

Glossary

absorption: The process by which digested nutrients pass through the wall of the small intestine into the bloodstream.

active transport: The process by which materials, using energy supplied by the cell, are moved across a membrane. *See also* **passive transport**

alveoli: Tiny sacs in the lungs through which the exchange of oxygen and carbon dioxide takes place. The singular form of alveoli is “alveolus.”

amino acids: The building blocks of proteins.

amylase: A digestive enzyme that breaks down starch.

antibiotic: A medication that weakens or kills bacteria.

antigen: A substance that is recognized as foreign by the immune system and that causes the immune system to produce a specific antibody to it.

ATP (adenosine triphosphate): An organic chemical in which energy is stored and from which energy is released to meet the body’s needs.

atrium: One of the two thin-walled upper chambers of the heart. The plural of atrium is “atria.”

ball-and-socket joint: A joint that permits movements in all directions. Ball-and-socket joints are found at the shoulders and hips.

Benedict’s solution: A chemical indicator that, when added to a solution and heated, changes from blue to light green to red in the presence of increasing concentrations of sugar.

blood pressure: The force exerted by blood against vessel walls.

body system: A group of organs that work together to perform a specific function. For example, the organs of the digestive system process food and prepare it for delivery to the body’s cells.

breathing: The mechanical process of moving air into and out of the lungs; also called ventilation.

bromthymol blue: A chemical indicator that changes from blue to light green to yellow in the presence of increasing concentrations of carbon dioxide in solution.

calorie: A unit of heat energy. Spelled with a lowercase “c,” the word “calorie” describes the amount of energy required to raise the temperature of 1 gram of water 1 degree Celsius. Spelled with an uppercase “C,” the word “Calorie” describes the amount of energy required to raise the temperature of 1000 grams of water 1 degree Celsius.

carbohydrates: One of the three basic food types. May be in the form of starch, sugar, or fiber. Found in cereals, breads, and vegetables.

cartilage: Firm, smooth tissue at the ends of bones. Provides a smooth surface between bones. Also present in areas such as the nose, ears, and voice box.

cell: The smallest unit of an organism that can carry out the basic functions of life.

cellular respiration: The process by which glucose combines with oxygen to produce energy, carbon dioxide, and water.

cholesterol: A lipid found in animal fat and most animal tissue. Synthesized by the liver; also part of many foods.

chyme: A pulpy mixture of food and gastric juices. Produced in the stomach, from which it passes into the small intestine.

cilia: Tiny hairlike extensions of cells that line the respiratory tract. The cilia move in a wave-like fashion to help eliminate dust and germs from the body.

closed circulatory system: A transport system in which the fluid is confined within vessels. Humans have closed circulatory systems. *See also* **open circulatory system**.

combustion: A rapid form of oxidation that releases heat and, in many cases, light.

contagious: Capable of being transmitted from person to person.

diffusion: The process by which molecules move from places where they are more concentrated to places where they are less concentrated. A form of passive transport.

disease: Any disorder or malfunction of the body or a part of the body. May be caused by internal factors (for example, heredity, which causes certain forms of heart disease) or external factors (for example, bacteria, which cause tuberculosis).

duodenum: The first 25 centimeters of the small intestine; site where most chemical digestion occurs.

endocrine system: A network of glands and cells that secretes chemical messengers (hormones) into the bloodstream or lymph.

energy: The ability to perform work; may be stored in cells as fat or glycogen as well as in ATP.

enzyme: A protein that is capable of speeding up a chemical reaction.

extensor: A muscle that extends, or straightens, a body part by increasing the angle at a joint.

fats: (1) One of the three basic food types; found in oils and some dairy products.
(2) Tissue that provides a cushion for various body parts, insulates the body, and stores energy in a concentrated form.

feces: Solid wastes in the large intestine that are expelled from the body during bowel movements (defecation).

fiber: An indigestible carbohydrate such as cellulose that stimulates peristalsis in the intestine.

flexor: A muscle that bends a body part by decreasing the angle at a joint.

gastric juice: A liquid that includes hydrochloric acid and pepsin and that is responsible for the chemical digestion of protein in the stomach.

heartburn: A painful sensation in the lower esophagus or upper stomach; sometimes caused by excess stomach acid.

heart murmur: An abnormal heart sound such as that caused by the flow of blood through a damaged valve.

heart rate: The number of times the heart beats in a given unit of time (usually one minute).

hinge joint: A joint that permits a back-and-forth movement similar to that of a door; the elbow is an example.

