

Research Enterprise

November 14, 2012

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

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

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

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FEATURE STORIES

School of Medicine Researcher: Genome Atlas Finds Future Targets for Breast Cancer Treatments

Scientists are now a step closer to understanding the complexities of breast cancer with findings made available through The Cancer Genome Atlas, a multi-center study funded by the National Institutes of Health. Indiana University School of Medicine participated in the research that identified four molecular cancer subtypes based on samples from 825 breast cancer patients.

The findings were published in the Oct. 4, 2012 issue of Nature magazine. School of Medicine pathologist Dr. [George E. Sandusky](#), principal investigator for the study at IU, said the university is one of 35 tissue source sites in the U.S., Canada, the United Kingdom and Europe. Dr. Sandusky is a senior research professor of pathology and laboratory medicine at IU School of Medicine.



George Sandusky, DVM, Ph.D.,
Department of Pathology and Laboratory Medicine
School of Medicine

As anyone who has been touched by breast cancer knows, it is not a singular disease but a vastly complex one with various cell types and subtypes, gene mutations and chemical aberrations, which control the effectiveness of various treatments. The purpose of The Cancer Genome Atlas is to identify the changes in cellular DNA that cause cells to grow uncontrolled.

According to the National Cancer Institute, there are at least 200 different forms of cancer and many more subtypes. [The Cancer Genome Atlas](#) began as a three-year pilot project in 2006, which confirmed that an atlas of changes could be created for specific cancer types. Since then, a genetic atlas has been published for brain, ovarian and, now, breast cancers.

"The ultimate goal of the Cancer Genome Atlas is to identify the gene mutations and pathways so targeted therapies can be developed to more efficiently and effectively treat various cancers," Dr. Sandusky said. "All of the (Cancer Genome Atlas) studies have found new novel information and reaffirmed that some genetic pathways were valid findings from earlier studies."

Researchers found four primary breast cancer subtypes, each with its own biology and survival outlooks.

The four novel genetic subtypes confirmed by the research are HER2-enriched (HER2E), Luminal A, Luminal B and Basal-like.

HER2 is a protein that has been targeted for treatment in recent years and is known to have an important role in the progression of certain aggressive types of breast cancer. Breast cancer cells with the HER2 receptor on the surface are called HER2-positive; those without the receptor are referred to as HER2-negative. This research showed the HER2E protein may, in fact, be represented in two additional subtypes of tumors. When analyzed with standard cellular tests, only half of the samples were found to be characterized as belonging to the HER2E subtype. The other half was characterized as Luminal subtypes.

In general, Luminal subtypes A and B had the lowest overall mutation rate but, by contrast, had the largest number of genes observed to be significantly mutated. This suggests that each of the genes identified as significantly mutated in the Luminal subtypes is more likely to be important in fueling cancer progression.

The Basal-like subgroup has genetic similarities to a form of ovarian cancer. Both may be responsive to treatments that stop the growth of blood vessels that feed the tumor, a process called anti-angiogenesis. This subgroup also may be receptive to treatments with drugs that target DNA repair, which include chemotherapy agents such as cisplatin, perhaps best known as a treatment for testicular cancer.

Dr. Sandusky said the School of Medicine has been recognized for the consistency and quality of the tissue samples provided for analysis.

"In the past two years, we've had some major breakthroughs with genomics," he said. "The entire Genome Atlas is going to pay off; already it has identified a lot more genetic markers for all types of cancer, which will enhance the field of personalized medicine and the success of treatments."

"They have found valuable clinical information, more than anything we've found in the past 10 to 15 years, but I think we are only at the tip of the iceberg," he said. "And that's a good thing."

ANNOUNCEMENTS

School of Medicine Researcher Receives Lifetime Achievement Award from American Pancreatic Association

An Indiana University Melvin and Bren Simon Cancer Center researcher has been honored with a lifetime achievement award for his work in pancreatic cancer. Dr. Murray Korc, the Myles Brand Professor of Cancer Research at the School of Medicine, received the Vay Liang and Frisca Go Award for Lifetime Achievement from the American Pancreatic Association.

Recipients are chosen because of their leadership

within the association and their service as role models and mentors for future generations of pancreatic researchers and physicians. Also, their accomplishments in the field must have inspired many and continue to stimulate the next generation to do their best work.

