Research Development

Office of the Vice Chancellor for Research

RESEARCH ENTERPRISE NEWSLETTER

October 24, 2017

INSIDE THIS ISSUE

FEATURE STORY

IU launches comprehensive action on addiction, partnering with Gov. Holcomb, IU Health, others

Indiana University President Michael A. McRobbie has announced IU's commitment to invest $50 million to collaborate with community partners to prevent and reduce addictions in Indiana.

Announced alongside Indiana Gov. Eric J. Holcomb and IU Health President and CEO Dennis Murphy, the initiative -- Responding to the Addictions Crisis -- is part of IU's bicentennial Grand Challenges Program.

Utilizing IU's seven campuses across the state, and in partnership with state officials, IU Health, Eskenazi Health and others, this statewide initiative is one of the nation's largest and most comprehensive state-based responses to the opioid addiction crisis -- and the largest led by a university.

The Responding to the Addictions Crisis initiative will engage a broad array of IU's world-class faculty, as well as IU's business, nonprofit and government partners. Working together, the initiative aims to implement a comprehensive plan to reduce deaths from addiction, ease the burden of drug addiction on Hoosier communities, and improve health and economic outcomes.

The interdisciplinary team of IU researchers participating in this multifaceted effort will be led by IU School of Nursing Dean Robin Newhouse.

"Governor Holcomb has identified addressing the urgent substance abuse crisis, which is taking an increasingly severe toll on the health of far too many Hoosiers, as a key priority for the state, and aligning the resources of the state, including its universities, as a critical step in achieving that priority," McRobbie said.

"Through this vitally important initiative, Indiana University will bring to bear its formidable and extensive clinical and research capabilities, large statewide footprint in medicine and health care, and powerful community and industry partnerships to achieve maximum impact toward the goal of more effectively treating patients and implementing preventative substance abuse programs."

Holcomb has made tackling the opioid crisis one of his highest priorities and established within his office the position of executive director for drug prevention, treatment and enforcement to coordinate the state's efforts. The governor has called on all Hoosiers to collaborate to reduce the drug scourge.

This newest Grand Challenge initiative is IU's response to this charge, affirming the university's mission as a partner to Hoosier communities. The IU initiative will focus on five areas: ground-level data collection

and analysis; training and education; policy analysis and development; addictions science; and community and workforce development.

"It will take all of us working together to fight this epidemic and help those struggling with addiction to get on the road to recovery," Holcomb said. "I commend IU for their leadership and commitment to reversing the addictions crisis. IU's investment and strong partnership will help our state provide expanded resources and support for Hoosiers and communities that need it most."

Indiana is one of four states where the fatal drug overdose rate has more than quadrupled since 1999. Hoosiers are now more likely to die from a drug overdose than a car accident. According to the IU Richard M. Fairbanks School of Public Health at IUPUI, the total cost of drug overdoses in Indiana tops $1 billion annually, measured in medical expenses and lifetime earnings losses.

Indiana is not alone in this crisis. In 2016, more people died from drug overdoses in the U.S. than the total number of Americans killed in the Vietnam War.

Responding to the Addictions Crisis will provide working and aspiring health care professionals from all disciplines with the training, educational resources and certification programs necessary to address the significant shortage of addictions professionals in the Hoosier state. Robust continuing education programs will help those already working in communities across the state to broaden their skills to help more Hoosiers. And working with local public health officials, IU researchers will build county-specific databases to help community officials better understand the scope of this epidemic. They will also research the genetic, socioeconomic and biological forces that drive addiction in order to better understand how to prevent and treat it.

The $50 million IU is investing in the initiative comes from reprioritizing existing funds.

"By making more strategic use of resources, focusing on critical issues facing the state and working closely with key partners, we hope to achieve a greater impact In Indiana and around the world," said Fred H. Cate, IU vice president for research and Distinguished Professor.

Last year, Indiana University announced its first Grand Challenges project, the Precision Health Initiative. The initiative has the bold goal of curing at least one cancer and one childhood disease, as well as finding ways to prevent one chronic illness and one neurodegenerative disease, all by 2020.

The second initiative -- Prepared for Environmental Change -- was announced in May 2017. It brings together a broad, bipartisan coalition of government, business, nonprofit and community leaders to help Indiana better prepare for the challenges that environmental change brings to our economy, health and livelihood.

Additional quotes

- Jim McClelland, executive director for drug prevention, treatment and enforcement, State of Indiana: "Hoosier communities are in jeopardy. The addiction epidemic is a very real threat to the well-being of our families, businesses, and our state's social services and health care systems. Only together can we create and implement community-centric policies that will help alleviate this epidemic and help those recovering from substance use disorder again become productive citizens of our state."
- Dennis Murphy, president and CEO of IU Health: "As the largest health care system in the state, we take responsibility for being a part of the solution for behavioral health issues, including addiction. Our goal is to provide patients more places to access high-quality addiction and pain management services through our regional hospitals and physician offices."
- Robin Newhouse, principal investigator, Responding to the Addictions Crisis; dean, IU School of Nursing: "A challenge that is this complex requires a comprehensive response. Together with our partners and community, we are responding with an integrated, multidisciplinary approach that can help us understand and address the factors that contribute to addiction, rather than a one-project-at-a-time approach. Harnessing the power of IU research, with our partners we will work with individuals, communities, organizations and policy makers using many strategies. For example, our approach will help us better understand the biological and neurological underpinnings of addiction, but we're also going to dramatically increase the number of trained clinicians across the health professions and in communities across the state, including addictions counselors. And while we will develop better treatment options, we're also examining policies that make it harder for people and families facing addiction to get help."
- Jessica Nickel, president and CEO, Addiction Policy Forum: "The complexity of this crisis requires a comprehensive response, which should include collaboration between institutions with the influence and capacity to effect change. Leveraging the strength of a university with a statewide footprint, the influence of state policymakers and the patient reach of the state's primary health care providers, this initiative shows great potential to identify ways in which a state can address the core drivers of the addiction crisis."

