

Research Enterprise

May 14, 2015

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.

Research Offices:

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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

Grant supports care model targeting unnecessary hospitalizations of older adults

Approximately 1.4 million older adults in America live in nursing homes. A new grant from the John A. Hartford Foundation will enable clinician-researchers from the Indiana University Center for Aging Research and the Regenstrief Institute and their partners to prepare for the expansion of OPTIMISTIC, their long-term nursing home resident care model.



The Hartford Foundation grant of \$621,697 over the next 18 months will support enhanced evaluation of OPTIMISTIC, an acronym for "Optimizing Patient Transfers, Impacting Medical Quality and Improving Symptoms: Transforming Institutional Care." The new funding will allow for the development of training materials, as well as planning efforts related to the marketing and business sustainability of the approach to ensure its effective dissemination.

OPTIMISTIC, a long-term nursing home resident care model, is designed to improve the quality of care, reduce hospitalizations and increase access to palliative care for this medically complex and frail population.

"This significant investment from the Hartford Foundation is critical as we work to reach more nursing homes and nursing home residents in Indiana and beyond," said OPTIMISTIC co-director Kathleen Unroe, M.D., an Indiana University Center for Aging Research and Regenstrief Institute scientist and an IU School of Medicine assistant professor of medicine. "Our nursing home and community partners are committed to improving care of nursing home residents – this grant is an exciting opportunity to expand the scope of our current work."

OPTIMISTIC is supported by a four-year 2012 award of \$13.4 million from the Centers for Medicare and Medicaid Services (CMS). The demonstration project goal is

to improve care and communication within nursing homes and between these facilities and acute-care institutions so problems can be caught and solved before transporting a resident to the hospital becomes necessary.

Long-stay nursing home residents suffer from high rates of multiple chronic illnesses and dementia. Despite their needs and frailty, their care is often fragmented by hospitalizations, re-hospitalizations, and gaps in primary and palliative care, which increase suffering and costs of care.

Currently, specially trained OPTIMISTIC nurses are stationed on site at 19 central Indiana nursing facilities, supported by nurse practitioners, to provide direct support to long-stay residents as well as education and training to the staff. OPTIMISTIC nurses also lead care management reviews of long-stay patients to optimize chronic disease management, reduce unnecessary medications and clarify care goals.

"This new grant not only provides essential support to begin planning to take OPTIMISTIC to a national scale, it represents an amazing vote of confidence from the Hartford Foundation," said Greg A. Sachs, M.D., OPTIMISTIC co-director, an Indiana University Center for Aging Research and Regenstrief Institute scientist and an IU School of Medicine professor of medicine. "They believe in our vision for improving care in nursing homes, as well as our ability to play a leadership role in helping to disseminate the effective interventions being developed at six other CMS-funded sites around the country."

The interdisciplinary OPTIMISTIC project team includes Arif Nazir, M.D., IU School of Medicine (medical director); Susan E. Hickman, Ph.D., IU School of Nursing (palliative care component lead); Ellen Miller, PT, Ph.D., Center for Aging & Community, University of Indianapolis (education/training component lead); Monica Tegeler, M.D., (transitions of care component lead) and Greg Arling, Ph.D., Purdue University, (data core lead). Laura Holtz is project manager and Shannon Effler is project coordinator. Both are with the IU Center for Aging Research and the Regenstrief Institute.

ANNOUNCEMENTS

Graduate Student Imaging Research Fellowship applications due June 15, 2015

Applications are sought for the *Graduate Student Imaging Research Fellowship (GSIRF)* program coordinated through the *Imaging Research Initiative* of the IUPUI Office of the Vice Chancellor for Research (OVCR). The objective of this two-year fellowship program is to provide a stable source of funding for graduate students pursuing a doctoral degree who are primarily focused on research in imaging technology development. The intent of this program is to establish further interdisciplinary imaging research activities that aid in the development and implementation of new, innovative imaging methods and imaging-related technologies. There will be one new GSIRF awarded this year.

