Brain Mapping Center
SEMINAR SERIES

Sponsored by the UCLA Brain Mapping Center Faculty

The focus of these talks is on advancing the use of brain mapping methods in neuroscience with an emphasis on contemporary issues of neuroplasticity, neurodevelopment, and biomarker development in neuropsychiatric disease.

Hosted By: Shantanu Joshi, PhD, Neurology, UCLA

"Deriving neural circuit biotypes for depression and anxiety"

Leanne Williams, PhD

Professor, Psychiatry and Behavioral Sciences
Stanford University

Through rapid advances in brain mapping we have an understanding of the intrinsic neural circuit architecture that underlies domain-general processes of self-reflection, salience perception, and attention. Accumulated evidence also highlights the organization of task-evoked circuits for responding to affectively valenced stimuli and for controlling the processes of cognition. Disruptions in self-reflective negative thoughts, affective response, attention and cognition are hallmarks of depression and anxiety. Yet, till recently we have not had a means to characterize the basis of these disruptions in neural circuit dysfunction.

I present on a neural circuit taxonomy that I have developed to address this gap. Guided by this theoretical taxonomy, I have quantified dysfunction in six large-scale brain circuits at the individual patient level for train and test samples of individuals with depression and anxiety and without these disorders. By developing in parallel an image processing system, I generate circuit dysfunction scores that are reproducible, reliable, and readily clinically interpretable.

In primary and generalization samples I illustrate that disconnection within the intrinsic circuits and dysfunction within task-evoked circuits map onto specific symptoms and poorer daily function. In additional independent samples treated with different pharmacological and behavioral therapies I illustrate the clinical utility of using circuit dysfunction to differentiate who may benefit from each of these treatments and who may not. In newly launched studies circuit dysfunction is probed with mechanistic targets. The overarching goal is to harness insights from brain mapping to accelerate the development of a neuroscience-informed understanding of mental disorders that can be deployed clinically.

November 7, 2019 11:00am - 12:00pm

Neuroscience Research Building (NRB 132)
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