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ANNOUNCEMENTS

School awarded $7.6 million grant to study early-onset Alzheimer's disease

Dr. Liana G. Apostolova

IU School of Medicine has been awarded a one-year, $7.6 million grant from the National Institute on Aging (NIA) to establish a network of sites to study early-onset Alzheimer's disease.

The new NIA grant will help establish an infrastructure and begin recruitment for what will be an approximately $45 million research program led by Liana G. Apostolova, MD, Barbara and Peer Baekgaard Professor of Alzheimer's Disease Research at IU School of Medicine. Dr. Apostolova will lead a multi-site longitudinal observational study to better understand how people develop this rare variant of Alzheimer's disease.

While the risk of Alzheimer's disease increases with advancing age, approximately 5 percent of Alzheimer's patients develop symptoms before age 65, with less than 10 percent of these patients carrying known mutations for the disease, Dr. Apostolova said. But despite being highly motivated and having fewer age-related comorbidities compared to late-onset Alzheimer's patients, early-onset patients are commonly excluded from clinical research and therapeutic trials because of their young age or lack of memory loss. Studies suggest high heritability of genetic risk factors in this population, she said.

To help fill this gap, Dr. Apostolova's study, called Longitudinal Early-onset AD Study (LEADS), will establish a network of sites across the United States and will enroll a large cohort of early-onset Alzheimer's disease participants who will provide robust longitudinal clinical and biomarker data. This work will bridge the gap toward future clinical trials and establish an early-onset Alzheimer's disease clinical trial network in the U.S.

"The data collected as part of this study will provide a definitive comparison of the clinical, psychometric, imaging, fluid biomarker and genetic similarities and differences between early-onset and late-onset Alzheimer's disease," Dr. Apostolova said.

Co-principal investigators on the study are Gil Rabinovici, MD, of the University of California, San Francisco; Brad Dickerson, MD, of Harvard University; and Maria Carrillo, PhD, of the Alzheimer's Association. The project also will include research cores and clinical sites across 16 institutions nationwide.

IUPUI developing, testing tools to predict crime, other social harms

Police forces and city governments around the

Photo of L to R Saurabh Pandey, Jeremy Carter, George Mohler, Rajeev Raje.

Photo by Liz Kaye, IU Communication

world -- burdened by competing demands and limited resources -- must make hard, critical decisions every day about how best to deal with crime, drug use, traffic crashes, medical emergencies and more.

IUPUI researchers have received a grant to provide help. Through a three-year, $791,513 grant from the Smart and Connected Communities program of the National Science Foundation, the researchers are developing a system that can predict where and when these and other social harm events are likely to occur.

George Mohler and Rajeev Raje of the School of Science at IUPUI, collaborating with Jeremy Carter, director of criminal justice in the School of Public and Environmental Affairs at IUPUI, will devise algorithms and a software system to collect and analyze data, enabling stakeholders to make dynamic predictions of social harm incidents. Such analyses will empower stakeholders to make informed decisions about how to allocate limited resources to maintain and improve the quality of life in the communities they serve.

"Police don't only deal with crimes; they deal with many social harms," Mohler said. "Our new NSF-funded project embraces the bigger picture of policing, and of smart cities in general. There are all sorts of patterns for which we can develop algorithms to detect, weigh their importance and come up with risk scores that can be used to allocate resources effectively."

The innovative IUPUI undertaking will build upon grant principal investigator Mohler's decade-long research on predictive policing and will expand beyond prediction of future crimes to include social harms. Mohler is an associate professor of computer and information science in the School of Science. He is also a co-founder and board member of PredPol, a California-based company that applies statistical models to historical crime data. The proposed system will be developed using the concepts of trusted distributed systems, a research focus of Raje, a professor of computer and information science in the School of Science.

Current policing interventions that focus on hot spots -- for example, certain blocks on a street are known to be popular locations for drug sales -- are often too narrow and seek only to optimize crime reductions, ignoring other social harms. Police and others want to know more about what is happening in their communities.

"What we are predicting is the dynamic risk of social harm events. If we put quantified risk behind prevention, we can play the odds and hopefully position police, EMS and others in the right places at the times when social harms are most likely to occur," said Carter, the criminologist who is a co-principal investigator on the NSF grant. "Crime, drug usage and motor vehicle crashes concentrate in time and place and are to some degree predictable because people have routine activities."

Working with the Indianapolis Metropolitan Police Department, Indianapolis Emergency Medical Services, the mayor's office and other community partners, the IUPUI computer scientists and criminologists will study social systems, estimate the probability of specific harmful events and determine the effects of specific actions.

With the assistance of IUPUI graduate students from computer science and criminology, the researchers will gather relevant data from a variety of sources and make a predictive analytics software application available to government services as well as community groups.

The final phase of the NSF-supported project will be a randomized controlled field trial in Indianapolis. The trial will measure the impact of interventions -- such as allocation of specific resources to locations during times where they are most needed -- across crime, traffic crashes and EMS calls for service, as well as changes in community trust in police within high-risk communities.