More details about the GSIRF program and application guidelines are available on the IUPUI Office of the Vice Chancellor for Research internal funding website (<http://research.iupui.edu/funding/>).

Applications are due 5 p.m. Monday, June 15, 2015. Questions regarding the GSIRF should be directed to Etta Ward at emward@iupui.edu or 278-8427.

Renal Imaging Technology Development Program applications due June 1, 2015

Applications are sought for the *Renal Imaging Technology Development Program (RITDP)* coordinated through the *IUPUI Research Center for Quantitative Renal Imaging*. Proposals should address research associated with the development of new, innovative, renal imaging-related technologies (i.e., any technology associated with the acquisition of images, display of image information, or quantitative analyses of the information contained within an image) that will enhance the diagnosis of kidney diseases and the evaluation of the efficacy of therapeutic interventions.

A total of \$45,000 from the RITDP is available to fund meritorious proposals. However, although there is no specific limit for the total proposed budget (up to \$45k), it is strongly recommended the maximum total budget for the submitted proposal not exceed the range of \$10k to \$15k. Proposed projects should not exceed one year.

Complete details about the RITDP program and application guidelines are available on the IUPUI Research Center for Quantitative Renal Imaging website (<http://www.renalimaging.iupui.edu>).

Applications are due 5 p.m. Monday, June 1, 2015. Questions regarding the RITDP should be directed to Mark Holland at: renalimg@iupui.edu.

CENTER SPOTLIGHT

IU researchers: Pancreatic cancer patients with particular gene signature may benefit from personalized treatment

Indiana University Cancer researchers report that about 15 percent of people with pancreatic cancer may benefit from therapy targeting a newly identified gene signature.

Using data from the Cancer Genome Atlas, Dr. Murray Korc, the Myles Brand Professor of Cancer Research at the [Indiana University School of Medicine](#) and a researcher at the [Indiana University Melvin and Bren Simon Cancer Center](#), and colleagues found that a sub-group of pancreatic cancer patients who possess a strong angiogenic gene signature could benefit from personalized therapies that cut off the pathways that feed the cancer's growth.



Murray Korc, M.D.

This particular gene signature enables abnormal blood vessels to form in tumors, which feeds the tumor's growth.

The finding, published online February 25 in the journal *Oncotarget*, is new because the prevalence of this signature was not previously known. The authors also demonstrated for the first time that endothelial cells, the main type of cell found in the inside lining of blood vessels, can produce molecules that directly stimulate the growth of pancreatic cancer cells.

"We showed that endothelial cells can stimulate the growth of pancreatic cancer cells and that by silencing or inhibiting certain pathways – JAK1–2 and STAT3 – we can alter that effect," Dr. Korc explained. "We demonstrated that it is possible to target these pathways and prolong the survival of genetically modified mice whose pancreatic cancers also have a strong pro-angiogenic gene signature."

Thus, for people with a strong pro-angiogenic gene signature, the finding suggests that they may benefit from targeted therapy that is directed against one of these pathways.

An important feature of the study was to demonstrate that it is possible to implant in

mice small biopsy samples obtained from patients undergoing endoscopic procedures and to generate human tumors in these mice. When the original human tumor had evidence for angiogenesis, the implanted human tumor also exhibited angiogenesis in the mouse. Additional studies are necessary to confirm that these approaches could guide the design of precision medicine using targeted therapies, Dr. Korc said.

The need for new therapies for pancreatic cancer patients is great as only seven percent of people with the disease survive more than five years after diagnosis. According to the American Cancer Society, there will be an estimated 48,960 new cases of pancreatic cancer and 40,560 deaths from the disease in 2015.

Co-authors of the study were Jesse Gore, Ph.D.; Stuart Sherman, M.D.; Harvey Cramer, M.D.; Hai Nguyen, M.D.; Kelly Craven, Monica Cheng, and Julie Wilson, all of IU School of Medicine, and Gregory Cote M.D. M.S., formerly of IU School of Medicine and now at the Medical University of South Carolina.

