

BIOLOGY

- **BIO.1.1 Interactions with Organisms and the Environment:** Plan and carry out an investigation to analyze and interpret data to determine how biotic and abiotic factors can affect the stability and change of a population.
- **BIO.1.2 Interactions with Organisms and the Environment:** Develop and use a model to explain cycling of matter and flow of energy among organisms in an ecosystem.
- **BIO.1.3 Interactions with Organisms and the Environment:** Analyze and interpret data to determine the effects of photosynthesis and cellular respiration on the scale and proportion of carbon reservoirs in the carbon cycle.
- **BIO.1.4 Interactions with Organisms and the Environment:** Develop an argument from evidence for how ecosystems maintain relatively consistent numbers and types of organisms in stable conditions.
- **BIO.1.5 Interactions with Organisms and the Environment:** Design a solution that reduces the impact caused by human activities on the environment and biodiversity.
- **BIO.2.1 Structure and Function of Life:** Construct an explanation based on evidence that all organisms are primarily composed of carbon, hydrogen, oxygen, and nitrogen, and that the matter taken into an organism is broken down and recombined to make macromolecules necessary for life functions.
- **BIO.2.2 Structure and Function of Life:** Ask questions to plan and carry out an investigation to determine how (a) the structure and function of cells, (b) the proportion and quantity of organelles, and (c) the shape of cells result in cells with specialized functions.
- **BIO.2.3 Structure and Function of Life:** Develop and use a model to illustrate the cycling of matter and flow of energy through living things by the processes of photosynthesis and cellular respiration.
- **BIO.2.4 Structure and Function of Life:** Plan and carry out an investigation to determine how cells maintain stability within a range of changing conditions by the transport of materials across the cell membrane.
- **BIO.2.5 Structure and Function of Life:** Construct an explanation about the role of mitosis in the production, growth, and maintenance of systems within complex organisms.
- **BIO.2.6 Structure and Function of Life:** Ask questions to develop an argument for how the structure and function of interacting organs and organ systems, that make up multicellular organisms, contribute to homeostasis within the organism.
- **BIO.2.7 Structure and Function of Life:** Plan and carry out an investigation to provide evidence of homeostasis and that feedback mechanisms maintain stability in organisms.
- **BIO.3.1 Genetic Patterns:** Construct an explanation for how the structure of DNA is replicated, and how DNA and RNA code for the structure of proteins which regulate and carry out the essential functions of life and result in specific traits.
- **BIO.3.2 Genetic Patterns:** Use computational thinking and patterns to make predictions about the expression of specific traits that are passed in genes on chromosomes from parents to offspring.
- **BIO.3.3 Genetic Patterns:** Engage in argument from evidence that inheritable genetic variation is caused during the formation of gametes.
- **BIO.3.4 Genetic Patterns:** Plan and carry out an investigation and use computational thinking to explain the variation and patterns in distribution of the traits expressed in a population.
- **BIO.3.5 Genetic Patterns:** Evaluate design solutions where biotechnology was used to identify and/or modify genes in order to solve (effect) a problem.
- **BIO.4.1 Evolutionary Change:** Obtain, evaluate, and communicate information to identify the patterns in the evidence that support biological evolution.



DAVIS ESSENTIAL SKILLS & KNOWLEDGE

- **BIO.4.2 Evolutionary Change:** Construct an explanation based on evidence that natural selection is a primary cause of evolution.
- **BIO.4.3 Evolutionary Change:** Analyze and interpret data to identify patterns that explain the claim that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.
- **BIO.4.4 Evolutionary Change:** Engage in argument from evidence that changes in environmental conditions may cause increases in the number of individuals of some species, the emergence of new species over time, and/or the extinction of other species.
- **BIO.4.5 Evolutionary Change:** Evaluate design solutions that can best solve a real-world problem caused by natural selection and adaptation of populations.

