

A

Abdomen - the distinct, usually elongated posterior region of an arthropod's body

Abiotic - the non-living things in an environment

Active Transport - the movement of a substance across a membrane from low concentration to high concentration, requiring input of energy (ATP)

Adaptation - the process of becoming adapted to an environment; an anatomical, physiological, or behavioral change that improves a population's ability to survive

Agnatha - a class of vertebrate animals that are superficially fishlike but lack jaws and paired fins

Allantois - in animals, an membrane outside of the embryo that develops from the yolk sac; helps dispose the embryo's wastes and forms part of the umbilical cord in mammals

Alleles - one of the alternative forms of a gene that governs a characteristic, such as hair color

Algae - organisms that convert the sun's energy into food through photosynthesis but do not have roots, stems, or leaves (singular, alga)

Altricial - in bird development, babies are hatched with eyes closed, with little or no down, incapable of leaving the nest and are fed by parents

Alveoli - any of the tiny air cells of the lungs where oxygen and carbon dioxide are exchanged; singular is alveolus

Amino acid – a critical chemical of life that builds proteins

Amnion - in vertebrate animals, the membrane outside the embryo that encloses the fluid-filled amniotic sac containing the embryo

Amniotic Egg - shelled egg in which an embryo develops within a fluid-filled amniotic sac and is nourished by a yolk; produced by reptiles, birds, and egg-laying mammals

Angiosperm - a flowering plant that produces seeds within a fruit

Antennae - a feeler on the head of an invertebrate, such as an arthropod, a crustacean, or an insect, that senses touch, taste, or smell

Anther – the round part of the male structure (stamen) of a flower that holds pollen

Antibiotic - a substance that can inhibit the growth of or kill some microorganisms

Aortic Arches - a series of five heart-like organs in an earthworm that circulate blood around their body

Archaeobacteria - classification kingdom made up of bacteria that live in extreme environments; differentiated from other prokaryotes by various important chemical differences

Arteries - a blood vessel that carries blood away from the heart to the body's organs

Asymmetry - irregular in shape; without symmetry

Atom – the smallest part of an element

Autotroph – an organism that obtains food by making it without consuming another living thing (dead or alive); this is typically accomplished through photosynthesis

B

Bacteria - extremely small, single-celled organisms that usually have a cell wall and reproduce by cell division (singular, bacterium)

Bilateral symmetry - a condition in which two equal halves of a body mirror each other

Binary Fission - a form of asexual reproduction in single-celled organisms by which one cell divides into two cells of the same size

Biogenesis – the theory of how life began that says that living things come from other living things

Biome – a large region characterized by a specific type of climate and certain types of plant and animal communities

Bioremediation - the biological treatment of hazardous waste by natural or genetically engineered microorganisms

Biosphere – the part of Earth where life exists

Biotic – the living thing in an environment

Blood - the fluid that carries oxygen and nutrients to the body and that is made up of platelets, white blood cells, red blood cells, and plasma

Bronchi - the two tubes that connect the lungs with the trachea; singular is bronchus

C

Capillaries - a tiny blood vessel that allows an exchange between blood and cells in tissue

Carbohydrates – a critical chemical of life that is used by the body for energy

Cardiac Muscle - the type of involuntary muscle found in the heart

Carrying Capacity – the largest population that an environment can support at any given time

Cartilage - a flexible and strong connective tissue

Cell - a basic unit of living matter separated from its environment by a plasma membrane; a fundamental structural unit of life

Cell Membrane - a thin membrane enclosing the cytoplasm of a cell that regulates what enters and leaves the cell

Cell Wall - a rigid structure enclosing the membrane of plant and prokaryotic cells; maintains the shape of the cell and serves as a protective barrier

Cellular Respiration - the process of obtaining energy from food, such as glucose

Central Nervous System - the brain and the spinal cord; its main function is to control the flow of information in the body

Cephalothorax - in arachnids and some crustaceans, the body part made up of the head and the thorax

Characteristic – a feature that has different forms in a population

Chelicerae – the claw-like mouthparts on arachnids such as spiders, scorpions and ticks