The study was made possible in part by grant CA-075059 awarded by the National Cancer Institute of the National Institutes of Health.

For the past three decades, Dr. Korc's work has focused on abnormal growth-factor signaling in pancreatic cancer. He has also been studying mouse models of pancreatic cancer, with the goal of designing novel therapeutic strategies.

Dr. Gore, the first author on the study, is assistant research professor in the Department of Medicine and, like Dr. Korc, has focused his research exclusively on pancreatic cancer.

FACULTY SPOTLIGHT

IUPUI ethicist examines health care values behind Obamacare and HIP 2.0

David Craig, professor of religious studies in the School of Liberal Arts at Indiana University-Purdue University Indianapolis, took a research journey into the organization of health care in the United States. His goal was to cut through the complexity of health care delivery, access, and finance to the values that Americans want their health care to serve.



David Craig, Ph.D.

This research took Craig across the country to interview 100 people who worked for Catholic and Jewish hospitals or were active in an interfaith coalition in Massachusetts. Instead of political slogans, interviewees shared their informed moral assessment of what works and what does not work in the health care system.

Recently Craig shared the main lesson he learned in an IUPUI JagTalks "Making Health Care a Social Good: Obamacare and HIP 2.0." As he put it, health care is neither private nor public in the U.S. Instead, Americans share and pay for health care together through public funding of nearly half of all health care costs. Funding supports private-public partnerships in medical research, medical training, and the health care safety net -- investing innovation, excellence, equity, and solidarity in U.S. health care. To view Craig's full JagTalks presentation, go to <https://www.youtube.com/watch?v=wNTv0ffSxDI&list=PLezOtvUqGj7tCzZ-DqMySCIoXucVqyUKK&index=4>.

As Americans continue to debate health care reform, Craig recommends acknowledging that individual health benefits, risks, and responsibilities occur in a context of shared responsibility. The Affordable Care Act builds on this structure, and

Indiana's Medicaid expansion, the Healthy Indiana Plan 2.0, can, too, if Hoosiers actively support newly-eligible Medicaid families on their journey into health coverage.

In addition to his new book on the ethics of health care reform, *Health Care as a Social Good: Religious Values and American Democracy* (<http://press.georgetown.edu/book/georgetown/health-care-social-good>), Craig has brought together local congregations and health care providers in central Indiana. Many congregations support wellness programs. Some deliver care by sponsoring community health centers, free clinics, wellness programs, and parish nursing. Partnering with the Center for Interfaith Cooperation, Immigrant and Refugee Service Corps, Lake Institute on Faith and Giving, and many other area nonprofits, the team has convened conversations on religion and healthy communities.

Craig was recognized for this work, as well as his leadership of IUPUI's first Common Theme on sustainability, with the 2015 IUPUI Chancellor's Award for Excellence in Civic Engagement. He is presenting his latest research on the U.S. Supreme Court's *Hobby Lobby* decision on corporate religious freedom at the Petrie-Flom Center at Harvard Law School.

STUDENT SPOTLIGHT

Bioinformatics Student Develops App to Forecast the Flu



Bioinformatics student Sandeep Shantaram (pictured bottom right in the dark green shirt) with other interns at Pacific Northwest National Laboratory during the Biosurveillance Mobile App Development Competition

A [bioinformatics](#) master's student in the Indiana University School of Informatics and Computing at Indiana University-Purdue University Indianapolis, Sandeep Shantaram, helped develop a mobile app that one day may be used to forecast outbreaks of seasonal flu and other illnesses.

Shantaram and other student researchers developed the prototype application as interns at the Pacific Northwest National Laboratory for the Biosurveillance Mobile App Development Competition, an annual challenge sponsored by the Laboratory and the U.S. Department of Defense. The competition was funded by the Defense Threat Reduction Agency (DTRA).

The mobile app, called FluCast, won the competition and is now undergoing testing and development through DTRA's Biosurveillance Ecosystem (BSVE) program.