"We are thrilled to honor Dr. Korc for his lifetime of achievements," Ashok K. Saluja, secretary-treasurer of the American Pancreatic Association, said. "He is unquestionably a leader in the field, and moreover, has provided exemplary service to the pancreas community."

Dr. Korc, who arrived at Indiana University in October 2011 and also holds the titles of IU professor of medicine and of biochemistry and molecular biology, and his colleagues design strategies for early pancreatic cancer detection, improved prevention and treatment modalities, and meaningful prolongation of pain-free survival.

The Myles Brand Professorship was created to help physicians and scientists at the IU Simon Cancer Center to continue investigating devastating malignancies, such as pancreatic cancer, which claimed the life of Brand, the 16th president of Indiana University. The Brand Professorship funds and encourages research that may one day lead to a cure.

In 2012, an estimated 43,920 new cases of pancreatic cancer are expected in the United States, according to the American Cancer Society. An estimated 37,390 deaths are expected from the disease in 2012.

Dr. Korc's research has been continuously funded by the National Institutes of Health since 1981. His focus is on aberrant growth-factor signaling in pancreatic cancer and genetic mouse models of pancreatic cancer, with the goal of designing novel therapeutic strategies. He has published more than 270 peer-reviewed manuscripts, and he is internationally recognized for his seminal contributions to the understanding of the role of the EGF receptor and transforming growth factor-beta in pancreatic cancer, work recognized by an NIH MERIT award. The NIH presents the highly-selective MERIT Awards to researchers who demonstrate superior competence and outstanding productivity in research endeavors.

School of Nursing Awarded Robert Wood Johnson Foundation Grant to Study Doctoral Education

The School of Nursing has been awarded a Robert Wood Johnson Foundation Evaluating Innovations in Nursing Education grant in support of a study examining the stages of decision-making that lead to careers in nursing education. Findings will be used to develop strategies for increasing enrollment in doctoral programs as well as the numbers of graduates who seek and are retained in faculty roles.

The study, "Exploring the State of Doctoral Education: Implications for the Nursing Faculty Shortage," is led by School of Nursing assistant professor Kristina Thomas



Murray Korc, M.D.
School of Medicine

Dreifuerst. Co-investigators on the study are Dean Marion Broome; associate professor Angela McNelis; and professors Claire Draucker and Michael Weaver.

"This was a highly competitive grant process from a prestigious organization. We are honored to have one of the few research proposals selected for this notable funding," Dr. Dreifuerst said.

"This is a critical time in nursing education," she said. "The shortage of faculty, particularly doctorally prepared faculty, impacts all aspects of the nursing discipline. While this is not a new problem, new solutions are necessary to move forward. This research will be instrumental in helping to address these needs and develop innovative solutions for them."

The study will investigate the decisions that MSN-prepared nurse educators make when seeking a doctoral degree; those factors informing decisions of doctoral students choosing between a Ph.D. and a Doctor of Nursing Practice degree; decisions of doctoral students to seek faculty positions; satisfaction of recent doctoral graduates with academic and/or practice roles; and intentions of recent graduates to stay in their current roles.

"The data gathered will allow us to develop effective strategies for increasing doctoral enrollment in pursuit of faculty placement," Dr. Dreifuerst said.

The Institute of Medicine Report "The Future of Nursing" has indicated that identifying solutions to address the shortage of nursing faculty and doctorally prepared nurses in the United States is a priority.

"This research proposal addresses six areas of need that are critical to achieving the recommendations from the IOM report on 'The Future of Nursing': one, teaching productivity in nursing education; two, faculty preparation in nursing education; three, the shortage of doctorally prepared nursing faculty; four, career decision-making among doctoral students in nursing; five, effectiveness of strategies for leveraging the expertise of existing faculty to teach more doctoral and undergraduate students in nursing; and six, strategies to improve recruitment and retention efforts for nurse faculty," Dr. Dreifuerst said.

According to Broome, "We are one of only five studies funded this cycle through an extremely competitive process, and it's very exciting to be able to further investigate the nursing faculty shortage and relevant mitigating circumstances. The results of this study will have a tremendous impact on the way the discipline mentors nurses and helps them to define their career paths in nursing education."

