Idaho End-of-Course Assessment:
Biology Glossary for Objectives and Content Limits

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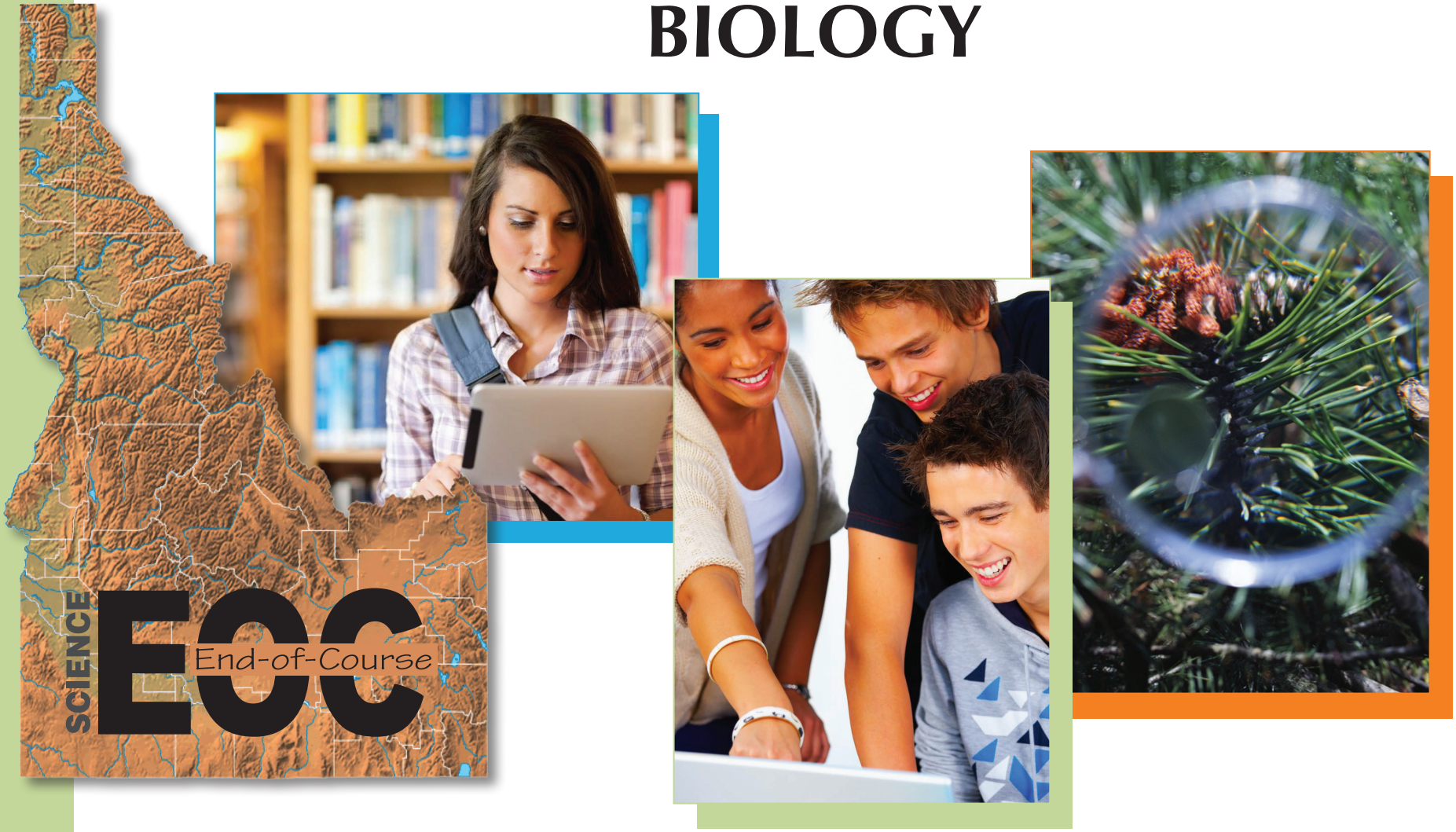
BIOLOGY



