

Board Meeting  
March 10, 2010

## APPOINT FELLOWS TO THE CENTER FOR ADVANCED STUDY, URBANA

**Action:** Approve Appointment of Fellows to the Center for Advanced Study for the Academic Year 2010-2011

**Funding:** Private Gift Funds from the Beckman Endowment and State Appropriated Funds

Each year the Center for Advanced Study awards appointments as Fellows in the Center, providing one semester of release time for creative work. Fellows are selected in an annual competition from the faculty of all departments and colleges to carry out self-initiated programs of scholarly research or professional activity.

The double asterisks denote faculty members who have been recommended for appointment as Beckman Fellows in the Center for Advanced Study, named for the donor of a gift that permits additional recognition for outstanding younger Fellow candidates who have already made distinctive scholarly contributions.

The Chancellor at Urbana recommends the following list of Fellows selected for the 2010-2011 academic year, and offers a brief description of their projects:

**Richard Akresh, Assistant Professor, Economics, *Burkina Faso Randomized Evaluation of Conditional/Unconditional Cash Transfers***

Since most social assistance programs in developing countries are conditional on compliance with certain requirements and provide resources to the mother, it has been impossible to disentangle how much of any observed impact is due to the transfer recipient's gender, how much is due to an income effect, and how much is due to

a change in relative prices associated with a program's conditionality. This project will be the first to explore this question using a random experimental design to evaluate the relative effectiveness of the following social protection programs targeting poor households in rural Burkina Faso: conditional cash transfers given to the father, conditional cash transfers given to the mother, unconditional cash transfers given to the father, and unconditional cash transfers given to the mother.

**\*\*Ryan C. Bailey, Assistant Professor, Chemistry, Institute for Genomic Biology and Micro and Nanotechnology Laboratory, *MicroRNA-omics: Developing a Global Analysis Platform for Tiny Regulators***

MicroRNAs are incredibly important regulators of a myriad of biological processes; however, their analysis is greatly complicated by their small size. The goal of this project is to develop a novel platform based upon silicon photonic micro-ring resonator arrays that allows for the label- and amplification-free global analysis of the entire miRNA-ome on a cheap, disposable, semiconductor chip.

**Rohit Bhargava, Assistant Professor, Bioengineering, Beckman Institute, Micro and Nanotechnology Laboratory, *Who will die of prostate cancer? A systems pathology approach using computational prediction models to integrate imaging and biology***

This project seeks to develop mathematical tools and models to predict whether a detected prostate tumor may prove lethal. A new systems pathology approach is proposed in which chemical and structural measurements are combined to develop a picture of tumor growth and invasion.

**\*\*Steven P. Broglio, Assistant Professor, Kinesiology and Community Health, *Mild traumatic brain injury: Interscholastic football as an injury model***

Mild traumatic brain injuries represent a major medical concern with up to 3.8 million injuries resulting from sport participation annually. This investigation will evaluate injury biomechanics and post-injury cognitive decrements in youth athletes permitting the development of much needed diagnostic criteria and recovery patterns.

**Raffi Ohannes Budakian, Assistant Professor, Physics, *Probing the Physics of the Fractional Vortex State in Novel Superconductors***

The field of topological quantum computation is a new and rapidly growing area of research involving cutting-edge experiments at the interface of condensed matter physics, topology, and quantum information. This project looks at the recent discovery of a fractional vortex state in superconducting rings, their connection to topological quantum computation, and describe future experiments to further understand the properties of these vortices.

**Ashwini Chhatre, Assistant Professor, Geography, Beckman Institute for Advanced Science and Technology, and Department of Political Science, *Democratic governance and adaptation to climate change***

This project explores the emergence of democracy through contentious social interactions and its role in facilitating adaptation to impending climate change. Through ethnographic and historical analysis of case studies from India, the researcher will describe the importance of democracy for equitable responses to adverse climate impacts.

**\*\*Todd Coleman, Assistant Professor, Electrical and Computer Engineering, Neuroscience Program, *Systems Engineering Principles for the Design of Brain-Machine Interfaces***

This project will wed principles from systems engineering with psychology and neuroscience to develop novel brain-machine interface paradigms. This plan of research will develop novel immersive display environments to understand how users perform neural control in complex environments, and will also develop novel wearable brain-machine interface sensors that will enable ubiquitous use of the paradigm in widespread society.

**\*\*Jennifer A. Greenhill, Assistant Professor, Art and Design, *Playing It Straight: Art and Humor in the U.S. from the Civil War to the World's Columbian Exposition***

During the cultural reinvention that followed the Civil War, the expanding market for humor in the United States appeared to undermine the new national call for seriousness, particularly in the realm of “high” art, a category very much under construction. This project investigates how artists negotiated through this period to produce work that strikes the funny bone by playing it straight.

**Xiuling Li, Assistant Professor, Electrical and Computer Engineering and Materials Science and Engineering, *An All-Silicon Nanowire Tandem Solar Cell for \$1 per Watt Energy Conversion***

The feasibility of a novel all-silicon tandem solar cell that uses optically tunable silicon nanowire arrays is explored for high efficiency and sustainable (\$1/Watt) energy conversion. A manufacturable approach that involves a non-lithographical top-down fabrication process, as well as the fundamental mechanism of carrier generation and collection in semiconductor nanostructured devices, will be studied.

**Ripan Singh Malhi, Assistant Professor, Anthropology and Animal Biology,**  
*Collaborating with Native American Communities to Study Population History*

This project proposes to develop collaborations with individuals from Native American communities and use DNA as a tool to gain insight into the population histories of Native Americans. DNA will be used to investigate the initial peopling of the Americas as well as the effects of population events that occurred much more recently, such as European colonization.

**\*\*Darko Marinov, Assistant Professor, Computer Science and Information Trust Institute,**  
*Taming Bugs in Parallel Software*

Future software will have to be parallel (i.e., execute several computations at once) to be efficient, but parallel software often has bugs that make the software unreliable. This project will explore approaches for finding bugs in and removing bugs from parallel software to make it more reliable and trustworthy.

**John Charles Stallmeyer, Associate Professor, Architecture,**  
*Informational Urbanism: Information Technology Development and New Typologies of Architecture and Urban Space*

This project explores the relationship between information technology (IT) development and the contemporary city. Paying particular attention to the ways that IT both produces and mediates the physical and social spaces of the contemporary city, the project investigates new typologies and morphologies of architecture and urbanism across multiple cultural and geographical contexts.

**\*\*Anna Westerstahl Stenport, Assistant Professor, Germanic Languages and Literatures, Cinema Studies, Comparative and World Literature, International Studies, Gender and Women's Studies, Unit for Criticism and Interpretive Theory, European Union Center,**  
*Sexonomics: Gendered Economies of Expression in European Modern Drama 1880-1910*

This comparative project explores money metaphors and the gendered cultural construction of modern European capitalism, and its expression in aesthetic and avant-garde forms. This interdisciplinary book argues that modern drama and theater practices are privileged sites for revealing how human relationships by the end of the nineteenth century had become inextricably linked to gendered economic discourse. *Sexonomics* ultimately offers a model for understanding the rhetorical and performative foundations of contemporary global capitalism and the unequal models of consumption and production it advocates.

The Board action recommended in this item complies in all material respects with applicable State and Federal laws, University of Illinois *Statutes*, *The General Rules Concerning University Organization and Procedure*, and Board of Trustees policies and directives.

The President of the University concurs.