

Hardy-Weinberg Equilibrium

- Given allele frequencies $f(G_1) = p$
 $f(G_2) = q$ } $p+q=1$

- Resulting genotype frequencies under random mating and no selection (idealized population). Genotypes are the result of randomly combining gametes (eggs and sperm)

		egg	
		G_1	G_2
Sperm	G_1	$f(G_1G_1) = p \cdot p = p^2$	$f(G_1G_2) = p \cdot q$
	G_2	$f(G_2G_1) = q \cdot p$	$f(G_2G_2) = q \cdot q = q^2$

Genotype frequencies:

$$f(G_1G_1) = p^2$$

$$f(G_1G_2) = 2p \cdot q$$

$$f(G_2G_2) = q^2$$

$$f(G_1G_1) + f(G_1G_2) + f(G_2G_2) = 1$$

$$p^2 + 2pq + q^2 = (p+q)^2 = 1$$