

Board Meeting
January 19, 2012

APPOINT FELLOWS TO THE
CENTER FOR ADVANCED STUDY, URBANA

Action: Appoint Fellows to the Center for Advanced Study for the Academic Year 2012-13

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 Vice President, University of Illinois and Chancellor, University of Illinois at Urbana-Champaign recommends the following list of Fellows selected for the 2012-13 academic year, and offers a brief description of their projects:

Jayadev Athreya, Assistant Professor, Mathematics, *Random Hyperbolic Lattices*

This project will study Random Hyperbolic Lattices--fundamental objects in mathematics, arising in many different areas including geometry, number theory, and group theory. The study of lattices has important applications in statistical physics, chemistry (crystallography in particular) and even in art, in modeling different types of symmetries.

****Eugene M. Avrutin, Assistant Professor, History, Jewish Culture & Society, *The Velizh Affair: Ritual Murder in a Russian Border Town***

Now largely forgotten, the Velizh affair (1823-1835) was the longest ritual murder case in the modern world. Drawing on the newly discovered archival materials, this book project reconstructs small town life in the Russian Empire, exploring along the

way, neighborly encounters, law and daily life, and the complex motivations resulting in the ritual murder charge.

Yann Robert Chemla, Assistant Professor, Physics, *Understanding the Mechanism of Molecular Nanomachines with Combined Single-Molecule Force Spectroscopy and Fluorescence Microscopy*

This program explores the application of a new, hybrid instrument developed in the lab that combines high-resolution optical tweezers with single-molecule fluorescence microscopy, the two most prominent and powerful techniques available. The key question under investigation is the mechanism by which molecular nanomachines involved in genome maintenance operate.

****Julie Cidell, Assistant Professor, Geography, Beckman Institute, *The City That Greens: Creating Chicago's New Urban Environment***

Chicago city employees, residents, visitors, and developers have been transforming their urban environment through a series of municipal programs and policies starting in the mid-1990s, including curbside recycling, installing pervious pavement in alleyways, and “greening” airports. This project explores how these programs improve some urban environmental conditions but produce new contradictions as well, leading to a proposal for a book manuscript tentatively titled *The City That Greens*.

****Andrei Cimpian, Assistant Professor, Psychology, *The Naturalistic Bias as a Source of Essentialist Thinking***

First, the proposed project aims to identify and characterize a basic psychological process involved in reasoning about the world: the naturalistic bias, which will be defined as a tendency to see many aspects of current reality as natural, even inevitable (as if current reality could not have turned out any other way.) Second, it aims to demonstrate that the naturalistic bias is a potential source of psychological essentialism, which is the common belief that categories of things in the world (e.g., cats, men) cohere by virtue of a deep underlying "essence."

Hyunjoon Kong, Assistant Professor, Chemical & Biomolecular Engineering, *Inflammation cell-mimicking nanoparticles for targeted imaging of leaky blood vessels*

The goals of this project are (1) to develop a nanoparticle that can detect and visualize leaky blood vessels and (2) to write a review article discussing current technologies to design a transporter of bioimaging contrast agents. This proposed study is highly innovative in both the design and application of the nanoparticle for targeted imaging, and successful completion of this study will significantly impact studies in bioengineering and clinical diagnosis.

****Melissa M. Littlefield, Assistant Professor, Kinesiology & Community Health, English, *Rethinking fMRI Lie Detection: Social Neuroscience and the Neural Correlates of Socially-Stressful Truth-Telling***

A growing number of fMRI studies have ostensibly shown increased blood-oxygenation-level-dependent (BOLD) activity in the prefrontal cortex and the anterior cingulate gyrus during deception; however, these studies rely on the assumption that truth-telling is a baseline against which the brain activation of deception can be measured. Via an fMRI experiment and a series of related papers, this project will trouble this assumption by testing and exploring the potential similarities between the stress of deception and the stress of telling the truth under duress.

Mark Neubauer, Assistant Professor, Physics, *An Integrated Approach to Understanding the Origin of Mass and Advancement in Computing and Triggering Technologies for Research in Particle Physics*

This proposal outlines specific activities to advance our knowledge regarding the origin of mass, which is essential to obtaining a fundamental understanding of the Universe, through experimentation using high energy proton collisions at the Large Hadron Collider. These proposed activities will also help address challenges arising in data-intensive scientific computing and the collection of rare but important types of collision events in particle physics experiments.

Ned O'Gorman, Assistant Professor, Communication, *The Bomb Studio: Science, America, and Hollywood in the Films of the Air Force's Lookout Mountain Laboratory*

This research project examines a historic set of motion pictures produced by a Hollywood-based United States Air Force film studio in the 1950s and 60s that documented and helped legitimate the massive Cold War expansion of the U.S. nuclear weapons program. This project argues that the rhetorical power of these films depended on their unusual synthesis of discourses drawn from American civic nationalism, modernization, and classical Hollywood cinema. This collaborative proposal was submitted jointly with Associate Professor Kevin Hamilton (School of Art & Design.)

Gabriel Popescu, Assistant Professor, Electrical & Computer Engineering, *Optical Resonance Imaging*

This project aims to develop diffraction-unlimited resolution microscopy using a principle borrowed from magnetic resonance imaging. If successful, the new technology will enable the imaging of structures down to the nanoscale, both in label-free and fluorescence mode, which will open up new, previously unapproachable areas of study in both materials and life sciences.

Terri Weissman, Assistant Professor, Art History, Jewish Culture & Society, Criticism & Interpretive Theory, *This is What Democracy Looks Like: Freedom, Action and Revolutionary Dreams*

Theories of democracy increasingly center on acts of looking and being seen. *This is What Democracy Looks Like: Freedom, Action, and Revolutionary Dreams* analyzes this phenomenon and the various ways individuals visually express their political selves in order to explain what it means that we have become a nation of citizen-spectators as much as citizen actors.

**These faculty members 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 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.