

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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January 23, 2009

ANNOUNCEMENTS

SAVE THE DATE - Defense Advanced Research Projects Agency (DARPA) to Visit IUPUI

On April 3, 2009, the IUPUI Office of the Vice Chancellor for Research will host key members of the Defense Advanced Research Projects Agency (DARPA) to present information about funding opportunities available to researchers across various disciplines. DARPA representatives will share strategies and tips for pursuing DARPA funding and provide insights on the current affairs of DARPA federal funding, including current and future funding priorities. More information will be announced in upcoming issues of the RESEARCH ENTERPRISE. Questions can be directed to Etta Ward at emward@iupui.edu or 317.278.8427.

SAVE THE DATE – Nobel Laureate Leon M. Lederman to Speak at IUPUI Research Day Event



Dr. Leon M. Lederman, Nobel prize-winning physicist, will be the keynote speaker for the 2009 IUPUI Research Day on April 24, 2009. Dr. Lederman's presentation titled, "Knowing How Science Works for Scientists and Citizens," will be of interest to a broad audience, from middle-school students to

senior faculty and administrators. In conjunction with Dr. Lederman's presentation, multiple events are planned for the IUPUI Research Day, which is sponsored by the IUPUI Office of the Vice Chancellor for Research, in commemoration of the IUPUI year-long 40th anniversary celebration. More details about Dr. Lederman's presentation and other Research Day activities will be announced in upcoming issues of the RESEARCH ENTERPRISE. Questions can be directed to Etta Ward at emward@iupui.edu or 317.278.8427.



Leon M. Lederman, Ph.D.
Nobel Laureate & Physicist



FEATURE STORY

IUPUI Forensic and Investigative Sciences Program Forges Partnership with State Law Enforcement to Detect DNA Residue on Explosive Devices

The Forensic and Investigative Sciences Program has embarked on a collaborative project with the Indiana State Police Bomb Squad and Forensic Science Laboratory to develop a new method for recovering the DNA of a bomber from the remains of an explosive device. Post-blast debris consists of the shattered remains of the explosive device, some of which was touched by the bomber during construction. The detection of "touch DNA" is a new tool for law

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

enforcement and has been used to identify suspects in shootings based on the DNA residue they leave on firearms. What has not been established is whether DNA residue on an explosive device can survive the blast and be reliably detected by a forensic science laboratory.

Using both standard techniques and new swabbing technology developed by Indianapolis-based Forensic ID, Inc., the Indiana State Police will attempt to develop DNA profiles of a "bomber" (in this case, a member of the bomb squad) from post-blast debris following a series of pipe bomb explosions that were carried out in Noblesville Indiana, in January. "The findings are clearly important not only to the State, but nationally as well. By using the data we will discover in this project, Indiana will be recognized as a leader in attempting to address very real, and very dangerous problems that as a country, we are facing all over the world," states Vince Perez, Founder, Sr. Vice President, and General Counsel of Forensic ID, Inc.

IUPUI undergraduate and graduate students from the Department of Chemistry and Chemical Biology as well as the Forensic and Investigative Sciences Program helped design and build the blast site, recover pipe bomb fragments and package them for delivery to the Indiana State Police Laboratory for DNA analysis. According to Dr. John V. Goodpaster, Assistant Professor of Analytical and Forensic Chemistry in the IUPUI Department of Chemistry and Chemical Biology, "The students, who actually sought out this opportunity in order to engage in undergraduate research or complete graduate thesis research, formed the backbone of our study by preparing the site, collecting all samples and eventually taking charge of their analysis at IUPUI." In fact, the study being conducting forms the basis for several undergraduate research projects beyond that of DNA typing, including examining the velocity and momentum of pipe bomb fragments, designing new methods for recovering explosive residues and analyzing common components of improvised explosive devices such as electrical tape.

The explosions were also filmed using a high-speed video camera, the footage from which will be analyzed to observe how the pipe bombs fragmented depending on the materials that were used as well as the explosive filler. The ability of IUPUI to train future forensic chemists and engage in cutting edge research in partnership with law enforcement and the private sector is invaluable. "This experiment will give experience to the lab personnel, ensure that the techniques used are best for this type of evidence, and will allow the CSI's to know which exams are going to be most beneficial in the case. This information would be shared with the forensic community to give a strong starting point for the testing in other forensic labs," says Carl Sobieralski, DNA Supervisor and State Technical Leader at the Indiana State Police Laboratory. A critical part of a university's mission is to offer its ideas, expertise, equipment and personnel to the community in which it is located. "IUPUI is uniquely poised to push the boundaries of what is possible for explosive investigators in Indiana and beyond. We can also offer students the opportunity to take part in that process of discovery," Dr. Goodpaster concludes.