Call for Summer 2013 Multidisciplinary Undergraduate Research Institute (MURI) Proposals

The Center for Research and Learning welcomes proposals for the Summer 2013 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.](#)

*Graduate students and post-doctoral trainees may also serve as co-mentors on a team.

**Proposals are due by midnight on November 16, 2012 to CRLGrant@iupui.edu*

**The Proposal Review Committee Meeting is currently scheduled for December 7, 2012.*

**The announcement re: funded proposals is currently scheduled for December 14, 2012.*

**Students may apply to MURI and rank their project choices beginning December 17, 2012 with a deadline of March 1, 2013.*

**The summer program begins on May 31, 2013 and continues through August 2, 2013.*

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.

FACULTY SPOTLIGHT

School of Dentistry Research Will Help Dentists Determine Potential Cavity Sites, Offer Preventive Treatment

The results of a four-year, \$3.4 million National Institutes of Health-funded study led by a researcher in the School of Dentistry will help dentists identify which at-risk sites on teeth are likely to become cavities if no preventive action is taken.

Armed with that information, dentists could treat those at-risk sites to at least delay, if not stop, them from turning into cavities. Once a cavity develops and a filling is put in, the tooth enters a repetitive restorative cycle, leading to a cascade of costly restorative treatments.

The results of the study were published in the September 2012 issue of the Journal of Dental Research. The study was led by Dr. [Andrea Ferreira Zandona](#), director of the Graduate Preventive Dentistry Program, director of the Department of Preventive and Community Dentistry's Early Caries Detection and Management Program, and associate professor in the Department of Preventive and Community Dentistry, in the IU dental school.

The study, which was conducted at IU and the University of Puerto Rico, is believed to be the first extended examination since 1966 of the natural history of dental caries, the dental term for cavities, using detailed criteria.

A total of 565 children between the ages of 5 and 13 were recruited for the study in 2007. Of these, 338 children completed all examinations. The children were



Andrea Ferreira Zandona, DDS, PhD
Department of Preventive and Community
Dentistry
School of Dentistry

examined at regular intervals over 48 months.

According to Dr. Zandona, a lot is known about caries, but little is known about the process that leads from early caries lesions to cavities. Caries lesions are an early sign that a cavity might develop.

Because some caries lesions progress and become cavities and some don't, identification of at-risk sites is one of the biggest challenges faced by dentists, according to the researchers' paper, "The Natural History of Dental Caries Lesions: A Four-Year Observational Study." To date, the practice has been to wait and watch lesions until they reach the point where the dentists believe a filling is required, Dr. Zandona said.

The purpose of the study was to evaluate whether lesions could be evaluated using the International Caries Detection and Assessment System, a standardized visual examination that requires no special equipment, to identify with greater predictability which ones were more likely to become cavities.

"What we were trying to see was if we could identify when lesions reach the point that they will become cavities," Zandona said. "Are there some signs we see on teeth that signal when it is progressing towards cavitation? When we see a 1, does it become a 2 and progress to higher scores? What happens when we see a 2? If dentists knew that, they could target prevention at those lesions."

IU researchers developed the ICDAS examination with a small group of international scientists.

In the study, examiners used the ICDAS to give lesions a score, ranging from 1 to 6 -- with one representing a lesion so small that it was difficult to see and scores greater than 5 indicating what is usually considered a cavity -- and judged whether a lesion was active or not. The lesions were tracked during the 48 months, with some registering higher and higher scores until they progressed to cavities.

After analyzing data collected in the study, the researchers concluded "characterization of lesion severity with ICDAS can be a strong predictor of lesion progression to cavitation." In other words, the higher the ICDAS score beyond 1, and after a determination that the caries lesion is active, the greater the probability the lesion will develop into a cavity.

"The study shows dentists can identify which teeth are likely to develop cavities," Dr. Zandona said. "They can then institute a preventive measure such as a sealant or a fluoride treatment instead of waiting for lesions to become cavities."

