

Research Enterprise

November 13, 2014

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FEATURE STORY

Herron art professor earns unprecedented \$300,000 in prizes at sixth annual ArtPrize competition

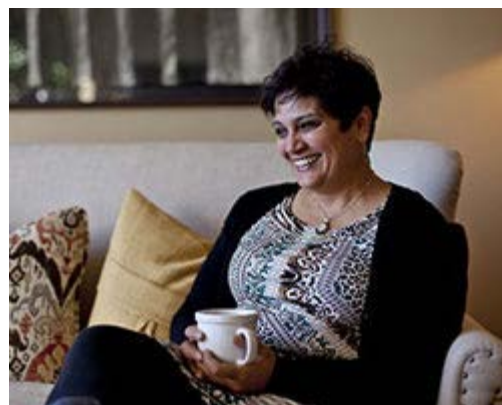
Herron School of Art and Design professor Anila Quayyum Agha has won the two top prizes at ArtPrize 2014, earning a record \$300,000 in the international art competition held in Grand Rapids, Michigan.

Her entry, titled "Intersections", earned the ArtPrize 2014 Public Vote Grand Prize of \$200,000 and split the Juried Grand Prize of \$200,000 in a tie with "The Haircraft Project" by artist Sonya Clark of Richmond, Virginia.

Agha's wins mark the first time one entry has won both the ArtPrize grand prize awarded by popular vote and the grand prize awarded by a jury of international art experts. Her total prize is also the highest amount given to one individual in the competition, which awards the world's largest art prize.

The professor's unprecedented success was no surprise to Susan Scarafia, a 1983 IU Kelley School of Business graduate who traveled to Grand Rapids to join the thousands of visitors -- including Michigan Gov. Rick Snyder -- who viewed the entries on display at venues within the three-mile square art district in downtown Grand Rapids.

"I thought Anila would win from my first look at 'Intersections'," Scarafia, who has attended the past four ArtPrize competitions, said Sunday in an email interview. "There was buzz about it online. ... (O)nce I got to the city, 'Intersections' was the piece others recommended



Anila Quayyum Agha

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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Editor:

Etta Ward

Layout:

Fred Haver

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.

most when I asked what I should see."

"But the way I knew, really knew, that 'Intersections' would win was that I could see that everyone who saw it was so involved with it. They weren't just passing by or taking a quick picture. They walked into the room, stopped talking, looked up, looked around and kept looking from different angles. It seemed to me that this art really hooked into people."

The "hooked" included one man who, while viewing "Intersections", dropped to his knees and [surprised his girlfriend with a marriage proposal, according to a news report.](#)



"Intersections," at Herron by Anila Quayyum Agha

Agha is associate professor of drawing and foundation studies at Herron, the art school on the Indiana University-Purdue University Indianapolis campus.

The professor's "Intersections", completed under a 2012-13 New Frontiers Research Grant from Indiana University, is composed of a 6.5-foot laser-cut wooden cube created using Herron's new computer numeric control router.

When illuminated by the single bulb installed inside, the wooden frieze casts patterns of light and shadows inspired by the geometric patterning of Islamic sacred places as found in the Alhambra Palace in Granada, Spain. During the 19-day ArtPrize exhibit, which ended Sunday, the entry was on display at the Grand Rapids Art Museum.

"This is a wonderful and well-deserved award for Herron professor Anila Agha," Herron Dean Valerie A. Eickmeier said. "Her prize-winning installation presents a perfect example of how our new digital technology equipment has assisted the creative work of our faculty. Anila teaches drawing, and her artwork is usually made on paper or fabric. This is the first work that she has created with Herron's new computer numeric control router. Anila's achievement provides an excellent example for Herron students as well."

A smaller version of Agha's winning entry was on view in the Frank and Katrina Basile Gallery at Herron last fall.

ArtPrize 2014, an independent competition open to anyone 18 or older, included 1,536 entries representing 51 countries and 42 U.S. states and territories. Entries were submitted in 2-D, 3-D, time-based and installation categories.

The contest, which drew 400,000 visitors last year, awarded two grand prizes totaling \$400,000 and eight awards in the four categories worth a total of \$160,000. ArtPrize has a parallel awards structure, with half of the awards decided by public vote cast by mobile devices or online and half by a jury of international art experts.

"Intersections" was chosen for the popular grand prize by the 41,109 registered voters who cast 398,714 votes.

After three days of deliberation over the 20 finalists selected by category jurors, the grand prize jury of Susan Sollins, Leonardo Drew and Katharina Grosse decided to split the \$200,000 prize between "Intersections" and "The Haircraft Project."

"By the end of our adventure here, and after much, much discussion, we came to the conclusion that there were two artists of equal caliber and talent who had risen to the top of our list," Sollins said. "We felt strongly that both artists had to be recognized equally. In short, there was nothing for it but to declare a tie."

The winners were announced in Hollywood fashion during an ArtPrize Awards ceremony October 10 at the Grand Rapids Civic Theatre. A town hall recap of this year's competition took place Wednesday, October 15.

Agha's acceptance speech is included in [awards ceremony television coverage posted online](#).

[An after-show interview on Grand Rapids television is also available online.](#)

ANNOUNCEMENTS

Cancer tumor researcher receives IU School of Medicine Beering Award

Dr. William G. Kaelin Jr. was recently named the recipient of the 2014 Steven C. Beering Award for Outstanding Achievement in Biomedical Science, presented annually by the Indiana University School of Medicine.

Dr. Kaelin serves as a professor in the Department of Medicine at the Dana-Farber Cancer Institute at Harvard Medical School and as associate director for basic science at the Dana-Farber/Harvard Cancer Center. His research seeks to understand how mutations affecting tumor-suppressor genes cause cancer, with a goal of laying a foundation for new anticancer therapies.

He received the award and presented a lecture titled "The Von Hippel-Lindau Tumor Suppressor: Insights into Oxygen Sensing and Cancer," October 21st.



William G. Kaelin Jr., M.D.

The prestigious [Beering Award](#) was named in honor of Steven C. Beering, M.D., who served as dean of the IU School of Medicine from 1974 to 1983, when he accepted the presidency of Purdue University, a position he held until 2000.

