of Mathematical Cognition and Reasoning and the Prevention of Math Learning Disabilities (R01):** This opportunity is intended to stimulate innovative, multidisciplinary research on the cognitive, neuroplasticity, genetic and environmental factors involved in math learning and learning disabilities. This research will advance our knowledge of the factors that contribute to the development, advancement, and impairment of mathematical cognition, including the ability to apprehend and reason about magnitude, number, temporal and spatial relationships, and concomitantly provide the evidence base to inform the design of effective interventions for the remediation and/or prevention of mathematical learning disabilities (MLD). The overall objectives include: 1) identifying the critical biological, cognitive, and behavioral components and dynamic developmental sequence, including sensitive periods, necessary for the normal development of mathematical cognitive abilities and reasoning, including early and normative milestones; 2) identifying the biological, cognitive, environmental, and behavioral factors that contribute to and/or restrict the developmental plasticity of mathematical cognitive abilities, and may be used to improve prevention, identification, and classification of children, including theoretically-grounded approaches to identification and classification; 3) developing and testing well-defined, evidence-based prevention interventions for populations at high risk for mathematics learning disability such as children raised in poverty, and those with predisposing genetic or medical conditions where the intervention's effectiveness can be shown to be both sustainable and generalizable; and 4) developing and testing well-defined, evidence-based remediating or treatment interventions, the effectiveness of which can be demonstrated to be both sustainable and generalizable. Such foundational knowledge should ultimately improve math instruction, both for typically developing and math challenged or disabled children. *Deadline: October 5, 2014.*

## NATIONAL SCIENCE FOUNDATION

**Interdisciplinary Behavioral and Social Science Research (IBSS):** The IBSS competition establishes new opportunities to encourage, facilitate, and support interdisciplinary research that brings together researchers from different Social, Behavioral, and Economic Sciences (SBE) disciplinary communities. It will focus on research problems that can be fully addressed only by interdisciplinary teams using approaches from multiple fields, and it will support research that promises results that will be meaningful across the contributing disciplines and that will explicitly advance science beyond existing intellectual boundaries. The IBSS competition seeks to support research conducted by SBE scientists as collaborating members of teams that come from multiple disciplines, who engage in integrated research that employs methods and techniques from multiple disciplines, and whose results are likely to enhance theories and/or methodological approaches or have other stimulating and/or catalytic impact across a range of disciplinary fields.

The IBSS competition invites proposals for two different kinds of projects: 1) IBSS Large Interdisciplinary Research Projects; and 2) IBSS Interdisciplinary Team Exploratory Projects. Support for exploratory efforts by emerging multidisciplinary teams is designed to facilitate the kinds of contact, interaction, and active research activities necessary to enable researchers from multiple disciplines to engage in effective interdisciplinary research. Emphasis is to be placed on the conduct of research and potential outcomes, not on the preparation of plans and proposals for future research. Proposals seeking IBSS support may address any topic, issue, or problem. Researchers are encouraged to pursue research on one of the four cross-cutting themes identified in the Rebuilding the Mosaic report (population change; sources of disparities; communication, language, and linguistics; and technology, new media, and social networks), but the IBSS competition will be open and receptive to other topics that address topics having theoretical and societal significance. *Deadline: December 2, 2014.*



**Alan T. Waterman Award:** This award is the highest honor awarded by NSF. Since 1975, when Congress established it to honor the agency's first director, this annual award has been bestowed upon individuals who have demonstrated exceptional individual achievement in scientific or engineering research of sufficient quality to place them at the forefront of their peers. The annual award recognizes an outstanding young researcher in any field of science or engineering supported by NSF. *Deadline: October 25, 2014.*

**Expeditions in Training, Research, and Education for Mathematics and Statistics through Quantitative Explorations of Data (EXTREEMS-QED):** The long-range goal of EXTREEMS-QED is to support efforts to educate the next generation of mathematics and statistics undergraduate students to confront new challenges in computational and data-enabled science and engineering (CDS&E). EXTREEMS-QED projects must enhance the knowledge and skills of most, if not all, the institution's mathematics and statistics majors through training that incorporates computational tools for analysis of large data sets and for modeling and simulation of complex systems.

