

## Biology EOCT Glossary Review by Domain

### Cells SB1

This category of vocabulary will make up approximately 17% of the test. Assessment in this domain focuses on understanding cell structure and organization; identifying the four major biomolecules & their function within the living cell; comprehending how and why homeostasis is essential for life.

**Activation Energy** This is the energy needed by a system to initiate a process.

**Active Transport** Process requiring energy for the movement of particles across a cell membrane against the concentration gradient.

**Adenine** This bonds to thymine (T) in DNA.

**Amino Acids** This is a molecule that contains both amino and carboxylic acid functional groups. They are the building blocks of protein.

**ATP** This is the main energy storage and transfer molecule in the cell.

**Carbohydrate** This is a compound made up of carbon, hydrogen, and oxygen atoms; it is used by cells to store and release energy. Sugars are made by chloroplasts through photosynthesis and consumed by mitochondria through cell respiration.

**Cell Membrane** A thin, flexible, semipermeable barrier around the cell which regulates what enters and leaves the cell.

**Cell Wall** This structure provides support and protection for plant cells.

**Chloroplast** This is a plastid with chlorophyll in plants that photosynthesize.

**Cytosine** This bonds to guanine (G) in DNA.

**Diffusion** The process when molecules tend to move from an area of high concentration to an area of low concentration.

**DNA** This holds an organisms hereditary information.

**Endocytosis** This is the process where cells engulf material from outside their cell membranes.

**Endoplasmic Reticulum** This is a membrane-bound organelle in eukaryotic cells that is the production and processing center of proteins and some lipids.

**Enzyme** These are complex proteins that speed up chemical reactions by lowering the amount of energy needed to get the reaction started.

**Eukaryote** These are cells where the genetic material is contained in membrane-bound nuclei.

**Exocytosis** This is the transport of material out of a cell by means of a sac or vesicle that first engulfs the material and then is extruded through an opening in the cell membrane.

**Facilitated Transport** This is also known as facilitated diffusion, a process by which substances are transported across cell membranes by means of protein carrier molecules.

**Golgi Body** This organelle serves to process and package lipids and proteins in the cell.

**Guanine** This bonds to cytosine (C) in DNA.

**Homeostasis** This is a regulation of the internal environment of an organism.

**Lipid** A macromolecule made up of mainly carbon and hydrogen atoms that is primarily used for energy storage and in cell membranes.

**Nucleic Acid** This is a macromolecule that holds cell information in a coded form. Made of sugar, phosphate and nitrogen-containing bases.

**Nucleotide** This is the repeating structural unit that forms RNA and DNA.

**Nucleus** The structure that houses the cells genetic information.

**Osmosis** The movement of water through a selectively permeable membrane from an area of high concentration to low concentration.

**Passive Transport** A non-energy requiring process that moves materials across a cell membrane with the concentration gradient.

**Product** This is the substance(s) formed in a chemical reaction.

**Prokaryote** These are organisms where the genetic material is not bound by a nucleus. They are usually unicellular.

**Protein** A macromolecule that contains carbon, hydrogen, oxygen, and nitrogen, which is used by the body for growth and repair.

**Ribosome** This organelle synthesizes proteins.

**Selective Permeability** This is an ability of a plasma membrane to allow some substances to cross across the membrane more easily than others.

**Substrates** This is the material or substance on which an enzyme acts.

**Thymine** This bonds to adenine (A) in DNA.

**Vacuole** This is a tiny fluid-filled cavity in the cytoplasm. It can be used for storage of biochemicals.

## Biology EOCT Glossary Review by Domain

### Genetics SB2

This category of vocabulary will make up approximately 25% of the test. Assessment in this domain focuses on explaining the structure and role of DNA and RNA in living systems and the how changes in these nucleic acids can affect an organism; comprehending Mendelian genetics and the role of meiosis in genetics; examining genetic technology and its effect on various industries, and understanding the differences and similarities in sexual and asexual reproduction.

