

BIOCHEMISTRY

A	Adhesion	G	Concentration	M	Monomer
B	Atom	H	Enzyme	N	Nucleic Acid
C	Biological Macromolecules	I	Freezing Point	O	Organic Molecule
D	Carbohydrate	J	Lipids	P	pH
E	Catalyst	K	Macromolecules	Q	Protein
F	Cohesion	L	Molecules	R	Specific Heat
				S	Temperature

1. _____ **A macromolecule that contains atoms of carbon, hydrogen, and oxygen in a 1:2:1 ratio and serves as a major source of energy for living organisms (e.g., sugars, starches, and cellulose).**

2. _____ **The intermolecular attraction between like molecules. Surface tension results from the cohesive properties of water.**

3. _____ **A substance that enables a chemical reaction to proceed at a usually faster rate or under different conditions (e.g., lower temperature) than otherwise possible without being changed by the reaction.**

4. _____ **A molecule containing carbon that is part of or produced by living systems.**

5. _____ **A group of organic compounds composed mostly of carbon and hydrogen including a proportionately smaller amount of oxygen; are insoluble in water, serve as a source of stored energy, and are a component of cell membranes.**

6. _____ **A molecule of any compound that can react with other molecules of the same or different compound to form a polymer. Each biological macromolecule has characteristic monomers.**

7. _____ **A biological macromolecule (DNA or RNA) composed of the elements C, H, N, O, and P that carries genetic information.**

8. _____ **A macromolecule that contains the principal components of organisms: carbon, hydrogen, oxygen, and nitrogen; performs a variety of structural and regulatory functions for cells.**

9. _____ **The intermolecular attraction between unlike molecules. Capillary action results from the adhesive properties of water and the molecules that make up plant cells.**

10. _____ **A protein that increases the rate of a chemical reaction without being changed by the reaction; an organic catalyst.**

CELL STRUCTURE

A	Cell	F	Eukaryote	K	Nucleus
B	Chloroplast	G	Extracellular	L	Organelle
C	Endocytosis	H	Golgi Apparatus	M	Plastids
D	Endoplasmic Reticulum	I	Mitochondrion	N	Prokaryotes
E	Endosymbiosis	J	Multicellular	O	Ribosome
				P	Unicellular

1. _____ **A cellular structure composed of RNA and proteins that is the site of protein synthesis in eukaryotic and prokaryotic cells.**

2. _____ **An organelle found in eukaryotic cells responsible for the final stages of processing proteins for release by the cell.**

3. _____ **A theorized process in which early eukaryotic cells were formed from simpler prokaryotes.**

4. _____ **A process in which a cell engulfs extracellular material through an inward folding of of its plasma membrane.**

5. _____ **The basic unit of structure and function for all living organisms. Cells have three common components: genetic material, cytoplasm, and a cell membrane. Eukaryotic cells also contain specialized organelles.**

6. _____ **A group of membrane-bound organelles commonly found in photosynthetic organisms and mainly responsible for the synthesis and storage of food.**

7. _____ **A single-celled organism that lacks a membrane-bound nucleus and specialized organelles.**

8. _____ **An organelle found in plant cells and the cells of other eukaryotic photosynthetic organisms where photosynthesis occurs.**

9. _____ **A membrane-bound organelle in eukaryotic cells functioning to maintain the integrity of the genetic material and, through the expression of that material, controlling and regulating Cellular activities.**

10. _____ **A subunit within a cell that has a specialized function.**

DNA / RNA REPLICATION

A Frame-shift Mutation
B Mutation
C Point Mutation

D Protein Synthesis
E Semiconservative Replication
F Transcription

G Translation
H Translocation

1. _____ The process in which a strand of messenger RNA (mRNA) is synthesized by using the genetic information found on a strand DNA as a template.

2. _____ The process in which amino acids are arranged in a linear sequence through the processes of transcription of DNA and to RNA and the translation of RNA to a polypeptide chain.

3. _____ The process in which a segment of a chromosome breaks off and attaches to another chromosome.

4. _____ The process in which the DNA molecule uncoils and separates into two strands. Each original strand becomes a template on which a new strand is constructed, resulting in two DNA molecules identical to the original DNA molecule.

