AP BIOLOGY

Evolution

Essential Questions

What conditions in a population make it more or less likely to evolve?

Scientifically defend the theory of evolution.

How does species interaction encourage or slow changes in species?

Understandings

*Students will understand that:*

Knowledge:

*Students will know:*

Skills:

*Students will be able to:*

Curriculum Standards - 2019 College Board Course & Exam Description

Explain the connection between variation in the number and types of molecules within cells to the ability of the organism to survive and/or reproduce in different environments.

Describe the causes of natural selection.

Explain how natural selection affects populations.

Describe the importance of phenotypic variation in a population.

Explain how humans can affect diversity within a population.

Explain the relationship between changes in the environment and evolutionary changes in the population.

Explain how random occurrences affect the genetic makeup of a population.

Describe the role of random processes in the evolution of specific populations.

Describe the change in the genetic makeup of a population over time.

Describe the conditions under which allele and genotype frequencies will change in populations.

Explain the impacts on the population if any of the conditions of Hardy- Weinberg are not met.

Describe the types of data that provide evidence for evolution.

Explain how morphological, biochemical, and geological data provide evidence that organisms have changed over time.

Describe the fundamental molecular and cellular features shared across all domains of life, which provide evidence of common ancestry.

Structural evidence indicates common ancestry of all eukaryotes

Explain how evolution is an ongoing process in all living organisms.

Describe the types of evidence that can be used to infer an evolutionary relationship.

Explain how a phylogenetic tree and/or cladogram can be used to infer evolutionary relatedness.

Describe the conditions under which new species may arise.

Describe the rate of evolution and speciation under different ecological conditions.

Explain the processes and mechanisms that drive speciation.

Describe factors that lead to the extinction of a population.

Explain how the risk of extinction is affected by changes in the environment.

Explain species diversity in an ecosystem as a function of speciation and extinction rates.

Explain how extinction can make new environments available for adaptive radiation.

Explain how the genetic diversity of a species or population affects its ability to withstand environmental pressures.

Describe the scientific evidence that provides support for models of the origin of life on Earth.

Mission Integration

(*Note: could be combined with performance task/design thinking culminating assessment)*

Performance Task or Design Thinking Culminating Assessment

Other Evidence (formative assessments, summative assessments)

*what homework and other out of class experiences are needed to equip students?*

Topic Overview

*Order of topics presented (Calendar)*

Learning Plan

*Learning Activities - What experiential or inductive learning will help students to explore the big ideas and questions to achieve desired understandings? for their expected performances?*

Resources