hormone: A chemical messenger produced by the endocrine system and transported through the bloodstream or lymph to certain target sites.

hydrochloric acid: A component of gastric juice that helps create the environment that pepsin needs to break down protein in the stomach.

immunity: State of being resistant to a disease-causing agent such as the polio virus or the bacterium that causes tuberculosis.

indicator: A substance that changes in some way to indicate the presence of another substance. Examples include Benedict's solution and Lugol solution.

infectious: Describes a microorganism that is capable of passing from one person to another.

integumentary system: The system that provides protective coverage for the body; the skin.

joint: A place where bones meet.

ligament: Tough, fibrous tissue that connects one bone to another bone.

Lugol solution: A yellow-brown indicator that turns blue-black when it comes into contact with starch.

macrophage: A protective cell in the blood, lymph, and connective tissue that engulfs and destroys bacteria and other foreign substances.

mucus: A thick, sticky substance that lines and protects the inner walls of the digestive organs. Facilitates the passage of food through the digestive tract and helps protect the walls of the digestive tract from being digested.

nervous system: The body's "control" system; initiates muscle contractions and glandular secretions.

open circulatory system: A transport system in which the blood is not confined within vessels. Many insects have open circulatory systems. *See also* **closed circulatory system**.

opposing muscles: Muscles that work against each other at a particular joint so that the joint can move. For example, the biceps and triceps enable humans to bend and extend the arm.

organ: A group of different tissues that work together to perform a specific function. Examples include the heart, liver, and brain.

organism: A complete living thing. Members of the animal kingdom, such as humans, dogs, and

cats, are organisms. Plants are organisms, as are bacteria and fungi.

oxidation: The process by which substances combine with oxygen.

pacemaker: A group of specialized cells in the right atrium of the heart that establish the basic rhythm of the heartbeat.

passive transport: A process in which substances pass through a cell membrane from a place where they are more concentrated to a place where they are less concentrated, without using any energy from the cell. *See also* **active transport**.

pathogen: A disease-causing agent; for example, a tuberculosis bacterium or a polio virus.

pepsin: An enzyme in the stomach that breaks down protein.

peristalsis: Regular muscular contractions that move food through the digestive tract.

pivot joint: A joint that permits movement of one bone around its own long axis or around the axis of another bone; for example, the atlas joint at the neck.

plaque: The buildup of materials on the inner wall of a blood vessel.

plasma: The liquid part of the blood; makes up about 55 percent of the blood.

platelets: Cell fragments in the blood that aid in clotting.

proteins: One of the three basic food types; needed for building and repair of tissue in the body. Found in beef, egg whites, nuts, and pork. All enzymes are proteins.

pulmonary circulation: The vessels that transport blood from the heart to the lungs and back to the heart.

pulse: The rhythmic expansion and recoil of arteries; initiated by the contractions of the ventricles of the heart.

residual volume: The amount of air that remains in the lungs after a person exhales as forcefully as he or she can.

Rh factor: A group of antigens on red blood cells; named after the Rhesus monkey in which it was first found; blood that has this group of antigens is called Rh-positive; blood that does not have these antigens is called Rh-negative.

rubric: An established set of guidelines for assessing work.

saliva: Watery substance secreted by three pairs of glands around the mouth. Helps moisten and soften food for swallowing. Contains an enzyme called amylase that begins the digestion of starch.

sphincter: A ring of muscle that aids in the one-way passage of food through the digestive tract.

spirometer: A device for measuring lung volume.

surface area: The part of an object that makes direct contact with its environment.

system: A number of parts that work together as a whole.

systemic circulation: The blood vessels that carry blood from the heart to the body and back to the heart. *See also pulmonary circulation.*

tendons: Tough, fibrous tissue that attach muscle to bone.

tissue: A group of similar cells that work together to carry out a specific function. The function of muscle tissue, for example, is to contract.

total lung capacity: The amount of air the lungs can hold after taking as deep a breath as possible (the sum of vital capacity and residual volume).

ulcer: An open sore or lesion in the skin or mucous membrane.

valve: A structure in the heart and some veins that prevents the blood from flowing backward.

ventilation: The movement of air into and out of the lungs.

ventricle: One of the two thick-walled lower chambers of the heart; the pumping part of the heart.

villi: Microscopic, fingerlike projections that line the inner wall of the small intestine and increase the surface area available for absorption of nutrients.

vital capacity: The total amount of air that a person can exhale after taking as deep a breath as possible.