

Research Enterprise

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 contact Etta Ward at emward@iupui.edu.

Please be aware that

May 19, 2009

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MESSAGE FROM THE VICE CHANCELLOR FOR RESEARCH

Dear Colleagues,

On April 24, we held our first annual IUPUI Research Day. Based on the responses received, this has been a successful event, meeting its primary objectives of showcasing IUPUI's cutting-edge and multifaceted research and scholarly activities, and bringing together a diverse cross-section of the IUPUI faculty, staff, and students, as well as our community partners. The Research Day events began in the morning with undergraduate, graduate and professional student poster presentations, followed by afternoon sessions including the "standing-room only" Research Frontiers Distinguished Lecture presented by Nobel Laureate Dr. Leon Lederman, and research presentations highlighting the groundbreaking research conducted on the IUPUI campus.



(left to right) Executive Vice Chancellor Uday Sukhatme, Nobel Laureate Leon Lederman, and Vice Chancellor Kody Varahramyan

I would like to take this opportunity to thank everyone for your tremendous response and show of support. As part of this, I would like to extend a special thank you to all the presenters (students, faculty, and centers) for their contributions. Moreover, I welcome your feedback and solicit ideas for similar future events. Please send your suggestions to OVCR@iupui.edu.

Kody Varahramyan
Vice Chancellor for Research

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

ANNOUNCEMENTS

IU President Continues New Frontiers Funding for Five More Years

Indiana University's New Frontiers in Arts and Humanities grants program was launched in 2004 with a \$5 million gift from the Lilly Endowment Inc. As the program turned five years old in spring 2009, a bumper crop of IU faculty achievements related to initial New Frontiers funding emerged, including a \$400,000 National Endowment for the Humanities grant and a new faculty book named to the New York Times Editor's Choice list. In his October 2008 State of the University speech, IU President Michael McRobbie announced that, given the productivity and success of New Frontiers grant awardees in garnering additional external funding, Indiana University will continue the New Frontiers program for five additional years with the same annual funding of \$1 million per year. Deadlines for New Frontiers Exploration Traveling Fellowship (ETF) grants (up to \$2,500) occur in June and in August. The ETF grants are part of the New Frontiers program and provide funds to support national or international travel in the initial stages of new research projects for creative activities. There are three additional grant programs available through New Frontiers.

[More Information](#)

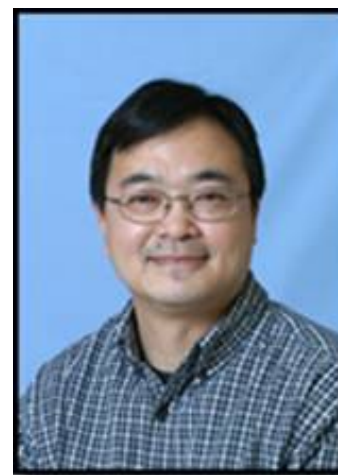
CENTER SPOTLIGHT

Center Leverages Local and International Collaborations to Explore Effects of HIV/HCV on the Brain

Dr. Johnny J. He, Professor in the Indiana University School of Medicine Department of Microbiology and Immunology and Director of Indiana University [Center for AIDS Research](#) (IU-CFAR), is leading the effort to understand how human brain cells interact with Human Immunodeficiency Virus/Hepatitis C Virus (HIV/HCV) viruses and to develop therapeutic strategies specifically targeted at these interactions. His research has been focusing on the molecular biology of host-virus interactions, particularly in the central nervous system.

The long-term goal is to determine what brain cells are infected by HIV/HCV, how these cells are infected by HIV/HCV, what host factors are needed to support virus replication, and how these infections alone or in combination ultimately lead to neurological diseases. Dr. He states, "On translational studies, we are interested in development of therapeutics that are able to attack the viruses in the brain and/or delay and prevent onset of neurological disorders. We are also looking into how co-morbidity factors such as substance abuse (methamphetamine and alcohol) affect the progression and treatment of HIV/HCV-infected brain."

