

## Q

**qualitative data:** data that is descriptive

**quantitative data:** data that is numerical

**quaternary structure:** association of different polypeptide chains in a protein

## R

**radioactive isotope:** an isotope that spontaneously emits particles or energy to form a more stable element

**reactants:** the substances used at the beginning of a chemical reaction (usually on the left side of a chemical equation)

**reactivity:** the ability of elements to combine and chemically bond with each other

**receptor-mediated endocytosis:** a variant of endocytosis that involves the use of specific binding proteins in the plasma membrane for specific molecules or particles

**recessive:** describes a trait whose expression is masked by another trait when the alleles for both traits are present in an individual

**redox reaction:** a chemical reaction that consists of the coupling of an oxidation reaction and a reduction reaction

**reduction reaction:** a chemical reaction that consists of an electron being gained by an atom

**replication fork:** the Y-shaped structure formed during the initiation of replication

**ribonucleic acid (RNA):** a single-stranded polymer of nucleotides that are involved in protein synthesis

**ribose:** a five-carbon sugar molecule with hydroxyl group in the 2' position; the sugar component of RNA nucleotides

**ribosomal RNA (rRNA):** ribosomal RNA; molecules of RNA that combine to form part of the ribosome

**RNA polymerase:** an enzyme that synthesizes an RNA strand from a DNA template strand

**RNA primase:** an enzyme that can base pair with the DNA and add a short stretch of RNA nucleotides called a primer. The primer is required to initiate DNA replication

**RNA primer:** short sequence of RNA nucleotides which DNA polymerase can add DNA nucleotides to

**rough endoplasmic reticulum (RER):** the region of the endoplasmic reticulum that is studded with ribosomes and engages in protein modification

## S

**S phase:** the second, or synthesis phase, of interphase during which DNA replication occurs

**saturated fatty acid:** a long-chain hydrocarbon with single covalent bonds in the carbon chain; the number of hydrogen atoms attached to the carbon skeleton is maximized

**science:** the knowledge that covers general truths or the operation of general laws, mainly when acquired and tested by the scientific method

**scientific method:** a method of research with defined steps that include experiments and careful observation

**scientific theory:** a thoroughly tested and confirmed explanation for observations or phenomena

**second law of thermodynamics:** states that every energy transfer or transformation increases the universe's entropy

**secondary structure:** structure that proteins form by hydrogen bonding between the oxygen atom of one amino acid, and the hydrogen attached to the nitrogen atom of another amino acid

**selectively permeable:** the characteristic of a membrane that allows some substances through but not others

**semiconservative replication:** the method used to replicate DNA in which the double-stranded molecule is separated and each strand acts as a template for a new strand to be synthesized, so the resulting DNA molecules are composed of one new strand of nucleotides and one old strand of nucleotides

**septum:** a partition formed between two bacterial daughter cells

**sexual reproduction:** requires that two different gametes (egg and sperm) come together to form a zygote

**simple diffusion:** a process where solutes move directly through the membrane from an area of high concentration to an area of low concentration until equilibrium is met

**sister chromatids:** two identical chromosomes attached to one another at a location called the centromere region

**smooth endoplasmic reticulum (SER):** the region of the endoplasmic reticulum that has few or no ribosomes on its cytoplasmic surface and synthesizes carbohydrates, lipids, and steroid hormones; detoxifies chemicals like pesticides, preservatives, medications, and environmental pollutants, and stores calcium ions

**solute:** a substance being dissolved in another to form a solution

**solution:** a homogeneous mixture made of two or more components

**solvent:** a substance capable of dissolving another substance

**somatic cell:** all the cells of a multicellular organism except the gamete-forming cells

**speciation:** a formation of a new species

**sperm:** the male gamete; a haploid cell

**spliceosome:** a structure composed of various proteins and other molecules, which attaches to the mRNA transcript and “splices” or cuts out the non-coding, introns

**splicing:** the process of removing introns and reconnecting exons in a pre-mRNA

**standardized variable:** variables that must be kept consistent otherwise they can affect the outcome or results of the experiment

**starch:** a storage carbohydrate in plants

**start codon:** the AUG (or, rarely GUG) on an mRNA from which translation begins; always specifies methionine

**steroid:** a type of lipid composed of four fused hydrocarbon rings

**stoma:** the opening that regulates gas exchange and water regulation between leaves and the environment; plural: stomata

**stop codon:** one of the three mRNA codons that specifies termination of translation

**stroma:** the fluid-filled space surrounding the grana inside a chloroplast where the Calvin cycle reactions of photosynthesis take place

**substrate-level phosphorylation:** production of ATP from ADP using the excess energy from a chemical reaction and a phosphate group from a reactant

**substrate:** a reactant that binds to a specific enzyme

**surface tension:** the cohesive force at the surface of a body of liquid that prevents the molecules from separating

**sympatric speciation:** a speciation that occurs in the same geographic space

## T

**telomerase:** an enzyme that contains a catalytic part and an inbuilt RNA template; it functions to maintain telomeres at chromosome ends

**telomere:** the DNA at the end of linear chromosomes

**telophase:** the stage of mitosis during which chromosomes arrive at opposite poles, decondense, and are surrounded by new nuclear envelopes

**temperature:** a measure of molecular motion

**tertiary structure:** a protein's three-dimensional conformation, including interactions between secondary structural elements

**tetrad:** two duplicated homologous chromosomes (four chromatids) bound together by chiasmata during prophase I

**theory:** a thoroughly tested and confirmed explanation for observations or phenomena

**thermodynamics:** the science of the relationships between heat, energy, and work