deoxyribose: a five-carbon sugar molecule with a hydrogen atom rather than a hydroxyl group in the 2' position; the sugar component of DNA nucleotides

dependent variable: the variable that will change when the independent variable is altered; this is what the researcher will measure or observe during the experiment

desmosome: a linkage between adjacent epithelial cells that forms when cadherins in the plasma membrane attach to intermediate filaments

diffusion: a passive process of transport where solutes move from an area of high concentration to an area of low concentration until equilibrium is met

dihybrid: the result of a cross between two true-breeding parents that express different traits for two characteristics

diploid: describes a cell, nucleus, or organism containing two sets of chromosomes (2n)

disaccharide: two sugar monomers that are linked together by a peptide bond

discontinuous variation: a variation in a characteristic in which individuals show two, or a few, traits with significant differences between them

divergent evolution: an evolution that results in different forms in two species with a common ancestor

DNA ligase: the enzyme that catalyzes the joining of DNA fragments together

DNA polymerase: an enzyme that synthesizes a new strand of DNA complementary to a template strand

domain: the highest level of the taxonomic hierarchy; includes the Eukarya, Archaea, and Bacteria

dominant: describes a trait that masks the expression of another trait when both versions of the gene are present in an individual

double helix: the molecular shape of DNA in which two strands of nucleotides wind around each other in a spiral shape

duplication: a part of a chromosome is duplicated and either inserted into a different position on the same chromosome or a completely different chromosome

E

ecosystem: all living things in a particular area together with the abiotic, nonliving parts of that environment

egg (ovum): the female gamete; a haploid cell

electron transfer: the movement of electrons from one element to another

electron transport chain: a series of four large, multi-protein complexes embedded in the inner mitochondrial membrane that accepts electrons from donor compounds and harvests energy from a series of chemical reactions to generate a hydrogen ion gradient across the membrane

electron: a negatively charged particle that resides outside of the nucleus in the electron orbital; lacks functional mass and has a charge of –1

electronegativity: an atom's ability to attract a shared pair of electrons more closely to its own nucleus

element: one of 118 unique substances that cannot be broken down into smaller substances and retain the characteristic of that substance; each element has a specified number of protons and unique properties

embryology: the study an organism's development from a zygote to its adult form

endergonic: describes a chemical reaction that results in products that store more chemical potential energy than the reactants

endocytosis: a type of active transport that moves substances, including fluids and particles, into a cell

endomembrane system: the group of organelles and membranes in eukaryotic cells that work together to modify, package, and transport lipids and proteins

endoplasmic reticulum (ER): a series of interconnected membranous structures within eukaryotic cells that collectively modify proteins and synthesize lipids

endosymbiosis: a relationship in which one organism lives inside the other

endosymbiotic theory: a theory that explains how mitochondria and chloroplasts originated

energy coupling: energy released from exergonic processes is used to support or transferred to endergonic processes

energy: the ability to do work or to create change

entropy: the measure of randomness or disorder within a system

enzyme: a molecule that catalyzes a biochemical reaction; speeds up a chemical reaction by lowering the amount of activation energy need to initiate a chemical reaction

eukaryote: an organism with cells that have nuclei and membrane-bound organelles

eukaryotic cell: a cell that has a membrane-bound nucleus and several other membrane-bound compartments or sacs

euploid: an individual with the appropriate number of chromosomes for their species

evaporation: the release of water molecules from liquid water to form water vapor

evolution: the process of gradual change in a population that can also lead to new species arising from older species

exergonic: describes a chemical reaction that results in products with less chemical potential energy than the reactants, plus the release of free energy

exocytosis: a process of passing material out of a cell

exon: a sequence present in protein-coding mRNA after completion of pre-mRNA splicing

experimental group: the group where the independent variable is applied

extracellular matrix: the material, primarily collagen, glycoproteins, and proteoglycans, secreted from animal cells that hold cells together as a tissue, allows cells to communicate with each other, and provides mechanical protection and anchoring for cells in the tissue

F

F1: the first filial generation in a cross; the offspring of the parental generation

F2: the second filial generation produced when F1 individuals are self-crossed or fertilized with each other

facilitated transport: a process by which solutes moves down a concentration gradient (from high to low concentration) using integral membrane proteins

falsifiable: it can be shown to be false by experimental results

fat: a lipid molecule composed of three fatty acids and glycerol (triglyceride) that typically exists in a solid form at room temperature

feedback inhibition: a mechanism of enzyme activity regulation in which the product of a reaction or the final product of a series of sequential reactions inhibits an enzyme for an earlier step in the reaction series

fermentation: the steps that follow the partial oxidation of glucose via glycolysis to regenerate NAD+; occurs in the absence of oxygen and uses an organic compound as the final electron acceptor

fertilization: the union of two haploid cells typically from two individual organisms

first law of thermodynamics: states that the total amount of energy in the universe is constant and conserved

flagellum: (plural: flagella) the long, hair-like structure that extends from the plasma membrane and is used to move the cell

fluid mosaic model: a model of the structure of the plasma membrane as a mosaic of components, including phospholipids, cholesterol, proteins, and glycolipids, resulting in a fluid rather than static character

fossils: mineralized or preserved remains of organisms found in the past

founder effect: a magnification of genetic drift in a small population that migrates away from a large parent population carrying with it an unrepresentative set of alleles

free energy: usable energy or energy that is available to do work

functional group: groups of atoms that occur within molecules and confer specific chemical properties to those molecules