The competition focused on exploring solutions to biosurveillance challenges, demonstrating how mobile devices enable access to health care information and resources, making them an ideal option for addressing the needs of digital disease detection.

"FluCast focuses on risk assessment and seasonal flu forecasting using historic flu case information in correlation with weather data and social media to provide a real-time flu risk assessment," said Shantaram. A collaboration platform for analytics and an RSS feed of flu-related news and Twitter mentions are also features of the FluCast app.

"The FluCast app can be used to keep track of what is happening in the biological world, monitor it, and draw attention to areas where there might be anticipated issues," stated Shantaram. "The app would provide the ability to capture data like geographic location, track any noticeable issues of concern and provide the information such that protocols could be communicated, and implemented to reduce the risk of epidemics or outbreaks, like that experienced with the Ebola outbreak."

TRANSLATIONAL RESEARCH IMPACT

Indiana University researchers awarded grant to study employment behavior of artists

With a newly-announced grant from the National Endowment for the Arts, two Indiana University researchers will examine key economic issues facing artists.

School of Public and Environmental Affairs faculty members [Doug Noonan](#) and [Joanna Woronkovicz](#) will use data from the U.S. Census Bureau's Current Population Survey and data from crowdfunding websites including Kickstarter and Indiegogo to study these questions:

*What was the effect of the Great Recession on the employment of artists and how have they fared during the recovery?

*How do crowdfunding campaigns for arts projects differ in their results from similar campaigns for technology and other non-arts projects?

The \$15,000 research grant is one of only 19 research projects nationwide funded by the NEA through its [Research: Art Works program](#).

"We want to better understand the role of artists in creating economic value," Noonan said. "We want to develop data that shows the impact of artists on the economic fabric of society."

Tracking employment and salary for artists is difficult because of the nature of their work. They have flexibility in schedules, often hold multiple jobs and can be footloose in regard to where they live and work.

"We know a good deal about artists from data taken at a particular moment in time, but this research goes in a new direction," Woronkovicz said. "By studying how artists work and move across years and during a sustained and challenging economic



Doug Noonan, Ph.D.



Joanna Woronkovicz, Ph.D.

period, we can get a much broader understanding of how they survive and how, as a society, we can help them thrive.”

Noonan and Woronkowicz will analyze data from the 2003-14 Current Population Surveys as well as data from Kickstarter and Indiegogo from 2009 to 2014.

“We hope to create data sets that other researchers can use to further define the economic contributions of artists,” Noonan said. “They enrich our lives in so many ways, but too little is known about the many ways artists earn a living.”

Noonan is a professor at the [School of Public and Environmental Affairs at Indiana University-Purdue University Indianapolis](#). He is also research director for the IU Public Policy Institute. Woronkowicz is an assistant professor at [SPEA at IU Bloomington](#).

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 **July 1, 2015**.* For grant guidelines and application forms, go to <http://research.iupui.edu/funding/>.

EVENTS AND WORKSHOPS

Introduction to Databases for Humanists

May 19, 2015, 2-4 pm
IUPUI Arts and Humanities Institute, IUPUI
Library Room UL 4115P
[Register](#)

Databases are becoming increasingly important to research projects in the humanities. From storing to structuring to analyzing our digitized corpuses and data sets, databases provide humanists with a powerful tool to ask new questions and to discover new answers to old questions. But, where does the scholar who is new to databases begin?



This workshop will introduce you to the basics of database design for humanities research. You will learn on SQLite (<http://sqlite.org>), a flexible and versatile open source database engine that is the most widely deployed SQL database engine in the world.

What will you learn in this workshop

- *Database concepts
- *How common data manipulation/cleaning tasks can be accomplished in SQLite
- *How to import vast amounts of data in SQLite
- *How to query data from SQLite
- *How to use SQLite’s full feature set (e.g. full-text search and geospatial data store) to simplify analysis

What will you need?

*A personal laptop with internet connection

Data used for the demonstration will be provided. You are welcome to bring your own data sets.