2015 IUPUI Research Day Save-the-Date



On April 17, 2015 the Office of the Vice Chancellor for Research will host the 2015 IUPUI Research Day. This open house celebrates the cutting-edge and multifaceted research and scholarly activities of IUPUI. This full day event will be held at the IUPUI Campus Center.

Research Day provides an opportunity for the IUPUI faculty, staff, and students, their academic, industrial, and governmental partners, and the broader community, to come together and learn more about the research enterprise at IUPUI, to explore new collaborations, and to lay the foundation for new partnerships.

More details will be announced in upcoming Research Enterprise issues.

IU Center for Civic Literacy receives Simon Family Foundation grant

The Indiana University Center for Civic Literacy recently received a \$25,000 grant from the Simon Family Foundation to study the gap in civics education available to students in wealthy and poor neighborhoods.

"There are so many things we don't know about the distressing deficit of civic knowledge," said Sheila Kennedy, professor of law and policy and director of the center. "One of the most troubling aspects of the decline in both civic literacy and civic engagement is unequal access to civic opportunities and instruction. We are so grateful to the Herbert Simon Family Foundation for enabling us to study and analyze that problem."



Sheila Kennedy, J.D.

The [Center for Civic Literacy](#), a multidisciplinary research center at Indiana University-Purdue University Indianapolis, pursues an aggressive research agenda to identify and address the causes and civic consequences of Americans' low levels of constitutional, economic and scientific knowledge. It hosts a website and blog, and it publishes a quarterly newsletter and the free online, peer-reviewed journal *Civic Literacy*.

Established in July 2012, the center is supported by the IUPUI Signature Centers Initiative, which is designed to provide selected centers initial funding for a period of three years. The Simon Family Foundation grant is the first grant the center has received outside of IUPUI.

New Signature Center Initiative Category Announced

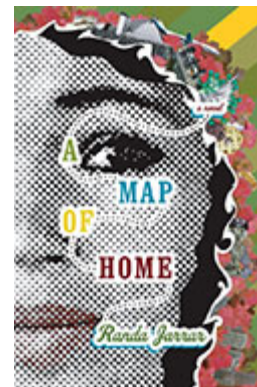
The Office of the Vice Chancellor for Research will introduce a new Signature Centers Initiative (SCI) funding category in 2015. This new category is for SCI planning grants that will allow collaborative research groups to build capacity and strengthen a future application for a center grant. The funding level for each approved proposal in this category is expected not to exceed \$50,000 for one year. **Note:** Proposals for this category require that the applicant has attended the annual SCI workshop, which will take place on January 16, 2015, from 1-3 pm in University Library Room 1126.

For more detailed information on SCI planning grants, please go to <http://research.iupui.edu/funding/> and download the SCI guidelines.

Randa Jarrar Speaks at Al-Mutanabbi Street Starts Here Symposium on November 17

November 17, 2014
7:00 pm - 8:30 pm
Basile Auditorium, Eskenazi Hall, 735 W. New York St

As part of the **Al-Mutanabbi Street Starts Here Symposium**, the IUPUI Arts and Humanities Institute, in collaboration with the IUPUI Library and the Rufus & Louise Reiberg Reading Series, will host a free lecture by Randa Jarrar. Jarrar is an award-winning novelist, short story writer, essayist, and translator. In 2010, a collaborative project between the Hay Festival, Beirut UNESCO's World Book Capital 2009 celebrations, *Banipal* magazine and the British Council recognized her as a member of the Beirut39 — 39 of the world's most promising Arab writers under the age of 39.



[Click here](#) for free tickets.

2014 IUPUI Innovation Forum and Showcase: Alternatives for Funding New Ventures

Target Audience: Faculty

When: Thursday, November 20, 2014 | 2:00pm - 4:00pm

Where: Campus Center Theater

The Office of the Vice Chancellor for Research and the Indiana University Research & Technology Corporation (IURTC) co-sponsor the IUPUI Innovation Forum and Showcase. There are more funding options open to startups than ever before as new services have emerged to fill the gap created as banks and conventional venture capital firms pull away from riskier early-stage investments. An expert panel will provide insights on how new firms can explore options for raising funds, even in the earliest stages—while the company is still small, and even when the company does not yet have a marketable product.

Register at <https://crm.iu.edu/CRMEvents/InnovationForum2014/>.

For more information or if you have questions, contact Karen White at 274-1083 or kfwhite@iupui.edu.

Call for Summer 2015 Multidisciplinary Undergraduate Research Institute (MURI) Faculty Proposals

The Center for Research and Learning welcomes proposals for the Summer 2015 Multidisciplinary Undergraduate Research Institute (MURI) at IUPUI. Proposals should represent two or more disciplines and should offer undergraduate students the opportunity to engage in a substantive research experience focused on a significant research problem.

This is a unique opportunity provided to IUPUI faculty and researchers for mentoring students while conducting pilot projects or testing new techniques and designs.

Some key points regarding this year's program are as follows:

- *Faculty writing proposals are encouraged to review the document entitled [MURI FAQs for Faculty Submitting Proposals](#).
- *Proposals must be submitted by using the current version of the [MURI Project Proposal Form](#).
- *The MURI Review Committee will review the submitted proposals using the [MURI Proposal Evaluation Form](#) (log in with IUPUI username and password).
- *Projects must include faculty mentors from more than one discipline.
- *Eligible graduate students and post-doctoral trainees may also serve as co-mentors on a team.
- *Proposals are due by midnight on November 23, 2014, to the following address: CRLGrant@iupui.edu
- *The Proposal Review Committee meetings are currently scheduled for December 11 and 12, 2014.
- *The announcement regarding funded proposals is currently scheduled for January 12, 2015.
- *Students may apply to MURI and rank their project choices beginning January 12, 2015 with a deadline of March 1, 2015.

*The summer program begins on June 1, 2015, and continues through July 31, 2015.

MURI is jointly funded by the Center for Research and Learning, a division of the Office of the Vice Chancellor for Research, and the School of Engineering and Technology.