Chloroplast - an organelle found in plants and photosynthetic protists; it absorbs sunlight and uses it to make food (sugar)

Chondrichthyes - a class of cartilaginous fishes that include sharks, rays, and skates

Cilia - a hair-like structure arranged in tightly packed rows that projects from the surface of some cells; single is cilium

Class - a taxonomic category containing orders with common characteristics

Classification - the division of organisms into groups, or classes, based on specific characteristics

Club Fungi – a type of fungus that reproduces sexually, many of which have “gills” underneath; includes mushrooms, puffballs and bracket fungi

Cnidarians - the phylum that contains hydras, jellyfish, sea anemones, and corals; have radial symmetry and contain a stinging cell to capture prey

Coelom - a body cavity that contains the internal organs

Collar Cells - any of the flagellate cells that line the cavities of a sponge; also called a *choanocyte*

Complete Metamorphosis - the transformation from larva to adult in insects

Compound Eye - an eye composed of many light detectors separated by pigment cells

Conjugation - in prokaryotes, algae, and fungi, a type of sexual reproduction in which two cells join temporarily to recombine nuclear material

Connective Tissue - a tissue that has a lot of intracellular substance and that connects and supports other tissues

Consumer – a group of organisms that obtain their food by eating other living things

Contour Feather - the outermost feathers on a bird; provide color and shape as well as keeping the bird dry and warm

Crop - a pouch-like organ in a digestive tract where food is softened and stored temporarily

Cutaneous respiration - exchange of gases between the skin and the air/water

Cyanobacteria – a bacterium that can carry out photosynthesis, such as a blue-green alga

D

Decomposer – an organism that obtains nutrients by consuming dead organic matter; examples: fungi, scavengers, rodents, etc.

Dermis - the layer of skin below the epidermis

Dichotomous Key - an aid that is used to identify unknown organisms and that consists of the answers to a series of questions, of which each involves alternate choices

Diffusion - the spontaneous movement of particles from a high concentration to a low concentration

Dominant - describes the allele that is fully expressed when carried by only one of a pair of homologous chromosomes

Down Feather - soft and fluffy feathers closest to the bird's body that keep it warm

E

Echinoderm - a radially symmetrical marine invertebrate that has an endoskeleton, such as a starfish, a sea urchin, or a sea cucumber

Ecology – the study of the interactions of living organisms with one another and with their environment

Ecosystem – a community of organisms and their abiotic, or nonliving environment

Ectotherm - an animal that gets most of its body heat from the environment (sun)

Element – a substance that is made up of only one type of atom

Endocytosis - the movement of materials into the cytoplasm of a cell via vesicles or vacuoles

Endoplasmic Reticulum - an organelle in a eukaryotic cell that may have ribosomes (rough) or not (smooth)

Endoskeleton - an internal skeleton made of bone and cartilage

Endospore - a thick-walled protective spore that forms inside a bacterial cell and resists harsh conditions

Endotherm - an animal that gets most of its body heat from its own metabolism

Epidermis - the outer surface layer of cells of a plant or animal

Epithelial tissue - a tissue composed of cells that form a barrier between an organism and its external environment

Esophagus - a long, straight tube that connects the pharynx to the stomach

Eubacteria - a classification kingdom that contains all prokaryotes except archaeobacteria

Eukaryotic - an organism made up of cells that have a nucleus enclosed by a membrane, multiple chromosomes, and a mitotic cycle; eukaryotes include animals, plants, and fungi but not bacteria or cyanobacteria

Eustachian tube - a channel that connects the middle ear to the mouth cavity

Exocytosis - the movement of materials out of the cytoplasm of a cell by vesicles or vacuoles

Exoskeleton - a hard, external, supporting structure that develops from the ectoderm

F

Family - the taxonomic category below the order and above the genus

Fermentation – the chemical process of making energy without using oxygen; typically done by bacteria, protists, and some fungi

Filament – in angiosperms, the stalk-like structure in the center of a flower that holds up the anther

Flagella - a long, hair-like structure that grows out of a cell and enables the cell to move

