

Board Meeting
January 31, 2019

APPOINT FELLOWS TO THE CENTER FOR ADVANCED STUDY, URBANA

Action: Appoint Fellows to the Center for Advanced Study

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 untenured faculty of all departments and colleges to carry out self-initiated programs of scholarly research or professional activity.

The Chancellor, University of Illinois at Urbana-Champaign, and Vice President, University of Illinois recommends the following list of Fellows selected for the 2019-2020 academic year, and offers brief descriptions of their projects:

Jefferson Chan, Assistant Professor, Chemistry, *Development of Chemical Tools to Study How Stem Cells Age

Stem cells are important cell populations in the body that maintain tissue health, and thus understanding the mechanisms that lead to a decline of stem cell function can provide unique insights into how their regenerative capacity can be enhanced to facilitate healthy aging. Professor Chan and his research team aim to accomplish this by developing chemical probes to study reactive aldehydes that are believed to be responsible for damaging and aging of stem cells.

Michael Dann, Assistant Professor, Religious Studies, *Powerful Memories, Pregnant Silences: Shi'ism and the Making of the Sunni Hadith Tradition

This book chronicles the lives, literary contributions, and posthumous reception of Shī'ites, who have made indispensable contributions to the Sunnī hadith tradition. It argues that while Sunnī-Shī'ite ambiguity has always been a significant feature of Islamic societies and has provided ample space for renegotiations of sectarian boundaries in different historical contexts, a variety of strategies of boundary maintenance have also always been employed to ensure that such ambiguity does not overturn the basic dichotomy on which these two sectarian identities depend.

Ying Diao, Assistant Professor, Chemical and Biomolecular Engineering, *Reinventing Molecular Electronics for Ultrasensitive Biochemical Detection on a Chip

This work seeks to develop bioactive electronics by re-purposing medicinal compounds as molecular electronics, which evolved high binding affinity and specificity with biomarkers. The proposed work will not only lead to discovery of new electronic materials inspired by plant-derived semiconductors, but also usher electronic biochemical sensing into a new era of personalized health monitoring, prognosis and diagnosis.

Citlali Lopez-Ortiz, Assistant Professor, Kinesiology and Community Health, *Force Feedback of Low Dimensions in Virtual Reality for Movement Rehabilitation and Characterization in Cerebral Palsy*

Individuals with cerebral palsy demonstrate abnormal muscle tone and motor control of challenging diagnosis and rehabilitation. We propose using robotic force feedback of low dimensions in virtual reality for rehabilitation and quantitative characterization of movement impairment.

Benjamin Marx, Assistant Professor, Economics, *Quantitative Analysis of the Nonprofit Economy*

Professor Marx will analyze the nonprofit sector by merging data from organizations' IRS information returns with restricted-access Census data covering firms and establishments. The project will examine data quality, the size of the nonprofit sector, determinants of its growth, and its effects on the distribution of income.

Naveen Naidu Narisetty, Assistant Professor, Statistics, *Detection and

Characterization of Patient Subgroups with Heterogeneous Behavior

Motivated by large-scale medical studies where huge volumes of data with complex structure are produced, this project aims to develop a novel statistical framework to detect patient subgroups which exhibit heterogeneous behavior and to characterize these subgroups based on their biological and clinical features. The research methods will be useful for personalized medicine so that patients belonging to more responsive subgroups can be treated, and those belonging to subgroups with side effects can be excluded from such treatments.

Julia "Jessie" Shelton, Assistant Professor, Physics, *Tracking the Gravitational Footprints of Decoupled Dark Sectors*

This research will develop theoretical predictions for the gravitational impact of dark particle physics on the growth of cosmic structure in the early universe. These predictions are generic to a large class of dark matter models that are out of reach of laboratory experiments on Earth, and open new avenues for unraveling dark particle physics through its gravitational shadow in the sky.

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 Executive Vice President and Vice President for Academic Affairs concurs.

The President of the University recommends approval.

* 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 to their respective fields.