Currently, IU-CFAR members are collaborating with investigators in countries such as China with limited resources but rapidly increased HIV-infected population to



Johnny J. He, Ph.D.
Professor, Microbiology and Immunology
Director, Center for AIDS Research
IU School of Medicine

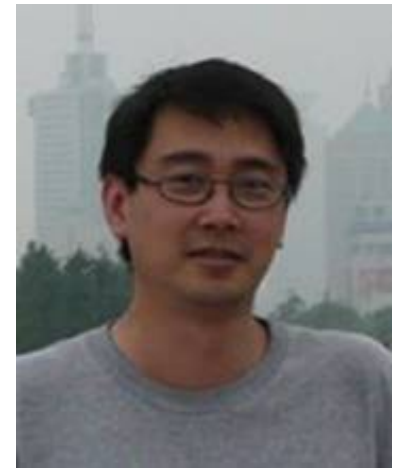
determine how viral, host and socio-economical factors affect the nature and prevalence of HIV/HCV-associated neurological diseases and their treatment. "Meanwhile, we have been working to identify collaborations with those who are potentially interested in HIV/AIDS research in various academic units on campus and to explore collaborative research programs," says Dr. He. Collaborating units include the Stark Neuroscience Institute, Neuroimaging, Psychiatric Institute, Aging Center, and Alcohol Center.

Funding from the National Institutes of Health (NIH) has been secured to study the combined effects of alcohol and HIV infection on the brain. Additional funding has been secured from NIH for IU-CFAR's China NeuroAIDS project. "We hope this project will serve as a platform for us to develop and expand our international HIV/AIDS research efforts as the international component for our future application for a NIH-funded CFAR," Dr. He explains. As part of its international outreach program, IU-CFAR has recently co-organized an international conference with the Chinese National Society on Drug Dependence on drug abuse and HIV/HCV co-morbidity at Xi'an, China, which was sponsored by National Institute on Drug Abuse and National Institute on Alcohol Abuse and Alcoholism of National Institutes of Health, USA and the Indiana Genomics Initiatives of IU School of Medicine.

FACULTY SPOTLIGHT

Systems Biology Research Holds Promise for Tailoring Highly Precise Treatment Regimen for Complex Diseases

Computational modeling of systems and network biological properties of cells is at the core of research projects taking place at the Discovery Informatics and Computing Laboratory, which is led by Dr. Jake Y. Chen. The laboratory is part of the newly founded signature center, [Indiana Center for Systems Biology and Personalized Medicine](#). Using advanced bioinformatics techniques, Dr. Chen and his team aim to speed up current ways of developing drugs and molecular diagnostic markers for complex diseases. Unlike rare genetic disorders, complex diseases such as cancers and neurodegenerative diseases often arise due to the interplay between environmental factors and multiple genetic risk factors. According to Dr. Chen, "Many classical biochemical approaches, including sequence-to-structure-to-function analysis, have failed to establish the molecular mechanisms that can explain how these diseases occur and how they can be cured." Not only do these polygenic diseases arise from complex mechanisms, the havoc they wreak inside cells can also be widespread. New power tools are needed to collect molecular measurement in diseased cells.



Jake Y. Chen, Ph.D.
Assistant Professor, Informatics and
Computer Science
Founding Director, Indiana Center for
Systems Biology and Personalized
Medicine
School of Informatics

Systems biology aims to reveal the global relationships among myriads of biomolecular entities inside cells. Different from the "one-gene-at-a-time" paradigm, popular among advocates of reductionist's approach to biology centuries ago, systems biology leverages recent advances in genomics and functional genomics technology to study many genes at a time. "Due to the inherent nature of large data size that needs to be collected, the management and interpretation of these data sets often require high-performance computing software tools, data mining methods, and advanced information visualization techniques. In particular, *in silico* computational

modeling of molecular interaction networks inside cells is closely associated with systems biology," Dr. Chen states. In the laboratory, Dr. Chen and his team make use of terabyte-level relational database management system and large CPUs from the Big Red supercomputer, supported by Indiana University Academic and Research Computing group.

An interesting consequence of studying diseases using a systems biology approach is that new perspectives for therapeutics and diagnostics solutions can be developed. Prior, systems biology of each disease is studied as if each disease has nothing to do with each other. Therefore, the promise of tailoring highly precise treatment regiment for a given disease area is high. "The future of personalized medicine will likely rest on our ability to collect large molecular profiling data from patients, combining them with clinical records, and interpreting them in a similar way that large web search engines such as Google mine personal clickstream data for each individuals. In the next several decades, systems biology will provide an effective means to performing such daunting yet extremely significant tasks leading to personalized medicine," Dr. Chen concludes.

STUDENT SPOTLIGHT

The May 2009 Student Spotlight section is dedicated to the IUPUI Research Day Student Poster Competition winners. The Office of the Vice Chancellor for Research and the entire IUPUI research community congratulates all the student winners on their success.

