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2024 Neuropsychopharmacology Reviews

Panel Session

Advances and Challenges in Using Neuroimaging to Identify Mechanisms and Treatments of Mental Health Conditions

Co-Chairs: Deanna M. Barch, Ph.D. and Conor Liston, M.D., Ph.D.

The ACNP panel session for *Neuropsychopharmacology Reviews* will be held on Monday, December 9, 2024, 9:00AM - 11:00AM Mountain Standard Time.

While the causes of mental health conditions are multi-faceted, disruptions in brain function, structure, and development are central to understanding both the mechanisms by which such conditions emerge and how to treat them best. Such efforts in both human and animal research have drawn heavily on a variety of invasive and non-invasive brain imaging tools in both

humans and animals. These efforts have been hugely informative in a number of ways, helping us to identify both shared and unique neural differences present in a number of different psychiatric disorders and helping to both generate and test theories about etiological pathways to the development of mental illness. At the same time, research in both human and animal neuroimaging has also met with challenges, including issues around the interpretation of obtained signals, robustness of results, and reliability across time and settings. As such, novel approaches and methods to both invasive and non-invasive neuroimaging in humans and animals have been developed to address these concerns and move the field forward.

The objective of this session, based on the upcoming issue of *Neuropsychopharmacology Reviews*, is to overview key innovations in the use of advanced neuroimaging methods in humans and animals to further our search to identify causes and optimize treatments for a broad range of mental health concerns. The five selected presentations will consider these issues from a variety of perspectives. Dr. Deanna Greene will overview innovations in precision functional neuroimaging in humans, an approach designed to capitalize on the known variability in human brain organization to generate optimized methods in humans that show better reliability and predictive utility. Dr. Peter Rudebeck will overview advances in neuromodulation and neuroimaging in both humans and animals. Dr. Mazen Kheirbek will outline novel approaches using calcium imaging to identify cell types and circuits that might be disrupted in relation to psychiatric disorders. Dr. Amit Etkin will overview the advances in using neuroimaging tools in the context of treatment development, both in industry and in academia. Lastly, Dr. Holly Lisanby will provide an NIMH-informed perspective on the major challenges and opportunities for neuroimaging in our ongoing efforts to reduce the burden of mental illness.

Speakers

- Deanna Greene, Ph.D.
 - University of California at San Diego
 - Precision Functional Imaging in the Search to Understand the Neural Basis of Psychopathology
- Peter Rudebeck, Ph.D.
 - Icahn School of Medicine at Mount Sinai
 - What can neuroimaging of neuromodulation reveal about the basis of circuit therapies for psychiatry?
- Mazen Kheirbek, Ph.D.
 - University of California, San Francisco
 - Identifying dysfunctional cell types and circuits underlying psychiatric disorders with calcium imaging
- Amit Etkin, M.D., Ph.D.
 - Stanford University
 - Opportunities for the use of neuroimaging in de-risking drug development and improving clinical outcomes in psychiatry: an industry perspective
- Holly Lisanby, M.D.
 - National Institute of Mental Health
 - NIMH Perspectives on Future Directions in Neuroimaging for Mental Health