Improving genetic prediction for genetic-testing consumers

Diego F. Salazar-Tortosa PhD
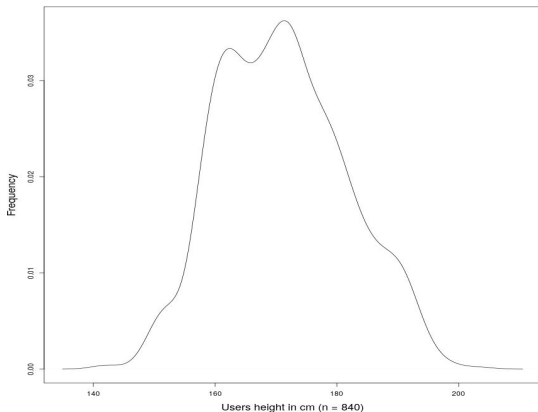

THE UNIVERSITY
OF ARIZONA

Relevance of genetics

- Well known influence for some traits aside the environment
- Gaps in the knowledge of specific genetic determinants
- Limited genetic prediction of traits

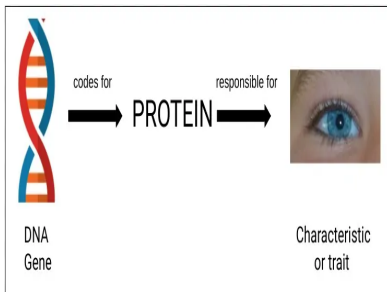Schematic representation of gene-trait relationship

openSNP: genetic prediction of height

- Open-access database with genetic and height data
- 5.7 GB of genetic and height data scrapped with an API
- ≈ 9 thousand genetic variants associated with height

Genetic algorithms to predict height

- Genetic algorithms selecting best genetic variants
  - Filtering by association p-values
  - Considering functional impact on proteins
- Fine tuning of algorithm parameters $\rightarrow$ battery of algorithms
- Influence of algorithm parameters on height prediction

Schematic representation of gene-trait relationship

Proof of concept

- Improvement of algorithms for genetic prediction
- Future test on larger datasets with clinical data
- More robust predictions of disease risk for consumers