Ph.D./Professional Student Poster Competition Winners

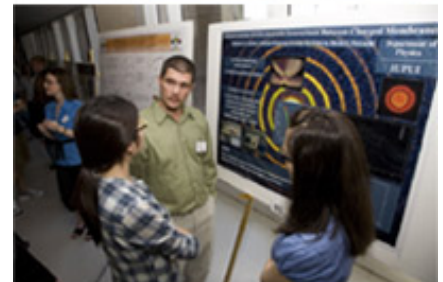
First Place

Michael Olaopa,
Medical and Molecular Genetics
EFFECTS OF PAX3 MUTATION AND NEURAL CREST
GENETIC ABLATION UPON HEART MORPHOGENESIS



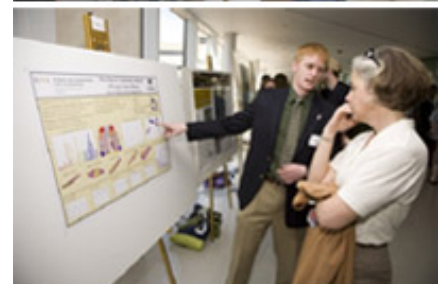
Second Place

Natalie Case,
Medical Neuroscience
A STRESS REACTIVE GENETIC ANIMAL MODEL OF
BIPOLAR DISORDER AND CO-MORBID SUBSTANCE
ABUSE: PHENOMIC, CONVERGENT FUNCTIONAL
GENOMIC AND BIOMARKER STUDIES



Third Place

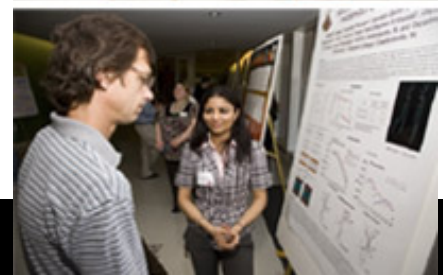
Jennifer LeVora, Medical Neuroscience
BIOCHEMICAL AND GENETIC ANALYSIS OF
PARKINSON'S DISEASE ASSOCIATED PROTEINS,
MOLECULAR TRANSPORTERS, AND STRESS
RESPONSE PROTEINS IN C. ELEGANS MODELS OF
MANGANISM



Masters Student Poster Competition Winners

First Place

Jared Allen, Biology
ANALYSIS OF CHANGES IN MANDIBULAR SIZE AND
GENE EXPRESSION IN THE TS65DN MOUSE MODEL



OF DOWN SYNDROME

Second Place

Ranganathan Ganakammal Satishkumar, Informatics
BIOINFORMATIC ANALYSIS OF TRANSCRIPTIONAL REGULATORS IN IL-12
STIMULATED STAT4 MEDIATED Th1 CELL DEVELOPMENT

Third Place

Elisa Liszewski, Chemistry and Chemical Biology
MICROSPECTROPHOTOMETRIC AND CHEMOMETRIC ANALYSIS OF AUTOMOTIVE
PAINT CLEAR COATS

Undergraduate Student Poster Competition Winners

Lea' Abshire, Nursing
THE HOT FLASH EXPERIENCE IN PROSTATE CANCER SURVIVORS

Ross Blankenship, Psychology
EFFECTS OF ETHANOL (ETOH) SELF-ADMINISTRATION TO MODULATE DESIPRAMINE-
INDUCED INCREASES IN EXTRACELLULAR DOPAMINE (DA) IN THE PREFRONTAL
CORTEX (PFC) OF ALCOHOL PREFERRING (P) RATS

Andrew Strong, Chemistry and Chemical Biology
ENUMERATION OF A VIRTUAL CATALOG OF POTENTIAL DRUG MOLECULES

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

RESEARCH AND RESEARCH INFRASTRUCTURE "GRAND OPPORTUNITIES":

The focus is on high impact ideas that lend themselves to short-term funding, and may lay the foundation for new fields of investigation. Applicants may propose to address either a specific research question or propose the creation of a unique infrastructure/resource designed to accelerate scientific progress in the future. Application deadline has been extended to May 30, 2009. <http://grants.nih.gov/grants/guide/rfa-files/RFA-OD-09-004.html>

RESEARCH ON TEEN DATING VIOLENCE: The focus is on behavioral and/or biomedical research aimed at better understanding the etiologies and precursors for, reducing risk for, and incidence of, teen dating violence (TDV). Research is also sought that examines the linkages and gaps among perceptions of appropriate responses to teen dating violence from service providers, the criminal justice system, teens themselves, victims, perpetrators and bystanders. Standard dates apply: <http://grants1.nih.gov/grants/funding/submissionschedule.htm>
<http://grants.nih.gov/grants/guide/pa-files/PA-09-169.html>

