Variance:

$$\sigma_G^2 = 2pq\alpha^2 + (2pqd)^2$$

$$= \sigma_A^2 + \sigma_D^2 \rightarrow \text{dominance variance}$$

σ_A^2 → genetic-additive Variance

- BV_{ij} as random variables:

$$Var[BV_{ij}] = (BV_{11} - E[BV])^2 \cdot p^2 + (BV_{12} - E[BV])^2 \cdot 2pq + (BV_{22} - E[BV])^2 \cdot q^2$$

$$= BV_{11}^2 \cdot p^2 + BV_{12}^2 2pq + BV_{22}^2 \cdot q^2 - 2p\alpha$$

$$E[BV] = 2pq\alpha \cdot p^2 + (q-p)\alpha \cdot 2pq + (-q\alpha) \cdot q^2 \; 2p\alpha$$

$$= 2p^2q\alpha + q\alpha \cdot 2pq - p\alpha \cdot 2pq - q^2 2p\alpha$$

$$= 2p^2q\alpha + 2pq^2\alpha - 2p^2q\alpha - 2pq^2\alpha$$

$$= \emptyset$$