Cell Biology

• Nucleus: The nucleus is a membrane-bound organelle within a eukaryotic cell that contains the cell's genetic material (DNA).

• Cell Membrane: A cell membrane is a semipermeable barrier that surrounds the cell, regulating the passage of substances in and out of the cell.

• Lysosomes: Lysosomes are membrane-bound organelles containing enzymes that break down waste materials and cellular debris in eukaryotic cells.

• Ribosomes: Ribosomes are cell organelles responsible for protein synthesis, translating genetic information from mRNA into functional proteins within cells.

• Cytoplasm: Cytoplasm is a jelly-like substance within cells that contains organelles, proteins, and other molecules necessary for cellular function.

• Mitochondria: Mitochondria are membrane-bound organelles found in eukaryotic cells responsible for generating energy in the form of ATP through respiration.

• Endoplasmic Reticulum: Endoplasmic reticulum is a network of membranes within the cytoplasm of eukaryotic cells involved in protein synthesis and transport.

Genetics

• Heredity: Heredity in genetics refers to the passing on of traits from parents to offspring through genetic information in DNA.

• Phenotype: The observable physical traits and characteristics of an organism determined by its genetic makeup are referred to as phenotype.

• Genotype: Genotype refers to the genetic makeup of an organism, including the specific combination of alleles present in its DNA.

• Mutation: A mutation in genetics refers to a change in the DNA sequence that can alter the function of a gene.

• Gene: A gene is a specific sequence of DNA that contains the instructions for creating a particular protein or RNA molecule.

• Chromosome: A chromosome is a thread-like structure made of DNA and proteins found in the nucleus of a cell.

• RNA: RNA (Ribonucleic Acid) is a nucleic acid molecule that plays a crucial role in protein synthesis and gene regulation.

• DNA: DNA, or deoxyribonucleic acid, is a molecule that carries genetic information and serves as the hereditary material in all organisms.

• Genetics: Genetics is the branch of biology that studies genes, heredity, and genetic variation in organisms.

Molecular biology Terms

• Transcription: Transcription is the process of copying a segment of DNA into RNA by RNA polymerase enzyme in molecular biology.

• Translation: Translation is the process in molecular biology where the genetic information stored in mRNA is used to build proteins.

• Gene Expression: Gene expression is the process by which information from a gene is used to synthesize a functional gene product.

• Replication: Replication is the process in molecular biology where DNA is copied to produce an identical strand, essential for cell division.

• Mutation: A mutation is a change in the DNA sequence that can lead to alterations in the structure and function of proteins.

• Protein Synthesis: Protein synthesis is the process by which cells build proteins using instructions encoded in DNA, involving transcription and translation.

Evolutionary biology Terms

• Gene Flow: Gene flow is the transfer of genetic material from one population to another through migration or interbreeding, increasing genetic diversity.

• Fitness: Fitness in evolutionary biology refers to an organism's ability to survive and reproduce in its environment, contributing to genetic success.

• Mutation: Mutation refers to a change in the DNA sequence of an organism, which can lead to genetic variation and evolution.

• Speciation: Speciation is the process by which new species evolve from existing ones, often due to reproductive isolation and genetic divergence.

• Adaptation: Adaptation refers to the process by which organisms change over time to better suit their environment and increase their chances of survival.

• Natural Selection: Natural selection is the process by which organisms with advantageous traits for their environment are more likely to survive and reproduce.

• Evolution: Evolution is the process by which species change over time through genetic variation, natural selection, and adaptation to their environment.

• Genetic Variation: Genetic variation refers to differences in the DNA sequences among individuals within a population, which can lead to evolutionary change.

Physiology Terms

• Digestion: Digestion refers to the process of breaking down food into smaller molecules that can be absorbed and utilized by the body.

• Respiration: Respiration is the process by which organisms exchange gases with their environment, taking in oxygen and releasing carbon dioxide.

• Neurons: Neurons are specialized cells that transmit information throughout the body, allowing for communication between the brain and other body parts.

• Hormones: Hormones are chemical messengers produced by glands in the endocrine system that regulate various physiological functions in the body.

• Metabolism: Metabolism is the process by which the body converts food and drink into energy, used for various bodily functions.

• Homeostasis: Homeostasis is the body's ability to regulate and maintain stable internal conditions, such as temperature and pH, despite external changes.

• Physiology: Physiology is the study of how living organisms function, including the processes and functions of their cells, tissues, and organs.

Microbiology Terms

• Microorganism: Microorganisms are tiny living organisms, such as bacteria, viruses, fungi, and protozoa, that are invisible to the naked eye.

• Pathogen: A pathogen is a microorganism, such as a virus, bacterium, fungus, or parasite, that causes disease in its host.

• Antibiotic: Antibiotics are drugs that inhibit the growth or kill bacteria by targeting specific cellular processes, commonly used for treating infections.

• Culture: Culture in microbiology refers to the process of growing microorganisms in a controlled environment, typically in a petri dish.

• Sterilization: Sterilization in microbiology refers to the process of killing or removing all microorganisms, including bacteria, viruses, and fungi.

• Immunity: Immunity in microbiology refers to the ability of an organism to resist infection or disease caused by pathogens.

• Virulence: Virulence refers to the ability of a microorganism to cause disease or harm to its host in microbiology.

• Conjugation: Conjugation in microbiology refers to the process in which bacteria transfer genetic material to another bacterium through direct cell-to-cell contact.

Immunology Terms

• Inflammation: Inflammation is a protective response by the immune system to tissue damage, infection, or irritants, involving redness, swelling, and pain.

• Lymphocyte: Lymphocytes are a type of white blood cell that plays a crucial role in the immune system's defense against pathogens.

• Immunity: Immunity refers to the ability of an organism to resist or fend off infections and diseases through the immune system.

• Pathogen: A pathogen is a microorganism, such as a virus, bacterium, or fungus, that causes disease in its host organism.

• Vaccination: Vaccination is the administration of a vaccine to stimulate the immune system to develop immunity against a specific disease.

• Immune System: The immune system is a complex network of cells, tissues, and organs that work together to defend the body against pathogens.

• Antigen: An antigen is a substance that triggers an immune response in the body, usually by binding to antibodies.

• Antibody: Antibodies are proteins produced by the immune system that specifically target and neutralize foreign substances such as pathogens.