

Evolution:

- Goals: understand the concepts underlying, & the relationship among, the following terms:
 - evolution
 - natural selection
 - speciation
 - phylogeny
- Natural selection acts on variation in a population resulting in evolution, which over time can cause new species to form
- the relationships among these species and their origins can be understood through phylogeny
- Biological Fitness: the ability of an indiv. to produce surviving, fertile offspring relative to that ability in other individuals in the population
- Adaptation: a heritable trait that increases an individual's fitness in a particular environment relative to individuals lacking that trait
- Selection: differential reproduction as a result of heritable variation
- Darwin's Four Postulates: Darwin broke the process of evolution by natural selection into 4 criteria or postulates
 - individuals in a population vary in their traits
 - some of these differences are heritable, they're passed on to offspring
 - in each generation, many more offspring are produced than can survive
 - only some will survive long enough to reproduce
 - some will produce more offspring than others
 - individuals w/ certain heritable traits are more likely to survive & reproduce
 - natural selection occurs when individuals w/ certain traits produce more offspring than do individuals w/o these traits
 - the individuals are selected naturally, by the environment
 - the selected traits will increase in frequency in the population from one generation to the next, resulting in evolution
- evolution is thus a logical outcome of the 4 postulates
- four steps are condensed into 2 phrases:
 - heritable variation leads to reproductive success
- Selection event: naturally occurring phenomena that shifts the distribution of the phenotypes in a population
- Evolution: a shift in the frequency or the characteristics of a population over time
 - any change in the relative frequency of alleles in a population
- Viewing Populations through the lens of Genetics
 - remember that a population is a group of individuals w/ the same species that interbreed
 - b/c members of populations interbreed, they share a common group of genes called a gene pool