The Idaho Biology Glossary includes key scientific terminology and definitions. This information is intended to assist Idaho educators in better understanding the Idaho Biology Objectives and Content Limits. The glossary does not define all possible terms included on an actual Idaho Biology End-of-Course Test, and it does not include a complete list of terms for use in classroom instruction for a particular course. This document will be updated periodically, as needed.

abiotic factor	A nonliving component of an ecosystem.
activation energy	The energy required to begin a chemical reaction.
active transport	The movement of a substance across a cellular membrane from a region of lower concentration to a region of higher concentration using specific transport proteins and energy from ATP.
adaptation	A characteristic that can improve an organism's ability to survive and reproduce in its environment.
adenosine diphosphate (ADP)	A molecule that is formed during cellular energy release when an ATP molecule loses a phosphate group, and can be converted back to ATP by the addition of a phosphate group and energy.
adenosine triphosphate (ATP)	A molecule that provides energy for many cellular activities. ATP releases energy when one of its high-energy bonds are broken by removing a phosphate group.
aerobic respiration	A form of cellular respiration that requires oxygen to generate energy by converting glucose into CO_2 and H_2O and then using these molecules to produce ATP.
agriculture	The practice of raising and harvesting plants and/or animals for food, fibers, or other useful products; also can be called farming.
air quality	A measure of the air conditions in an environment relative to the requirements to maintain an internally balanced state of humans or other species.
allele	An alternative variation of a gene. Each gene has two alleles that interact to produce a specific genotype and resulting phenotype.
amino acid	A monomer or "building block" of a protein; there are 20 amino acids.
anaerobic respiration	A form of cellular respiration that occurs in the absence of oxygen and produces ATP by breaking down glucose molecules (e.g., fermentation).

analogous structure	A physical structure present in different species that has a similar function but did not result from sharing a recent common ancestor. This structure often evolved in response to similar environmental conditions (e.g., insect wings and bird wings).
anaphase	The third stage of mitosis or meiosis, during which sister chromatids (mitosis or meiosis II) or chromosome pairs (meiosis I) are separated by the spindle and moved toward opposite poles of the cell.
anticodon	A sequence of three nucleotides in transfer RNA (tRNA). This sequence of nucleotides is complementary to the codon in the messenger RNA (mRNA) and corresponds with a specific amino acid during protein synthesis.
artificial selection	A process in which humans breed organisms in order to increase or decrease the occurrence of specific genetic traits in offspring; also known as selective breeding.
base-pairing	The principle that adenine should always chemically bond with thymine in DNA (or uracil in RNA) and cytosine should always bond with guanine during the formation of nucleic acids.
biodiversity	A diverse group of different organisms in a given ecosystem or region at a specific time.
biofuel	A fuel produced from biological materials (e.g., wood, ethanol, dried manure).
biogeochemical cycles	The flow of elements and chemical compounds between the living and nonliving components within ecosystems (e.g., carbon cycle, water cycle).
biological fitness	The ability of an organism to survive and reproduce.
biology	The branch of science that studies life.
biomass	Biological material derived from living organisms that is often used as a source of fuel (e.g., plant matter, animal matter, biodegradable waste substances).
biomass pyramid	A model that represents the relative amounts of living organic matter at each trophic level in an ecosystem.

biome	A geographic area classified according to the dominant communities of organisms present who are in turn characterized by unique adaptations particular to that climate (e.g., desert, grassland, tropical rainforest). Biomes may be classified into land, marine, and freshwater biomes.
biosphere	The part of Earth in which life exists and living organisms interact with their environment.
biotic factor	A living component of an ecosystem.
Calvin cycle	A series of reactions occurring in the stroma of the chloroplast during photosynthesis, in which carbon dioxide is converted into high-energy compounds such as glucose and fructose.
carbohydrate	A macromolecule in living organisms that is composed of carbon, hydrogen, and oxygen and functions to provide energy and structural materials for cells. Carbohydrates include sugars, starches, and cellulose.
carbon cycle	The predictable pattern describing how carbon is used, recycled and reused in and throughout the earth.
carnivore	A living organism that eats only animals.
carrying capacity	The maximum population size of a species that can be supported in an environment given the resources available and other environmental pressures.
catalyst	A substance that accelerates the rate of a chemical reaction by decreasing the activation energy of the reaction without being changed by the reaction (e.g., enzyme).
cell	The basic unit of all living things that is fundamental to the structure and function of the organism.
cell cycle	The sequence of events in a cell life span including growth, duplication of genetic material, and division. The cell cycle consists of interphase, mitosis, and cytokinesis.
cell membrane	The outer layer of a cell composed of phospholipids and proteins that separates the cell from its surroundings and controls the movement of substances in and out of the cell; this is also called the plasma membrane.

