THE UNIVERSITY OF CHICAGO

Department of Statistics

DISSERTATION PROPOSAL

TAE HYUN KIM

Department of Statistics
The University of Chicago

Effects of Ancestry on the African American Transcriptome: Statistical Challenges in Modern Biomedical Data

MONDAY, December 10, 2018, at 11:00 AM
Jones 304, 5747 S. Ellis Avenue

ABSTRACT

Ancestry is known to play an important role in human phenotypes including susceptibility to diseases. In the past, ancestry was largely studied with the self-reported race, but now ancestry can be quantified more accurately with the help of advances in population genetics and statistical methods. Meanwhile, the next generation sequencing technology provides us with rich genomic and transcriptomic data sets that bring us closer to a comprehensive picture of human biology. Taking advantage of these data and technology, we study the African Americans' expression level and its relationship with ancestry, and we tackle the relevant statistical challenges. We aim to answer three problems. First, we study the effects of ancestry on the gene expression levels, and then we study the interaction effect between ancestry and minor alleles on the expression levels. Lastly, we study gene co-expression networks to see if ancestry plays a role in gene-gene correlation.