**Allele** This is an alternative form of a gene.

**Anaphase** This is the stage of meiosis or mitosis when chromosomes separate to the opposite ends of the cell.

**Asexual Reproduction** Process by which a single parent reproduces by itself.

**Clones** These are organisms that come from the same cell and are genetically identical to one another.

**Deletion** A genetic mutation caused by the loss of a chromosomal segment.

**Dihybrid Cross** This is the inheritance of alleles of two genes from two different parents.

**Diploid** This is an organism or cell with two sets of chromosomes.

**DNA** This holds an organisms hereditary information.

**Dominant** This is an observable trait of an organism that can mask the recessive trait.

**Double Helix** This is the structure of DNA as first published by James Watson and Francis Crick in 1953.

**Gamete** This is a haploid cell with half the reproductive information from the parent.

**Gene** This is a segment of DNA on the chromosome that is coded for a particular trait.

**Genetic Engineering** The process of manipulating the DNA code of living organisms.

**Genetics** This is the science of genes, heredity and variation of organisms.

**Genotype** The genetic makeup of an organism (letters)

**Haploid** This is an organism with one set of chromosomes.

**Heterozygous** This is an organism that has two different alleles for the same genetic trait (Bb)

**Homozygous** This is an organism that has two identical alleles for the same genetic trait (BB or bb)

**Independent Assortment** This is one of Mendel's principles that govern the process of genetic inheritance. It states that allele pairs separate independently during the formation of gametes (sex cells). This means that traits are passed to offspring independently of one another.

**Law Of Dominance** One of Mendel's Laws of Inheritance. This law states an organism has two different alleles for a trait and the allele that is expressed in the phenotype, masking the expression of the other allele, is said to be dominant. The allele whose expression is masked is said to be recessive.

**Law Of Segregation** This is Mendel's first law. For each inherited trait, there are at least one pair of alleles. The law of segregation states that during gamete formation each member of an allelic pair separates from the other member to form the genetic make-up of a gamete (sex cell).

**Meiosis** This is a process where a parent cell divides into four sex cells with half the chromosomes.

**Metaphase** This is the stage of mitosis where chromosomes align in the middle of the cell before being separated into each of the two daughter cells.

**Monohybrid Cross** This is the inheritance of a single pair of contrasted characteristics.

**Mutation** This is a random error/change in the DNA sequence. These may be inherited or occur in cells during the lifetime of the organism.

**Nucleic Acid** This is a macromolecule that holds cell information in a coded form. Made of sugar, phosphate and nitrogen-containing bases.

**Nucleotide** This is the repeating structural unit that forms RNA and DNA.

**Phenotype** The physical expression of genes.

**Punnett Square** This is a diagram that shows the gene combinations that might result from a genetic cross.

**Recessive Trait** A trait that can be masked by another one.

**Recombinant DNA** This is an artificial genetic sequence from combining two other sequences in a plasmid.

**Replication** This is the copying process by which a cell duplicates its DNA.

**Ribose** This is a 5-carbon sugar which is a structural component of RNA, it differs from deoxyribose of DNA by only one group.

**RNA** A single stranded nucleic acid that plays a role in protein synthesis.

**Trait** A specific characteristic that varies from one individual to another.

**Transcription** This is the process of copying DNA to RNA.

**Translation** This is the second step of production of proteins where mRNA is decoded to produce a specific polypeptide.

## Biology EOCT Glossary Review by Domain

### Organisms SB3

This category of vocabulary will make up approximately 18% of the test. Assessment in the domain focuses on comparing the similarities and differences in unicellular and multicellular organism; comprehending the need and abilities of organisms to obtain and utilize nutrients and energy; examining the basis and development of the current six kingdom classification system.

**ADP** This is short for adenosine diphosphate. An organic compound that is composed of adenosine and two phosphate groups. With the addition of another phosphate group, it is converted to ATP for the storage of energy during cell metabolism. It then forms again, from ATP, when a phosphate group is removed to release energy

**Animalia** A major group of organisms, that are, in general, multicellular, capable of locomotion and responsive to their environment, and feed by consuming other organisms.

**Archaeobacteria** This is the kingdom of unicellular prokaryotes that have cell walls without peptidoglycan.

**ATP** This is the main energy storage and transfer molecule in the cell.

**Autotroph** This is an organism that obtains its energy from inorganic substances or from the sun.

**Binomial Nomenclature** This is the naming system Linnaeus gave to living things, which uses the Latin name for the organism's genus and species.