cell wall A rigid structure that provides support and surrounds the cell membrane in plant cells, bacteria, fungi, and some protists.

cellular respiration A complex set of chemical reactions in which chemical energy is transferred from organic molecules (e.g., glucose) and stored in the phosphate bonds of adenosine triphosphate (ATP) molecules for later use in energy-requiring activities of the cell.

Celsius scale The metric scale for temperature measurement, in which the freezing point of water is 0°C and the boiling point of water is 100°C.

centriole A short, cylindrical organelle composed of microtubules that are found in pairs in eukaryotic cells (except plants) and organizes the formation of a spindle during mitosis or meiosis in animal cells.

centromere A region that joins two sister chromatids and is the point where spindle fibers attach to pull the chromatids apart during mitosis and meiosis.

Charles Darwin English naturalist who presented the scientific theory of evolution in his book *On the Origin of Species* (1859). Darwin presented scientific evidence of biological evolution and proposed natural selection as the mechanism for these changes over time.

chemical energy Energy that can either be released by a chemical reaction or absorbed by the forming of chemical bonds.

chlorophyll A green pigment within plant chloroplasts that captures solar energy so it can be converted into chemical energy.

chloroplast An organelle in plant cells and other eukaryotic photosynthetic organisms that is the site of photosynthesis.

chromatid One of two identical sister strands of a duplicated chromosome that is joined to its pair at a centromere. Sister chromatids are formed during interphase of cell division and then separate to become individual chromosomes.

chromatin	A group of nucleic acids (DNA or RNA) coiled around proteins that compress together to form a chromosome during cell division.
chromosomal mutation	A genetic alteration in DNA that changes the number or structure of one or multiple chromosomes; types of chromosomal mutations include insertions, deletions, inversions, and translocations.
chromosome	A structure of genetic material that is comprised of a linear strand of coiled DNA and associated proteins in the nucleus of eukaryotic cells, or as a circular strand of DNA in the cytoplasm of prokaryotic cells.
cilia	Short, hair-like structures that extend from the cell membrane in some eukaryotic cells and function in cell movement or in moving liquid and other matter past the surface of the cell (singular: cilium).
circulatory system	An organ system responsible for blood transport throughout the body. This system allows nutrients to circulate to and from cells in order to maintain homeostasis.
classification/classify	The systematic grouping of organisms based on characteristics or evolutionary relationships.
climate change	Changes in Earth's average atmospheric temperature, oceanic temperatures, and precipitation over time resulting from the increase of greenhouse gases, such as carbon dioxide, in the atmosphere.
cloning	The process of creating an exact genetic copy of a DNA sequence, cell, or organism from an original source. Cloning can be natural (e.g., binary fission in bacteria) or artificial using biotechnology (e.g., DNA cloning, reproductive cloning).
codon	A sequence of three nucleotides in messenger RNA (mRNA) which form a unit of genetic code that is interpreted by cells for the construction of proteins. The codon is complementary to the anticodon in the transfer RNA (tRNA).
common ancestor	An ancestral species from which two or more species descended based on scientific evidence.
community (ecological)	Populations of different species in a particular area during the same time period that interact with each other and the environment.

