Week 5 Evolution Continued

Learning Goal: Understand the mechanisms that can change allele frequencies in a population over time.

After this class meeting students will be able to:
- Calculate expected genotype frequencies in a population given allele frequencies
- Calculate changes in allele frequencies using the HW principle
- Recognize the importance of HW equilibrium as a null hypothesis
- State whether a population is evolving based on deviations from HW equilibrium
- Evaluate each assumption of HW equilibrium and the effect violation of the assumptions may have on changing allele frequencies in a population
- Describe the mechanisms by which variation arises and is fixed (or lost) in a population over time
- Calculate allele frequencies based on phenotypic or genotypic data for a population

Week 5 Part II Fitness curves and landscapes, Species Concepts

Learning Goal: Evaluate the relationship between a fitness landscape and trait evolution in a population.

After completing your pre-class assignments, you should be able to:
- Define the biological species concept.
- Recognize the limitations of the biological species concept.
- Provide an argument why hybridization complicates the biological species concept.
- Define the ecological species concept and the phylogenetic species concept.
- Differentiate between pre- and post-zygotic isolating mechanisms.
- Differentiate between allopatric and sympatric speciation.
- Explain the role of reinforcement to the process of speciation.

After this class meeting students will be able to:
- Evaluate how changes in fitness due to natural selection change allele and genotype frequencies
- Interpret fitness curves and landscapes
- Explain how adaptive traits and non-adaptive traits can both be present in a population
- Predict how different mechanisms of evolution may alter a population's allele and genotype frequencies, and their placement on a fitness landscape