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 - April 2015

PI	Agency	Project Title	School	Department	Total
Stewart, Jesse	NATIONAL HEART, LUNG AND BLOOD INSTITUTE	Modernized Collaborative Care to Reduce the Excess CVD Risk of Depressed Patients	SCIENCE	PSYCHOLOGY	\$2,647,352
Sun, Jie	NATIONAL HEART, LUNG AND BLOOD INSTITUTE	Regulation of pulmonary anti-viral immunity in normal and obese hosts	MEDICINE	PED-PULMONARY BASIC RESEARCH	\$1,950,000
Azhar, Mohamad	NATIONAL HEART, LUNG AND BLOOD INSTITUTE	Analysis of TGFbeta ligands function in heart development and disease	MEDICINE	PED-NEONATAL BASIC RESEARCH	\$1,950,000
Mirmira, Raghu G	NATIONAL INSTITUTE OF DIABETES, DIGESTIVE & KIDNEY	Validation of small molecule 12-lipoxygenase inhibitors in metabolic disease	MEDICINE	PED-ENDOCRINOLOGY BASIC RES	\$1,827,427
Plotkin, Lillian I	NATIONAL INSTITUTE OF ARTHRITIS MUSCULOSKELETAL SKIN	Osteocyte apoptosis and regulation of bone resorption with aging	MEDICINE	ANATOMY & CELL BIOLOGY	\$1,716,000
Lapish, Christopher C.	NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM	Prefrontal cortex regulation of ethanol-reinforced behavior	SCIENCE	PSYCHOLOGY	\$1,712,177
Hoang, Quyen Quoc	NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES	Structure and Function of the Parkinson's disease associated protein LRRK2	MEDICINE	BIOCHEMISTRY/MOLECULAR BIOLOGY	\$1,487,177
Unroe, Kathleen T	THE JOHN A. HARTFORD FOUNDATION, INC.	The OPTIMISTIC Resource Center: A planning grant proposal	MEDICINE	GENERAL INTERNAL MEDICINE	\$621,697
Konrath, Sara	JOHN TEMPLETON FOUNDATION	Building Empathic Character via an Interactive smartphone app.	LILLY FAMILY SCHOOL OF PHILANTHROPY	PHILANTHROPY	\$583,258
Cowden Dahl, Karen	U.S. DEPARTMENT OF DEFENSE	ARID3B induces CD133-mediated homing to the ovarian cancer metastatic niche	MEDICINE	IUSM-SOUTH BEND	\$468,000
Bellido, Teresita M	PURDUE UNIVERSITY	Berries and Bones	MEDICINE	ANATOMY & CELL BIOLOGY	\$275,650
John, Chandy C	DORIS DUKE CHARITABLE FOUNDATION	Novel use Of Hydroxyurea in an African Region with Malaria	MEDICINE	PED-INFECTIOUS DISEASE RESEARCH	\$243,000
Ware, Stephanie	AMERICAN HEART ASSOCIATION INCORPORATED	Genetic and epigenetic mechanisms in cardiomyopathy	MEDICINE	PED-GENETICS RESEARCH	\$240,000
Albany, Costantine	CONQUER CANCER FOUNDATION	Hypomethylation Induced Resensitization to Platinum in Refractory Germ Cell Tumors	MEDICINE	HEMATOLOGY/ONCOLOGY	\$200,000
Walton, Betty A	INDIANA DIVISION OF MENTAL HEALTH AND ADDICTION	System of Care Implementation Grant	SOCIAL WORK	SOCIAL WORK	\$171,255
Shekhar, Anantha	UNIVERSITY OF PITTSBURGH	University of Pittsburg CTSI - ACT Wave 2	MEDICINE	CLINICAL TRANSLAT SCI (CTSI)	\$169,363
Lawrance, Mark	LUMINA FOUNDATION FOR EDUCATION	Thriving Communities, Thriving State	SPEA	PUBLIC & ENVIRONMENTAL AFFAIRS	\$150,000
Rawl, Susan M.	THE ROBERT WOOD JOHNSON FOUNDATION	Indiana University Future of Nursing Scholars Program Application	NURSING	NURSING	\$150,000

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 links to online search tools listed below.