**Cellular Respiration** This is the process that releases energy by breaking down food molecules in the presence of oxygen.

**Chlorophyll** This is a green pigment in chloroplasts that traps light energy from the sun.

**Classification** Placing an organism in sets of categories based on its characteristics.

**Eubacteria** This is the kingdom of unicellular prokaryotes that have cell walls with peptidoglycan.

**Family** In biological classification, this is one of the most important ranks. It is more specific than Order, but less than Genus.

**Fungi** This is the kingdom of heterotrophs that obtain energy and nutrients from dead and decaying organic matter.

**Genus** In the classification system, this is a group of organisms with one or more related species.

**Kingdom** In (Linnaean) biological taxonomy, this is the highest level of scientific classification of organisms.

**Kreb's Cycle** This is the second stage of cellular respiration and takes place in the mitochondrial matrix. During this stage the decomposition of pyruvate to carbon dioxide is completed

**Order** Between Family and Class in scientific classification scheme

**Photosynthesis** This is a chemical process that uses light to process carbon dioxide in plants.

**Phylum** The second highest taxonomic classification between kingdom and class.

**Plant** This is any living thing without the power of locomotion that obtain energy from sunlight or make their own food.

**Protists** These are living organisms; simple eukaryotes; they may be single-cellular, colonial or multicellular.

**Species** These are groups of reproducing populations that are isolated from other groups.

**Taxonomy** This is the study of grouping and naming organisms.

## Biology EOCT Glossary Review by Domain

### Ecology SB4

This category of vocabulary will make up approximately 25% of the test. Assessment in this domain focuses on identifying the interdependence of organisms and their environment; comprehending the recycling of nutrients within a system and the flow of energy through that system; recognizing the effect man has made on the environment; examining the adaptations of plants and animals to an ever-changing world.

**Abiotic** These are the nonliving factors of the environment.

**Adaptation** This is an inherited characteristic that increases an organism's chance of survival.

**Autotroph** This is an organism that obtains its energy from inorganic substances or from the sun.

**Biome** This is a group of plants and animals in the same region that have adapted together to the region's environment.

**Biosphere** The portion of the Earth and its atmosphere that can support life. The part of the global carbon cycle that includes living organisms and biogenic organic matter.

**Biotic** These are all the living organisms on earth.

**Carnivore** This is an organism that gets energy by eating meat, living or dead.

**Carrying Capacity** The maximum population which an area can maintain indefinitely.

**Community** These are the groups of plants and animals that interact within an ecosystem.

**Competition** This occurs when 2 or more organisms or populations in a community rely or need similar limiting resources.

**Consumer** This is an organism that relies on other organisms for its food and energy supply; also called a heterotroph.

**Deciduous** This is a plant that loses all its leaves during a particular season each year. Different pigments in the leaf are revealed as the leaves die and fall.

**Decomposer** This is an organism that breaks down and gains nutrients from dead organisms.

**Desert** Arid region that receives less than 10 inches of precipitation annually.

**Ecology** This is the study of organisms and their interactions with the environment.

**Ecosystem** Populations and abiotic factors with which they interact in the setting of a community.

**Energy Pyramid** This display graphically shows the energy that is available at each trophic level in a food chain.

**Exponential Growth** This is the type of growth experienced by a population that increases at a rate proportional to its size. The larger the population gets, the faster it grows.

**Food Chain** This is a path for the transfer of matter and energy through an ecosystem by eating and being eaten.

**Food Web** A representation of the linkages between food chains in a community.

**Grassland** One of several types of terrestrial biomes, where grasses form the predominant vegetation, usually mixed with herbs and sometimes with shrubs, but usually without trees.

**Greenhouse Effect** This is a warming of the planet due to carbon dioxide build up and heat retention.

**Heterotroph** This is an organism that relies on complex organic substances for nutrition.

**Marine** Biome with a salt water environment.

**Migration** A recurring pattern of movement between 2 or more locations in response to environmental rhythms or seasonal changes.

**Niche** This is the role of a species in an ecosystem, consisting of such things as what it eats, when it eats, and where it lives.