5. _____ The addition (insertion mutation) or removal (deletion mutation) of one or more nucleotides that is not indivisible by three, therefore resulting in a completely different amino acid sequence than would be normal. The earlier in the sequence nucleotides are added or removed, the more altered the protein will be.

ECOLOGY TERMS

A	Abiotic	K	Decomposer	U	Non-native Species
B	Agriculture	L	Ecology	V	Population
C	Aquatic	M	Ecosystem	W	Population Dynamics
D	Biogeochemical Cycles	N	Endemic Species	X	Producer (ecological)
E	Biome	O	Energy Pyramid	Y	Species
F	Biosphere	P	Environment	Z	Succession
G	Biotic	Q	Food Chain	AA	Symbiotic Relationship
H	Community (Ecological)	R	Food Web	BB	System
I	Competition	S	Habitat	CC	Terrestrial
J	Consumer (Ecological)	T	Limiting Factor	DD	Trophic Level

1. _____ **The movement of abiotic factors between the living and nonliving components within ecosystems; also known as nutrient cycles (i.e., water cycle, oxygen cycle, and nitrogen cycle).**

2. _____ **The zone of life on Earth; sum total of all ecosystems on Earth.**

3. _____ **A term that describes a nonliving factor in an ecosystem.**

4. _____ **A species that is found in its originating location and is generally restricted to that geographic area.**

5. _____ **An organism that obtains nutrients by consuming dead and decaying organic matter which allows nutrients to be accessible to other organisms.**

6. _____ **Chemical or physical factor that limits the existence, growth, abundance, or distribution of an individual organism or a population.**

7. _____ **The artificial cultivation of food, fiber, and other goods by the systematic growing and harvesting of various organisms.**

8. _____ **An area that provides an organism with its basic needs for survival.**

9. _____ **A complex arrangement of interrelated food chains illustrating the flow of energy between interdependent organisms.**

10. _____ **An organism that obtains energy by feeding on other organisms or their remains.**

11. _____ The position of an organism in relation to the flow of energy and inorganic nutrients through an ecosystem (e.g., producer, consumer, and decomposer).
12. _____ Different populations of organisms interacting in a shared environment.
13. _____ The lowest taxonomic level of biological classification consisting of organisms capable of reproduction that results in fertile offspring.
14. _____ A set of interacting or interdependent components, real or abstract, that form an integrated whole. An open system is able to interact with its environment. A closed system is isolated from its environment.
15. _____ A system composed of organisms and nonliving components of an environment.
16. _____ A relationship between two organisms (i.e., mutualism, in which both organisms benefit; parasitism, in which one organism benefits and the other organism is harmed; and commensalism, in which one organism benefits and the other organism does not benefit or is harmed).
17. _____ An organism that uses a primary energy source to conduct photosynthesis or chemosynthesis.
18. _____ A species normally living outside a distribution range that has been introduced through either deliberate or accidental human activity; also can be known as introduced, invasive, alien, nonindigenous, or exotic.
19. _____ A group of individuals of the same species living in a specific geographical area and reproducing.
20. _____ The total surroundings of an organism or a group of organisms.

EVOLUTION

A Allele Frequency
B Embryology
C Evolution
D Extinction

E Fossils
F Founder Effect
G Gradualism
H Isolating Mechanisms

I Natural Selection
J Punctuated Equilibrium
K Speciation

1. _____ **A process in nature in which organisms possessing certain inherited traits are better able to survive and reproduce compared to others of their species.**

2. _____ **The measure of the frequency of an allele at a genetic locus in a population; expressed as a proportion of percentage.**

3. _____ **A process typically caused by the genetic isolation from a main population resulting in a new genetically distinct species.**

4. _____ **A proposed explanation in evolutionary biology stating that new species arise from the result of slight modifications (mutations and resulting phenotypic changes) over many generations.**

5. _____ **The branch of zoology studying the early development of living things.**

6. _____ **The preserved remains or traces of organisms that once lived on Earth.**

7. _____ **A proposed explanation in evolutionary biology stating that species are generally stable over long periods of time. Occasionally there are rapid changes that affect some species which can quickly result in a new species.**

8. _____ **A process in which new species develop from preexisting species (biological evolution or macroevolution); a change in the allele frequencies of a population of organisms from generation to generation (genetic evolution or microevolution).**

9. _____ **A decrease in genetic variation caused by the formation of a new population by a small number of individuals from a larger population.**

10. _____ **A term that typically describes a species that no longer has any known living individuals.**

MAKING ENERGY

A Adenosine Triphosphate (ATP)
B Biochemical Conversion
C Bioenergetics

D Cellular Respiration
E Energy Transformation
F Photosynthesis

1. _____ A process in which energy changes from one form to another form while some of the energy is lost to the environment.