Student researchers as seen through the lens of the video camera



John V. Goodpaster, Ph.D.
Assistant Professor of Analytical & Forensic Chemistry
Department of Chemistry and Chemical Biology

FACULTY SPOTLIGHT

International Study on Muslims in a Post 9/11 Era

International transnational research on global human rights has become a passion of Dr. Khadija Khaja, Assistant Professor and Dr. Irene Queiro-Tajalli, Executive Director of Undergraduate Education and Interim Director of Labor Studies at the IUPUI School of Social Work. Their mutual concern is that time has done little to ease feelings of stereotypes, discrimination, and prejudice that Muslims have felt since the September 11th terrorist attacks on the World Trade Centers in New York. Dr. Khaja, who was born in Nigeria, is a Muslim faculty member hired by Indiana University shortly after the attacks. Once she started teaching social work classes she realized that many students had misconceptions about what Islam stood for and who Muslims were.

Some students reported they were "afraid of all Muslims." Dr. Khaja and Dr. Queiro-Tajalli report that rigid "immigration/refugee policies, stricter surveillance of international travelers, and wars in Iraq and Afghanistan have led to much stress and stereotypes experienced by Muslims. Dr. Queiro-Tajalli, who herself studied in Iran and speaks fluent Persian, is described as a "global scholar and kindred sister committed to peace and diversity. "I could not have done this study without her," says Dr. Khaja. Hence, they developed a pilot study with the assistance of a number of other co-investigators from the University of North Dakota and the University of Utah that examined the lives of Muslims living in the United States, Canada, Argentina and Australia.

Muslims ranging in ages from 20 to 86 were interviewed for their qualitative perspectives on their lives before and after 9/11. Respondents felt that Muslims who embraced the west calling it their home now feel vulnerable and unwanted. They fear physical attacks, social prejudice, employment discrimination, deportation, immigration roadblocks, stigmatization, and incarceration. This emotional toll has led to feelings of shame, guilt, depression, panic, fear, alienation, and anxiety. Muslim families are worried about what the future holds for their children as the signs and symptoms associated with post-traumatic stress disorder become increasingly evident in their homes. Dr. Khaja reports that respondents were deeply concerned about Muslim women. Many respondents reported that Muslim women in particular appear to face the worst forms of discrimination in society. Dr. Khaja reports that it is crucial to bridge a better understanding and relationship between Muslims and Non-Muslims. "There is a lot of fear, not just of terrorism, but fear of what will happen to Muslim children," she states. Muslims wondered whether their employment opportunities may be affected, whether their children will be made fun of and what names people will call their wives if they wear a head covering (hijab).

Preliminary findings of this research have been presented in conferences in South Africa, Canada, and the USA. Dr. Khaja and Dr. Queiro-Tajalli think that to secure peace and understanding in the world people need to talk to each other, get to know each other, and spend time with each other to realize we are more similar than different. Furthermore, they believe that decisions should be made based on data rather than biased opinions. They report that more international research aimed at supporting peace initiatives not only embraces the role of the social work profession, but it embraces humanity as a whole.



Irene Queiro-Tajalli, Ph.D. (Left)
Professor, IU School of Social Work
Khadija Khaja, Ph.D. (Right)
Assistant Professor, IU School of
Social Work

STUDENT SPOTLIGHT

Science with a Smile: Two Students Experience the Joys and Rewards of Hands-on Research

Science with a smile. That's what you get when you meet Juniors Tiffany Blackgrove and Alexandra Vayl. Both of these students have been working as undergraduate researchers in Dr. Anna Malkova's laboratory in the Biology department since their freshman year. But don't let their fun-loving demeanors lead you to believe that they are performing anything less than serious science. Both Tiffany and Alexandra have spent two years working on projects aimed to better understand the mechanisms of chromosome repair.



Student researchers Tiffany Blackgrove (Left) and Alexandra Vayl (Right) in Dr. Anna Malkova's research lab

As freshmen, Tiffany and Alexandra were assigned to work for Dr. Malkova as part of the Biology Department's Freshman Workers Program. "Our jobs at first consisted of washing dishes and making different types of media, but we wanted to do more," stated Alexandra as Tiffany nodded in agreement. Recognizing their enthusiasm early on, Dr. Malkova encouraged them to participate in an ongoing project in the lab testing mutant yeast strains. Even though this original project did not result in any significant findings, having hands-on experience convinced both students to enroll in an advanced genetics course and begin independent research projects. "It makes us feel like real scientists," said Tiffany. "We get to have our own research, our own results, and we even have the chance to do things like present our research at conferences." In fact, Alexandra and Tiffany have already presented their independent results, and Alexandra was recently a co-author on a peer-reviewed paper in the journal *Genetics*.