Project proposals from all disciplines on the IUPUI campus are encouraged. For more information contact Elizabeth Rubens erubens@iupui.edu or Steve Higbee sjhigbee@iupui.edu.

CENTER SPOTLIGHT

IU Researchers Secure Diabetes Grant

An international team of diabetes researchers led by Indiana University scientists has been awarded a \$2.4 million research grant to discover and develop biomarkers meant to provide early prediction and diagnosis of type 1 diabetes.

Nearly 2 million people in the U.S., most of them children, are diagnosed with type 1 diabetes each year, and nearly 30 million American are living with the disease. Type 1 diabetes occurs when the insulin-producing cells of the pancreas -- beta cells -- die off to the extent that the body is unable to produce enough insulin, which is needed to convert sugar and other foods into energy.

IU School of Medicine researchers Raghu Mirmira, M.D., Ph.D., and Carmella Evans-Molina, M.D., Ph.D., are the lead scientists on the three-year biomarker project, funded as a "high-risk, high-reward" proposal by the National Institute of Diabetes and Digestive and Kidney Diseases at the National Institutes of Health.

Biomarkers are proteins, bits of genetic material or other molecules found in blood or other tissues that can be used as indicators of disease, response to drugs or other bodily activities.

Early detection is needed, the researchers said, because by the time patients are diagnosed with diabetes, most of their beta cells have been destroyed by the body's own immune system. Research trials attempting to slow or reverse the disease by suppressing the immune system have not been successful, said Dr. Evans-Molina, assistant professor of medicine.

"A big reason these drugs fail is that by the time a person presents to clinic with high blood glucose, the underlying process has already led to the death of 80 to 90 percent of beta cells," she said.

Although type 1 diabetes is widely viewed as an autoimmune disorder -- one in which the body's immune system attacks the body's own tissues as if they were foreign tissues -- how and why that occurs in diabetes is not well understood.

However, research by Dr. Mirmira and others suggests that problems arise in the beta cells themselves early in the evolution of the disease, triggering biochemical



Raghu Mirmira, M.D., Ph.D.



Carmella Evans-Molina, M.D., Ph.D.

stress pathways inside the cells that either initiate or accelerate the immune system attacks on the beta cells. "The majority of people in the field believe type 1 diabetes really is an autoimmune disease, but I think people are beginning to appreciate that it's not as simple as that," said Dr. Mirmira, Eli Lilly and Co. Professor of Pediatric Diabetes.

To conduct the research, Mirmira and Evans-Molina, who are investigators at the Herman B Wells Center for Pediatric Research, organized a team with complementary expertise in the analysis of proteins and gene expression:

- A group at the Pacific Northwest National Laboratory in Richland, Wash., has state-of-the-art mass spectrometry systems. Mass spectrometry is a technique used to identify what proteins and other substances are present in a sample.
- At Eastern Virginia Medical School, diabetes researcher Jerry Nadler, M.D., chair of internal medicine and vice dean of research, has developed a technology called imaging proteomics that enables mass spectrometry techniques to be applied to tissue samples directly instead of the soluble samples normally used.
- In Belgium, Decio Eizirik, M.D., Ph.D., director of the Laboratory of Experimental Medicine at the Université Libre de Bruxelles, has expertise in analyzing which genes are active in beta cells versus other cells and is a leading expert on cell death in diabetes.

The IU researchers, meanwhile, can identify as little as a single molecule of DNA in a tissue sample using a technology known as droplet digital PCR -- the only such system in the state.

"With the technologies we've amassed, and with the tissue banks available to us, we want to develop a picture of how the disease progresses over time, based on what's different about the beta cells at different stages," Dr. Mirmira said.

The goal is to find a protein or other molecule that is uniquely produced by the stressed beta cells and that could be detected in the blood long before a patient appears at a hospital with symptoms.

With early detection, some of the immune system treatments that so far have proven ineffective might work better when used earlier, Dr. Evans-Molina said. Moreover, she added, the research to find the biomarkers could itself lead to more effective treatments.

INSTITUTE SPOTLIGHT

Launch of IU Network Science Institute.

The \$7 million initiative will bring together many of the university's top minds to explore and embrace the challenge of understanding complex networks that underlie large-scale systems, including the environment, economics, technology and human health.

"Today, more than ever before, exploring the connections and relationships among our most complex networks -- from the biological to the economic, political and social -- is paramount to solving humankind's most critical and challenging questions," IU Vice President for Research Jorge José said. "Through the formation of this new interdisciplinary, university-wide institute, which will reflect all of the major sectors of scientific research and will be supported by the university's robust technological infrastructure, IU has positioned itself to become the leading global center for understanding the complicated structure and evolving dynamics of the systems that drive our society."



Complex networks are at the core of an ever more interconnected social, economic and technological planet, and their connectivity and dynamics underpin nearly all aspects of how these systems function. Networks can be associated with topics as diverse as cancer, schizophrenia, even the spreading of rumors, innovations or social unrest.

José said that focusing on the interactions between huge numbers of system components places the university at the forefront of shaping new paths for research and innovation.

Three faculty members named as founding co-directors helped lead the effort to create the institute: Distinguished Professor Bernice Pescosolido, Department of Sociology; Distinguished Professor Olaf Sporns, Department of Psychological and Brain Sciences; and Andrew Saykin, professor of radiology and imaging sciences and director of the Indiana Alzheimer Disease Center at the IU School of Medicine.

The institute will be unique in a number of ways: Affiliated researchers will represent multiple IU campuses and will come from medicine, the natural sciences, the social sciences and the humanities; in addition to being focused on networks, every project supported by the institute is required to be a collaboration, a reflection of the institute itself.

Four research hubs currently form the core of IUNI -- Health and Health Care, Network Neuroscience, Science of Science and Social Network Science -- each with the capacity to engage and share data and other resources with one another. Outreach activities, workshops and conferences, and efforts toward online network science education will add to the scope of IUNI activities.

The three-year initiative -- with an opportunity to renew for another three years -- will be supported by IU President Michael A. McRobbie's office, the offices of Provost and Executive Vice President Lauren Robel and Vice President for Research José, the College of Arts and Sciences, the School of Informatics and Computing, and the School of Medicine.