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CENTER SPOTLIGHT

Overall cancer risk not increased with use of popular diabetes medication, IU study finds

People taking a new oral medication for Type 2 diabetes can breathe a sigh of relief concerning suspicions they might be at an increased risk for many types of cancer, according to Indiana University researchers.

A review of 46 clinical trials involving more than 34,000 patients and published in the July online issue of the journal Diabetologia showed no increased risk of developing most forms of cancer for individuals taking sodium-glucose cotransporter 2 (SGLT2) inhibitors. The article is the first meta-analysis looking at the risk associated with SGLT2 and cancer using multiple resources including all available randomized clinical

Jiali Han, PhD

trials, multiple subgroup analyses, as well as meta-regression and sensitivity analyses.

Researchers from the Indiana University Melvin and Bren Simon Cancer Center and the Richard M. Fairbanks School of Public Health at IU conducted the analysis.

"It is important to note that the evidence from our meta-analysis of available randomized clinical trial data is suggestive of, but not conclusive for, the potential impact by SGLT2 inhibitor use on cancer risk," said co-author Yiqing Song, MD, ScD, professor of epidemiology at the Fairbanks School of Public Health and a researcher at the IU Simon Cancer Center. "Given rapidly increasing use of SGLT2 inhibitors, it is our hope that long-term safety of its use be carefully monitored in future clinical trials and real-world settings."

SGLT2 inhibitors are a class of prescription oral medications approved by the FDA in 2013 to be used in combination with diet and exercise to lower blood sugar in adults with type 2 diabetes. SGLT2 is a protein found in the kidney that helps the body reabsorb glucose. SGLT2 inhibitors specifically block that process, resulting in increased renal glucose excretion and decreased levels of blood glucose.

A growing body of evidence suggests that people with Type 2 diabetes are at elevated risk for cancer. Obesity is a known risk factor for developing both cancer and diabetes. Although all the mechanisms at play for this elevated risk are unknown, physicians do know that several glucose-lowering drugs have the potential to affect cancer risk, according to the study's co-author Jiali Han, PhD, professor and chair of the Department of Epidemiology at the Fairbanks School of Public Health and the Rachel Cecile Efroymson Professor of Cancer Research at the IU Simon Cancer Center.

"Metformin therapy has been shown to decrease the risk of cancer while other drugs may increase the risk of specific cancers," Dr. Han said. "For instance, in 2011 a federal report raised concerns about the risk of bladder and breast cancer associated with dapagliflozin, but a later analysis of 21 clinical trials suggested it was more likely the increased incidence was due to under-diagnosis prior to patients being

Yiqing Song, MD, ScD

randomized to the trial."

Dapagliflozin (Forxiga) is one of three SGLT2 inhibitors recently approved for use by the FDA and reviewed in the literature for this study. The others are canagliflozin (Invokana) and empagliflozin (Jardiance).

"In addition to lower glucose levels, SGLT2 inhibitors may offer other benefits, such as weight loss and lowering blood pressure," Dr. Han said. "More and more patients will use SGLT2 inhibitors, with more than 12 million U.S. prescriptions to date just for canagliflozin."

The researchers screened for the risk of all forms of cancer and then looked at the risk of specific cancers such as skin, breast, respiratory, gastrointestinal, bladder, prostate and renal.

Diabetes and obesity are known risk factors for bladder cancer but the exact mechanisms involving SGLT2 inhibitors and the increased risk for that cancer, as well as urinary tract infections, are unknown. The meta-analysis did not detect an increased risk associated with use of SGLT2 inhibitors for breast cancer or other cancers, but the authors caution that an increased risk cannot be ruled out without more randomized clinical trials.

"Our study provides the latest evidence about the association between use of SGLT2 inhibitors and risk of cancer and will help physicians and patients to better understand the risk when choosing these drugs. However, due to the relatively short term of randomized trials, our study also requires further long-term studies," Dr. Han said.

The IU Health - IU School of Medicine Strategic Research Initiative and the IU Simon Cancer Center supported this research. Also contributing to the paper was Huilin Tang, MSc, research associate in the Fairbanks School of Public Health's Department of Epidemiology.

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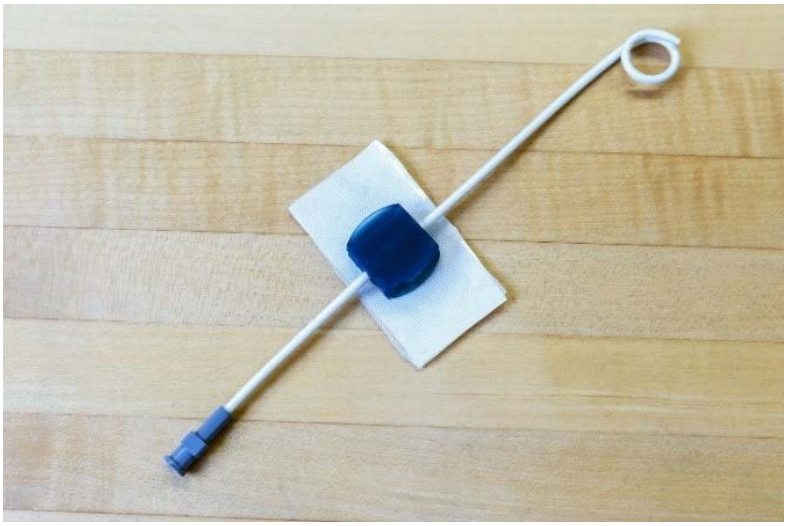
FACULTY SPOTLIGHT

IU School of Medicine researcher develops device to secure chest tubes without sutures



Dr. Samer Abu-Sultaneh's device, shown holding a chest tube.