concentration gradient	The difference in solute concentration between two solutions.
consumer (ecological)	An organism that gets its energy by consuming other organisms.
crossing-over	A process that occurs during meiosis in which homologous chromosomes exchange segments of genetic material, resulting in chromosomes with new allele combinations contributing to overall genetic variability.
cytokinesis	The division of cytoplasm into two daughter cells during cell division, generally occurring during telophase.
cytoplasm	The contents of a cell that are within the plasma membrane.
cytoskeleton	An internal cellular framework composed of protein filaments and microtubules found in the cell's cytoplasm which functions to control cell shape, cell movement, internal spatial organization, and transport of organelles within the cell.
decomposer (ecological)	An organism that absorbs and recycles nutrients from nonliving organic matter, making them available to other organisms.
deoxyribonucleic acid (DNA)	A double-stranded, helical nucleic acid molecule in the nucleus of eukaryotic cells and the cytoplasm of prokaryotic cells that encodes the genetic information for living organisms.
dichotomous key	A biological reference tool where a series of choices between alternative characteristics leads to the identification of species.
differentiation	The process where cells become specialized in structure and function (e.g. a stem cell becoming adapted to function in the digestive system).
diffusion	The natural movement of a substance from a region of higher concentration to a region of lower concentration; energy use is not required.

digestive system	An organ system responsible for taking ingested nutrients and breaking them into smaller parts through physical and chemical processes.
diploid	A cell that contains two sets of homologous chromosomes (2n), often one set is inherited from each parent.
DNA polymerase	An enzyme that functions during DNA replication by joining individual nucleotides together to produce a new strand of DNA by using the original DNA strand as a template.
DNA replication	The process in which a cell makes a duplicate copy of its DNA.
dominant	An allele or gene that is expressed in an organism's phenotype, even when paired with a recessive allele or gene.
ecology	The scientific study of the interactions between living organisms and between these organisms and their environment.
ecosystem	A specific region that includes all living organisms and nonliving components (abiotic factors) within the area.
electromagnetic radiation	A form of energy given off by objects containing electrically charged particles. This form of energy has wave-like behaviors.
electron transport chain/system	A stage of cellular respiration where a sequence of proteins use high-energy electrons to convert ADP into ATP.
endocytosis	The process where a cell takes in generally large substances from outside the cell through the formation of membrane-bound vesicles in the plasma membrane.
endoplasmic reticulum (ER)	An organelle in eukaryotic cells that is composed of membrane-enclosed sacs and produces and transports proteins and lipids. Rough ER has ribosomes on its surface for protein production. Smooth ER has no ribosomes, synthesizes steroids and lipids, and transports macromolecules.

energy pyramid A model that shows how energy flows through several organisms in an ecosystem; it also shows the relative amount of energy available for each organism at their respective trophic level in the ecosystem.

entropy The tendency of matter to progress toward increasingly disorganized states; a measure of the degree of disorder in a system.

enzyme A protein that functions as a biological catalyst and accelerates the rate of a biochemical reaction by reducing the required activation energy of the reaction while remaining unchanged by the reaction.

equilibrium The state of a chemical reaction where the concentrations of reactants and products have no net change over time.

eukaryote A single-celled or multi-celled organism containing cells with a membrane-bound nucleus and usually other specialized membrane-bound organelles.

evolution Changes in the genetic composition of a population of organisms over multiple generations (microevolution) or the gradual development of new species of organisms from common ancestors over many years (macroevolution), as supported by scientific evidence.

exocytosis A process where a cell releases generally larger substances from the cytoplasm by discharging them as membrane-bound vesicles passing through the cell membrane.

facilitated diffusion The movement of a substance across a cellular membrane through a protein channel from a region of high concentration to a region of low concentration without the use of energy.

flagella Long, whip-like structures that extend from the cell membrane of some prokaryotic and eukaryotic cells and function in cell movement (singular: flagellum).

food chain A simple model that illustrates the transfer of chemical energy between organisms.

food web A complex model of interrelated food chains linked together to show the energy transfer relationships among organisms.

fossil	The remains or trace of an organism (e.g., body impression, bone, footprint) preserved over geologic time in rock layers.
fossil fuel	A fuel that was formed in the earth from plant or animal remains after thousands of years of geological pressure; fossil fuels are nonrenewable (e.g., coal, petroleum, natural gas).
fossil record	A preserved historical record of once-living organisms on Earth.
frameshift mutation	A type of mutation where the addition or deletion of one or more nucleotides causes the sequence of codons in mRNA to become shifted and likely result in the alteration of the amino acid sequence during protein translation. The number of nucleotides inserted or deleted is not typically a multiple of three and results in an improper grouping of the codons.
gamete	A specialized reproductive cell that contains half the number of chromosomes of a somatic cell (i.e., egg cell, sperm cell).
gene	The essential unit of heredity that relates to a specific segment on a DNA strand. Genes control cell structure and function by coding for unique proteins.
gene expression	The process where information contained in a gene is transcribed into mRNA and then translated into a protein to be expressed phenotypically.
gene mutation	An alteration that changes a segment of DNA representing a gene.
gene pool	The combined genetic information of every interbreeding organism in a particular population at any one time. In general, a large gene pool indicates high genetic diversity, and a small gene pool indicates low genetic diversity.
genetic engineering	Techniques used for altering the genetic material of living organisms to produce particular desired functions and/or characteristics.
genetic inheritance	The passing of genetic information from parents to their offspring.

