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CLINICAL & TRANSLATIONAL NEUROSCIENCE

NEUROSCIENCE NEWS | OCTOBER 2018

Welcome to the October Clinical and Translational Neuroscience newsletter. This month we'll let you know about new funding opportunities from the NIH, highlight events of interest, and feature an investigator on campus. Please visit our program area pages of the IHSI website for the latest news and grant opportunities. And as always, if you have an item to share with the neuroscience community at Illinois, we would be happy to feature it. Items can be submitted to Gillian Snyder, IHSI research development manager.

REMINDER: HEALTH I.D.E.A.S. LECTURE WITH KAMIL UGURBIL TODAY

Imaging Function and Connectivity in the Human Brain with High Magnetic Fields: Spanning Scales from Cortical Columns to Whole Brain

Kamil Ugurbil, PhD, University of Minnesota

October 24, 2018 | 3:00 - 4:00 p.m.
Reception to follow
Beckman Institute Auditorium
Register (space is limited)

This lecture is held in partnership with the Beckman Institute, Carle Illinois College of Medicine, Center for Brain Plasticity, and the Neuroscience Program at the University of Illinois, and Carle Health System.

VIEW SEMINAR DESCRIPTION

INNOVATIVE INVESTIGATOR SPOTLIGHT | CATHERINE CHRISTIAN

Each Investigator Spotlight features a clinical and translational neuroscience researcher doing important work right here at Illinois.

Professor Catherine Christian's research interests include synaptic transmission, cellular and circuit excitability, and glial-neuronal interactions in the contexts of neuroendocrinology and epilepsy.

LEARN MORE

INCREASING DIVERSITY IN NEUROSCIENCE RESEARCH

This Funding Opportunity Announcement (FOA) is an initiative of the NIH Blueprint for Neuroscience Research, a collaborative and coordinated effort across 15 Institutes, Centers and Offices (ICO) that supports research, research education, and research training with the goal of accelerating the pace of discovery in neuroscience research. By pooling resources and expertise, the NIH Blueprint for Neuroscience Research can take advantage of economies of scale, confront challenges too large for any specific ICO, and develop research tools and infrastructure that will serve the entire neuroscience community.

The purpose of the NIH Blueprint Diversity Specialized Predoctoral to Postdoctoral Advancement in Neuroscience Award or D-SPAN (F99/K00) is to support mentored research training for late-stage graduate students from diverse backgrounds, including those from groups that are underrepresented in neuroscience research, and who have demonstrated interest and potential in pursuing careers as independent researchers. Applicants must be currently enrolled as students in a PhD or equivalent research doctoral degree program at the time of application.

VIEW THE FOA

ALZHEIMERS DISEASE AND NEUROPSYCHIATRIC SYMPTOMS

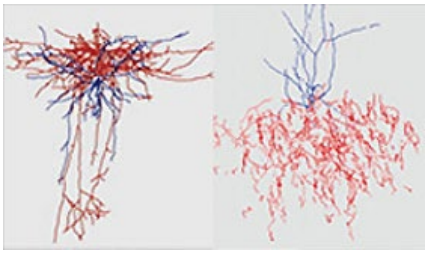
The goal of these Funding Opportunity Announcements (FOAs) is to encourage applications for studies that will enhance knowledge of mechanisms associated with neuropsychiatric symptoms (NPS) in persons with Alzheimer's disease (AD) or Alzheimer's disease-related dementias (ADRD). The findings from such research are expected to advance mechanistic understanding of both biobehavioral and neurobiological pathways leading to NPS, and may provide insights into novel targets for interventions that might alleviate some burden associated with these symptoms, or suggest strategies for preventing the development of NPS as related to AD or ADRD.

NPS, or Behavioral and Psychological Symptoms of Dementia (BPSD), include aggression, psychosis, anxiety, apathy, depression, agitation, sleep disturbances and wandering, and can be significant challenges to the care and treatment of people with dementia. These symptoms lead to accelerated declines in both functional abilities and may lead to earlier nursing home placement. Currently, few pharmacological treatments are available. In addition, there is a need to understand behavioral and environmental targets to further refine and develop promising behavioral treatments for these disorders.

The demand for novel treatment approaches highlights the importance of identifying and dealing with the underlying causes of these symptoms among older adults with dementia. There is thus an urgent need to advance the mechanistic understanding of these problems to identify new treatment targets. The National Plan to Address Alzheimer's Disease specifically calls for the development of better treatments for the behavioral and psychiatric complications due to the disease.

RFA-MH-19-510 uses the R01 grant mechanism, while RFA-MH-19-511 uses the R21 mechanism. High risk/high payoff projects that lack preliminary data or utilize existing data may be most appropriate for the R21 mechanism.

BRAIN INITIATIVE FUNDING



The BRAIN Initiative Cell Census program awarded 9 collaborative projects in 2017 and 5 in 2018, which collectively constitute the BRAIN Cell Census Network (BICCN). The overarching goal of the BICCN is to generate comprehensive 3D common reference brain cell atlases that will integrate molecular, anatomical, functional, and cell lineage data for describing cell types in mouse, human, and non-human primate brains.

