- Given parent in HWE
  ⇒ Genotype frequencies are given by
  $f(G_1G_1) = p^2$; $f(G_1G_2) = 2pq$; $f(G_2G_2) = q^2$

Offspring receive alleles from parents at random based on allele frequencies:

$$f(G_1) = f(G_1G_1) + \tfrac{1}{2} f(G_1G_2)$$
$$= p^2 + \tfrac{1}{2} \cdot 2pq = p(p+q) = p$$

$$f(G_2) = f(G_2G_2) + \tfrac{1}{2} f(G_1G_2)$$
$$= q^2 + \tfrac{1}{2} \cdot 2pq = q(q+p) = q$$

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

Genotype-frequencies offspring