To date, affiliated faculty from 26 different schools, departments and centers have either participated in development of IUNI or expressed an interest in participating in collaborative research through the institute.

Faculty participating in the institute include the College of Arts and Sciences departments of physics, psychological and brain sciences, statistics, sociology and geography; the School of Informatics and Computing at IU Bloomington; the School of Medicine; the School of Public Health-Bloomington; the Fairbanks School of Public Health at IUPUI; and centers already focused on different aspects of complex networks, such as the Indiana Center for Systems Biology and Personalized Medicine at IUPUI and the Digital Science Center at IU Bloomington.

FACULTY SPOTLIGHT

IU School of Medicine diabetes researcher receives five extramural research grants in 13 months

Debbie C. Thurmond, professor of pediatrics and associate director of the Basic Diabetes Research Group of the Herman B Wells Center for Pediatric Research in the IU School of Medicine, will receive \$3.34M from a total of four new research awards from the National Institutes of Health (NIH) and the Juvenile Diabetes Research Foundation over the next 4 years. An additional \$726,500 was awarded from the NIH to support her new T32 training grant



Debbie C. Thurmond, Ph.D.

with Dr. Alyssa Panitch (Purdue University), to train the next generation of biomedical engineers to apply their skills to diabetes research. All of these were funded between September 2013 and October 2014.

"My lab's focus is on the underlying causes of type 1 and type 2 diabetes developments and progressions. We in the field are working at a frantic pace towards deriving new therapeutic targets for these insidious diseases," said Thurmond. "When predictions indicate that 1/3 of the kids at your daughter's birthday party will succumb to diabetes within their lifetime, you find yourself driven to stay up at night looking for ways to halt the progression towards this frightening future."

Thurmond joined the IU faculty in 2001 as an assistant professor and rose up through the ranks to become full professor in 2011. In 2009, she was promoted to associate director of the Basic Diabetes Group in the Wells Center for Pediatric Research.

"Being part of the Wells Center has engendered a great desire to pursue approaches that will lead toward translational outcomes. To do this I rely upon my basic science roots," said Thurmond. "I was originally trained as a biochemist and cell biologist, being lucky to start my postdoctoral training just when SNARE proteins (the protein machinery within all cells that is required for secretion of cargo such as insulin, neurotransmitters, etc.) were discovered and intracellular vesicle trafficking emerging as being pervasively important in all cells from yeast to mammals."

The discovery of SNARE proteins was awarded the Nobel Prize in Medicine in 2013 to Drs. Rothman, Schekman and Sudhof. Thurmond hosted Dr. Rothman's visit to the IUPUI campus in 2005 when he was awarded the campus' prestigious Steven C. Beering Award for the Advancement of Biomedical Science.

The topics in Thurmond's new grants remain linked to SNARE-mediated vesicle trafficking events and cytoskeletal signaling and as they pertain to the causes of diabetes. Her group has discovered that diabetic individuals harbor defects and deficiencies in certain vesicle trafficking proteins; correction of one in particular, Syntaxin 4 restored function to otherwise defective human type 2 diabetic islets. Using innovative genetic models, her team is investigating whether defects in these proteins actually cause diabetes. "We are so grateful to have this new NIH and JDRF support, as it now allows us to test our newest concept, which certain trafficking proteins might serve as tools to treat diabetes, and perhaps even to prevent or delay the progression of diabetes," Thurmond remarked.

STUDENT SPOTLIGHT

Bringing everyone and everything forward

Suranga Nath Kasthurirathne is a first year Ph.D. student in Health Informatics from Sri Lanka. He first heard about the School of Informatics and Computing through a less than conventional method: through connections he made during the

annual Google Summer of Code program.

The Google Summer of Code is a global program, which places students in paid internship positions to work on Open Source programs. As part of the Google Summer of Code, Suranga worked with OpenMRS, a multi-institutional non-profit collaborative led by the Regenstrief Institute of Indiana.

After three years with OpenMRS and related EMR implementations, Suranga was convinced that [Health Informatics](#) was what he wanted to do for the rest of his life. Suranga's associates at Regenstrief suggested he pursue a Ph.D. to get his foot in the door. They recommended IUPUI as the best option to obtain a formal education while keeping in touch with practical implementation work currently underway.



Suranga Nath Kasthurirathne

When deciding where to complete his Ph.D., Suranga had two criteria that any school had to meet: rising potential and good connections.

"The big thing that interested me about IUPUI and the School of Informatics and Computing is that it's currently on its way up. Based on what I've seen, and what the faculty and students are working on, IUPUI is a rising star in the field of informatics, and I wanted to be part of its future success. Also, the School of Informatics and Computing has a wide outreach, and connections with organizations such as Regenstrief, which are directly involved with practical application and fieldwork. This makes it easy for students interested in global health informatics to get firsthand exposure working on real world applications."

Suranga believes that the study of informatics is vital to just about anyone.

"Informatics deals with the management and transition of data to information, and ultimately, to knowledge. I feel this makes it far more relevant in practical terms, and it gives you more potential to contribute towards society, as opposed to dealing with just theoretical research. I also feel that the study of informatics has been somewhat sidelined by its sibling, computer science, which many deem easier to understand the general root of, so informatics has a lot of potential in terms of catching up".

After graduation, Suranga plans to use his knowledge to contribute towards research and practical implementation of health informatics, preferably in the developing world.

TRANSLATIONAL RESEARCH IMPACT

Researcher studies complex motor control to aid people with movement disabilities

When asked why she studies complex motor behavior, Kristine Mosier promptly replies with a laugh: "Because I'm a klutz."

The study of complex movements is applicable globally to more than just understanding the circuits behind those voluntary movements, she said. "The

way you develop thought processes -- cognition -- depends upon motor control."

Mosier studies complex motor control and applies them to subjects with arm- and hand-movement disabilities, such as patients with stroke, Parkinson's disease, brain injury and autism, at IU Health Neuroscience Center of Excellence.



Kristine Mosier

How do these disorders all relate to each other? In studies of complex motor control, "There are similar things you can look at."