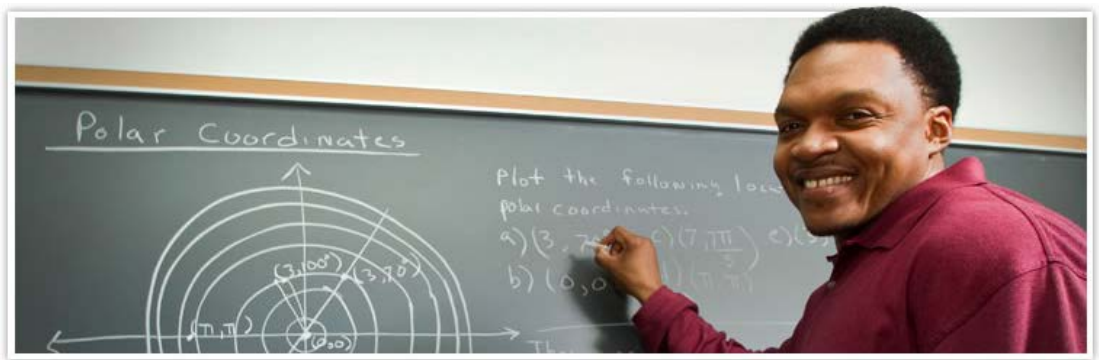
"We don't want dentists to wait for a lesion to become a cavity," Dr. Zandona said. "In reality, if he sees a lesion that is active and has an ICDAS score higher than 1, chances are it will become a cavity. He should do something preventively before he has to place a filling, because there is a great chance it will become a cavity."

The study provides information that wasn't previously available, Dr. Zandona said. "Now dentists can have more certainty about what path to take because of what we learned."

"Through additional funding from NIH, we are now focusing on identifying the metabolic signals on the dental plaque overlaying these lesions that can help us determine if these lesions are active," Dr. Zandona said.

STUDENT SPOTLIGHT

Doctoral Student Uses Real-World Scenarios to Engage High School Students



Harold Owens likes being the first to know about new developments in computer science that won't be in the marketplace for years. It's the kind of technology today's computer users can't even imagine, but it's part of what Owens, a Ph.D. student, learns every day at the School of Science.

"The research I'm doing and the classes I'm taking deal with technology that's not currently used in the software domain," says Owens. "But I know what's coming, and that's what keeps me engaged."

Owens' current research focus is interactive distributive systems. He has particular interest in how this technology can be applied to make devices like stoplights and toll systems more "intelligent." Specifically, Owens' work involves generating software requirements and sets of specifications for these systems to see if they can be automated.

Before beginning his Ph.D. studies four years ago, Owens worked as a software engineer for a private firm. A veteran of the U.S Air Force, he earned a bachelor's degree in computer science and mathematics from McMurry University and a master's degree in computer science from the University of North Texas. In choosing IUPUI, Owens was impressed by the computer science program's high national ranking.

"I've found the atmosphere here to be very supportive," Owens says. "It's a group of faculty that really wants to see you succeed."

This past academic year, Owens was recommended by the School of Science faculty to apply for the IUPUI Urban Educators GK-12 Program (Graduate Teaching Fellows in K-12 Education Program), which is funded by the National Science Foundation. The program provides competitive fellowships for graduate students in the IUPUI School of Science and the IU School of Medicine. GK-12 fellows dedicate several hours a week teaching in local middle and high schools. The graduate students apply their university research projects to the classroom, offering teachers and students access to current, relevant scientific topics.

Owens was selected for the program and spent a year teaching math classes twice a week at Southport High School. Modeling his research, Owens used the real-world scenario of downloading files to illustrate the properties of distributive systems. For example, he showed students how to use calculus and trigonometry to determine how long it would take to download a song to an MP3 player if there were three or four computers at work sending the file.

"Lots of times kids don't understand how math concepts can be used in practical applications," says Owens, adding how much he enjoyed the GK-12 experience, especially the mentoring aspects of the program. "I'm hopeful I was able to show them that these concepts do exist in the real world, and there are many ways they'll use the information as they go through life."

TRANSLATIONAL RESEARCH IMPACT

IUPUI Shines at CUMU Conference

IUPUI participated in the 2012 Coalition of Urban and Metropolitan Universities 18th annual conference held at the University of Tennessee at Chattanooga in October. The theme *Working Together Works: Partnering for Progress* engaged participants in sharing what works on urban campuses to enhance academic excellence and partnerships in communities. The conference is attended by high level administration, faculty and staff from urban and metropolitan universities from across the country. Presenting faculty and staff demonstrated again how IUPUI matters in its continuing efforts to explore and solve problems that improve lives. IUPUI was heralded as a shining example of successful campus-community partnership during several keynote sessions and conference attendees were often overheard talking about ideas and practical solutions shared by our faculty and staff. Congratulations to IUPUI presenters and thank you for representing our campus so well!

