

Population Genetic Vocabulary Lecture Terms:

Population: a group of individuals of the same species that live in the same area and interbreed to produce fertile offspring

- Gene pool: a population's genetic makeup
 - Consists of all copies of every type of allele
 - If there is only one allele present in the population it is "fixed"
 - many fixed alleles = less genetic diversity

A population's allele frequencies will change over time

- populations evolve, NOT individuals
- Microevolution : small scale genetic changes in a population
 - Evolution is driven by the following occurrences
 - Mutations (random)
 - Genetic Drift
 - Migration/gene flow
 - Natural selection
- Mutations can result in genetic variation
 - can form new alleles
 - natural selection can act on varied phenotypes
 - mutation rates tend to be slow in plants and animals and fast in prokaryotes
 - not all mutations lead to evolution, some have little to no impact
- Genetic Drift: chance events that cause a change in allele frequency from one generation to the next
 - most significant in small populations
 - can lead to loss of genetic variation
 - can cause harmful alleles to become fixed

Two types of genetic drift are bottleneck effect and founder effect

- Bottleneck effect: when a large population is drastically reduced by a Non-selective disaster
 - floods, famine, fires, hurricanes, hunting, etc...
 - some alleles become underrepresented
- Founder effect: when a few individuals become isolated from a large population and establish a new small population with a gene pool that differs from the larger one
 - loss of genetic diversity

- Gene Flow: the transfer of alleles into or out of a population due to fertile individuals alleles or gametes being transferred from one population to another
 - Ex/ pollen being blown from one location to another

Fitness: ability to survive and reproduce

Reproductive success is measured by relative fitness

- number of surviving offspring that an individual produces compared to the number left by others in the population
- effects of natural selection can be measured by examining the changes in the mean of Phenotypes

Three modes of natural selection:

1. Directional selection = selection towards an extreme phenotype
2. Stabilizing selection = selection towards the mean and against extreme phenotypes
3. Disruptive selection = selection against the mean with selection towards opposite extreme phenotypes

Sexual selection: a type of natural selection that explains why many species have unique/showy traits that could possibly make them more vulnerable.