

## Instructional Vocabulary

### Biology

#### Unit 1: Science Safety and Evidence Based Thinking

- **Science** – the “use of evidence to construct testable explanations and predictions of natural phenomena as well as the knowledge generated through this process” Science. (n.d.). In *National Academies of Science Evolution Resources* online. Retrieved from <http://nationalacademies.org/evolution/Definitions.html>
- **Hypothesis** – a tentative and testable statement that must be capable of being supported or not supported by evidence
- **Theory** – a well-established and highly reliable explanation, but may be subject to change as new areas of science and new technologies are developed

#### Unit 2A: Ecology

- **Ecosystem** – a community interacting with its environment through a one-way flow of energy and the cycling of materials
- **Symbiosis** – an ecological interaction between two organisms
- **Ecological succession** – changes in the composition of species found in a community over time
- **Trophic level** – position that organism(s) occupy in a food web, which is defined by its relationship to the primary energy source
- **Ecosystem stability** – the ability of an ecosystem to return to a state of equilibrium following a disturbance

#### Unit 3: Biochemistry

- **Biomolecule** – an organic molecule produced by living organisms and consisting predominantly of carbon, hydrogen, and oxygen
- **Carbohydrates** – a group of organic molecules that includes sugars, starch, and cellulose, which can be used for energy or structural support
- **Lipids** – a group of organic molecules that includes fats, oils, waxes, and steroids that are insoluble in water and used for energy storage and insulation
- **Proteins** – a group of organic molecules that provides structure and facilitates chemical reactions (enzymes)
- **Nucleic acids** – a group of organic molecules that includes DNA and RNA, which store and transmit genetic information
- **Enzyme** – a protein that catalyzes (speeds up) a reaction without being changed by it

#### Unit 4: Cells

- **Eukaryote** – a living organism whose cell or cells contain nuclei and membrane-bound organelles
- **Prokaryote** – a single-celled living organism that lacks a nucleus and membrane-bound organelles
- **Diffusion** – movement of particles from an area of higher concentration to an area of lower concentration
- **Osmosis** – diffusion of water from an area of higher concentration to an area of lower concentration
- **Active transport** – movement of particles across a membrane to an area of higher concentration, which requires energy

- **Homeostasis** – regulation of an organism's internal environment in order to maintain conditions suitable for survival

#### Unit 5: Cellular Processes – Photosynthesis and Respiration

- **Cellular respiration** – cellular process which breaks down glucose to form lactic acid or ATP
- **Photosynthesis** – cellular process in which autotrophs capture light energy and convert it to chemical energy (glucose) using carbon dioxide and water

#### Unit 6: Cellular Processes – Cell Cycle

- **DNA** – nucleic acid which is self-replicating and contains the code to make all proteins needed by an organism
- **Replication** – process by which DNA makes a copy of itself
- **Mitosis** – the process of nuclear division and cytokinesis that produces genetically identical daughter cells
- **Cancer** – proliferation of cells caused by disruptions in the cell cycle; disruptions may be caused by environmental factors

#### Unit 7: Cellular Processes – Protein Synthesis

- **Central dogma** – thesis that information flows from DNA to RNA to protein
- **Protein synthesis** – cellular process used to make proteins, which includes transcription and translation
- **Transcription** – process of copying DNA into mRNA in gene expression
- **Translation** – process by which mRNA is used to synthesize amino acids
- **Codon** – sequence of three nitrogen bases in DNA that codes for an amino acid
- **Mutation** – change in DNA sequence

#### Unit 8: Genetics and Heredity

- **Allele** – one or more forms of a gene
- **Gene** – inheritable unit of information in DNA
- **Punnett square** – tool used to give probabilities of particular genotypes and phenotypes in offspring
- **Genotype** – allele combination for a trait
- **Phenotype** – an observable trait or characteristic
- **Genome** – the complete set of genetic material for an organism
- **Meiosis** - a two-part cell division process in organisms that sexually reproduce, which results in gametes with one-half the number of chromosomes of the parent cell.

#### Unit 9: Evolution

- **Adaptation** – an inherited trait that increases an organism's rate of survival in its current environment
- **Evolution** – genetic change in a species over time
- **Natural selection** – the process by which organisms better suited to their environment survive and reproduce

#### Unit 10: Classification

- **Taxonomy** – the classification of organisms

- **Dichotomous key** – tool used to identify species of organisms using observable characteristics
- **Cladogram or phylogenetic tree** – a branching diagram used to show evolutionary relationships among organisms

#### Unit 11: Viruses, Bacteria and Protists

- **Virus** – a nonliving, infective agent composed of nucleic acids surrounded by a protein coat
- **Bacteria** – unicellular, prokaryotic microorganism
- **Protist** – unicellular or multicellular; eukaryotic organism from the Kingdom Protista

#### Unit 12: Plant Structures and Adaptations

- **Xylem** – conducting tissue in plants that transports fluid through the plant
- **Phloem** – conducting tissue in plants that transports nutrients through the plant
- **Carpel** – female reproductive structure in plants that includes the stigma, style, and ovary
- **Stamen** – male reproductive structure in plants that includes the anther and filament

#### Unit 13: Body Systems

- **Homeostasis** – a state of biological balance in an organism

#### Unit 14: Making Connections

- **Scientific inquiry** – the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work