Alexandra's and Tiffany's participation in Dr. Malkova's undergraduate research program has been mutually beneficial. While their research efforts have contributed significantly to the overall objectives of the lab to better understand chromosome repair and DNA metabolism, both students have had an invaluable opportunity to learn what scientific research is all about. For Tiffany, participation in Dr. Malkova's lab has distinctly influenced her future plans. "When I first came to college, my career goal was to become a physical therapist, but after having the chance to work with Dr. Malkova, my eyes were opened to new possibilities. Now I plan to go to medical school, and I am seriously considering pursuing a Ph.D. as well," stated Tiffany. For Alexandra, the story is similar. "I always knew I wanted to be a surgeon, but it wasn't until I worked with Dr. Malkova that I really learned about career opportunities that link medicine with laboratory science." She, too, hopes to enroll in a combined M.D./Ph.D. program.

Mentoring undergraduate students is an important career goal for Dr. Malkova. In fact, Dr. Malkova's lab was initially staffed entirely by undergraduates, and it was a grant from the National Institutes of Health to support undergraduate research that got things started. Five years later, the lab has funding from multiple sources, and Dr. Malkova is proud that the data she used to get those grants were produced primarily by her early undergraduate students. In addition, Dr. Malkova has successfully tapped into many resources for undergraduate researchers offered by IUPUI, and many of her students, including Alexandra and Tiffany, have received grants and other funding from the university.

Participating in undergraduate research will undoubtedly prove to be an asset for Alexandra and Tiffany after they graduate, as it has been for so many other students

who have moved on from Dr. Malkova's lab. "I have known other students who have worked with Dr. Malkova, and they have all had great opportunities after they graduated. I know Tiffany and I are very fortunate to have worked in this lab," said Alexandra. But for Dr. Malkova, mentoring undergraduates is mutually beneficial. "This is a difficult business, and I feel like giving students a chance to participate both helps our profession to recruit talented scientists and helps the students to better define what they are passionate about."

OVCR INTERNAL GRANT DEADLINES

INTERNATIONAL VISITING RESEARCH SCHOLARS/PROFESSORS SUPPORT

(NEW): The IUPUI International Visiting Research Scholars/Professors Support Program is designed to assist IUPUI faculty members and departments to invite faculty members from abroad for both research collaboration and instructional purposes to benefit students at the graduate and/or undergraduate levels. This program will enhance IUPUI's Internationalization efforts in both teaching and research. The purpose is to develop faculty capacity to teach with a global perspective. Application deadline is February 6, 2009. For grant guidelines and application forms go to <http://research.iupui.edu/funding/>.

OTHER INTERNAL GRANT DEADLINES

CENTER ON PHILANTHROPY RESEARCH FUND: The Center on Philanthropy at Indiana University requests proposals from faculty members from all disciplines for research relating to issues facing philanthropy and nonprofit organizations. All proposals must be postmarked by March 6, 2009. For more information, go to <http://www.philanthropy.iupui.edu/Research/grant-programs.aspx> or Reema T. Bhakta at rtbhakta@iupui.edu or 317-278-8996.

OVCR WORKSHOPS AND EVENTS

Finding Funding

When: Tuesday, February 03, 2009 | 02:00 PM-03:30 PM

Where: University Library Room 0106

This session will provide an overview of the various types of external funding sources, identify tools to locate funding opportunities, explain how to design a funding search, and demonstrate a couple of knowledge management systems that contain thousands of funding opportunities available by the university subscription.

To register for this event, go to <http://crl.iupui.edu/events/eventsRegistration.asp?id=1471>

Community of Science (Find Funding and Collaborators)

When: Thursday, February 12, 2009 | 02:00 PM-03:30 PM

Where: University Library Room 0106

Indiana University is a member of the Community of Science (COS). Whether your work is in the arts or the sciences, COS funding and expertise search tools and services can help support and advance your research and scholarly activity. Learn how to take full advantage of these services and help our institution promote its work. This event is a hands-on open lab session.

To register for this event, go to <http://crl.iupui.edu/Events/eventsRegistration.asp?id=1474>

Research Compliance 101: Human Subjects

When: Thursday, February 26, 2009 | 01:00 PM-02:30 PM

Where: University Library Room 1126

This event is co-sponsored by the office of the Vice Chancellor for Research and Office of Research Administration, Research Compliance Administration.

This session offers an overview of the history and regulations pertaining to the protection of human subjects from research risk. Everyone involved in the conduct of research will find this information essential.