GOOGLE

Google Research: Faculty Research Awards: This program aims to identify and support world-class, full-time faculty pursuing research in areas of mutual interest. The intent of the Awards is to support cutting-edge research in Computer Science, Engineering, and related fields. Applicants are asked to categorize their proposals into one of the following broad research areas of interest to the company: Computational neuroscience, Economics and market algorithms, Geo/maps, Human-computer interaction, Information retrieval, extraction, and organization (including semantic graphs), Machine learning and data mining, Machine perception, Machine translation, Natural language processing, Networking, Online education at scale, Physical interactions with devices, Policy and standards, Privacy, Robotics, Security, Social networks, Software engineering and programming languages, Structured data and database management, and Systems (hard/software)

Each funded project will be assigned a Google sponsor. The role of the sponsor is to support the project by discussing research directions, engaging with professors and students, and overseeing collaboration between the project team and Google. The company encourages Research Awards recipients to visit Google to give talks related to their work and meet with relevant research groups here. Through the Research Awards program, the company tries to fund projects where collaboration with Google will be especially valuable to the research team.

Deadline: October 15, 2015.

http://research.google.com/university/relations/research_awards.html

General Motors Foundation

The General Motors Foundation supports only programs that fall within the Foundation's four key focus areas: education, health and human services, environment and energy, and community development. Primary consideration is given to requests that meet the following criteria:

1. Exhibit a clear purpose and defined need in one of the Foundation's four key focus areas.
2. Implement innovative approaches to address the defined need.
3. Demonstrate efficiency and the ability to follow through on the proposal.

Deadline: Continuous. http://www.gm.com/company/aboutGM/gm_foundation.html

NOTE: Faculty, researchers, and scientists interested in this funding opportunity may also consider pursuing a collaborative relationship that provides access to unique data for appropriate research projects. This data has been collected from a broad spectrum of public safety personnel from various agencies in Indiana over the past two decades. Cardiovascular disease happens to be the primary cause of on-duty and lifetime mortality in firefighters (45% and 36% of deaths, respectively). Dataset includes: tobacco and alcohol use, diet, physical activity level, medications, immunization history, overall fitness, blood pressure, weight, lung function, blood analysis/lipids/glucose, urine analysis, psychological overview. Over 100,000 person years available. Data is currently being accessed for FEMA/Homeland Security study through Harvard School of Public Health. (S. Kales, Primary Investigator). To learn more about this data and explore the feasibility of a joint project for this funding

opportunity, please contact Terry Zollinger , Professor Emeritus, Fairbanks School of Public Health, at 317.278.0307 or tzolling@iu.edu).

NATIONAL INSTITUTES OF HEALTH

Developing the Therapeutic Potential of the Endocannabinoid System for Pain Treatment (R01): The purpose of this opportunity is to support projects that will elucidate the therapeutic potential of the cannabinoids and endocannabinoid system in the development of mechanism-based therapies for pain. Components of Participating Organizations: National Institute on Drug Abuse (NIDA), National Cancer Institute (NCI), National Institute on Aging (NIA), National Center for Complementary and Integrative Health (NCCIH), National Institute of Neurological Disorders and Stroke (NINDS), National Institute on Alcohol Abuse and Alcoholism (NIAAA), and the Eunice Kennedy Shriver National Institute of Child Health & Human Development.

Deadlines: AIDS related: September 7, 2015; all other: October 5, 2015.

