Evolution

- Populations
 - A population is a group of individuals that belong to the same species, live in the same area, and interact with one another
 - \circ ~ In a given population, none of the individuals will be genetically identical
 - Some individuals will have different alleles at certain genes
 - Example
 - 15 individual oysters, either blue, red, or green
 - Color is controlled by one gene, and the color is determine by possessing one of three different alleles
 - 1/3 have blue, 1/3 have red, and 1/3 have green
 - However, frequencies are not exactly constant
 - Random fluctuation, gene flow, better camouflage
- An allele is an alternative form of the same gene
 - Different alleles give different phenotypes
- Evolution is the process of organismal change over time with genetic modification
 - Changes can be small (microevolution), involving a change in a population's allele frequencies over a few generations
 - Over time, micro-evolutionary changes build up, leading to larger differences between organisms on larger time scales (macroevolution).
 - Evolution has produced the diversity of life on each 68.7 million species currently)
 - Three key elements to empution
 - Involves cested over time
 - even generation of organisms gives rise to the next, and populations under the decision of the second secon
 - Genetic modification
 - Must be traits controlled by genetics, not the environment (i.e. weight)
 - Unpredictable and natural
 - Individuals do not undergo evolution, populations do
 - Allele frequencies can change from one generation to the next
 - Eventually, the population may split in two
 - After more time the populations may build up so many differences that they become different species
- History of evolution
 - Charles Darwin sailed around the world on the HMS Beagle in 1831
 - Noticed strange patterns
 - Marine fossils in the Andes
 - Finches in the Galapagos Islands were well suited for their respective islands
 - Wrote The Origin of Species in 1859
 - Earth is much older than six thousand years old and is constantly changing