Medical practitioners may be able to secure chest tubes to their patients more quickly and with greater reliability by using a device developed by Dr. Samer Abu-Sultaneh, assistant professor of clinical pediatrics at the Indiana University School of Medicine.

Chest tube placement, or tube thoracostomy, is routinely performed by intensive care physicians, surgeons, interventional radiologists and emergency room physicians to drain fluid, blood or gas in the pleural space, which is the space between the membranes that line the lungs. The current procedure includes an incision between the patient's ribs and feeds the tube into the pleural space. The chest tube is secured with sutures, allowing accumulated fluids, blood or gases to drain with or without the use of suction.

Abu-Sultaneh said the traditional method of securing the tube with sutures directly to the patient's chest has several common risks.

"Sutured chest tubes, especially smaller-sized tubes, can become dislodged. This can lead to the patient experiencing bleeding, pain and pneumothorax -- an accumulation of air in the pleural space," he said. "Suturing also takes a substantial amount of time, which is not ideal in emergency situations. The use of sutures may also limit a patient's movement during recovery because the chest tube is prone to dislodgement."

Abu-Sultaneh said his device addresses these challenges. "The chest tube securement device offers a way of firmly securing a chest tube to the patient without suturing," he said. "By using a medical adhesive strip and a tube mount, the tube can be secured to the chest wall in a shorter amount of time. It will also be less prone to dislodgement."

In developing the device, Abu-Sultaneh will test the amount of force that can be applied to a chest tube before it is dislodged from his device and from traditional sutures. He also will calculate the time needed to secure a chest tube with his device and with traditional sutures.

Dr. Samer Abu-Sultaneh

"Should the U.S. Food and Drug Administration approve the device, we could start a trial to use the chest tube securement device on patients," he said.

Abu-Sultaneh has received funding from the Indiana University Innovation-to-Enterprise Central to work with the School of Engineering and Technology at IUPUI to develop and test a prototype. The Innovation to Enterprise Initiatives launched in 2011 to support the research commercialization efforts of faculty at the IUPUI campus.

The Indiana University Innovation and Commercialization Office protects, markets and licenses intellectual property developed at Indiana University so it can be commercialized by industry. IU ICO has filed a full patent application on Abu-Sultaneh's chest tube securement device. For more information about developing or commercializing the device, email dmcnerny@iu.edu or call 317-278-8479 to contact Dan McNerny of IU ICO.

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STUDENT SPOTLIGHT

International reputation of IUPUI chemistry department attracts scholars from three continents

By any measure, the number of international scholars who have come to the Department of Chemistry and Chemical Biology at IUPUI in the last six months to pursue their scientific interests is remarkable.

Hector Oyem-Erasmus, one of the international students.

Since the spring semester, five students and researchers from India, England, Germany, Argentina and Brazil have been working in labs and with faculty within the department.

"This is quite impressive," said Partha Basu, professor and chair of the department, particularly for a small department with only 19 faculty members.

The visitors are:

- Seth Kapileswar, who is supported by an Indo-U.S. Fellowship. He received his Ph.D. from the National Institute of Pharmaceutical Education and Research in Punjab, India.
- Hector Oyem-Erasmus, who is a graduate student supported by the International Credit Mobility program through Newcastle University in England.
- Agustin Mangiarotti, who is a Fulbright scholar and received his Ph.D. from the Center for Research in Biological Chemistry of Cordoba, Argentina.
- Veronica Vale, who is supported by Coordination for the Improvement of Higher Education Personnel and is from the chemistry department at Federal University of Goias, Brazil. She is pursuing her Ph.D.
- Verena Haug, who is an undergraduate from the University of Stuttgart visiting a faculty member.

Based on two decades in academia, Basu said that having five international visitors in a short period of time is not very common.

"This is a testament to the international reputation of the department's faculty," Basu said. "The critical thing is the science that is developed here."

The department offers a unique program of graduate study at the interface of chemistry, biology and medicine. Faculty research includes areas such as chemical biology; enzymology and drug discovery; the development and application of advanced bioanalytical methods; computational and experimental biophysics; bioinorganic, organic and bioorganic chemistry; and forensic science.

The presence of the international visitors is a good for everyone, Basu said.

"It's a good experience for the visitors because no laboratory in the world is completely self-sufficient, no

matter where you work. Science is a community. You always want to know what other scientists are doing and how they are doing it so that you can apply that information to your project," Basu said.

There's also the issue of how science is done, Basu said. "It's a little bit different in every country. The experiments are the same, but how you approach it varies a little from country to country, and we learn from each other."

"Even though we are faculty, we are constantly learning, as much as the students," Basu said. "The visitors are going to gain experience, and we will enrich ourselves through their presence because they bring a fresh perspective and ideas that we might not have thought about."

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TRANSLATIONAL RESEARCH IMPACT

Researchers to devise compensation systems for low-wage employees, eliminating compensation problems

From left: Lynn Dombrowski and Davide Bolchini

A $494,286 National Science Foundation research grant to IUPUI researchers will help improve the accuracy of compensation for traditionally low-wage workers by developing worker-centered designs for workplace information systems and applications.

An estimated 40 million American workers are employed in low-wage occupations such as farm work, custodial work, child care and restaurant services. The research project, led by faculty members Lynn Dombrowski and Davide Bolchini at the Indiana University School of Informatics and Computing at IUPUI, will address how new design of workers' time-reporting systems and other technologies can decrease long-standing problems surrounding wage discrepancies and compensation labor laws in these environments.

