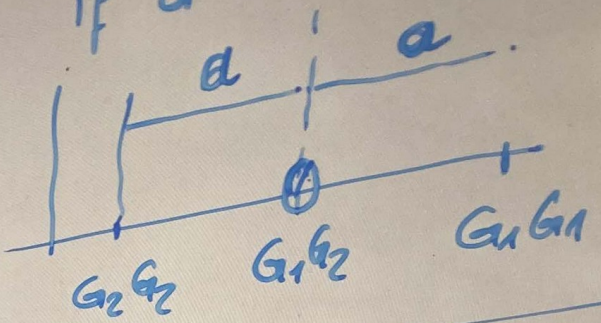
	BV
G_1G_1	$2q\alpha$
G_1G_2	$(q-p)\alpha$
G_2G_2	$-2p\alpha$

with $\alpha = a + (q-p)d$

if $d = 0 \Rightarrow \alpha = a$



Allele Substitution

- Given animal i with genotype G_2G_2
- Assume Gene Editing to replace one G_2 allele by a G_1 allele. After the GE animal i has genotype G_1G_2
- What happens to the BV of animal i
- Before GE: $BV_{22} = -2p\alpha$
- After GE: $BV_{12} = (q-p)\alpha$

$\Delta = BV_{12} - BV_{22}$

$\Rightarrow \Delta = (q-p)\alpha - (-2p\alpha) = q\alpha - p\alpha + 2p\alpha$

$= q\alpha + p\alpha = (p+q)\alpha = \underline{\alpha}$

- Again replace G_2 by G_1 in animal $i \Rightarrow G_1G_1$

$\Delta = BV_{11} - BV_{12} = 2q\alpha - (q-p)\alpha = \underline{\alpha}$