Funded activities are expected to: 1) provide opportunities for undergraduate research and hands-on experiences centered on CDS&E; 2) result in significant changes to the undergraduate mathematics and statistics curriculum; 3) have broad institutional support and department-wide commitment that encourage collaborations within and across disciplines; 4) include professional development activities for faculty or for K-12 teachers; and 5) where appropriate, leverage and advance the use of existing cyberinfrastructure resources (e.g., data archives, networks) for data exploration.

The Office of Cyberinfrastructure is interested in supporting educational activities that incorporate cyberinfrastructure considerations at a fundamental level, and in efforts that leverage and advance NSF cyberinfrastructure investments. Cyberinfrastructure consists of advanced computing systems, data storage systems, instruments and data repositories, visualization environments, and people, all linked together by software and high performance networks to improve research productivity and enable breakthroughs not otherwise possible. *Deadline: November 6, 2014.*

## **U.S. DEPARTMENT OF ENERGY**

**Resilience for Extreme Scale Supercomputing Systems:** Proposals are invited for basic research that significantly improves the resiliency of scientific applications in the context of emerging architectures for extreme scale computing platforms. The next-generation of scientific discovery will be enabled by research developments that can effectively harness significant or disruptive advances in computing technology. Applications running on extreme-scale computing systems will generate results with orders of magnitude, higher resolution and fidelity, achieving a time-to-solution timeline significantly shorter than possible with today's high performance computing platforms. However, indications are that these new systems will experience hard and soft errors with increasing frequency, necessitating research to develop new approaches to resilience that enable applications to run efficiently to completion in a timely manner and achieve correct results. Of interest are proposals that address challenges in the following topics: 1) Fault Detection and Categorization; 2) Fault Mitigation; 3) Anomaly Detection and Fault Avoidance. *Deadline: November 3, 2014.*

## **IDENTIFYING FUNDING OPPORTUNITIES**

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

**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://service.govdelivery.com/service/multi\\_subscribe.html?code=USNSF&custom\\_id=823](http://service.govdelivery.com/service/multi_subscribe.html?code=USNSF&custom_id=823). 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 <https://www.fbo.gov>. 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:**

Many federal agencies and foundations offer grants, awards and fellowships that limit the number of applications that can come from one institution or require special handling. In order to comply with agency and foundation guidelines and increase the chances of Indiana University (IU) succeeding in such limited submissions and special handling opportunities, IU policies and procedures are in place and are utilized by the Office of the Vice Chancellor for Research and other IU research offices to facilitate internal coordination and competitions.

Individuals interested in responding to limited submission opportunities must inform the Office of the Vice Chancellor for Research about their intent to apply to a given limited submission opportunity, such that they can be included in the internal review and selection process. Failure to do so may disqualify individuals from consideration for submission to the funding opportunity.


Individuals interested in a limited submission opportunity or have any questions about the internal coordination process, contact Etta Ward at [emward@iupui.edu](mailto:emward@iupui.edu) or 317-278-8427. For a description of upcoming limited submission funding opportunities, as well as guidelines and application forms, go to: [http://research.iu.edu/limited\\_sub.shtml](http://research.iu.edu/limited_sub.shtml). Please note that this is not a comprehensive list, and that any external funding opportunity that imposes any type of submission limitation is subject to the IU limited submission policy and procedures.

The Special Handling list was created in order to communicate donor restrictions and/or preferences for managing solicitation requests from Indiana University. The list reflects special relationships that exist between donors and the university and includes corporations and foundations that the President's office wishes to review prior to submission in order to coordinate Indiana University's requests to these donors.

The Special Handling List was compiled and is maintained by the Indiana University Foundation office of Corporate and Foundation Relations. Please contact [Dee Metaj](#) at 317-278-5644 if you have any questions regarding this list.

IU Authentication is required to view the following attachments:

[IUF Special Handling List and Principal Gifts Review Template](#)

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