Roundtable discussions:

IUPUI: Adult Learning Centers: An Educational Partnership in Progress

Sylvia Cunningham
Myron Duff

Nurturing a Translational Research Campus Culture

Stephan Viehweg

Concurrent Workshops:

A Model for University/Community Partnering: The IUPUI Solution Center

Tara Hobson-Prater

Campus and Community Connections: The Evolving IUPUI Common Theme Project

Kathleen Hanna

The Center for Adult and Lifelong Learning—An Online and Onsite Model for Adult Degree Completion

Mary Jane Brown
Renee Betts
Myron Duff
Jennifer Pease
Jeremy Bohonos

University-Community Collaboration: Partnerships to Transform the Health, Wellness and Quality of Life in Indianapolis Near East Side

Tara Hobson-Prater

Helping to Create a Better Physical Environment for Sickle Cell Support and Education

Darrell Nickolson
Nicole Sybouts

Training for My Life: Lived Experiences of Dislocated Workers

Marquita Walker

Creating Communities of Learning: Collaborating from the Classroom to the Boardroom

Atta Ceesay
Ellen Szarleta

INTERNAL GRANT DEADLINES

INDIANA UNIVERSITY COLLABORATIVE RESEARCH GRANTS (IUCRG): This opportunity is open to faculty on all Indiana University campuses. Funding decisions will result from a competitive peer review of proposals in response to this call. The Vice President for Research will make the final funding decisions, based on reviewers' recommendations. The maximum funding per project will be \$75,000 but in exceptional cases, when there is a convincing justification, this maximum could be exceeded. The goals of this competition are to facilitate and support outstanding research and cutting edge discoveries by teams of experts who have not worked together previously in the project's subject matter. Teams should include experts from different campuses, schools, departments, or disciplines. This opportunity is open to all fields of research.

The intent of this initiative is to support research which will advance a research field and in doing so, impact the lives of Indiana residents, the US and the world. The program as a whole is designed to help increase Indiana University's competitiveness for external funding involving innovative and transformative research; **proposals must, therefore, include explicit plans for securing external funding for projects extending from the findings of the IUCRG.** IUCRG recipients are required to submit a proposal for external funding within 18 months from the date that IUCRG funds are available. Applicants should make explicit their plans for targeting external funding including but not limited to the funding agency and institute/program.

The deadline for applications is *November 30, 2012*. For more information and to apply, go to http://research.iu.edu/funding_collaborative.shtml.

OVCR EVENTS AND WORKSHOPS

Preparing Social Science Research Proposals

When: Thursday, November 15, 2012 | 1:00 PM-2:30 PM
Where: University Library, Room 1116

This workshop will target the essentials of developing a successful grant proposal in the social sciences. A variety of topics will be covered from developing a strong foundation for your application to key components of the narrative, the basic budget, writing styles, and interpreting agency guidelines.

[Click here to register](#)

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 - September 2012

PI	Agency	Project Title	School	Department	Total
MOLITORIS, BRUCE A.	NATIONAL INSTITUTE OF DIABETES, DIGESTIVE & KIDNEY	Center for Advanced Renal Microscopic analysis.	MEDICINE	NEPHROLOGY	\$5,758,095
SPANDAU,DAN F	NATIONAL INSTITUTE OF ENVIRONMENTAL HLTH SCIENCES	Mechanisms of photocarcinogenesis in geriatric skin	MEDICINE	DERMATOLOGY	\$1,719,720
FOROUD, TATIANA M.	NATIONAL INSTITUTE ON ALCOHOL ABUSE	3D Facial Imaging in	MEDICINE	MEDICAL & MOLECULAR	\$1,610,371

