

## Week 4 Evolution

**Learning Goal:** Understand how populations evolve and the processes that can alter the frequency of alleles and/or genotypes in a population, and apply this information as it is relevant to HWE.

After completing your pre-class assignments, you should be able to:

- Recognize how mutation and recombination are the two sources of genetic variation.
- Determine allelic variation by evaluating results shown on a gel.
- Define the Hardy-Weinberg Equilibrium.
- Discuss how the frequencies of alleles dictate the frequencies of genotypes in a population.
- List the five assumptions of the Hardy-Weinberg Equilibrium.
- Differentiate between disruptive, directional, and stabilizing selection.
- Compare and contrast the mechanisms of natural, sexual, and kin selection.

After this week's class meetings students will be able to:

- evaluate data to determine the direction and mode of selection on a specific trait in a population
- predict how different modes of selection affect the distribution of phenotypes in a population
- recognize that selection acts upon individuals, while populations evolve
- apply the concepts of heritability and natural selection to changes in trait evolution in a population over time
- calculate changes in allele frequencies in a population over time
- recognize HW principle as a null hypothesis
- define each of the mechanisms of evolution and their effect on allele frequencies in a population