genetic variability	The tendency of genotypes in a population to be different from each other across the population.
genetically modified organism (GMO)	An organism whose genetic material has been altered by non-naturally occurring processes.
genetics	The scientific study of how genetic traits are passed on through successive generations of organisms.
genotype	The genetic makeup of an organism that determines the phenotypic expression of a particular trait or set of traits.
genus	A taxonomic grouping of related species, ranked below the classification level of family (plural: genera).
geographic isolation	Physical separation of populations by a geographic barrier (e.g., mountain, canyon, body of water), likely preventing successful reproduction between the populations and may result in speciation.
glucose	A specific carbohydrate molecule that functions as the main source of potential chemical energy in many organisms and is one of the primary products of photosynthesis in plants and other photosynthetic organisms.
glycolysis	The initial stage of cellular respiration where a molecule of glucose is broken in half, producing a net of two molecules of pyruvic acid (pyruvate) and two molecules of ATP.
Golgi body	An organelle in a eukaryotic cell that is composed of stacks of flat membranous sacs and functions in storing and transporting proteins synthesized in the endoplasmic reticulum (also called Golgi apparatus and Golgi complex).
greenhouse effect	The increase of Earth's surface temperature due to the accumulation of gases in the atmosphere, such as carbon dioxide and methane, which trap infrared radiation.
haploid	A cell containing only half the number of chromosomes found in normal somatic cells (n).
hazardous waste	Waste products (e.g., pesticides, manufacturing byproducts) that may cause human health concerns or harmful effects to the environment.

herbivore	An organism whose primary diet consists only of plants.
heterozygous	A genetic circumstance where an organism has two different alleles for a specific trait (e.g., Aa).
homeostasis	The process where organisms maintain relatively stable internal environments despite changing environmental conditions.
homologous chromosomes	A pair of chromosomes in a diploid cell that have corresponding DNA sequences with one coming from each parent; also called homologues.
homologous structures	A comparable physical structure (e.g., bat wing, whale fin) found in different organisms, developing from the same type of embryonic tissues, with a similar structure originating from a common ancestor of the species.
homozygous	A genetic circumstance where an organism has two identical alleles (e.g., AA, aa) for a specific trait.
hydroelectric	The production of electricity by using moving water to power a spinning turbine that generates electricity.
hypertonic	A solution in which the total molar concentration of all dissolved solutes in greater than the concentration of these solutes in another solution.
hypothesis	A statement based on an observed phenomenon or a research inquiry that is scientifically testable.
hypotonic	A solution in which the total molar concentration of all dissolved solutes in less than the concentration of these solutes in another solution.
interphase	The longest period of the cell cycle, occurring between cell divisions, where the cell undergoes growth and replication of its chromosomes and organelles.
isotonic	A solution in which the total molar concentration of solutes is the same as in another solution.