To register for this event, go to <http://crl.iupui.edu/Events/eventsRegistration.asp?id=1484>

OTHER WORKSHOPS AND EVENTS

SBIR Workshop Series

The Indiana Economic Development Corporation (IEDC), in partnership with Indiana University Emerging Technologies Center (IUETC), is hosting a 3 session SBIR/STTR workshop series that will begin in February. The series focuses on very specific SBIR topics that are common barriers for companies navigating the SBIR and STTR programs. The topics and dates for the remainder of the series is as follows:

- **February 17th - "The Do's and Don'ts of Phase I Proposal Writing"**
This session will provide insight and instruction on the drafting of effective work plans, how to identify the best and well rounded SBIR team, correct budgeting habits and how to avoid those common but deadly mistakes.
- **March 10th - "The In's and Out's of the NIH SBIR/STTR Program"**
This session will focus on the NIH SBIR/STTR program. You will learn details about the NIH SBIR process that will help even the seasoned veteran with their strategy.
- **March 31st - "Contracting Agencies vs Granting Agencies"**
This session will cover the differences between the contracting agencies and the granting agencies. How do they differ? What submission process does each agency follow? Is the proposal development different for each? We will tell you to answer to each of those questions.

Each session will be held at the IUETC office in Indianapolis and will begin at 8:15am and conclude at 11:30am. The cost for the series is \$10.00 per session or \$25.00 for the series with breakfast included in that price. For more information please contact DeAnn Reinhart at dreinhart@iedc.in.gov or 812-384-3530. [Registration information and Flyer](#). Space is limited.

SCHOLARSHIP AT LUNCH TIME (SALT) SERIES

The SALT event series is aimed at showcasing interdisciplinary research efforts,

promoting IUPUI research center activities, and encouraging new collaborative partnerships. This highly interactive event provides an opportunity to meet fellow researchers in an informal setting on a monthly basis at the Faculty Club. Presentations are limited to 20-25 minutes to allow ample time for discussion.

When: Thursday, February 12, 2009 | 12:00 PM-01:00 PM

Where: University Faculty Club

Presenter: *Sam Nunn, Director of the Center for Criminal Justice Research, School of Public Affairs and Environmental Affairs*

The Center works with public safety agencies and social services organizations to provide impartial applied research on criminal justice and public safety issues. Applied and interdisciplinary research is conducted in the areas of crime prevention, criminal justice systems, drugs/alcohol & crime, law enforcement/policing, public safety, traffic safety, violence & victimization, and youth.

More information and the complete SALT schedule for 2008/09 can be found at <http://faa.iupui.edu/newFaa/SALT.asp>.

This event is sponsored by The University Faculty Club of Indianapolis

DID YOU KNOW?

National Facts

- In 2005, Indiana ranked 26th among the states receiving research and development funds from the Department of Energy.
- In 2007, research obligations from all federal agencies to colleges and universities was \$22.8 billion. Of this, 65% was for life sciences. Engineering was 2nd with 8% followed by physical sciences (7.2%), mathematics and computer sciences (5.7%) and psychology (4.8%).

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

Collaborative Study of Suicidality and Mental Health in the U.S. Army: The focus is on conducting an epidemiologic study of mental health, psychological resilience, suicide risk, suicide-related behaviors, and suicide deaths in the U.S. Army and identifying, as rapidly as scientifically possible, modifiable risk and protective factors and moderators of suicide-related behaviors. Once modifiable factors are identified, investigators will identify specific intervention options for reducing suicide risk by addressing empirically-identified risk and protective factors, and develop initial research designs for subsequent research that may test practical suicide risk reduction efforts. One 5 year (\$10M/yr) award is anticipated. Application deadline is April 3, 2009. [Visit website.](#)

Agency for Healthcare Research and Quality (AHRQ) Health Services

Research Projects: The focus is on large research (R01) projects that address AHRQ portfolio priority areas of interest for ongoing extramural health services research, demonstration, dissemination, and evaluation grants. Application deadline is March 9, 2009. [Visit Website](#).

NATIONAL SCIENCE FOUNDATION

Developing Global Scientists and Engineers (International Research Experiences for Students (IRES) and Doctoral Dissertation Enhancement Projects (DDEP): The Developing Global Scientists and Engineers program provides highest quality international research experiences for U.S. students. Whereas the International Research Experiences for Students (IRES) component of the program supports groups of U.S. undergraduate or graduate students conducting research abroad in collaboration with foreign investigators, the Doctoral Dissertation Enhancement Projects (DDEP) component supports the dissertation research abroad of one doctoral student in collaboration with a foreign investigator. Application deadline is February 15, 2009. [Visit website](#).

DEPARTMENT OF DEFENSE

Defense Advanced Projects Agency (DARPA) Young Faculty Award: The focus is on developing the next generation of academic scientists, mathematicians and engineers who will focus a significant portion of their career on Department of Defense (DoD) and national security issues. Proposed research should focus on innovations that will enable revolutionary advances in the selected topic area. Awards are \$300,000 for two years. For priority areas, follow the link below. Application deadline is February 16, 2009. [Visit website](#).

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.

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