GLOSSARY AND CREDITS

Everything we eat and drink to keep us alive and healthy is made up of chemical elements from the earth. All living things are composed of matter and energy. You will learn about the function of life-forming chemicals. Fundamental in this study is an introduction to basic chemistry and chemical processes.

VOCABULARY

activation energy	the energy required to start a chemical reaction
adenosine triphosphate	a molecule produced during glucose breakdown; serves as an energy source for the cell
adhesion	molecular attraction of dissimilar molecules, usually due to hydrogen bonding
alkaline	a base solution; has a pH of more than 7
amino acid	the basic building block of proteins; contains a carboxyl group (-COOH) and an amino group (-NH $_2$)
anion	a negatively charged ion; an atom that has gained an electron
atom	the smallest unit of an element that still retains the chemical properties of the element
atomic mass	the mass of an element; approximately equal to the number of protons and neutrons in an atom's nucleus
atomic number	the number of protons in the nucleus of the atom; also the number of electrons around the nucleus
atomic weight	the average relative mass of each element

biochemistry	the study of energy and matter within living organisms
buffer	a substance that will resist changes in pH within reasonable limits
carbohydrate	a sugar or polymer of sugar; contains the elements carbon, hydrogen, and oxygen
catalyst	any substance that accelerates a chemical reaction without being used up in the reaction
cation	a positively charged ion; an atom that has lost an electron
chemical bond	combining of atoms through the interaction of their electrons in the outermost orbit
chemical equilibrium	when a reversible reaction is occurring in both directions at the same rate (products and reactants do not change in concentration)
chemical reaction	when the atoms of elements or compounds interact to form at least one new compound
cohesion	molecular attraction of similar molecules, usually due to hydrogen bonding
compound	a chemical substance composed of atoms of two or more distinct elements chemically bonded to one another
covalent bond	a chemical bond formed between two atoms through the sharing of electrons
decomposition reaction	a chemical reaction in which the compound is broken into its constituent parts
dehydration synthesis	a bonding of subunits to form a polymer by the loss of water
diatomic	containing two atoms
disaccharide	a two-sugar polymer

DNA (deoxyribonucleic acid)	a complex molecule containing the genetic code
electron	a subatomic particle fundamental to all matter, existing in orbit around the nucleus of an atom, and carrying a negative charge
elements	substances made up of only one type of atom
enzyme	a protein molecule that is specialized to speed up a specific chemical reaction in biological systems
exchange reaction	a chemical reaction in which the substrates trade constituent parts
functional groups	a group of atoms with distinct chemical properties
glucose	a simple sugar (C ₆ H ₁₂ O ₆) occurring in plant and animal tissues
hormone	a chemical synthesized by an organism; aids in the control of a specific function in the organism
hydrogen bond	a weak chemical bond formed when a hydrogen atom is shared by two adjacent molecules
hydrolysis	the breakdown of large molecules into smaller molecules with water being a reactant
inorganic	a chemical compound that doesn't contain carbon
ion	an electrically charged atom or group of atoms formed by the loss or gain of electrons
ionic bond	a bond formed by the electrical attraction between two oppositely charged ions
ionization	the process that creates positive and negative ions
law of mass action	the condition whereby the concentration of reactant product influences the rate and net direction of a reversible chemical reaction

lipid	a group of organic compounds including fats, steroids, and phospholipids
macromolecules	large molecules containing thousands of atoms and many functional groups
metabolism	all of the chemical reactions in an organism required for maintenance of the processes of life
minerals	Inorganic substances found in foods needed for growth, regulation and development.
molecule	a unit of matter representing the chemical properties of a substance composed of two or more atoms held together by chemical bonds
monosaccharide	the building block unit of carbohydrates; a simple sugar
neutron	a subatomic particle, fundamental to all matter except hydrogen, that exists in the nucleus and has about the same mass as a proton (but carries no charge)
nucleic acid	a sequence of sugars, phosphates, and nitrogenous organic bases—DNA and RNA
nucleus	the positively charged center of an atom that contains both the protons and neutrons of the atom
octet rule	rule that states that an atom with an unfilled outer shell will interact with other atoms to complete its shell
organic	a chemical compound that contains carbon
рН	a measure of the hydrogen ion concentration in a solution
polar molecule	a molecule that has partial positive and negative charges at each end
polymer	a chemical compound in which each molecule is made up of two or more simpler molecules strung together
polymerization	a reaction in which two or more molecules unite, forming a more complex molecule

polysaccharide	a polymer of simple sugars (monosaccharides)
protein	a large, complex organic molecule consisting of a large number of amino acids linked together by peptide bonds
proton	a subatomic particle fundamental to all matter, existing in the nucleus, having a positive charge, and about equal in mass to a neutron
reversible reaction	a chemical reaction in which the reactants used to form the products can also be formed from the products
RNA (ribonucleic acid)	a nucleic acid that participates in the synthesis of proteins
salt	the compound formed by the ionic bonding of a cation and anion
shell	the path surrounding the nucleus of an atom in which electrons are normally located
solute	a substance that is dissolved in a liquid
solvent	a liquid that acts to dissolve or suspend solutes
specific heat	the amount of energy required to change 1 gram of substance by 1°C
substrate	a compound that is involved in a chemical reaction and is chemically changed by the reaction
synthesis reaction	a chemical reaction in which two or more units are added together to form a new compound
valence	the number of electrons an element must gain or lose in order to complete its outer electron shell
vitamins	Organic substances found in foods that aid enzymes.