



THE UNIVERSITY OF
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Ancestry-eGenes: Differentially Expressed Genes
by Local Ancestry and Genotype

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ABSTRACT

Ancestry is known to play a large role in phenotypic variation from physical appearances to susceptibility to diseases. In this work, we use the RNA-seq data in muscle-skeletal tissue to explore the relationship between gene expression level and ancestry. While there have been studies in the past that found a set of eQTLs and eGenes, this study aims to find the ancestry-eGenes whose local ancestry shows a strong interaction effect on their expression level with the genotype of a certain SNP. We used a permutation test to control for Type I error while accounting for the linkage disequilibrium structure. As a result, we found 201 ancestry-eGenes and analyzing their biological functions showed a significant enrichment of the genes in the MHC region, possibly implying a difference in the immunological evolutionary process between Africans and Europeans.

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