

# Master's Student Research in the Ochoa Lab

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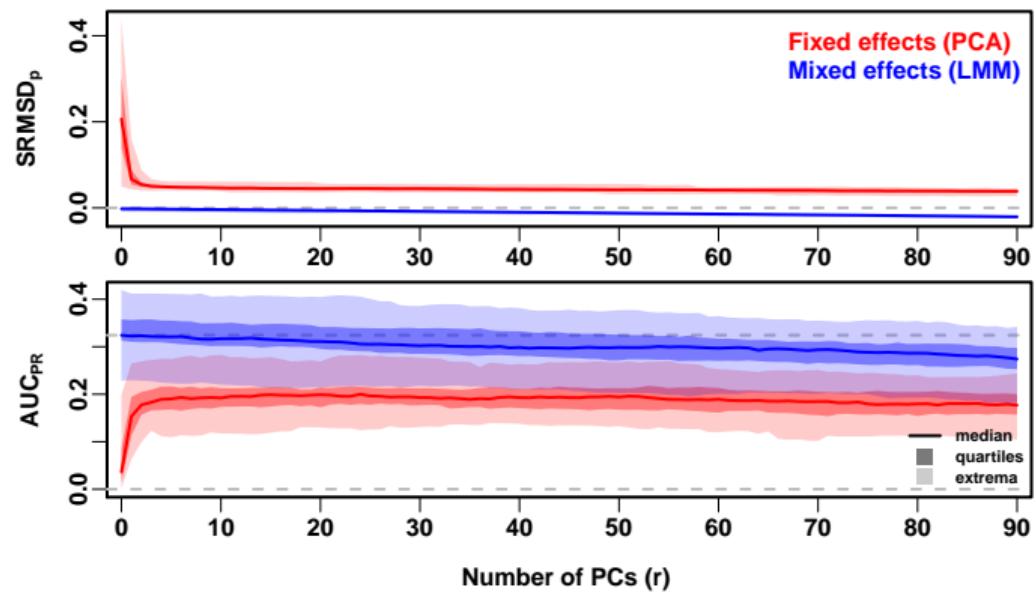
StatGen, Biostatistics & Bioinformatics — Duke University

