HARVARD MEDICAL SCHOOL

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

CELEHS Distinguished Lecture Series 2024

Title: Understanding Disease Causality: An Introduction to Mendelian Randomization

Date & Time: 09/19 from 9:30-12:30 pm

Location: Countway Library, Ballard Room 503 (5th Floor)

Jingshu Wang, PhD
Department of Statistics at the University of Chicago

Dr. Wang's main research interest is in developing statistical methods and machine learning tools for cutting-edge bio-technologies and genetic problems. She currently works on various problems related to single-cell multi-omics and Mendelian Randomization. Dr. Wang's research also includes developing new statistical methods and theories for multiple p-values combinations to increase replicability and/or power, causal inference, and factor models, with their applications in statistical genetics.

Short-course Description

Understanding the pathogenic mechanism of common diseases stands as a foundational objective in clinical research. Mendelian Randomization (MR), a method gaining increasing popularity, offers an innovative approach to discerning causal relationships by utilizing genetic variants as instrumental variables. When assumptions are satisfied, MR empowers the inference of causal effects from observational data, even in the presence of unmeasured confounding. This short course contains two lectures covering the foundational concepts and assumptions of MR, recent state-of-the-art methods to deal with assumption violations, and connections between MR and related fields. We will start with an introduction of the basic idea of MR with deeper discussions on the assumptions underlying an MR study. Then, we will introduce various recent methods designed to address assumptions' potential violations. We will also explore advanced topics such as multivariable MR, within family MR, MR with time series data, and the practical challenges of employing MR in the context of genetics and epidemiology.

RSVP before September 16
"Limited seating"

TRANSLATIONAL DATA SCIENCE
CELEHS
CENTER FOR A LEARNING HEALTH SYSTEM