<http://grants.nih.gov/grants/guide/pa-files/PA-15-188.html>

High Throughput Screening (HTS) to Discover Chemical Probes (X01): This Resource Access Opportunity is to promote and support discovery and development of new chemical probes as research tools for use by the research community to advance the understanding of biological functions and disease mechanisms. The announcement encourages partnership between assay submitters and a funded High Throughput Screening (HTS)/chemical probe discovery facility to conduct the joint research. Through this announcement, NIH wishes to stimulate research in 1) discovery and development of novel, small molecules for their potential use in studying disease treatment relevant to the missions of the participating NIH Institutes and Centers, and 2) discovery and/or validation of novel, biological targets that will inform studies of disease mechanisms. Emphasis will be placed on assays that provide new insight into important disease targets and processes. Components of Participating Organizations: National Institute of Mental Health (NIMH), National Institute on Alcohol Abuse and Alcoholism (NIAAA), Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), National Institute on Drug Abuse (NIDA), and the National Center for Advancing Translational Sciences (NCATS).

Deadlines; Letters of Intent: 30 days before submission; Applications: August 5 & December 4, 2015. <http://grants.nih.gov/grants/guide/pa-files/PAR-13-134.html>

Obesity and Asthma: Awareness and Self-Management (R01): The purpose of this opportunity is to stimulate research to examine the relationship between asthma, obesity and self-management. The prevalence of both asthma and obesity has significantly risen in the past few decades. Although the association between these two conditions has been found in many studies, the exact mechanisms for how this association arises are unresolved to include self-management and achieving control. Because both of these conditions have their beginnings in early life, an aspect of the association between them that requires more understanding is their common exposures in early life and transition into adulthood. Studies that investigate the molecular pathways linking asthma and obesity are encouraged as long as the studies describe how this relates to self-management. In addition, intervention studies targeting asthma or obesity and their effects on each other, and possible mechanisms of action and effect on behavior, are encouraged.

Deadline: October 5, 2015. <http://grants.nih.gov/grants/guide/pa-files/PA-14-316.html>

NATIONAL SCIENCE FOUNDATION

Quantum Information Science: Quantum Information Science (QIS) supports theoretical and experimental proposals that explore quantum applications to new computing paradigms or that foster interactions between physicists, mathematicians, and computer scientists that push the frontiers of quantum-based information,

transmission, and manipulation. The quantum information science program is focused on investigations relevant to disciplines supported by the Physics Division, while encouraging broader impacts on other disciplines. Disciplines within the purview of the Physics Division include: atomic, molecular, optical, plasma, elementary particle, nuclear, gravitational and biological physics, particle astrophysics, and accelerator science.

Proposals with intellectual focus in areas supported by other NSF Divisions should be submitted to those divisions directly. Proposals that cross Divisional lines are welcome, but the Physics Division encourages PIs to request a co-review by naming other Divisional programs on the cover sheet. This facilitates the co-review and participation of other programs in the review process.

Deadline: December 3, 2015. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505207

Integrative Paleoanthropology Grants (IPG): The goal of this competition is to further innovative, integrative research to elucidate hominin biological and behavioral evolution. The particular focus is on long term processes within hominin evolution and how they relate to major questions of paleoanthropological significance. While the intellectual scope of the competition is thus constrained, the potential methodologies and disciplines are not. It is understood, for example, that fields such as (but not limited to) cognitive science, genetics, and spatial or mathematical modeling may be directly relevant to such an endeavor. Competition organizers recognize that much paleoanthropological research is currently interdisciplinary and integrative in nature. However, the competition is intended to stimulate research that is integrative and crosses intellectual/disciplinary boundaries in novel ways, above and beyond current practice. As general examples, an integrative and interdisciplinary project might: 1) encompass broader perspectives, not previously synthesized, on regional and large-scale comparative issues, or 2) result in the development and application of an innovative method informed by multiple disciplines. Proposals are required to address this issue directly in the project description by using up to two pages of the 15 to specifically speak to how the proposed research is both integrative and novel beyond norms currently in practice and how the proposed research could not be accomplished otherwise. Reviewers and Program Officials will place significant weight on this criterion.