2021-02-19 — Master of Biostatistics Virtual Visit Day

# Principal components vs mixed effects in genetic association



Yiqi Yao  
MB 2020  
Now: IQVIA in Beijing

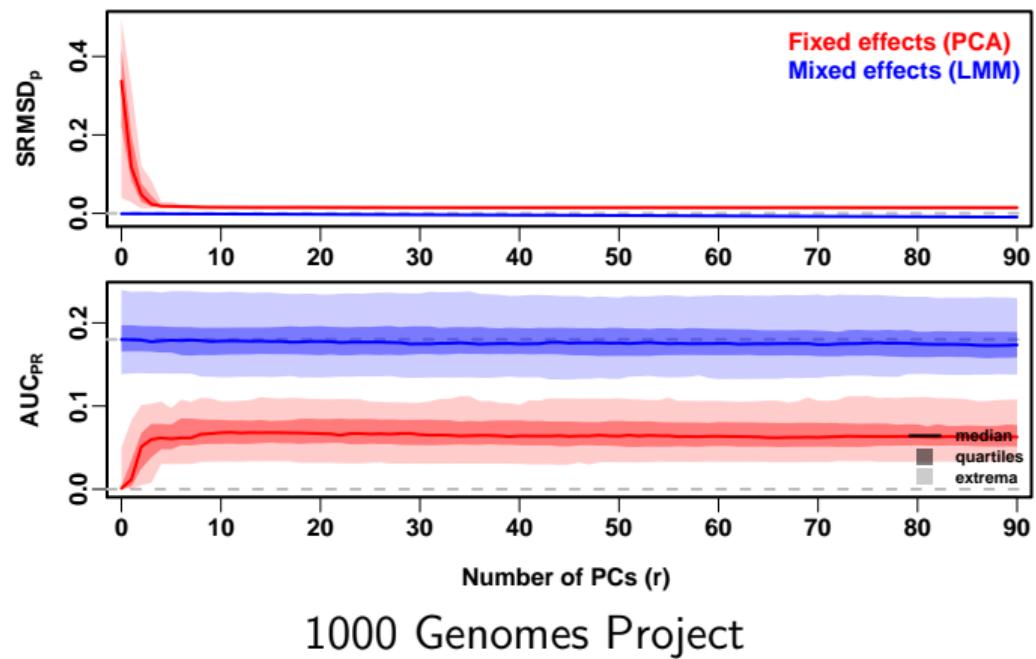


Simulated admixture + family structure

# Principal components vs mixed effects in genetic association



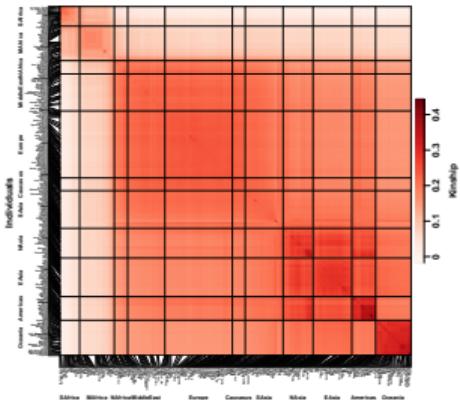
Yiqi Yao  
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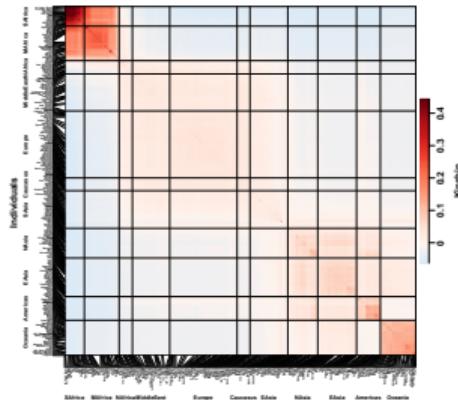
# Kinship bias does not affect genetic associations



Zhuoran Hou  
MB 2021  
Admitted to PhD

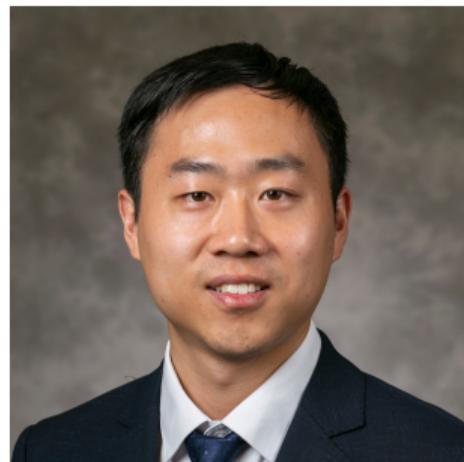


New popkin  
kinship estimator

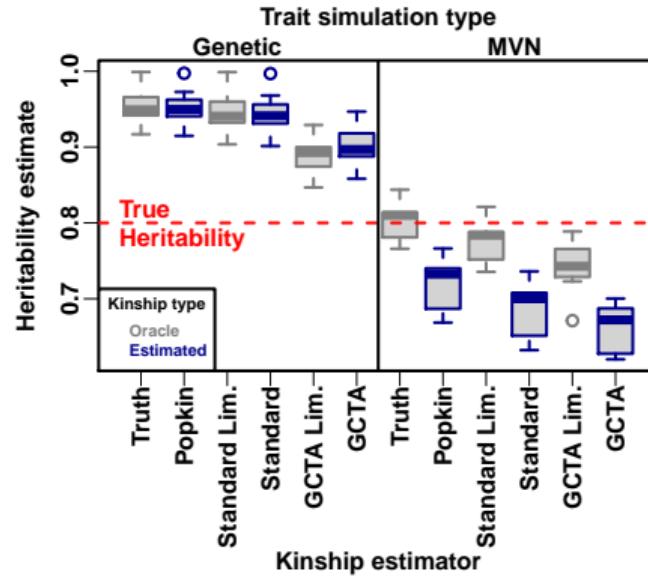


Standard  
kinship estimator

# Kinship bias affects heritability estimation



Zhuoran Hou  
MB 2021  
Admitted to PhD



# Tuning elastic nets for genetic association



Jiajie Shen  
MB 2022

$$\hat{\beta} \equiv \underset{\beta}{\operatorname{argmin}} (\|y - X\beta\|^2 + \lambda_2 \|\beta\|^2 + \lambda_1 \|\beta\|_1).$$

- ▶ Validate existing PCA extension
- ▶ How to model higher-dimensional relatedness?

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