	AND ALCOHOLISM	FASD (U01)		GENETICS	
SHEN,LI	NATIONAL LIBRARY OF MEDICINE	Bioinformatics Strategies for Multidimensional Brain Imaging Genetics	MEDICINE	RADIOLOGY & IMAGING SCIENCES	\$1,376,420
HUDMON,ANDY	NATIONAL INSTITUTE NEUROLOGICAL DISORDERS & STROKE	CaMKII in neuronal signaling and degeneration	MEDICINE	BIOCHEMISTRY/MOLECULAR BIOLOGY	\$1,352,375
VIDAL,RUBEN	NATIONAL INSTITUTE NEUROLOGICAL DISORDERS & STROKE	Ferritin Induced Neurodegeneration	MEDICINE	PATHOLOGY AND LABORATORY MED	\$1,327,760
LIANGPUNSAKUL,SUTHAT	U.S. ARMY MEDICAL RESEARCH AND MATERIEL COMMAND	Phospholipids as biomarkers for excessive alcohol use	MEDICINE	GASTROENTEROLOGY	\$1,149,300
MARTINEZ MIER,ESPERANZA ANGELE	HEALTH RESOURCES AND SERVICES ADMINISTRATION	Development of Regional Sealant Programs in Indiana	DENTISTRY	DENTISTRY-ORAL HEALTH	\$789,301
NEPHEW,KENNETH P	UNIVERSITY OF TEXAS HEALTH SCIENCE CTR- SAN ANTONIO	Interrogating Epigenetic Changes in Cancer Genomes	MEDICINE	MEDICAL SCIENCES PROGRAM	\$765,541
MARRERO,DAVID GRAYSON	JPB FOUNDATION	The Diabetes Prevention Program for Families	MEDICINE	ENDOCRINOLOGY	\$595,273
ARLING,GREGORY WENDELL	AGENCY FOR HEALTHCARE RESEARCH AND QUALITY	Study of a State-Level Model for Transitioning Nursing Home Residents to the Community	MEDICINE	GENERAL INTERNAL MEDICINE	\$475,404
ZHANG,JING	U.S. DEPARTMENT OF ENERGY	TAOI A: Novel Functional- gradient Thermal Barrier Coatings in Coal-fired Power Plant Turbines	E&T	MECHANICAL ENGINEERING	\$293,519
BROWNING,BARBARA	U.S. DEPARTMENT OF EDUCATION	IUPUI Upward Bound- Township	UNIVERSITY COLLEGE	UNIVERSITY COLLEGE	\$292,220
BRATER,DONALD CRAIG	ALFRED P. SLOAN FOUNDATION	Alfred P. Sloan Awards for Faculty Career Flexibility	MEDICINE	DEAN'S OFFICE-MEDICINE	\$250,000
HOWENSTINE,MICHELLE SUZANNE	CYSTIC FIBROSIS FOUNDATION	Application for CFF Accreditation and Funding 2012/2013 IN - 182/182 - Riley Hospital for Children Indiana University Medical Center (CenterAssist, CFF)	MEDICINE	PED-PULM CRITICAL CARE/ALLERGY	\$143,452
KLEMSZ,ABIGAIL F	INDIANA UNIVERSITY HEALTH	Riley Hospital- Program for Children With Special Healthcare Needs	MEDICINE	PED-CHAIRMAN'S OFFICE GENERAL	\$134,556
MOLINA,CARMELLA EVANS	JUVENILE DIABETES RESEARCH FOUNDATION INTERNATIONA	Serum Biomarkers to Detect Beta Cell Stress in Early Type 1 Diabetes	MEDICINE	ENDOCRINOLOGY	\$114,914
NURNBERGER JR,JOHN I	REGENTS OF THE UNIVERSITY OF CALIFORNIA	Pharmacogenetics of Mood Stabilizer Response in Bipolar Disorder	MEDICINE	PSYCHIATRY	\$104,267

CURRENT EXTERNAL FUNDING OPPORTUNITIES

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

NATIONAL INSTITUTES OF HEALTH

Advanced Development of Informatics Technology (U24): The purpose of this Funding Opportunity Announcement (FOA) is to invite Cooperative Agreement (U24) applications for advanced development and enhancement of emerging informatics technologies to improve the acquisition, management, analysis, and dissemination of data and knowledge in cancer research. Application deadline is January 22, 2013. <http://grants.nih.gov/grants/guide/pa-files/PA-12-287.html>

National Library of Medicine (NLM) Grants for Scholarly Works in Biomedicine and Health (G13): NLM Grants for Scholarly Works in Biomedicine and Health are awarded for the preparation of book-length manuscripts and other scholarly works of value to U.S. health professionals, public health officials, biomedical researchers and historians of the health sciences. Application deadline is February 21, 2013. <http://grants.nih.gov/grants/guide/pa-files/PA-13-014.html>