2. _____ The study of energy flow (energy transformations) into and within living systems.

3. _____ A process in which solar radiation is chemically captured by chlorophyll molecules and through a set of controlled chemical reactions resulting in the potential chemical energy in the bonds of carbohydrate molecules.

4. _____ A complex set of chemical reactions involving an energy transformation where potential chemical energy in the bonds of "food" molecules is released and partially captured in the bonds of adenosine triphosphate (ATP) molecules.

5. _____ The changing of organic matter into other chemical forms such as fuels.

GENETICS

A	Allele	I	Gene Splicing	Q	Inheritance
B	Biotechnology	J	Gene Therapy	R	Migration (Genetics)
C	Cloning	K	Genetic Drift	S	Multiple Alleles
D	Co-dominance	L	Genetic Engineering	T	Phenotype
E	Dominant Inheritance	M	Genetically Modified Organism	U	Polygenic Trait
F	Gene	N	Genetics	V	Recessive Inheritance
G	Gene Expression	O	Genotype	W	Selective Breeding
H	Gene Recombination	P	Incomplete Dominance	X	Sex-linked Trait

1. _____ A pattern of inheritance in which the phenotypic effect of one allele is completely expressed within a homozygous and heterozygous genotype.
2. _____ A natural process in which a nucleic acid molecule (usually DNA but can be RNA) is broken and then joined to a different molecule; a result of crossing-over.
3. _____ **A technology that includes the process of manipulating or altering the genetic material of a cell resulting in desirable functions or outcomes that would not occur naturally.**
4. _____ **The observable expression of a genotype.**
5. _____ **A variation of a gene's nucleotide sequence (an alternative of a gene).**
6. _____ **The scientific study of inheritance.**
7. _____ **A trait, associated with a gene that is carried by either the male or female parent (e.g., color blindness and sickle-cell anemia).**
8. _____ **Any procedure or methodology that uses biological systems or living organisms to develop or modify either products or processes for specific use. This term is commonly associated with genetic engineering, which is one of many applications.**
9. _____ **A change in the allele frequency of a population as a result of chance events rather than natural selection.**
10. _____ **An organism whose genetic material has been altered through some genetic engineering technology or technique.**

11. _____ A process in which a cell, cell product, or organism is copied from an original source.

12. _____ The genetic composition of an organism with reference to a single trait, a set of traits, or the entire complement of traits of an organism.

13. _____ A pattern of inheritance in which the phenotypic effect of two alleles in a heterozygous genotype express each phenotype of each allele fully and equally; a phenotype which would not be expressed in any other genotypic combination.

14. _____ A trait in which the phenotype is controlled by two or more genes at different loci on different chromosomes.

15. _____ The intentional insertion, alteration, or deletion of genes within an individual's cell and tissues for the purpose of treating a disease.

16. _____ A pattern of inheritance in which two alleles, inherited from the parents, are neither dominant nor recessive. The resulting offspring have a phenotype that is a blending of the parental traits.

17. _____ A sequence of nucleotides composing a segment of DNA that provides a blueprint for a specific hereditary trait.

18. _____ A pattern of inheritance in which the phenotypic effect of one allele is only expressed within a homozygous genotype. In a heterozygous condition with a dominant allele, it is not expressed in the phenotype.

19. _____ The process of breeding organisms that results on offspring with desired genetic traits.

20. _____ A type of gene recombination in which the DNA is intentionally broken and recombined using laboratory techniques.