For example, in traumatic brain injury, the chronic effects -- including memory loss -- involve some of the pathways that are also involved in Parkinson's. In this manner, Mosier's studies are finding commonalities between various neurological conditions.

Her patients have to relearn how to move their hands and arms, and Mosier's research "witnesses the relearning of tasks," determining how practice results in functional, structural and neurochemical changes in the brain.

Writing with your toes and complex motor control

Mosier studies the networks involved in voluntary arm and hand movements. She relates a classic example of hand, lip and toe writing. No matter the appendage that grips the pen, analysts can tell that it is your handwriting.

"What's interesting is how your brain does that," she said. According to Mosier, voluntary movements depend upon "the way your brain organizes things."

Mosier said the number of signals that control writing with your hands, mouth or toes are different according to each appendage doing the work. Essentially, complex motor control requires your brain to act as an engineer and physicist.

"The brain solves an incredible amount of complex mathematical problems. It's one of the essential things we look at."

Get a grip: Hand/arm tasks

Mosier uses functional imaging to study the circuits behind voluntary hand and arm movements. She works with biomedical engineers, physicists, neuropsychologists, physical medicine and rehabilitation physicians to conduct her research.

Blood-oxygen-level dependent contrast imaging maps the areas of the brain that are active during movement, arterial spin labeling shows how blood flow is changing, and diffusion tensor imaging uses the diffusion properties of water in the brain to study the physical connections from within the brain all the way to the spinal cord.

Mosier's group studies one to two subjects per week and approximately 20 subjects per study. Scanning is performed before the arm/hand task is introduced, then subjects practice the task for one hour for about four days.

Error rate in the task always decreases in healthy as well as disabled subjects, but how the movement looks -- the straightness or smoothness of the movement -- doesn't always get better with practice.

The "toys" of the trade

The study of hand and arm movements requires Mosier to use some complex

instruments. "I have a lot of 'toys'," she said.

The first "toy" is an instrumented data glove, which measures hand movements as subjects are learning to make specific movements. "It's a form of true motor learning," she said.

The data glove is used to track how subjects learn to control a computer cursor. It is used to map a 2-D space -- the cursor's movement -- onto a 19-D space. The 19 dimensions include a variety of measurements taken from the glove's movement. This is called "dimensionality reduction."

Mosier also uses robotics to study hand and arm movements. "The engineers I work with are pretty amazing," she said.

Robotics are used to apply perturbations to hand and arm movements during the performance of a task involving a joystick to control a cursor. The robotics work to apply force to the joystick in a direction the subject is unaware of. The subject must control the cursor by compensating for the directional force.

The data glove and robotics are used to study the complexities of circuitry behind arm and hand movements. "Your brain can relearn to remap things that have different dimensionality to it," Mosier said.

"Relearning movement has broad application to cognitive psychology. Any sort of executive processing -- that's really all based on the same mechanism of end movement," she said.

The people make it possible

Mosier credits her subjects for both inspiration and even some new ideas for experiments. "Their altruism really impresses me," she said of subjects who sacrifice their time to participate in her research studies.

She is most fond of high-functioning autistic patients, who have a keen ability to cooperate -- "sometimes better than healthy adults."

An interesting turn of events occurred when two of her healthy subjects for the data glove studies became so interested in Mosier's studies that they pursued graduate studies under her mentorship.

Mosier relates how all our human interactions -- like meeting each other for the first time -- relate to complex movements.

"Social interaction is similar to learning a repertoire of movements," she said.

"All these things that we study have a very broad application; it allows us to understand human behavior."

For fun, Mosier puts her love of movement into practice as a nationally-ranked competitive triathlete, with her sights set on qualifying for the world championships.

OVCR Internal Grant Deadlines

Release Time for Research (RTR): IUPUI maintains a robust research enterprise. To support faculty with adequate time to prepare competitive proposals, the IUPUI Office of the Vice Chancellor for Research has developed the Release Time for Research (RTR) internal funding mechanism. This funding program allows IUPUI faculty a "buyout" of teaching time to prepare high quality grant/contract proposals for submission to external funding agencies. It also supports non-tenure track faculty who are full-time senior lecturers or clinical track faculty possessing terminal degrees relevant to their fields, and who have a desire to engage in research or creative activity in an area that directly relates to their teaching or service mission.

The next RTR application deadline is **February 1, 2015**. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

IUPUI ARTS AND HUMANITIES INTERNAL GRANT (IAHI): The IAHI Grant Program exists to support campus-wide attainment of excellence in research and creative activity in arts and humanities. It is designed to enhance the research and creative activity mission of IUPUI by supporting research projects and scholarly activities that are conducted by arts and humanities faculty. *The IAHI application deadline is **February 15, 2015***. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

Developing Diverse Researchers with InVestigative Expertise (DRIVE): The Developing Diverse Researchers with InVestigative Expertise (DRIVE) program is designed to enhance the diversity and research and creative activity mission of IUPUI. Faculty from historically underrepresented populations, usually defined as African-American, Latino-American, Native American, Pacific Islanders, and women, are particularly encouraged to apply. The DRIVE program supports projects that have the potential for sustainability through external funding. *The next DRIVE application deadline is **March 1, 2015***. 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 FORCES application deadline is **March 15, 2015***. For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

OTHER INTERNAL GRANT DEADLINES

IU Vice President for Research Announces 2014-15 IU Collaborative Research Grants

Now in its fifth year, the IUCRG program supports collaborative research, which will significantly advance a field and impact the lives of those in Indiana, the United States, and the world. The maximum funding per project will be \$75,000.

Proposals must involve at least two faculty members from different departments, schools, campuses or disciplines, working on a new project with significant potential for external funding after the end of the IUCRG grant. Proposals are invited in three general areas:

- I. Social and Behavioral Sciences
- II. Biological, Natural or Health Sciences
- III. Physical, Applied or Computer Sciences

The deadline for submission of proposals is December 3, 2014. Full program details are available online at http://research.iu.edu/funding_collaborative.shtml.

If you have questions about the program, please consult the FAQs on line. If you have questions not answered there, please contact IUCRG@iu.edu.