Krebs cycle (citric acid cycle)	A stage of cellular respiration where pyruvic acid or pyruvate is broken down into carbon dioxide through a series of reactions to generate high-energy electrons for use in the electron transport chain to produce ATP.
light-dependent reactions	The reactions in the chloroplast during the first stage of photosynthesis where light energy is captured by chlorophyll molecules and transferred to chemical energy to produce ATP and NADPH molecules.
light-independent reaction	The second phase of photosynthesis where the Calvin cycle is carried out making sugars from the products of the light-dependent reaction.
limiting factor	A factor (e.g., food, water, nutrients) that affects the developmental health of a population of organisms in an ecosystem by limiting the growth or abundance of the species.
lipid	A macromolecule in organisms that is made of mostly carbon and hydrogen atoms and functions in long-term energy storage, insulation, and as a structural component in cell membranes. Lipids include fats, waxes, oils, and steroids.
lysosome	A membrane-enclosed organelle in eukaryotic cells that contains digestive enzymes to break down food particles or eliminate waste products inside a cell (e.g., organelles, engulfed viruses, bacteria).
macromolecule	A large molecule (polymer) composed of many smaller organic molecules called monomers. There are four types of biological macromolecules: proteins, carbohydrates, lipids, and amino acids.
meiosis	A two-stage process of cellular division that occurs in sexually reproducing organisms and results in four daughter cells, gametes, with half the number of chromosomes than the original parent cell.
messenger RNA (mRNA)	A type of RNA molecule that is transcribed from DNA and carries an instructional template for the assembly of amino acids into proteins. In a eukaryotic cell, Messenger RNA leaves the nucleus and attaches to ribosomes in the cytoplasm for protein synthesis.
metaphase	The second stage of mitosis and meiosis, during which chromosomes align along the equator of the cell.

microfilament A long, solid structure in the cytoplasm of eukaryotic cells that aids in cellular movement or in helping to maintain the cell's internal structure.

microtubule A long, hollow structure in the cytoplasm of eukaryotic cells and in cilia and flagella; this structure aids in cell movement, maintaining the cell's internal structure, forming the spindle during mitosis and meiosis, and transporting cellular substances.

mitochondrion A membrane-enclosed organelle in most eukaryotic cells that is the site of cellular respiration (plural: mitochondria).

mitosis A process where a eukaryotic cell divides to result in two somatic daughter cells, each containing the same number of chromosomes and genetic content as the original cell.

monosaccharide The monomer of a carbohydrate molecule, often known as a simple sugar (e.g., glucose, fructose, ribose).

monohybrid cross A model used to predict the inheritance pattern of a single differing trait in two individuals.

monomer A molecule that can chemically react with other like molecules to form a larger molecule called a polymer.

mutation A random change in the DNA nucleotide sequence of an organism. Mutations found in gametes can be inherited (e.g., chromosomal mutations, gene mutations) and mutations are often a source of genetic variation.

natural selection A biological mechanism which explains that organisms better adapted to their environment will be more likely to survive and reproduce.

nitrogenous base An organic molecule that contains the element nitrogen. DNA contains the nitrogenous bases adenine, thymine, cytosine, and guanine while RNA contains the nitrogenous bases adenine, uracil, cytosine, and guanine.

nonrenewable resource A type of natural resource (e.g., fossil fuels) that cannot be replenished or takes a longer period of time for Earth to reproduce it than its current rate of consumption.

nuclear energy A nonrenewable source of energy that is released from the splitting of atoms, a process called fission. Fission releases energy that can be used to make steam and the steam can then be used to power a turbine to generate electricity.

nuclear envelope The outside membrane of the nucleus in a eukaryotic cell. This structure separates the nucleus from the cytoplasm and controls the movement of substances between the nucleus and the cytoplasm, also called the nuclear membrane.

nucleic acid An organic macromolecule that carries and stores genetic information. This macromolecule contains hydrogen, oxygen, nitrogen, carbon, and phosphorus, and the two kinds of nucleic acids are ribonucleic acid (RNA) and deoxyribonucleic acid (DNA).

nucleolus A structure that functions in ribosomal RNA (rRNA) synthesis and the formation of ribosomes; it is composed of proteins and nucleic acids and is found within the nucleus of a cell.

nucleotide The basic unit or monomer of a DNA or RNA molecule, consisting of a five-carbon sugar molecule, a phosphate group, and one of four nitrogenous bases (i.e., adenine, thymine/uracil, cytosine, guanine).

nucleus A membrane-enclosed organelle in eukaryotic cells that contains genetic information stored in DNA molecules and works to maintain the integrity of DNA and to control cellular activities by regulating gene expression.

observation The act of noticing or paying close attention to one's surroundings in order to gain information.

offspring A new organism produced by one or more living organisms.

omnivore An organism whose primary diet consists of both plants and animals.

organ A group of tissues working together to perform a singular function or multiple functions (e.g., plant: roots, flowers; animal: heart, kidney).

