

Recap 2023-10-13

(1)

□ Single bi-allelic locus G

□ Decomposition of genotypic value V_{ij} for genotype $G_i G_j$:

$$V_{ij} = \mu + BV_{ij} + D_{ij}$$

with μ : population mean where $E[V_{ij}] = \mu$

BV_{ij} : Breeding value for genotypes

$G_1 G_1$	$G_1 G_2$	$G_2 G_2$
$2q\alpha$	$(q-p)\alpha$	$-2p(\alpha)$

D_{ij} : Dominance deviation

□ Properties:

$$E[V_{ij}] = \mu \Rightarrow E[BV_{ij}] = 0 \text{ ; } E[D_{ij}] = 0$$

because:
$$\begin{aligned} E[V_{ij}] &= E[\mu + BV_{ij} + D_{ij}] \\ &= E[\mu] + E[BV_{ij}] + E[D_{ij}] \\ &= \mu \quad \quad \quad = 0 \end{aligned}$$