Introduction to Imaging Genetics

Half Day Morning Course / 8:00-12:00

Organizers:

Jason Stein, PhD, University of North Carolina at Chapel Hill, United States

This course will introduce the fundamentals of "Imaging Genetics," the process of modeling and understanding how genetic variation influences the structure and function of the human brain as measured through brain imaging. The course begins with a brief history of imaging genetics, including discussion on replicability and significance thresholds. Then, we will review recent findings in neuropsychiatric disease risk, what neuroimaging genetics can learn from neuropsychiatric genetics, and how neuroimaging genetics can be used to explain missing mechanisms in neuropsychiatric genetics. We will cover datasets and methods for conducting common and rare variant associations, as well as bioinformatic tools to interpret findings in the context of gene regulation. Overall this course will provide the neuroimager who is not familiar with genetics techniques an understanding of the current state genetics field when exploring neuroimaging phenotypes.

Course Schedule:

8:00-8:45

A brief history of imaging genetics

Jason Stein, PhD, University of North Carolina at Chapel Hill, United States

8:45-9:30

The genetic influences on neuropsychiatric disease risk

Sven Cichon, Dr. rer. nat., Universitat Basel, Switzerland

9:30-10:15

The effect of common genetic variation on human brain structure

Paul Thompson, Imaging Genetics Center, Keck School of Medicine of University of Southern California, United States

10:15-10:30

Break

10:30-11:15

The effect of rare variation on human brain structure

Carrie Bearden, University of California, Los Angeles, United States

11:15-12:00

Connecting genetic variation to gene regulation

Bernard Ng, PhD, University of British Columbia, Canada