Deadline: April 2, 2015. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505181

Designing Materials to Revolutionize and Engineer our Future (DMREF): This program will support efforts that span researchers in materials science, chemistry, mathematics, computer science, and engineering, thereby bridging Program and Divisional interests. The complexity and challenge of activities addressed by this initiative require a transformative approach to discovering and developing new materials, predicting and optimizing properties of materials, and informing the design of material systems. Accordingly, the proposed research must be a collaborative and iterative process wherein theory guides computational simulation, computational simulation guides experiments, and experiments further guide theory. Strategies must be included in the proposed research to advance synthesis/growth/processing techniques, characterization/testing methodology, and theory/data/computation/simulation approaches needed to develop predictive models.

This process will require a team of PIs with the requisite expertise. Accordingly, it is expected that proposed projects will be directed by a team of at least two Senior Personnel with complementary expertise. The proposal must provide a plan for enhanced data management that ensures transparency, data sharing, and open source software, including an explicit statement of which open source license(s), if applicable, will be used. While not required, ties with industry, national laboratories, engineering partners, or other organizations are encouraged. If there are strong collaborations with industry, please see the Grant Opportunities for Academic Liaison with Industry (GOALI) program solicitation, which can be used in conjunction with

this effort. Because this DMREF approach emphasizes an integrated approach to materials research, cross-disciplinary educational activities are encouraged, as are public outreach activities.

Deadline: January 29, 2016. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505073&org=NSF&sel_org=NSF&from=fund

U.S. DEPARTMENT OF DEFENSE (DOD)

Awards to Stimulate and Support Undergraduate Research Experiences

(ASSURE): The ASSURE program aims to provide valuable research opportunities for undergraduates, either through ongoing research programs or through projects specially designed for this purpose. Research projects should allow high quality interaction of students with faculty and/or other research mentors and access to appropriate facilities and professional development opportunities. Active research experience is considered one of the most effective ways to attract and retain talented undergraduates in science and engineering. ASSURE projects must have a well-defined common focus that enables a research-related experience for students. Applicants are encouraged to involve students in research who might not otherwise have the opportunity, particularly those from institutions where research programs are limited. **Thus, a significant fraction of the student participants should come from outside the host institution.** In addition, DoD is interested in strengthening institutions with limited research programs and especially encourages proposals that help to enhance the research infrastructure in predominantly undergraduate four-year institutions. Student participants must be citizens or permanent residents of the United States or its possessions. There is no separate application for the ASSURE program; ASSURE funding is awarded through the NSF REU Sites Program. Any proposal submitted to NSF for the REU Sites program that is recommended for funding through the NSF merit review process will be considered by DoD representatives for possible support through ASSURE.

Deadline: August 27, 2015.

<http://www.wpafb.af.mil/library/factsheets/factsheet.asp?id=9333>

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 as 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 biosketch to the VP for Research Office at vpr@iu.edu. Prior to submission, the IUPUI Office of the Vice Chancellor for Research is offering assistance with the two-page summaries. For more information, contact Ann Kratz at akratz@iupui.edu.*

U.S. DEPARTMENT OF ENERGY (DOE)

Reliable Electricity Based on ELeCTrochemical Systems (REBELS): This program seeks to disrupt traditional learning curves for distributed, stationary power generation by introducing technology concepts that have the potential for significantly lower cost and that are capable of performance superior to current distributed generation technologies. Fuel cell technologies have been touted for decades due to their high chemical-to-electrical conversion efficiencies and potential for near-zero greenhouse gas emissions when fueled by hydrogen or operated as part of a carbon capture and storage (CCS) process. However, fuel cell technologies have not achieved widespread adoption due primarily to high cost relative to incumbent combustion technologies. In this program, ARPA-E seeks to fund transformational fuel cell devices that operate in an intermediate temperature range in an attempt to 1) create new pathways to achieve an installed cost to the end-user of less than \$1,500/kW at moderate production volumes, and 2) create new fuel cell functionality to increase grid stability and integration of renewable energy technologies such as wind and solar.

Deadline: Concept Paper: January 8, 2016. <https://arpa-e->

foa.energy.gov/#Foald63d6bcce-92dc-4656-a650-1111825cfd42

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.

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