

Genome-Wide Association Studies (GWAS)

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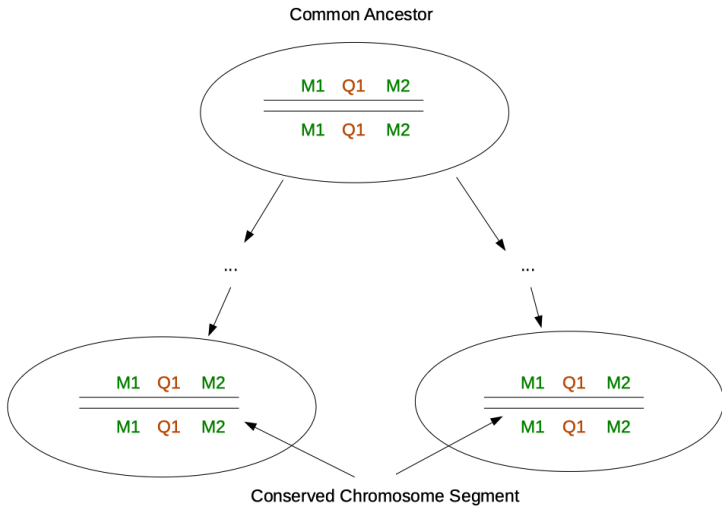
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Motivation

- ▶ Want to find location of important “genes”
- ▶ Draft of complete sequence of Human genome in 2000
- ▶ Function of different regions of genomes not known for large parts

→ Associate locations in the genome with function

Association



Single Marker Regression Tests

$$y = Wb + Xg + e \quad (1)$$

Genome-Wide Association Experiments Using Haplotypes

- ▶ Haplotypes as groups of SNP

Fitting All Markers Simultaneously

$$y = \mathbf{1}^T \mu + Xg + e$$