**Nitrogen Cycle** This is a biogeochemical cycle in which nitrogen is converted from its inert atmospheric molecular form ( $N_2$ ) into a form that is useful in biological processes. The cycle includes fixation, nitrification, assimilation, ammonification, and finally denitrification, when nitrogen is returned to the atmosphere.

**Organism** Any living thing with one or more cells.

**Parasite** This is an organism which feeds on, but usually does not kill, a larger organism.

**Population** All the individuals of a species that live together in one place at the same time

**Population Density** The number of individuals of a species per unit area.

**Predator** This is an animal that lives by preying on other animals.

**Prey** An animal that is killed and eaten by another animal.

**Producer** This is an organism that supplies matter and energy, also known as an autotroph.

**Rain Forest** This is one of the seven major biomes in which rainfall amounts are high and flora and fauna vary greatly; at least one-half of the the world's species are contained in these and primary productivity is extremely high.

**Scavenger** An animal that eats the dead remains and wastes of other animals and plants.

**Succession** This is the regular progression of species replacement that occurs after a disturbance, such as natural disaster, or during the establishment of a new habitat.

**Taiga** This is a northern hemisphere habitat with wet soil.

**Temperate** This is a term used to describe a region between polar zones and the tropics with warm summers, cold winters and sufficient precipitation to support its species.

**Trophic Level** This is the position that an organism occupies in a food chain - what it eats, and what eats it.

**Tundra** An ecosystem dominated by lichens, mosses, grasses, and woody plants. It is generally found at high latitudes. It is described as having a marshy surface where mosses, lichens, berries and low shrubs grow with mucky soil and permafrost underneath.

## Biology EOCT Glossary Review by Domain

### Evolution SB5

This category of vocabulary will make up approximately 15% of the test. Assessment in this domain focuses on comprehending the role of natural selection in the success of a species; understanding the scientific evidence for natural selection and evolution; recognizing the development of scientific theories throughout history.

**Adaptation** This is an inherited characteristic that increases an organism's chance of survival.

**Adaptive Radiation** This describes the evolution of many diverse species adapted to their specific habitats but having one common ancestor. This usually occurs when the original species is separated from each other completely, such as geographic isolation. When this occurs, the organisms adapt to different resources, leading to a new species.

**Analogous Structures** These are structures which are similar in different organisms because they evolved in a similar environment, yet do not have a common ancestor; bird wing and insect wing with similar functions

**Ancestors** These are parents, parents of parents, etc.

**Biodiversity** Number and variety of living organisms; includes genetic, species, and ecological types.

**Biological Resistance** The natural ability of an organism to overcome, retard, suppress, prevent infection, or avoid adverse abiotic factors. For example, some organisms natural immunity to certain diseases.

**Charles Darwin** British naturalist who is responsible for originating the theory of evolution.

**DNA Sequencing** This is the process of identifying the sequence of nucleotides along a segment of DNA.

**Homeostasis** This is the state of a body when opposing influences are balanced and the body remains unchanged.

**Evolution** This is a change in the genetic makeup of a population or species over time.

**Fossil Record** This is the chronicle of evolution over millions of years of geologic time engraved in the order which fossils appear in rock strata.

**Geographic Isolation** This can occur when part of a population of a species becomes separated from the remainder, they may over time evolve different characteristics from the parent population.

**Gradualism** This is a view of Earth's history that attributes profound change to the cumulative product of slow but continuous processes.

**Homologous Structures** These are physical features shared by organisms with common ancestry; they may have the same structure, but different functions developmentally mature organisms; person's arm and bird wing with different functions similar structure

**Natural Selection** This is the process of organisms adapting to their environments over time.

**Phylogeny** This is the evolutionary history of a species or group of related species.

**Radiocarbon Dating** This is the use of measuring the activity of a radioactive isotope in a sample to determine its age.

**Speciation** This is the origin of a new species in evolution, there are many different methods by which this can occur. Different species cannot reproduce successfully.

**Stabilizing Selection** In a population, a shift in the average population phenotype toward the mean and away from the physical extremes. This process lowers phenotypic variety; the population is more homogeneous.