WOMEN'S MENTAL HEALTH IN PREGNANCY AND THE POSTPARTUM PERIOD:

The focus is on research on women's mental health in relation to pregnancy and the postpartum period. A recent evidence-based practice report from the Agency for



Healthcare Research and Quality noted that depression is also prevalent during pregnancy as well as the postpartum period, therefore research that occurs throughout pregnancy and the postpartum period (the perinatal period) is encouraged. Standard dates apply: <http://grants1.nih.gov/grants/funding/submissionschedule.htm>
<http://grants.nih.gov/grants/guide/pa-files/PA-09-175.html>

NATIONAL SCIENCE FOUNDATION

DIVISION OF MOLECULAR AND CELLULAR BIOSCIENCES - THE

BIOMOLECULAR SYSTEMS CLUSTER: The focus is on fundamental research in the areas of molecular biophysics, molecular biochemistry, and metabolic biochemistry emphasizing the relationships between structure, function, and dynamics in studies of individual macromolecules, macromolecular complexes, and metabolic pathways. Research of interest includes protein folding and dynamics, natively unfolded proteins, protein design, molecular recognition, enzymology, energy transformations in living systems, and the components, architecture and flux in metabolic pathways. Application deadline is July 12, 2009. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12771

DEPARTMENT OF ENERGY

Transformational Energy Technologies:

The focus is on Advanced Research Projects Agency- Energy (ARPA-E). ARPA-E is a new organization within the Department of Energy (DOE), created specifically to foster research and development (R&D) of transformational energy-related technologies. Transformational technologies are by definition technologies that disrupt the status quo. They are not merely better than current technologies, they are significantly better. Awards from \$500,000 – 20,000,000. Application deadline is June 02, 2009. <http://www07.grants.gov/search/search.do?&mode=VIEW&oppId=47045>

FOUNDATIONS

ROBERT WOOD JOHNSON FOUNDATION (RWJF) PROJECT HEALTHDESIGN: RETHINKING THE POWER AND POTENTIAL OF PERSONAL HEALTH RECORDS:

Grant recipients will work to assess and test the potential of "observations of daily living" (ODLs) to help patients and physicians better manage chronic illnesses. A total of up to \$2.4 million is available in this second round of funding to as many as five grantee teams for 24-month demonstration projects. Grants may total up to \$480,000 each. Funded teams will work closely with patients and providers across different care settings. Brief proposals are due June 3, 2009. <http://www.rwjf.org/applications/solicited/cfp.jsp?ID=20762>

DID YOU KNOW?

National Facts

The success rate for new R01 equivalent grants in 2008 was 9.6% which was a slight decrease from 2007 (9.8%). The success rate for new with resubmissions R01 equivalent grants in 2008 was 40.7%. <http://report.nih.gov/reports.aspx?section=SuccessRates&title=Success%20Rate>

Campus Facts

Three schools (ENT, Law, SPEA) increased their grant awards for the first nine months of the fiscal year by \$1,000,000 or more compared to the previous year. For the same period total awards to the campus are down 4.6%.

A near capacity crowd (400) attended the Research Day lecture given by Nobel Laureate, Leon Lederman. Research Day also included 60 faculty oral presentations and more than 100 poster presentations.

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://www.nsf.gov/mynsf/>. 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 <http://vsearch1.fbo.gov/servlet/SearchServlet>. 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: Occasionally a funding agency places a limitation on the number of proposals that can be submitted from a campus or university system. For a description of the upcoming "limited submission" funding opportunities, as well as guidelines and application forms, go to: <http://ovpr.indiana.edu/lmsub/lmsub.asp> or contact Etta Ward in the IUPUI Office of the Vice Chancellor for Research: emward@iupui.edu or 317.278.8427.

Special Handling: The Special Handling list was created in order to communicate donor restrictions and/or preferences for managing solicitation requests from Indiana University. The list reflects special relationships that exist between donors and the university and includes corporations and foundations that the President's office wishes to review prior to submission in order to coordinate Indiana University's requests to these donors. The Special Handling List was compiled and is maintained by the Indiana University Foundation office of Corporate and Foundation Relations and is provided to OVPR for distribution. Questions regarding this list can be directed Bobbi Bosch at 317-278-5648 or bsbosch@indiana.edu.

IU Authentication is required to view the following attachments:

- [IU/IUF Corporation / Foundation Special Handling List](#)
- [Principal Gifts Review Template](#)

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