These problem areas affect more than 10 percent of the workforce. In a pilot study, Dombrowski found that

the majority of low-wage workers record their time either through personal documentation methods or company systems that don't accurately record employee work histories and performance. As a result, lost wages and benefits plague these low-wage employees, and employers often face costly wage-theft lawsuits.

Yet workplace information systems have not been explored from the perspectives of low-wage workers and their managers.

"Low-wage workers have quite a bit of experience and interaction with technology. But they are not part of the design processes for the technologies that impact them," said Dombrowski, an assistant professor of human-computer interaction and principal investigator for the three-year research study.

"We understand that people may be unaware of what their legal rights are, and managers may be unaware of what their legal obligations are," Dombrowski said. "We can build tools that help everyone understand the potential violations."

"We are excited about this new research project," said Bolchini, co-principal investigator on the grant and an associate professor and chair of the Department of Human-Centered Computing. "This research is an example of how cutting-edge design research methods in human-centered computing address difficult problems of important societal relevance. Where market forces are not yet ready or willing to go, it's our role as researchers to dive deeper."

Human-centered design of workplace systems can improve communication, understanding, accountability and equitability across the board, Dombrowski said. "Technology provides the opportunity to rethink what we understand about our working relationships, allowing us to design systems that are beneficial for all."

Dombrowski, Bolchini and the research team will draw on workers' real-life experiences, which include how well workers and their managers understand compensation and benefits laws. The team will design new technologies that address these issues -- and that will ultimately serve as models for workplace-compensation technologies across many industries.

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OVCR INTERNAL GRANT DEADLINES

International Research Development Fund (IDF) GRANT:

The IRDF grant was developed to enhance the international research and scholarly activity focus of the IUPUI academic mission. Generally, the IRDF grant serves as venture capital to stimulate additional funding for international research and scholarly activity, which has strong potential to generate indirect cost recovery from extramural sources.

The next IRDF application deadline is November 1.

Apply to this program through the InfoReady portal.

Download the Guidelines and Application.

Applications are to be submitted as one pdf file.

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OTHER INTERNAL GRANT DEADLINES

2018 Curriculum Enhancement Grant RFP Now Available

The Curriculum Enhancement Grant (CEG) provides faculty with technical and instructional support, time, and funds to implement projects designed to improve student learning and success at IUPUI and IUPU Columbus. In addition, the grants seek to enhance the conversation about scholarly teaching on campus and increase the practice of the scholarship of teaching and learning. The grant supports a wide range of faculty projects designed to improve student learning and success.

See the 2018 Curriculum Enhancement Grant Request for Proposals for more information.

The deadline for proposal submissions is Friday, January 26, 2018.

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OVCR EVENTS AND WORKSHOPS

Nine Golden Rules to Succeed in Research and Scholarship

Target Audience: faculty

Friday, October 27, 2017

2:30pm – 4:30pm
University Library, Room 1126

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

Click here to register

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OTHER EVENTS AND WORKSHOPS

Scientific Writing from the Reader's Perspective

Dr. Gopen's workshop is designed to teach participants a new, strategic approach to creating, analyzing, and editing scientific writing. Dr. Gopen is the Creator of *"The Reader Expectation Approach"* and his article, The Science of Scientific Writing, was selected by American Scientist as one of 36 "classic articles" in its 100 years of publications.

An introductory workshop will be held on Tuesday, December 5, 8:00 a.m. - 5:00 p.m.

An advanced workshop will be held on Wednesday, December 6, 2017, 7:30 a.m. - 4:30 p.m.

Click the event date and time above for details.

This event is sponsored by the IU School of Medicine Office of Faculty Affairs and Professional Development, the IUPUI Office of the Vice Chancellor for Research and the IUPUI Center for Teaching and Learning. If you have questions about this event, please contact OFAPD at (317) 278-3089 or by email at ofapd@iu.edu.

University Library and the Medical Library: Panels on Handling Data for Human Subjects Research

Data Services for Human Subjects Research

Date & Time: Tuesday, November 7th, 12:00pm to 1:00pm, IB 226

Speakers
Bob Davis, FSPH Department of Biostatics
Faye Smith, Regenstrief Institute - Data Core

Join us for an overview and discussion of the research data services offered by the Indiana CTSI Research Data Services and Regenstrief Data Core. Each speaker will briefly describe the services their groups provide and answer questions.

Registration at http://library.medicine.iu.edu/services/classes/data-topics-class-registration/ The session will be streamed live via Zoom: https://iu.zoom.us/j/78350261

Developing HIPAA compliant workflows for ePHI

Date & Time: Wednesday, November 8th, 12:00pm to 1:30pm, IB 225

Speakers
Anurag Shankar, Center for Applied Cybersecurity Research
Andrew Marsh, Clinical Affairs Information Technology Services (CAITS)
Leslie Pfeffer, General Council and IUSM

Do you store or analyze research data containing PHI on IU systems? This session will walk researchers through the additional physical, administrative, and technical safeguards necessary to work with critical data appropriately.

Registration at http://library.medicine.iu.edu/services/classes/data-topics-class-registration/ The session will be streamed live via Zoom: https://iu.zoom.us/j/78350261

Researcher perspectives - Handling human subjects data responsibly

Date & Time: Thursday, November 9th, 12:00pm to 1:30pm, IB 226

Speakers
Jennifer Guiliano, Assistant Professor, IU School of Liberal Arts @ IUPUI
Kendall Roark, Research Data Specialist and Assistant Professor, Purdue University Libraries
Modupe Labode, Associate Professor, IU School of Liberal Arts @ IUPUI
Elizabeth Nelson, Assistant Professor, IU School of Liberal Arts @ IUPUI
Emily Beckman, Assistant Professor, IU School of Liberal Arts @ IUPUI

This panel of researchers in the humanities and social sciences will discuss practical strategies in dealing with human subjects data in their field. Each will describe the most common issues they face and share resources or strategies for addressing those challenges. Finally, audience members will have time to ask questions of the panel.