MEIOSIS AND MITOSIS

A	Cell Cycle	G	DNA Replication
B	Chromosomal Mutation	H	Gamete
C	Chromosomes	I	Interphase
D	Crossing-Over	J	Meiosis
E	Cytokinesis	K	Mitosis
F	Deoxyribonucleic Acid (DNA)	L	Nondisjunction

1. _____ **An exchange of genetic material between homologous chromosomes during anaphase I of meiosis; contributes to the genetic variability in gametes and ultimately in offspring.**
2. _____ **The process in which DNA makes a duplicate copy of itself.**
3. _____ **The process in which sister chromatids fail to separate during and after mitosis or meiosis.**
4. _____ **A change in the structure of a chromosome (e.g., deletion, duplication, inversion and translocation).**
5. _____ **A single piece of coiled DNA and associated proteins found in linear forms in the nucleus of eukaryotic cells and circular forms in the cytoplasm of prokaryotic cells; contains genes that encode traits.**
6. _____ **A nuclear division resulting in the production of two somatic cells having the same genetic complement as the original cell.**
7. _____ **The longest-lasting phase of the cell cycle in which a cell performs the majority of its functions, such as preparing for nuclear division and cytokinesis.**
8. _____ **The final phase of a cell cycle resulting in the division of the cytoplasm.**
9. _____ **A two-phase nuclear division that results in the eventual production of gametes with half the normal number of chromosomes.**
10. _____ **A specialized cell (egg or sperm) used in sexual reproduction containing half the normal number of chromosomes of a somatic cell.**

MOVING ACROSS THE CELL MEMBRANE

A	Active Transport	F	Facilitated Diffusion	K	Osmosis
B	Carrier (Transport) Protein	G	Homeostasis	L	Passive Transport
C	Concentration Gradient	H	Homeostatic Mechanism	M	Plasma Membrane
D	Diffusion	I	Impermeable	N	Pumps (Ion or Molecular)
E	Exocytosis	J	Intracellular		

1. _____ The movement of water or another solvent through permeable membranes from an area of higher water concentration (dilute) to an area of lower water concentration (concentrated).
2. _____ A process in which substances are transported across a plasma membrane with the concentration gradient with the aid of carrier (transport) proteins.
3. _____ Proteins embedded in the plasma membrane involved in the movement of ions, small molecules, and macromolecules into and out of cells; also known as transport proteins.
4. _____ The movement of particles from an area of low concentration to an area of high energy provided by ATP or a difference in electrical charges across a cell membrane.
5. _____ A thin, phospholipid and protein molecule bilayer that encapsulates a cell and controls the movement of materials in an out of the cell through active or passive transport.
6. _____ Any of several molecular mechanisms in which ions or molecules are transported across a cellular membrane requiring the use of an energy source (e.g., glucose, sodium [Na⁺], etc.).
7. _____ The transportation of materials across a plasma membrane without using energy.
8. _____ A regulatory mechanism that contributes to maintaining a state of equilibrium (e.g., thermoregulation, water regulation, and oxygen regulation).
9. _____ The graduated difference in concentration of a solute per unit distance through a solution.
10. _____ Not permitting passage of a substance or substances.

SCIENTIFIC METHOD / NATURE OF SCIENCE

A	Biology	E	Mechanism (Scientific)
B	Forensics	F	Principle (Scientific)
C	Hypothesis	G	Science
D	Law (Scientific)	H	Theory (Scientific)

1. _____ **The combination of components and processes that serve a common function.**

2. _____ **The scientific study of life.**

3. _____ **An explanation of observable phenomena based on available empirical data and guided by a system of logic that includes scientific laws; provides a system of assumptions, accepted principles, and rules of procedure devised to analyze, predict, or otherwise explain the nature or behavior of a specific set of phenomena.**

4. _____ **A concept based on scientific laws and axioms (rules assumed to be present, true, and valid) where general agreement is present.**

5. _____ **A body of evidence-based knowledge gained through observation and experimentation related to the natural world and technology.**

STRUCTURE (AND FUNCTION)

A Analogous Structure
B Homologous Structure
C Organ
D Organ System

E Organism
F Tissue
G Vestigial Structure

1. _____ **A physical characteristic in different organisms that is similar because it was inherited from a common ancestor.**

2. _____ **An anatomical unit composed of cells organized to perform a similar function.**

3. _____ **A form of life; an animal, plant, fungus, protist or bacterium.**

4. _____ **A physical characteristic in organisms that appears to have lost its original function as a species has changed over time.**

5. _____ **An anatomical system composed of a group of organs that work together to perform a specific function or task.**