

1. General Biology Terms

- **Biology** – The scientific study of life and living organisms.
 - **Organism** – Any living thing, including plants, animals, fungi, and microorganisms.
 - **Cell** – The basic unit of life in all living organisms.
 - **Tissue** – A group of similar cells working together to perform a function.
 - **Organ** – A structure made of tissues that perform a specific function in the body.
 - **Organ System** – A group of organs working together to perform complex body functions.
 - **Homeostasis** – The maintenance of a stable internal environment in an organism.
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2. Cell Biology

- **Prokaryote** – A simple cell without a nucleus (e.g., bacteria).
 - **Eukaryote** – A complex cell with a nucleus (e.g., plants, animals).
 - **Nucleus** – The control center of a cell that contains genetic material (DNA).
 - **Mitochondria** – The powerhouse of the cell, where energy is produced.
 - **Ribosome** – A structure that synthesizes proteins.
 - **Endoplasmic Reticulum (ER)** – A network of membranes involved in protein and lipid synthesis.
 - **Golgi Apparatus** – An organelle that modifies, sorts, and packages proteins.
 - **Cell Membrane** – A protective barrier that controls what enters and exits the cell.
 - **Cell Wall** – A rigid layer found in plant cells, bacteria, and fungi, providing structure.
 - **Chloroplast** – The site of photosynthesis in plant cells.
 - **Cytoplasm** – The fluid inside the cell where organelles are suspended.
 - **Lysosome** – An organelle containing digestive enzymes to break down waste.
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3. Genetics & Heredity

- **DNA (Deoxyribonucleic Acid)** – The molecule carrying genetic information.
- **Gene** – A segment of DNA that codes for a specific trait.
- **Chromosome** – A thread-like structure of DNA and protein that carries genes.
- **Allele** – Different versions of a gene.
- **Genotype** – The genetic makeup of an organism.
- **Phenotype** – The physical appearance resulting from the genotype.
- **Homozygous** – Having two identical alleles for a trait.
- **Heterozygous** – Having two different alleles for a trait.
- **Mutation** – A change in the DNA sequence.
- **Dominant Trait** – A trait that is expressed when at least one dominant allele is present.

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- **Recessive Trait** – A trait that is only expressed when two recessive alleles are present.
 - **Heredity** – The passing of traits from parents to offspring.
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4. Evolution & Classification

- **Evolution** – The process by which species change over time.
 - **Natural Selection** – The survival and reproduction of organisms best adapted to their environment.
 - **Adaptation** – A trait that increases an organism's survival and reproduction chances.
 - **Speciation** – The formation of new species over time.
 - **Taxonomy** – The science of classifying organisms.
 - **Binomial Nomenclature** – The two-part scientific naming system for organisms (e.g., *Homo sapiens*).
 - **Kingdom** – The highest classification category (e.g., Animalia, Plantae).
 - **Species** – The most specific classification group, referring to organisms that can breed.
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5. Ecology & Environment

- **Ecology** – The study of interactions between organisms and their environment.
 - **Ecosystem** – A community of living organisms interacting with their physical environment.
 - **Biosphere** – The part of Earth where life exists.
 - **Population** – A group of the same species living in an area.
 - **Community** – Different populations living together in one area.
 - **Producer (Autotroph)** – An organism that makes its own food (e.g., plants).
 - **Consumer (Heterotroph)** – An organism that eats other organisms for energy.
 - **Decomposer** – Organisms that break down dead matter (e.g., fungi, bacteria).
 - **Food Chain** – A linear sequence showing energy flow in an ecosystem.
 - **Food Web** – A complex network of interconnected food chains.
 - **Trophic Level** – The position an organism occupies in a food chain.
 - **Symbiosis** – A close relationship between two species (e.g., mutualism, commensalism, parasitism).
 - **Biodiversity** – The variety of life in a given area.
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6. Human Biology & Physiology

- **Digestive System** – The system that processes food and absorbs nutrients.
- **Circulatory System** – The system that transports blood, oxygen, and nutrients.
- **Respiratory System** – The system responsible for gas exchange (oxygen in, carbon dioxide out).
- **Nervous System** – The system that transmits signals between different body parts.
- **Endocrine System** – The system of glands that produce hormones.

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- **Immune System** – The body's defense against disease.
 - **Skeletal System** – The framework of bones that supports and protects the body.
 - **Muscular System** – The system responsible for movement.
 - **Excretory System** – The system that removes waste from the body.
 - **Reproductive System** – The system responsible for producing offspring.
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7. Microbiology

- **Bacteria** – Single-celled prokaryotic organisms, some beneficial, some harmful.
 - **Virus** – A tiny infectious agent that requires a host cell to replicate.
 - **Fungus** – An organism that decomposes organic material (e.g., mold, yeast).
 - **Pathogen** – A microorganism that causes disease.
 - **Antibiotic** – A substance that kills or inhibits bacteria.
 - **Vaccine** – A biological preparation that provides immunity to a disease.
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8. Plant Biology (Botany)

- **Photosynthesis** – The process by which plants convert sunlight into energy.
- **Chlorophyll** – The green pigment in plants that absorbs light for photosynthesis.
- **Xylem** – The tissue that transports water in plants.
- **Phloem** – The tissue that transports food (sugars) in plants.
- **Stomata** – Small openings on leaves for gas exchange.
- **Transpiration** – The loss of water vapor from plant leaves.
- **Germination** – The process by which a seed grows into a plant.
- **Pollination** – The transfer of pollen from the male part of a flower to the female part.