

Catalyzing ADHD and Autism Spectrum Disorder Centers via Advancing Brain Imaging Development in Rodent Models

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Brain imaging has transformed modern medicine. In the clinical neurosciences, MRI has been particularly important for localizing structural brain abnormalities underlying several neurologic conditions. Yet, in most instances the clinical management of brain disorders that do not cause structural lesions has not moved forward alongside the introduction of clinical neuroimaging. Metabolic disorders, chronic pain syndromes, movement disorders, and, in particular, neuropsychiatric disorders, such as ADHD and Autism, typically do not correspond to a focal structural abnormality that can be identified with standard clinical MRI protocols.

To improve clinical management of disorders such as ADHD and Autism it is critical that objective biological measures (i.e. biomarkers) be created alongside a better understanding of the genetic and biologic underpinnings of these diseases. Developing a program capable of informing these disease types in this way would significantly advance modern medicine - both in terms of clinical management and understanding underlying neurobiological mechanisms - a critical goal to many OHSU investigators. Toward this end, the current proposal is part of a larger vision, which aims at obtaining a large center or program project aimed at clarifying heterogeneity, understanding etiology, and developing markers of ADHD and/or Autism. Developing the means by which to obtain such an award has been ongoing over the last 1-2 years. This proposal represents the "final piece of the puzzle," by conducting experiments to advancing the potential to use resting-state functional connectivity MRI (rs-fcMRI) as a biomarker, to clarify heterogeneity, and to understand etiology for ADHD and Autism.