

# Using neuroimaging to develop novel biomarkers: A case study of “big data” in Huntington’s disease

## Organizers:

Jane Paulsen

The University of Iowa, Iowa City, IA USA

*Jatin Vaidya*

University of Iowa, Iowa City, IA

Functional and structural neuroimaging has transformed the neuroscientific study of human thought, behavior, and emotion. However, neuroimaging is also playing an increasingly important role in applied research that seeks to identify neural biomarkers of neurological and psychiatric disease. This symposium focuses on functional and structural biomarkers of Huntington’s disease (HD), an inherited neurodegenerative disorder that ultimately leads to progressive loss of motor and cognitive functions. The results presented here are based on the PREDICT-HD project, a multi-site, longitudinal study investigating neural and behavioral changes in individuals who are genetically predisposed to develop HD. Presenters will discuss novel longitudinal methods and connectivity analysis techniques as well as “big data” integration methodologies that may ultimately lead to novel neural biomarkers of early disease progression that can be used in clinical trials to measure the effectiveness of new therapeutic agents.

## Learning Objectives:

1. Identify different ways of applying neuroimaging techniques for biomarker research
2. Characterize patterns of corticostriatal degeneration associated with Huntington’s disease
3. Learn novel ways of analyzing longitudinal neuroimaging data

## Abnormalities in brain circuitry in prodromal Huntington’s disease revealed using covariate-adjusted structural equation modeling of multi-site resting state fMRI data

Jatin Vaidya, University of Iowa

## Imaging Brain Networks in Huntington's disease

Andrew Feigin, The Feinstein Institute for Medical Research, North Shore-LIJ Health System, Manhasset, NY, United States

## Shape analysis of basal ganglia structures in Huntington's disease

Tilak Ratnanather, Center for Imaging Science, Johns Hopkins University, Baltimore, MD, United States

## Severity in Huntington’s disease predicted via deep learning network analysis of structural brain imaging

Sergey Plis, The Mind Research Network, Albuquerque, NM, United States