The Hardy-Weinberg law for 2 alleles (A and a):

3 genotypes are possible:
AA, Aa, aa

If the frequencies of the 2 alleles are p & q, respectively,
the equilibrium frequencies of the 3 genotypes will be:

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

For, AA, aA and aa, respectively:

Paternal frequency	Maternal frequency	
	P(A)	q(a)
p (A)	p2 (AA)	pq (Aa)
q (a)	pq (Aa)	q2 (aa)

Process of gene frequency changes

1. Mutation (and reversion)
2. Migration (gene "flow")
   (local changes of populations)
3. Genetic "drift" – generation to generation change via non-ideal Hardy-Weinberg behavior

Balance between drift and migration
Related to reproductive isolation
Examples:
1. Ecological Isolation (plate tectonics)
2. Temporal Isolation (seasonal differences in reproduction)
3. Behavioral Isolation
4. Mechanical Isolation (copulation is not possible: mouse – elephant)
5. Gametic Isolation