organ system	A group of organs working together to perform a common function or multiple functions (e.g., circulatory system, digestive system).
organelle	Membrane-bound structures that perform specialized functions within a cell.
organic molecule	A molecule made up of large carbon-based structures that is found in or produced by living organisms (e.g., carbohydrates, lipids).
organism	A single living cell or group of cells that make up one living thing, such as a plant or animal.
osmosis	The movement of water molecules across a permeable membrane from a region of high water molecule concentration to a region of low water molecule concentration without requiring the use of energy.
oxygen cycle	The predictable pattern describing how oxygen is used, recycled, and reused in and throughout the earth.
passive transport	The act of substances moving into or out of a cell without the use of cellular energy.
pH scale	A system of measurement ranging from one to fourteen that indicates the relative concentration of hydrogen ions (H^+) in a solution. A pH of one indicates a strong acid while a pH of fourteen indicates a strong base, and a pH of seven is neutral.
phenotype	The physical expression of a particular genetic trait, or genotype, which is influenced by an organism's genetic makeup and surrounding environmental pressures.
phospholipid	A type of lipid that has a hydrophilic head and two hydrophobic tails and is primarily used as a structural component in cellular membranes.
phospholipid bilayer	A double layer of phospholipids that provides structure for the cell membrane. The hydrophilic heads face the internal cytoplasm and external cell environment while the hydrophobic tails face inward toward each other.
photosynthesis	A process involving a complex set of chemical reactions where plants and other organisms use sunlight energy to convert water and carbon dioxide into oxygen and high-energy carbohydrate molecules such as simple sugars and complex starches.

point mutation A genetic alteration that affects a single nucleotide by substituting one nucleotide for another nucleotide (e.g., missense mutation, nonsense mutation, silent mutation), also called a single-base substitution.

polymer A large molecule composed of smaller units, called monomers, linked together by chemical bonds (e.g., proteins are polymers of amino acids).

polypeptide A molecule produced when a series of amino acids are linked together by peptide bonds. Polypeptides are formed during the translation process of protein synthesis.

polysaccharide A complex carbohydrate composed of a chain of monosaccharides bonded together (e.g., cellulose, starch, glycogen).

population A group of interbreeding organisms that live in a particular geographic area during the same time period.

predator An organism that typically hunts prey for energy.

prey An organism that is typically consumed by a predator as a source of energy.

producer (ecological) An organism that can use energy from sunlight (photosynthesis) or chemicals (chemosynthesis) to synthesize organic molecules from inorganic compounds.

product The substance that results from a chemical reaction.

prokaryote A single-celled organism that lacks a membrane-bound nucleus and membrane-bound organelles and has a nucleoid region in the cytoplasm containing a single, circular molecule of DNA.

prophase The first stage of mitosis and meiosis, during which chromatin condenses to form chromosomes, the nuclear envelope disappears, and the spindle begins to form.

protein A three-dimensional macromolecule in organisms that is composed of monomers called amino acids and contains carbon, hydrogen, oxygen, and nitrogen; perform many structural and regulatory functions in cells.

protein channel	Opening formed by specific protein(s) within the phospholipid bilayer of a cellular membrane and used for the transport of substances; can be opened or closed according to the needs of the cell.
protein synthesis	The process in which proteins are produced, including the transcription of DNA to mRNA and the translation of mRNA to a polypeptide chain.
Punnett square	A diagram used to determine possible combinations of offspring alleles by crossing the alleles of parents with known genotypes. A Punnett square is used to predict the probability of offspring having certain allele combinations.
qualitative	Data that pertain to quality or character rather than quantity or a numeric value.
quantitative	Data that measure a numeric amount or quantity.
reactants	In a chemical reaction, the substance (or substances) that undergo a change.
reaction rate	The speed at which a chemical reaction occurs, measured as the amount of reactant converted to product in a set period of time.
recessive	An allele or gene that is only expressed in a homozygous genotype because it is otherwise masked by a dominant allele.
recombinant DNA technology	The technology of producing altered DNA by cutting up DNA molecules from more than one organism into fragments and splicing the fragments together in a host organism.
renewable resource	A type of natural resource that can be replenished or takes a relatively short period of time for Earth to produce to sustain the rate of consumption (e.g., sunlight, air, wind, crops, forests).
respiratory system	An organ system that brings oxygen into an organism, performs gas exchange, and then releases carbon dioxide back to the surrounding environment.