A recent Funding Opportunity Announcement (FOA) intends to accelerate the integration and use of scalable technologies and tools to enhance brain cell census research, including the development of technology platforms and/or resources that will enable a swift and comprehensive survey of brain cell types and circuits. Applications are expected to address limitations and gaps of existing technologies/tools as a benchmark against which the improvements or competitive advantages of the proposed ones will be measured. The improvements include throughput, sensitivity, selectivity, scalability, spatiotemporal resolution and reproducibility in cell census analyses. The projects funded under this FOA will align with the overarching goals of the BRAIN Initiative Cell Census Network (BICCN) and are expected to enable the generation of a substantial amount of cell census data using the proposed technologies or via collaboration with the BICCN.

Another Funding Opportunity Announcement (FOA) intends to support a group of Specialized Collaboratories that will adopt scalable technology platforms and streamlined workflows to accelerate progress towards establishing comprehensive molecular and anatomical reference cell atlases of human brain and/or non-human primate brains. A central goal of this FOA is to build a brain cell census resource that can be widely used

throughout the research community.

DEVICE DEVELOPMENT FOR MENTAL HEALTH APPLICATIONS

The use of brain stimulation devices provides a unique opportunity to develop novel treatments for mental health disorders. Brain stimulation devices provide both the most efficacious (electroconvulsive therapy, ECT) and one of the most recently-cleared (transcranial magnetic stimulation, TMS) treatments for depression. However, while these successes demonstrate the potential to improve clinical care, limitations of the few existing FDA approved/cleared devices (e.g., cognitive side effects of ECT, variability in response to TMS) hamper widespread clinical use. In order to develop efficacious treatments that will be widely utilized across a variety of disorders, the development of innovative brain stimulation devices and novel approaches with existing devices is urgently needed.

The purpose of these funding opportunity announcements (FOAs) is to encourage applications seeking to develop the next generation of brain stimulation devices for treating mental health disorders. Applications are sought that will either 1) develop novel brain stimulation devices or 2) significantly enhance, by means of hardware/software improvements, the effectiveness of brain stimulation devices that are currently U.S. Food and Drug Administration (FDA)-approved or cleared. Novel devices should move beyond existing electrical/magnetic stimulation and develop new stimulation techniques capable of increased spatiotemporal precision as well as multi-focal, closed-loop approaches. Applications seeking to develop new capabilities should focus on significant enhancement of the spatial resolution, depth of delivery, and/or precision of the device. Incremental changes to existing devices (e.g., software updates) are not within the scope of this announcement. Applications should be submitted by multi-disciplinary teams with diverse expertise including systems neuroscience, engineering, clinical, and regulatory affairs.

Applications submitted in response to this FOA should promote the development or significant enhancement of novel tools (hardware/software) for brain stimulation in humans. Although the application should focus on the engineering development and bench top testing of the tool, animals and limited human testing necessary to demonstrate initial proof of concept is allowable. Applications to this FOA are not expected to be hypothesis-driven, but should propose design-directed, developmental, or discovery-driven technology research using integrative approaches. Applications that seek to study scientific or clinical hypotheses that simply utilize devices are outside the scope of this FOA. One FOA uses the R21 grant mechanism, encouraging shorter, higher-risk applications, whereas its companion funding opportunity seeks R01 grant applications.

MCKNIGHT FOUNDATION AWARDS

The McKnight Scholar Awards encourage neuroscientists in the early stages of their careers to focus on disorders of learning and memory. The Scholar Awards support young scientists who: hold an M.D. and/or Ph.D. degree; have completed formal postdoctoral training; and demonstrate a commitment to neuroscience. The Endowment Fund especially seeks applicants working on problems that, if solved at the basic level, would have immediate and significant impact on clinically relevant issues.

Technological Innovations in Neuroscience Awards support scientists who work on novel and creative approaches to understanding brain function. The program seeks to advance and enlarge the range of technologies available to the neurosciences.
The Endowment Fund is especially interested in how technology may be used or adapted to monitor, manipulate, analyze, or model brain function at any level, from the molecular to the entire organism. Technology may take any form, from biochemical tools to instruments to software and mathematical approaches. Because the program seeks to advance and enlarge the range of technologies available to the neurosciences, research based primarily on existing techniques will not be considered.

THE McKNIGHT FOUNDATION

Awards

CLINICAL & TRANSLATIONAL NEUROSCIENCE IN THE NEWS

Researchers at Illinois advance work in clinical and translational neuroscience, addressing complex and critical challenges. Here, we highlight recent research news:

10.16.18 Impact of caregiving on brain development

10.12.18 Neurons regulating hormone release have different activity in mice with epilepsy

IMPORTANT DATES AND DEADLINES

- Health I.D.E.A.S. Lecture with Kamil Ugurbil: October 24, 3 p.m.
- Scolnick Prize in Neuroscience nominations: December 15, 2018

Contact Gillian Snyder, IHSI research development manager, at 217-300-6709 or gcooke@illinois.edu if you have a calendar item or event to share.

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