Registration at http://library.medicine.iu.edu/services/classes/data-topics-class-registration/ The session will be streamed live via Zoom: https://iu.zoom.us/j/78350261

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RECENT EXTERNAL FUNDING AWARDS

Grants and Awards – September 2017

PI	Agency	Project Title	School	Department	Total
Clark, Daniel O.	NATIONAL INSTITUTE ON AGING	MIND Food and Speed of Processing Training in Older Adults with Low Education, The MINDSpeed Alzheimer?s Disease Prevention Pilot Trial	MEDICINE	GENERAL INTERNAL MEDICINE	$3,549,686
Robling, Alexander G	NATIONAL INSTITUTE ARTHRITIS MUSCULOSKELETAL SKIN	Lrp4 signaling in bone metabolism and mechanotransduction	MEDICINE	ANATOMY & CELL BIOLOGY	$3,232,104
Bhatwadekar, Ashay D	NATIONAL EYE INSTITUTE	Circadian Rhythms in Muller Cell Dysfunction	MEDICINE	OPHTHALMOLOGY	$1,968,750

Blazer-Yost, Bonnie L.	U.S. DEPARTMENT OF DEFENSE	Development of Pharmacotherapies for the Treatment of Hydrocephalus	SCIENCE	BIOLOGY	$1,826,477
Sims, Emily K	JUVENILE DIABETES RESEARCH FOUNDATION INTERNATIONAL	Identification of ? Cell Dysfunction in Relatives of Individuals with Type 1 Diabetes Mellitus	MEDICINE	PED-ENDOCRINOLOGY BASIC RES	$957,618
Shekhar, Anantha	THE ROBERT WOOD JOHNSON FOUNDATION	Harold Amos Medical Faculty Development Program (AMFDP)	MEDICINE	DEAN MED-RESEARCH SUPPORT	$824,183
Mohler, George Owen	NATIONAL SCIENCE FOUNDATION	S&CC-IRG Proposal Track 2: Real-time algorithms and software systems for heterogeneous data driven policing of social harm	SCIENCE	COMPUTER SCIENCE	$791,513
Fogel, Evan L.	UNIVERSITY OF TEXAS MD ANDERSON CANCER CENTER	Consortium for the Study of Chronic Pancreatitis, Diabetes and Pancreatic Cancer: Coordinating and Data Management Center (PROCEED)	MEDICINE	GASTROENTEROLOGY	$755,952
Fowler, Nicole R	U.S. DEPARTMENT OF DEFENSE	The Aging Brain ANSWERS Program	MEDICINE	GENERAL INTERNAL MEDICINE	$626,282

Teemant, Annela	U.S. DEPARTMENT OF EDUCATION	Partnering for Radical School Improvement: Preparing Every Teacher for English Learners	EDUCATION	EDUCATION	$549,887
Embi, Peter J	VANDERBILT UNIVERSITY MEDICAL CENTER	Improving Clinical trial Education, Recruitment, and Enrollment at CTSA Hubs (ICERCH)	MEDICINE	GENERAL INTERNAL MEDICINE	$396,145
Yoshida, Ken	LUNA INNOVATIONS	Flexible Low-Modulus Nanofiber-Based TIME Nerve Interfaces	E&T	BIOMEDICAL ENGINEERING	$373,778
Jacob, Seethal A	Jacob, Seethal A	Sickle Bright: Transitioning to a Bright Future-continuation	MEDICINE	PED-HEMATOLOGY/ONCOLOGY	$237,650
Hulvershorn, Leslie Ann	INDIANA UNIVERSITY HEALTH	Launch and initial evaluation of the Indiana Behavioral Health Access Program for Youth (IN-BeHAPY) in Pediatric Primary Care	MEDICINE	PSYCHIATRY	$228,662
		Engineering Antibody Drug Conjugates To			

Lu, Xiongbin	BAYLOR COLLEGE OF MEDICINE	Target P53-Defective Triple Negative Breast Cancer	MEDICINE	MEDICAL & MOLECULAR GENETICS	$191,400
Adams, Zachary W	MEDICAL UNIVERSITY OF SOUTH CAROLINA		MEDICINE	PSYCHIATRY	$124,186

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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 below to search online tools.

AGENCY for HEALTHCARE RESEARCH & QUALITY (AHRQ)

Large Research Projects for Prevention of Healthcare-Associated Infections (R01): This opportunity seeks projects that will advance the detection, prevention, and reduction of Healthcare-Associated Infections (HAIs). HAIs are infections patients acquire during the course of receiving treatment for other conditions in a health-care setting. These infections are a significant cause of preventable illness and death. About 1 in 25 hospital patients has an HAI. Thousands of patients lose their lives from HAIs each year, and these infections impose billions of dollars in excess costs annually.
This opportunity focuses on the following broad areas of HAI research:

- Determination of the clinical efficacy/effectiveness of preventive interventions, including unintended adverse consequences.
- Characterization/assessment of relevant epidemiological aspects of HAIs, such as patient risk factors, clinical presentation, and sources of antibiotic-resistant organisms involved in the development of HAIs.