Other Events and Workshops

IUPUI Arts and Humanities Institute (IAHI) Fall 2014 Lineup

For details and to register, visit http://www.iupui.edu/~iahi/?page_id=39.

RECENT EXTERNAL FUNDING AWARDS

The Office of the Vice Chancellor for Research recognizes and congratulates all IUPUI faculty and researchers for recent awards they have received and that help to advance the IUPUI research enterprise. The following table highlights those receiving \$100,000 or more in external grants.

Grants and Awards – October 2014

PI	Agency	Project Title	School	Department	Total
McAllister, Thomas W	NATIONAL COLLEGIATE ATHLETIC ASSOCIATION	THE NCAA-DOD GRAND ALLIANCE: Concussion Assessment, Research and Education (CARE) Consortium	MEDICINE	PSYCHIATRY	\$8,000,000
Loehrer, Patrick J.	NATIONAL CANCER INSTITUTE	AMPATH Oncology Institute-HPV and Cervical Cancer In Kenyan Women with HIV/AIDS	MEDICINE	CANCER CENTER	\$3,326,547
Mirmira, Raghu G	NATIONAL INSTITUTE OF DIABETES, DIGESTIVE & KIDNEY	Biomarkers of beta cell stress in type 1 diabetes (BetaMarker)	MEDICINE	PED-ENDOCRINOLOGY BASIC RES	\$2,401,653
Kiovsky, Richard D	INDIANA STATE DEPARTMENT OF HEALTH	2015 Area Health Education Centers Operating Support	MEDICINE	AREA HEALTH EDUCATION CENTERS	\$2,195,500
Carlesso, Nadia	NATIONAL INSTITUTE OF DIABETES, DIGESTIVE & KIDNEY	NATIONAL INSTITUTE OF DIABETES, DIGESTIVE & KIDNEY	MEDICINE	PED-NEONATAL BASIC RESEARCH	\$1,576,584
Hall, James A	HEALTH RESOURCES AND SERVICES ADMINISTRATION	Behavioral Health Workforce Education and Training for Professionals	SOCIAL WORK	SOCIAL WORK	\$1,414,852
Thurmond, Debbie C	NATIONAL INSTITUTE OF DIABETES, DIGESTIVE & KIDNEY	Targeting PAK1 to improve functional beta-cell mass and insulin sensitivity	MEDICINE	PED-ENDOCRINOLOGY BASIC RES	\$1,391,232
Jin, Xiaoming	NATIONAL INSTITUTE NEUROLOGICAL DISORDERS & STROKE	Homeostatic plasticity in the control of neuropathic pain	MEDICINE	ANATOMY & CELL BIOLOGY	\$1,248,000
Jacinte, Pierre-Andre	U.S. DEPARTMENT OF AGRICULTURE	Assessing threshold benefits of conservation tillage during drought years: Implications for nutrient use efficiency and water quality	SCIENCE	GEOLOGY	\$659,839
Zhang, Jian-Ting	U.S. DEPARTMENT OF DEFENSE	Targeting Survivin to Overcome Acquired Taxol Resistance in Prostate Cancer Chemotherapy	MEDICINE	PHARMACOLOGY & TOXICOLOGY	\$584,998
Duwve, Joan Marie	HEALTH RESOURCES AND SERVICES ADMINISTRATION	Richard M. Fairbanks School of Public Health Traineeship Program	PUBLIC HEALTH	PUBLIC HEALTH	\$450,000
Jerde, Travis J	U.S. DEPARTMENT OF DEFENSE	Overcoming Drug-Resistant Prostate Cancer with APE1/Ref-1 Blockade	MEDICINE	PHARMACOLOGY & TOXICOLOGY	\$345,590
Martin, Pamela A	STARKEY FARMS PARTNERSHIP	Edge of Field Monitoring Program	SCIENCE	GEOLOGY	\$268,866
Storniolo, Anna Maria V	THE BREAST CANCER RESEARCH FOUNDATION	Development of a Molecular Encyclopedia of the Normal Human Breast	MEDICINE	HEMATOLOGY/ONCOLOGY	\$250,000
Fu, Yongzhu	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	Advanced High-Energy Rechargeable Lithium-Sulfur Batteries	E&T	MECHANICAL ENGINEERING	\$250,000
Sun, Jie	UNIVERSITY OF ALABAMA BIRMINGHAM	Targeting Tfh transcription factors to enhance anti-HIV innate immunity	MEDICINE	PED-PULMONARY BASIC RESEARCH	\$233,613
Miller, Kathy D.	THE BREAST CANCER RESEARCH FOUNDATION	Repurposing Guanabenz	MEDICINE	HEMATOLOGY/ONCOLOGY	\$217,992
Eadon, Michael T	SATELLITE HEALTHCARE INC	Genetic Susceptibility to Nephrotoxicity	MEDICINE	NEPHROLOGY	\$200,000

Blum, Janice S.	JUVENILE DIABETES RESEARCH FOUNDATION INTERNATIONAL	Prevention of Type I Diabetes by Disrupting Heat Shock Protein 90- Beta Cell Antigen Complexes	MEDICINE	MICROBIOLOGY & IMMUNOLOGY	\$200,000
Howenstine, Michelle S	CYSTIC FIBROSIS FOUNDATION	IN-182/182 - Riley Hospital for Children Indiana University Medical Center	MEDICINE	PED-PULM CRITICAL CARE/ALLERGY	\$171,755
Walthall, Jennifer DH	INDIANA STATE DEPARTMENT OF HEALTH	Research for the prevention, treatment, and cure of spinal cord and brain injuries, including acute management, medical complications, and rehabilitative techniques, and neuronal recovery	MEDICINE	EMERGENCY MEDICINE	\$120,000
Keiski, Michelle Anne	INDIANA STATE DEPARTMENT OF HEALTH	Memantine for Neuroprotection and Cognitive Enhancement following Traumatic Brain Injury	MEDICINE	PHYSICAL MEDICINE & REHAB	\$120,000
Curtis, Edward E	NATIONAL ENDOWMENT FOR THE HUMANITIES	Muslim American Identities, Past and Present	LIBERAL ARTS	LIBERAL ARTS	\$114,438
Fu, Yongzhu	STORAGEENERGY	Advanced Li/S Batteries Based on a Novel Composite Cathode and Electrolyte System	E&T	MECHANICAL ENGINEERING	\$100,000
Rowan, Courtney Marie	INDIANA UNIVERSITY HEALTH	Project ROSE (Reach Out, Soothe and Embrace)	MEDICINE	PED-PULMONARY INTENSIVE CARE	\$100,000

