

(2)

□ Parents pass random sample of alleles to offspring  $\Rightarrow$  Selection on phenotype  $y_i$  is inefficient

□ Selection criterion: "Value" of the alleles passed from parents to offspring  $\Rightarrow$  Breeding value

□ Breeding value ( $u$ ) cannot be observed, what is commonly recorded are phenotypic measurements.

□ Connection between phenotypic records and unknown breeding values?

□ Decompose phenotypes  $y_i = g_i + e_i$   
 $\swarrow$  Genotype of animal  $i$   
 $\searrow$  Environmental of animal  $i$

□ Differentiate effect of  $g_i$  on phenotype:  
**breeding value**  $\leftarrow$  {  
• additive effect of a single allele on phenotype  
• dominance effect: single-locus genotype on phenotype  
• interaction between different loci