HAI prevention of is a top priority for HHS, which published the National Action Plan to Prevent Healthcare-Associated Infections (HAI NAP), launched the Partnership for Patients, a national effort that seeks to reduce nine specific hospital-acquired conditions, four of which are HAIs. The White House also announced the National Action Plan for Combating Antibiotic-Resistant Bacteria (CARB NAP).

AHRQ collaborates with other HHS Agencies to prevent and reduce HAIs and has funded initiatives in all of the settings identified in the HAI NAP: Acute care hospitals; ambulatory settings, such as ambulatory surgical centers, outpatient care clinics and offices, and hemodialysis centers/end-stage renal disease facilities; and long-term care settings. AHRQ projects have addressed a variety of HAI types, prominently among them: central line-associated bloodstream infection (CLABSI), catheter-associated urinary tract infection (CAUTI), surgical site infection (SSI), ventilator-associated pneumonia (VAP), methicillin-resistant Staphylococcus aureus (MRSA), and Clostridium difficile (C. diff).
Deadlines: Feb. 08, 2018
http://grants.nih.gov/grants/guide/pa-files/PA-17-008.html

NATIONAL INSTITUTES OF HEALTH

Investigations on Primary Immunodeficiency Diseases (RO1): This opportunity supports novel strategies to detect primary immunodeficiency diseases (PIDs), to identify their molecular basis, and to develop innovative therapies. More than 250 primary immunodeficiency diseases and 150 genes causing these diseases have been identified. The severity of these diseases range from mild to life threatening, as in severe combined immunodeficiency disease (SCID).
Research areas supported by this opportunity include, but are not limited to:

- Identifying the clinical, immunological, and molecular characteristics of primary immunodeficiency diseases, including disorders in which immunodeficiency is associated with hepatic, enteric, and other organ dysfunction;
- Identifying the molecular basis of PIDs, including disorders in which immunodeficiency results from abnormalities in hematopoietic stem cell development;
- Advancing our understanding of how a genetic variant results in immunodeficiency;
- Discovering/developing improved diagnostic/newborn screening tools for PIDs; and
- Discovering/developing animal models for PIDs, including models appropriate to test novel clinical strategies.

Other research areas supported include studies aimed at discovering novel therapeutic approaches to primary immunodeficiency diseases, such as:

- Improving understanding of existing PID treatments;
- Advancing understanding of PID-associated complications;

- Discovering or defining environmental, epigenetic, or other triggers that result in complications in individuals with PIDs; and
- Identifying and validating biomarkers for PIDs.

Deadline: Feb. 08, 2018
http://grants.nih.gov/grants/guide/pa-files/PAR-15-130.html

Developmental Centers for Interdisciplinary Research in Benign Urology (P20-Clinical Trials Not Allowed): The goal of this opportunity is to further advance research in benign urology by building research teams and facilitating resources generation and sharing. The research teams should be composed of individuals with complementary expertise who propose to either develop innovative resources (Resource Development Projects) or a new research project (Scientific Research Projects) that utilize integrative approaches to address questions relevant to benign urological diseases or disorders. Patient-centered research is encouraged.

Resources developed by Resource Development Projects will be shared upon validation while resources developed within the Scientific Research Projects will be shared at the end of the award, as appropriate and consistent with the program goal of further advancing research. Each Developmental Center is centered on a single Project and must contain an Administrative Core and an Educational Enrichment Program. As part of the efforts of the Division of Kidney, Urologic and Hematologic Diseases (DKUH) to expand and enhance benign urology research, the Developmental Centers Program will work in partnership with the George M. O'Brien Urology Cooperative Research Centers Program (U54) and the Multidisciplinary K12 Urologic Research (KURe) Career Development Program.

Deadline: Letter of Intent: Jan. 28, 2018; Application: Feb. 28, 2018
https://grants.nih.gov/grants/guide/rfa-files/RFA-DK-17-033.html

Assay Validation of High-Quality Markers for Clinical Studies in Cancer (UH3-Clinical Trials Not Allowed): The purpose of this opportunity is to accelerate the adoption and validation of molecular/cellular/imaging markers and assays for cancer detection, diagnosis, prognosis, monitoring, and prediction of response or resistance to treatment, as well as markers for cancer prevention and control. This also includes the validation of pharmacodynamic markers and markers of toxicity. Applicants must have an assay(s) whose performance has been analytically validated in specimens similar to those for the intended clinical use of the assay(s) and marker(s). As chemotherapies and/or radiation therapies are increasingly combined with immunotherapies to enhance durability of anti-cancer responses, multiple assays for measuring multiple markers, including immune markers, can be developed and validated simultaneously.

The UH3 mechanism supports the clinical validation of established assays for up to 3 years using specimens from retrospective or prospective clinical trials or studies. This opportunity may be used to validate existing assays for use in other trials, observational studies, or population studies. Efforts to

harmonize clinical laboratory tests, including investigation into the performance and reproducibility of assays across multiple clinical laboratories, are also appropriate for this funding opportunity. Proposed projects will require multi-disciplinary interaction and collaboration among scientific investigators, oncologists, statisticians, and clinical laboratory scientists. This opportunity is not intended to support early-stage development of technology or the conduct of clinical trials, but is intended for validation of assays to the point where they could be integrated into clinical trials/studies as investigational assays.

