

Pediatric Neuroimaging Grows Up: Large Scale Imaging Initiatives to Study the Developing Brain

Organizers:

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Increasingly, major neuropsychiatric disorders ranging from schizophrenia to addiction are understood as disorders of brain development. Non-invasive multi-modal neuroimaging can provide insights regarding trajectories of normal brain development, how abnormal brain development may be associated with psychopathology, and how health behaviors such as substance use may impact developmental trajectories. Such work is a critical prerequisite for early identification of psychopathology, the development of targeted interventions, and also may have substantial implications for public health policy. Accordingly, this symposium provides an overview of four large-scale developmental neuroimaging initiatives. These datasets both accelerate research regarding brain development and also provide rich resources for development of novel “big data” analytics.

First, Ted Satterthwaite (University of Pennsylvania) will present data from the Philadelphia Neurodevelopmental Cohort, a single-site community-based study of 1,600 youth that integrates multimodal imaging and genomics with detailed assessment of psychopathology and cognition. Second, Michael Milham (Child Mind Institute) will describe the design and findings provided by the NKI-Rockland Sample, an epidemiologically-ascertained lifespan study of 1,000 children, adolescents, and adults. Third, Hugh Garavan (University of Vermont) will describe the work of the IMAGEN consortium, a longitudinal study of 2,000 adolescents investigating reinforcement-related behavior using imaging and genomics. Finally, Terry Jernigan (University of California, San Diego) will present data from the Pediatric Imaging, Neurocognition, and Genetics (PING) study, a multi-site study of over 1,000 youth ages 3-20. Additionally, Dr. Jernigan will describe plans for the ABCD study, a landmark effort to follow 10,000 youth longitudinally over 10 years.

The Philadelphia Neurodevelopmental Cohort: A resource for exploring normal and abnormal patterns of brain development

Theodore Satterthwaite, University of Pennsylvania, Philadelphia, PA, United States

The NKI-Rockland Sample: A Model for Accelerating the Pace of Discovery Science in Psychiatry.

Mike Milham, Child Mind Institute, New York, NY, United States

Risk factors for adolescent mental ill-health: Exploratory “Big Data” and hypothesis-driven approaches

Hugh Garavan, University of Vermont, Burlington, VT, United States

Large-scale, collaborative, multi-site imaging studies of brain development

Terry Jernigan, University of California, San Diego, San Diego, CA, United States