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

Prostate Cancer Research Program (PCRP): Laboratory-Clinical Transition

Award: This opportunity supports product-driven preclinical studies of promising lead agents or medical devices that have the potential to revolutionize prostate cancer clinical care. **Lead Agents:** It is anticipated that lead agent development projects supported by this award will focus on generating pharmacology and toxicology data in preclinical studies for inclusion in a FDA Investigational New Drug (IND) application and/or establishing agent production according to current Good Manufacturing Practice (cGMP). Applicants are expected to have a validated target and to have identified one lead agent (or a limited number of lead agents for optimization) before applying for this award. Lead agents are defined as novel biological and molecular or chemical therapeutic or imaging agents having potential clinical application to prostate cancer. **Medical Devices:** Medical device projects to be supported by this award will test medical devices in preclinical studies with the intent of achieving an FDA Investigational Device Exemption application and/or cGMP production of the medical device. As appropriate, the PI should present preliminary data demonstrating reliability, reproducibility, and effectiveness for the medical device, as well as target availability and distribution in relevant human tissues. In addition, the inclusion of substantive information from model systems that supports the potential efficacy of medical device in humans is highly recommended.

Deadlines: Pre-Application: July 23, 2015; Proposal: October 29, 2015.

<http://cdmrp.army.mil/funding/pcrp.shtml>

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. 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.

NATIONAL ENDOWMENT FOR THE HUMANITIES

Sustaining Cultural Heritage Collections (SCHC): Sustaining Cultural Heritage Collections (SCHC) helps cultural institutions meet the complex challenge of preserving large and diverse holdings of humanities materials for future generations by supporting preventive conservation measures that mitigate deterioration and prolong the useful life of collections.

SCHC offers two kinds of awards: 1. PLANNING-To help an institution develop and assess preventive conservation strategies, grants will support planning projects, which may encompass such activities as site visits, risk assessments, planning sessions, monitoring, testing, modeling, project-specific research, and preliminary designs for implementation projects. Planning grants must focus on exploring sustainable preventive conservation strategies. 2. IMPLEMENTATION-Projects should be based on planning that has been specific to the needs of the institution and its collections within the context of its local environment. It is not necessary to receive an NEH planning grant to be eligible for an implementation grant. Planning could be supported by NEH, other federal agencies, private foundations, or an institution's internal funds. Projects that seek to implement preventive conservation measures in sustainable ways are especially encouraged. *Deadline: December 3, 2014.*

<http://www.neh.gov/grants/preservation/sustaining-cultural-heritage-collections>

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.* <http://www.neh.gov/grants/public/digital-projects-the-public>

NATIONAL INSTITUTES OF HEALTH

Evaluating Natural Experiments in Healthcare to Improve Diabetes

Prevention and Treatment (R18): The purpose of this opportunity is to support research to evaluate large scale policies or programs related to healthcare delivery that are expected to influence diabetes prevention and care. It is not intended to support the initiation and delivery of new policies or programs. Research support is for the evaluation of the effectiveness of healthcare programs and/or policies implemented independent of NIH grant funding. The goal is to support research that meaningfully informs clinical practice and health policy related to prevention or management of diabetes.

Research examples include, but are not limited to: 1) Innovative models of health care delivery; 2) The use of patient and/or physician incentives, insurance or employer reimbursement or cost-sharing policies; 3) Changes in healthcare policy

such as reimbursement for lifestyle intervention or obesity medications for patients at risk for diabetes; 4) Healthcare or employer-based disease management and health promotion approaches; 5) Programs designed to improve weight loss, patient self-management or adherence to efficacious treatments; 6) Programs designed to improve physician, healthcare team/system adherence to established clinical care guidelines or evidence based screening and/or intervention. *Deadline: March 02, 2015.* <http://grants.nih.gov/grants/guide/pa-files/PAR-13-365.html>

Tobacco Control Regulatory Research (R01): The purpose of this opportunity is to encourage biomedical, behavioral, and social science research that will inform the development and evaluation of regulations on tobacco product manufacturing, distribution, and marketing. Research projects must address the research priorities related to the regulatory authority of the Food and Drug Administration (FDA) Center for Tobacco Products (CTP) as mandated by the Family Smoking Prevention and Tobacco Control Act (FSPTCA), Public Law 111-31. The awards under this FOA will be administered by NIH using designated funds from the FDA CTP for tobacco regulatory science. Research results from this FOA are expected to generate findings and data that are directly relevant to inform the FDA's regulation of the manufacture, distribution, and marketing of tobacco products to protect public health. *Deadlines: Letter of Intent: May 07, 2015; Submission: June 17, 2015.* <http://grants.nih.gov/grants/guide/rfa-files/RFA-OD-13-011.html>

NIMHD Basic and Applied Biomedical Research on Minority Health and Health Disparities (R01): The overall goal of this initiative is to enhance our understanding of fundamental biological mechanisms involved in disease conditions that disproportionately affect health disparity populations and develop therapies or interventions that can directly or demonstrably contribute to the reduction or elimination of health disparities. This funding opportunity announcement (FOA) solicits applications to conduct the following: 1) Biological and genetic research to explore disease mechanisms or pathways that influence health outcomes in minority and health disparity populations. 2) Clinical and translational research linking basic science discovery with effective treatment or clinical practice to improve health outcomes in minority and health disparity populations. Projects investigating the etiology, physiology, genetic risk factors, molecular pathways, gene-environmental interactions, pharmacogenomics and personalized medicine in health disparity populations are particularly encouraged. *Deadlines: Letter of Intent: July 28, 2015; Submission: August 28, 2015.* <http://grants.nih.gov/grants/guide/rfa-files/RFA-MD-14-005.html>

Serious STEM Games for Pre-College and Informal Science Education Audiences (R41/R42): The purpose of this opportunity is to provide opportunities for eligible small business concerns (SBCs) to submit STTR grant applications to develop serious Science, Technology, Engineering and Mathematics (STEM) games with a focus on biology that addresses health and medicine questions for: (1) pre-kindergarten to grade 12 (P-12) students and pre- and in-service teachers ("Teachers") or (2) Informal Science Education (ISE) audiences.

