Comprehension Questions - Module 16: Evolution & Populations

Mechanisms of Evolution

1. Compare and contrast the five mechanisms of evolution: mutation, genetic drift, gene flow, natural selection, and non-random mating.
2. Explain how genetic drift affects small populations differently than large populations.
3. Describe how gene flow can affect genetic variation within and between populations.

Natural Selection

1. Explain the three types of natural selection (directional, stabilizing, disruptive) and give examples of each.
2. Describe how natural selection can lead to adaptation over time.
3. Explain how sexual selection differs from natural selection and give examples.

Population Genetics

1. Explain the Hardy-Weinberg equilibrium and the conditions required for it.
2. Describe how to use the Hardy-Weinberg equation to calculate allele and genotype frequencies.
3. Explain how deviations from Hardy-Weinberg equilibrium indicate evolutionary change.

Genetic Variation

1. Explain the sources of genetic variation in populations.

2. Describe how mutation contributes to evolution over long time periods.

3. Explain how genetic variation is maintained in populations despite natural selection.

Speciation

1. Compare and contrast allopatric and sympatric speciation.

2. Explain how reproductive isolation can lead to speciation.

3. Describe the different types of reproductive barriers and how they prevent gene flow.

Evolutionary Patterns

1. Explain the difference between gradualism and punctuated equilibrium.

2. Describe how convergent evolution and divergent evolution produce different patterns of similarity.

3. Explain how coevolution can shape the evolution of interacting species.