Food Chain - a sequence of food transfers from producers through several levels of consumers in an ecosystem

Food Web - a network of interconnecting food chains

Foot – in mollusks, a mucus making structure that helps them move

Fungus - an organism whose cells have nuclei, rigid cell walls, and no chlorophyll and that belongs to the kingdom Fungi

G

Gallbladder - sac-shaped organ that stores bile produced by the liver

Ganglia - a mass of nerve cells

Genes - a segment of DNA that is located in a chromosome and that codes for a specific hereditary trait

Genotype - the entire genetic makeup of an organism; *also* the combination of genes for one or more specific traits

Genus - the level of classification that comes after family and that contains similar species

Gill - an extension of the body surface of an animal, specialized for gas exchange and/or suspension feeding

Gizzard - a pouch-like organ in a digestive tract, where food is mechanically ground

Gram - measurement for mass in the metric system

Gut - the digestive tract

Gymnosperm - a woody vascular seed plant whose seeds are not enclosed by an ovary or fruit

H

Heredity - the passing of genetic traits from parent to offspring

Heterotroph - an organism that obtains organic food molecules by eating other organisms or their by products and that cannot synthesize organic compounds from inorganic materials

Heterozygous - having two different alleles for a given gene

Homeostasis - the maintenance of a constant internal state in a changing environment; a constant internal state that is maintained in a changing environment by continually making adjustments to the internal and external environment

Homozygous - having two identical alleles for a given gene

Host – an organism that houses a destructive pathogen that needs it to reproduce; ex: a virus needs a host to reproduce

Hyphae - a non-reproductive filament of a fungus

Hypothesis - a theory or explanation that is based on observations and that can be tested

I

Impulse - an electrical message that passes along a neuron

Incomplete Metamorphosis - a change from egg to nymph to adult with little change in appearance

Inquiry – a seeking request for truth, information, or knowledge

Intestine - the region of a digestive tract between the gizzard or stomach and the anus, where chemical digestion and nutrient absorption usually occur

Invertebrate - an animal that does not have a backbone

J

Joint - a place where two or more bones meet

K

Kidney - one of the organs that filter water and wastes from the blood, excrete products as urine, and regulate the concentration of certain substances in the blood

Kingdom - the highest taxonomic category, which contains a group of similar phyla

L

Large Intestine - the broader and shorter portion of the intestine, where water is removed from the mostly digested food to turn the waste into semisolid feces, or stool

Lateral Line - a row of sensory organs along each side of a fish's body that are sensitive to changes in water; enables fish to detect minor vibrations in the water

Law - a summary of many experimental results and observations; a law tells how things work

Lichen - a mass of fungal and algal cells that grow together in a symbiotic relationship and that are usually found on rocks or trees

Ligament - a type of tissue that holds together the bones in a joint

Lipids – a critical chemical of life that is made up of fats and oils

Liter - measurement for volume in the metric system

Liver - the largest organ in the body; it produces bile, stores and filters blood, and converts sugars into glycogen

Lysosome - a digestive organelle in eukaryotic cells

M

Mandibles - a type of mouth-part found in some arthropods and used to pierce and suck food; the lower part of the jaw

Mantle - in a mollusk, the outgrowth of the body surface that drapes over the animal; produces the shell and forms the mantle cavity

Mass - a measure of the amount of matter in an object; a fundamental property of an object that is not affected by the forces that act on the object, such as the gravitational force

Medusa - a free-swimming, jellyfish-like, and often umbrella-shaped sexual stage in the life cycle of a cnidarian; *also* a jellyfish or a hydra

Metabolism – the process of the chemical activities of life including digestion, ingestion, respiration and excretion

Meter - the basic unit of length in the SI (abbreviation, m)

Metric System - system of measurement using meters, grams, liters

Mitochondria - organelles in eukaryotic cells where cellular respiration occurs; also where ATP is made

Mitosis - in eukaryotic cells, a process of cell division that forms two new nuclei, each of which has the same number of chromosomes

Mold - in biology, a fungus that looks like wool or cotton

Mollusk - group of animals characterized by a muscular foot, mantle, mantle cavity, and radula; includes gastropods, bivalves, and cephalopods