Serious games are defined as the use of gaming technology to train, educate, and encourage behavioral changes in a virtual world format where progressive learning, feedback on success, and user control are combined into an interactive and engaging experience. It is anticipated that this STTR FOA will facilitate the translation of new or existing health and medicine-based, P-12 STEM curricula and museum exhibits into educational games that will provide a hands-on, inquiry-based and learning-by-doing experience for students, teachers and the community. *Deadline: May 12, 2015.* <http://grants.nih.gov/grants/guide/pa-files/PAR-14-326.html>

NATIONAL SCIENCE FOUNDATION

US Ignite: The primary goal of US Ignite is to break a fundamental deadlock: there is insufficient investment in gigabit applications that can take advantage of advanced

network infrastructure because such infrastructure is rare and dispersed. Conversely, there is a lack of broad availability of advanced broadband infrastructure for open experimentation and innovation because there are few advanced applications and services to justify it. US Ignite aims to break this deadlock by providing incentives for imagining, prototyping, and developing public sector gigabit applications, and by leveraging and extending this network testbed across U.S. college/university campuses and cities.

This solicitation builds on the experience gained from initial US Ignite activities to further engage the U.S. academic research and non-profit communities along with local cities, municipalities, and regions in exploring the challenges of developing and applying next-generation networking to problems of significant public interest and benefit. In particular, this solicitation has two tracks: the first encourages the development of applications in national priority areas that explore new uses for networks, giving rise to novel networking and application paradigms; and the second expands and enhances the ecosystems in which these applications will evolve and be evaluated. *Deadline: January 21, 2015.*

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505136

Plant Genome Research Program (PGRP): This program is a continuation of the Plant Genome Research Program (PGRP) that began in FY 1998 as part of the National Plant Genome Initiative (NPGI). Since the inception of the NPGI and the PGRP, there has been a tremendous increase in the availability of functional genomics tools and sequence resources for use in the study of key crop plants and their models. Proposals are welcomed that build on these resources to develop conceptually new and different ideas and strategies to address grand challenge questions in plants of economic importance on a genome-wide scale. There is also a critical need for the development of novel and creative tools to facilitate new experimental approaches or new ways of analyzing genomic data.

Activities in four focus areas will be supported in FY 2014: (1) Genomics-empowered plant research to tackle fundamental questions in plant sciences on a genome-wide scale; (2) Development of tools and resources for plant genome research including novel technologies and analysis tools to enable discovery; (3) Mid-Career Investigator Awards in Plant Genome Research (MCA-PGR) to increase participation of investigators trained primarily in fields other than plant genomics; and, (4) Advancing Basic Research in Economically Important Crop Plants (ABR-PG) to develop sequence resources that are critically needed to enable basic research resources in crop plants. Proposals addressing these opportunities are welcomed at all scales. *Deadline: April 28, 2015.* http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5338

Focused Research Groups in the Mathematical Sciences (FRG): The purpose of the FRG activity is to allow groups of researchers to respond to recognized scientific needs of pressing importance, to take advantage of current scientific opportunities, or to prepare the ground for anticipated significant scientific developments in the mathematical sciences. Groups may include, in addition to mathematicians and statisticians, researchers from other science and engineering disciplines appropriate to the proposed research. The activity supports projects for which the collective effort by a group of researchers is necessary to reach the scientific goals. Projects should be scientifically focused and well-delineated. It is not the intent of this activity to provide general support for infrastructure. Projects should also be timely and substantial in their scope and impact. *Deadline: September 19, 2015.* http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5671

Patient-Centered Outcomes Research Institute (PCORI)

Pragmatic Clinical Studies and Large Simple Trials to Evaluate Patient-Centered Outcomes: This opportunity seeks to fund pragmatic clinical trials (PCTs), large simple trials (LSTs), or large-scale observational studies that compare

two or more alternatives for addressing prevention, diagnosis, treatment, or management of a disease or symptom; improving health care system-level approaches to managing care; or for eliminating health or healthcare disparities. Proposed studies must address critical clinical choices faced by patients, their caregivers, clinicians, and/or delivery systems. They must involve broadly representative patient populations and be large enough to provide precise estimates of hypothesized effectiveness differences and to support evaluation of potential differences in treatment effectiveness in patient subgroups.

PCORI expects that most awards will be made for study designs that use randomization, either of individual participants or clusters, to avoid confounding bias. However, PCORI recognizes that exceptional opportunities may arise, by virtue of natural experiments and/or the existence of large registries, to address pragmatic questions using observational designs. *Deadlines: Letter of Intent: March 10, 2015; Submission: August 08, 2015.* <http://www.pcori.org/funding-opportunities/funding-announcements/pragmatic-clinical-studies-and-large-simple-trials-to-evaluate-patient-centered-outcomes/>

U.S. Food and Drug Administration (FDA)

Clinical Studies of Safety & Effectiveness of Orphan Products Research: The goal of FDA's OPD grant program is to support the clinical development of products for use in rare diseases or conditions where no current therapy exists or where the product being developed will be superior to the existing therapy. FDA provides grants for clinical studies on safety and/or effectiveness that will either result in, or substantially contribute to, market approval of these products. Applicants must include in the application's Background and Significance section documentation to support the assertion that the orphan disease or condition to be studied is a "rare disease or condition" and an explanation of how the proposed study will either help support product approval or provide essential data needed for product development. *Deadline: February 04, 2015.* <http://grants.nih.gov/grants/guide/rfa-files/RFA-FD-15-001.html>

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. 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 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. 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.

Office of the Vice Chancellor for Research - ovcr@iupui.edu
Indiana University Purdue University Indianapolis
755 West Michigan Street, UL1140, Indianapolis, IN 46202-2896
Phone: (317) 278-8427 

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