Simplify by: • μ is constant $\Rightarrow$ $var(\mu) = 0$

• covariance between random variable and constant is 0

$\Rightarrow$ $cov(\mu, BV_{ij}) = cov(\mu, D_{ij}) = 0$

• $cov(BV_{ij}, D_{ij}) = 0$

$$var(V_{ij}) = var(BV_{ij}) + var(D_{ij})$$
$$= \sigma_A^2 + \sigma_D^2$$

In real world populations, most quantitative traits are influenced by many loci. This is a scientifically ~~reasoned~~ confirmed result from more than 10 years of genomic selection.

$\Rightarrow$ Extend genetic model to more than 1 Locus

- For one locus: Decomposition of V_{ij}

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