

Parent Offspring Breeding Values

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Decomposition

- ▶ For animal i with parents s and d , breeding value u_i can be decomposed

$$u_i = \frac{1}{2}u_s + \frac{1}{2}u_d + m_i$$

- ▶ Modelling m_i as deviation leads to

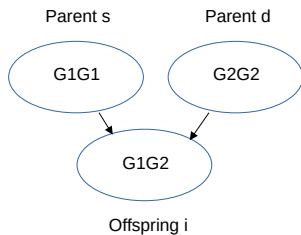
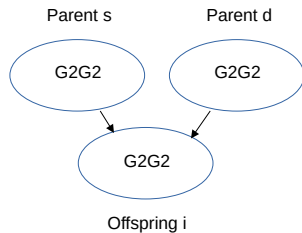
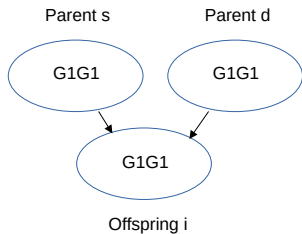
$$\frac{1}{N} \sum_{k=1}^N m_k = 0$$

for a large number of offspring of the same parents.

Verify

- ▶ Single locus model with locus G
- ▶ Locus G is bi-allelic
- ▶ Allele frequencies p and q and genotypic values a and d are known
- ▶ Different cases according to genotypes of parents and offspring

Homozygous Parents



Further Cases

- ▶ Mixed homozygous / heterozygous parents
- ▶ Heterozygous parents