Epigenomics of Virus-Associated Oral Diseases (R01, R21): The focus is on the epigenetic basis of virus-associated oral diseases in order to guide the discovery and application of novel epigenomic-based clinical interventions. These studies are expected to: 1) discover and define the mechanisms of action of epigenomic modifications in viral and host epigenomes; and 2) demonstrate how modifications in the host and viral epigenomes cause pathophysiological changes in oral cells and tissues that result in oral diseases and may also cause diseases in other parts of the body. Application deadline is February 21, 2013. <http://grants.nih.gov/grants/guide/rfa-files/RFA-DE-13-002.html>

Epigenetic Inheritance and Transgenerational Effects of Alcohol (R01, R21): This Funding Opportunity Announcement (FOA), issued by the National Institute on Alcohol Abuse and Alcoholism (NIAAA), encourages Research Project Grant (R01) applications proposing to conduct mechanistic studies in humans and animal models on alcohol-induced transgenerational effects and the role of epigenetic inheritance in these effects. [Standard dates](#) apply. <http://grants.nih.gov/grants/guide/pa-files/PA-13-003.html>

NATIONAL SCIENCE FOUNDATION

Political Science: The Political Science Program supports scientific research that advances knowledge and understanding of citizenship, government, and politics. Research proposals are expected to be theoretically motivated, conceptually precise, methodologically rigorous, and empirically oriented. Substantive areas include, but are not limited to, American government and politics, comparative government and politics, international relations, political behavior, political economy, and political institutions. Application deadline is January 15, 2013. http://nsf.gov/funding/pgm_summ.jsp?pims_id=5418&org=NSF&sel_org=NSF&from=fund

Interdisciplinary Behavioral and Social Science Research (IBSS): This is a new solicitation for a new competition. Following are important points that distinguish the Interdisciplinary Behavioral and Social Science Research (IBSS) competition from other competitions. IBSS emphasizes the conduct of interdisciplinary research by teams of investigators in the social and behavioral sciences. There are two types of projects that may be supported by IBSS: IBSS Large Interdisciplinary Research Projects (with maximum award sizes of \$1,000,000); IBSS Interdisciplinary Team Exploratory Projects (with maximum award sizes of \$250,000). Application deadline is January 23, 2013. <http://www.nsf.gov/pubs/2012/nsf12614/nsf12614.htm>

Cognitive Neuroscience: The Cognitive Neuroscience Program seeks highly innovative and interdisciplinary proposals aimed at advancing a rigorous understanding of how the human brain supports thought, perception, affect, action, social processes, and other aspects of cognition and behavior, including how such processes develop and change in the brain and through time. Application deadline is January 24, 2013. http://nsf.gov/funding/pgm_summ.jsp?

[pims_id=5316&org=NSF&sel_org=NSF&from=fund](#)

U.S. ARMY MEDICAL RESEARCH AND MATERIEL COMMAND BROAD AGENCY ANNOUNCEMENT FOR EXTRAMURAL MEDICAL RESEARCH

Research interests have been updated for this program. Before submitting full proposal/applications, organizations are required to explore USAMRMC interest by submitting preliminary research proposal/applications (pre-proposal/pre-applications). Pre-proposal/pre-applications may be submitted at any time prior to the BAA closing date of September 30, 2013. [Full Announcement](#)

Integrative Organismal Systems (IOS): The focus is on understanding why organisms are structured the way they are and function as they do. Areas of inquiry include, but are not limited to, developmental biology and the evolution of developmental processes, nervous system development, structure, and function, physiological processes, functional morphology, symbioses, interactions of organisms with biotic and abiotic environments, and animal behavior. Required pre-proposal deadline is January 18, 2013. http://nsf.gov/funding/pgm_summ.jsp?pims_id=503623&org=NSF&sel_org=NSF&from=fund

Cyber-physical systems (CPS): The focus is on engineered systems that are built from and depend upon the synergy of computational and physical components. Examples of the many CPS application areas include the smart electric grid, smart transportation, smart buildings, smart medical technologies, next-generation air traffic management, and advanced manufacturing. Application deadline is January 29, 2013. http://nsf.gov/funding/pgm_summ.jsp?pims_id=503286&org=NSF&sel_org=NSF&from=fund

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