Deadline: Feb. 14, 2018
https://grants.nih.gov/grants/guide/pa-files/PAR-18-310.html

NATIONAL SCIENCE FOUNDATION

Chemical Synthesis (SYN): The Chemical Synthesis program focuses on the development of new, efficient synthetic methodologies and on the synthesis of complex and/or challenging molecules. Typical synthetic targets involve novel structures, structures displaying unique properties, or structures providing pathways to discover and elucidate new phenomena. Examples of supported research areas include the development of innovative reagents, catalysts for synthetic transformations, discovery of new synthetic methods, target-oriented synthesis, green synthesis, and synthesis of novel organic, organometallic, and inorganic structures. Research in this program will generate fundamental knowledge of chemical synthesis that enables the development of new avenues of basic chemical research and transformative technologies.

Submissions that address national needs for sustainability are encouraged, such as new synthetic methods using earth-abundant & inexpensive chemicals, fundamental studies that improve our understanding of rare earth elements, and the conversion of non-petroleum based resources into useful building blocks.

The Chemical Synthesis program does not support projects whose main objectives are to study the properties of target systems even though they may contain a large synthetic component. Synthesis of nano structures, supramolecular assemblies, and polymers should be directed to the Macromolecular, Supramolecular and Nanochemistry program. Proposals containing a synthesis component but having a major focus on the mechanistic study of catalytic reactions should be submitted to the Chemical Catalysis program.
Deadline: Oct. 01, 2018
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503419

Leading Engineering for America's Prosperity, Health & Infrastructure (LEAP HI): The LEAP HI program challenges the engineering research community to take a leadership role in addressing demanding, urgent, and consequential challenges for advancing America's prosperity, health and infrastructure. LEAP HI proposals confront engineering problems that require sustained and coordinated effort from interdisciplinary research teams, with goals that are not achievable through a series of smaller, short-term projects. LEAP HI projects perform fundamental research that may lead to disruptive technologies and

methods, lay the foundation for new and strengthened industries, enable notable improvements in quality of life, or reimagine and revitalize the built environment.

LEAP HI proposals must:

- articulate a fundamental research problem with compelling intellectual challenge and significant societal impact, particularly on economic competitiveness, quality of life, public health, or essential infrastructure. One or more CMMI core topics must lie at the heart of the proposal;
- highlight engineering research in a leadership role;
- demonstrate the need for a sustained research effort by an integrated, interdisciplinary team, and should include a research integration plan and timeline for research activities, with convincing mechanisms for frequent and effective communication.

Deadline: Letter of Intent: Dec. 15, 2017; Application: Feb. 20, 2018
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505475

Dear Colleague Letter: Research on Methodologies for STEM Education: The Directorate for Education and Human Resources (EHR) wishes to notify the community of the intention to support fundamental research on methodologies that support valid inferences in STEM education. This Dear Colleague Letter (DCL) calls for research proposals to be submitted to the ECR program (NSF 15-509) that will develop and rigorously test new methodologies and grow the community's collective capacity to conduct rigorous research and evaluation on STEM learning and learning environments, workforce development, and broadening participation.

This opportunity seeks proposals on the development, application, and extension of formal models and methodologies for STEM education research and evaluation, including methods for improving statistical modeling, qualitative modeling, measurement, replication, and learning analytics. This includes research on methodological aspects of new or existing procedures for data collection, curation, and inference in STEM education. Similarly, ECR seeks proposals related to collection of unique databases with cross-boundary value, particularly when paired with innovative developments in measurement or methodology (standard statistical modeling, qualitative research, measurement, replication and learning analytics). Proposers must demonstrate how advances in the methodology will support important theoretical insights in STEM education research or evaluation. Proposers are encouraged to explore a wide range of fundamental research projects (in the areas of quantitative, qualitative, measurement, replication, and learning analytics methodologies) that may address, but are not limited to, such topics as:

- Methodologies to study developmental trajectories of student learning of STEM content;

- Models and methodologies that increase external validity of STEM research results;

- Mediation and moderation analysis as they play out in clustered field settings to support STEM learning; as well as advances in research on evaluation in STEM education;

- quantitative research involving growth and interruptions to that growth;
- metasynthesis of qualitative research in STEM education;
- linguistic analysis applied to STEM education;
- construct validity;
- network analysis for use in STEM education;
- item level factor analysis;
- the measurement of STEM human and social capital;
- methodologies to automate/validate coding of video data in STEM settings;
- Bayesian or computational modeling of STEM education data;
- the application of machine learning approaches to STEM education;
- Improving methods for data sharing for STEM education research;
- scientometrics and citation analysis in relation to STEM education research.

Deadline: Sept. 13, 2018
https://www.nsf.gov/pubs/2017/nsf17136/nsf17136.jsp?WT.mc_id=USNSF_25&WT.mc_ev=click

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U.S. DEPT. OF DEFENSE

Novel and Enabling Carbon Capture Transformational Technologies: The objective of this opportunity is to develop transformational technologies that are capable of step-change reductions in CO2 capture cost and energy penalties. One of the technical pathways that is supported is Post-Combustion Capture, which is primarily applicable to PC-fired power plants. The principal challenge in post-combustion capture is separating the low percentage of CO2 from other flue gas constituents that generally are detrimental to separation materials, capture systems, materials of construction, and process and plant efficiency.

Research & development under this opportunity is focused on developing CO2 capture technologies for both coal and natural-gas power generation. However, any proposed R&D for natural gas-fired systems must provide a discussion on how test results from natural gas derived flue gas will be applicable to the development of the proposed technology with coal-derived flue gas.
Deadline: April 30, 2018
https://www.grants.gov/custom/viewOppDetails.jsp?oppId=297893

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 2 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 2 page summaries. For more information, contact Steven Chin schin@iupui.edu.

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