ribonucleic acid (RNA) A single-stranded nucleic acid molecule in the nucleus of eukaryotic cells and the cytoplasm of prokaryotic cells; consists of nucleotide monomers containing the sugar ribose, a phosphate group, and the nitrogenous bases adenine, uracil, cytosine and guanine. RNA functions as a messenger carrying instructions of DNA during protein synthesis.

ribosomal RNA (rRNA) A type of RNA molecule that is the main structural and functional component of ribosomes and the site of protein synthesis.

ribosome Composed of RNA and proteins that function at the site of protein synthesis in the cytoplasm of eukaryotic and prokaryotic cells.

selective expression The process in which only certain genes are expressed, which can produce specialized cells from a single cell.

selective permeability A property of biological membranes (e.g., cell membrane) that regulates the passage of some substances while preventing others from passing through. This property helps cells maintain homeostasis.

selective pressure Any cause that limits the survival and reproduction of individuals within a population. Over many generations, this can lead to genetic change.

solar energy Radiant and heat energy emitted by the Sun, which can be used to generate electricity and is used for photosynthesis. This is a form of renewable energy.

specialized cell A cell that is suited to performing a particular function in a multicellular organism.

speciation A process resulting in a new and genetically distinct species.

species In classification of organisms, the lowest taxonomic grouping consisting of organisms that are capable of reproducing to produce fertile offspring.

spindle fiber A microtubule structure that controls chromosome movement during mitosis and meiosis.

stem cell	An unspecialized cell with the capacity to give rise to various cell types through cellular differentiation. Stem cells are found in embryos and certain adult tissues.
substrate	A substance that is acted on by an enzyme.
surface area	The entire amount of area, or space that can be measured on the outside of a three-dimensional object.
taxonomy	The branch of biology that focuses on classifying and naming organisms.
telophase	The fourth stage of mitosis and meiosis, during which chromosome separation is completed, chromosomes uncoil, the spindle breaks down, and daughter nuclei form at the two poles of a cell. Cytokinesis usually begins during telophase.
temperature	A measure of average kinetic energy of the particles in a sample of matter determining how hot or how cold that substance is. This measurement commonly uses the Celsius or Fahrenheit scale.
theory (scientific)	An explanation or a generalization based on many observations and investigations that has been consistently supported by independent experiments.
tissue	A group of similar cells organized to perform one or more specific functions in a multicellular organism.
trait	A specific characteristic in an organism that is expressed by genes and/or influenced by the surrounding environment.
transcription	The process in which part of the nucleotide sequence of DNA is used as a template to synthesize a strand of messenger RNA (mRNA).
transfer RNA (tRNA)	A type of RNA molecule that brings amino acids to the site of the ribosomes during protein synthesis.
translation	The process in which the genetic information encoded in a strand of messenger RNA (mRNA) is decoded by a ribosome to produce a sequence of amino acids (called a polypeptide chain) for protein synthesis.

trophic level	The position an organism, or group of organisms, occupies in a food chain or food web in relation to the flow of energy through an ecosystem (e.g., producer, consumer).
vacuole	A membrane-enclosed, fluid-filled organelle in some eukaryotic cells, containing substances that remove waste products and store ingested food and other substances. In many plant cells, there is a single large vacuole that can fill most of the cell's volume.
vesicle	A membrane-bound sac in a cell that stores and transports cellular products, and digests metabolic wastes within the cell.
vestigial structure	A structure in an organism that is functionless or incompletely developed. This is typically a structure more fully developed and functional in the organism's ancestors.
volume	The amount of space a three-dimensional object occupies.
water cycle	The predictable pattern describing how water is used, recycled, and reused in and throughout the earth.
water quality	A measure of the conditions of the water in an environment relative to the requirements of humans or other species.
X chromosome	One of the sex-determining chromosomes that is present in humans.
Y chromosome	One of the sex-determining chromosomes that is present in humans.
zygote	The diploid cell formed after a sperm and egg unite.

Idaho State
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