

Biology I Objectives

From Molecules to Organisms: Structures and Processes

- Distinguish among proteins, carbohydrates, lipids, and nucleic acids.
- Identify positive tests for carbohydrates, lipids, and proteins.
- Identify how enzymes control chemical reactions in the body.
- Identify the structure and function of DNA.
- Associate the process of DNA replication with its biological significance.
- Recognize the interactions between DNA and RNA during protein synthesis.
- Identify the cellular organelles associated with major cell processes.
- Determine the relationship between cell growth and cell reproduction.
- Distinguish between prokaryotic and eukaryotic cells.
- Predict the movement of water and other molecules across selectively permeable membranes.
- Compare and contrast active and passive transport.

Heredity: Inheritance and Variation of Traits

- Identify the structure and function of DNA.
- Associate the process of DNA replication with its biological significance.
- Recognize the interactions between DNA and RNA during protein synthesis.
- Determine the probability of a particular trait in an offspring based on the genotype of the parents and the particular mode of inheritance.
- Investigate how genetic information is encoded in nucleic acids.
- Describe the relationships among genes, chromosomes, proteins, and hereditary traits.
- Predict the outcome of monohybrid and dihybrid crosses.
- Apply pedigree data to interpret various modes of genetic inheritance.
- Be able to fill out a mono, di, and tri hybrid cross punnett squares
- Describe the phenotype ratios of simple crosses

Biological Change: Unity and Diversity

- Recognize the relationships among environmental change, genetic variation, natural selection, and the emergence of a new species.
- Predict how a specific environmental change may lead to the extinction of a particular species.
- Predict how various types of human activities affect the environment.
- Make inferences about how a specific environmental change can affect the amount of biodiversity.

Ecosystems: Interactions, Energy, and Dynamics

- Predict how population changes of organisms at different trophic levels affect an ecosystem
- Interpret the relationship between environmental factors and ebb and flow of population sizes
- Analyze and interpret population data, graphs, or diagrams
- Determine how the carrying capacity of an ecosystem is affected by interactions among organisms
- Predict how global climate change, human activity, geologic events, and the introduction of non-native species impact an ecosystem
- Describe the events which occur during the major biogeochemical cycles
- Discover the relationship concerning cellular respiration and photosynthesis
- Analyze energy flow through an ecosystem
- Track energy flow through an ecosystem
- Construct a concept map to differentiate between aerobic and anaerobic respiration
- Acknowledge the difference between primary and secondary succession by sketching the difference between the two
- Compare and contrast the structural, functional, and behavioral adaptations of animals or plants found in different environments.
- Describe the relationship between the amount of biodiversity and the ability of a population to adapt to a changing environment.
- Analyze factors responsible for the changes associated with biological succession.
- Associate fossil data with biological and geological changes in the environment.
- Predict how various types of human activities affect the environment.
- Predict how population changes of organisms at different trophic levels affect an ecosystem.
- Recognize the relationships among environmental change, genetic variation, natural selection, and the emergence of a new species.
- Infer relatedness among different organisms using modern classification systems.