Mucous glands – a gland that secretes a slippery substance called mucous

Muscle tissue - the tissue made of cells that can contract and relax to produce movement

Mycellium - the mass of fungal filaments, or hyphae, that forms the body of a fungus

N

Nematocyst - in cnidarians, a stinging cell that is used to inject a toxin into prey

Nephron - the functional unit of the kidney

Nerve - a collection of nerve fibers through which impulses travel between the central nervous system and other parts of the body

Nerve Cord – a pack of nerves on a single path; simpler than a spinal cord but serves the same purpose

Nerve Ring – a circle of nerve fibers around the mouth of an echinoderm

Nervous tissue - the tissue of the nervous system, which consists of neurons, their supporting cells, and connective tissue

Neuron - a nerve cell that is specialized to receive and conduct electrical impulses

Niche – a specific role and/or location in an environment that an organism can occupy

Nictitating membrane - a third eyelid found under the lower eyelid of many vertebrates, including birds, reptiles, and amphibians

Nonvascular plant - the three groups of plants (liverworts, hornworts, and mosses) that lack specialized conducting tissues and true roots, stems, and leaves

Nucleus - the genetic control center of a eukaryotic cell

O

Order - the taxonomic category below the class and above the family

Organelle - a structure with a specialized function within a cell

Osculum - an opening in a sponge's body through which water exits

Osmosis - the movement of water across a selectively permeable membrane

Osteichthyes - the vertebrate class of bony fishes like trout and goldfish

Ostia - one of the small openings in a sponge's body through which water enters

Ovary - in the female reproductive system of animals, an organ that produces eggs; in flowering plants, the lower part of a pistil that produces eggs in ovules

P

Pancreas - the organ that lies behind the stomach and that produces and secretes insulin, glucagon, and digestive enzymes

Parasite - an organism that feeds on an organism of another species (the host) and that usually harms the host; the host never benefits from the presence of the parasite

Passive Transport - the diffusion of a substance across a membrane without using energy

Pathogen - a virus, microorganism, or other substance that causes disease; an infectious agent

Peripheral Nervous System - all of the parts of the nervous system except for the brain and the spinal cord (the central nervous system); includes the cranial nerves and nerves of the neck, chest, lower back, and pelvis

Petal - one of the usually brightly colored, leaf-shaped parts that make up one of the rings of a flower

Phenotype - an organism's appearance or other detectable characteristic that results from the organism's genotype and the environment

Phloem - the tissue that conducts food (sugars, amino acids, and mineral nutrients) in vascular plants

Photosynthesis - the process by which plants, algae, and some bacteria use sunlight, carbon dioxide, and water to produce carbohydrates and oxygen

Phylum - the taxonomic group below kingdom and above class

Pistil - the female reproductive part of a flower that produces seeds and consists of an ovary, style, and stigma

Pollen - the tiny granules that contain the male gametophyte of seed plants

Pollination - the transfer of pollen from the male reproductive structures (the anthers) to the tip of a female reproductive structure (the pistil) of a flower in angiosperms or to the ovule in gymnosperms

Polyp - a form of a cnidarian that has a cylindrical, hollow body and that is usually attached to a rock or to another object

Precocial - in bird development, the babies are hatched with eyes open, covered with down, and leave the nest within two days

Producer – organisms, like green plants, that produce their own food (sugar) by using energy from the sun

Prokaryote (Prokaryotic) - an organism that consists of a single cell that does not have a nucleus or cell organelles; an example is a bacterium

Protein – a critical chemical of life that builds cells

Protozoa - a single-celled protist that can be aquatic or parasitic, that has organelles enclosed by a membrane, and that can move independently; examples include amoebas and paramecia

Pseudopod - a retractable, temporary cytoplasmic extension that functions in food ingestion and movement in certain amoeboid cells

Pulmonary circulation - the flow of blood from the right ventricle of the heart to the lungs and back to the left atrium of the heart through the network of pulmonary arteries, capillaries, and veins

Pulmonary respiration - exchange of gases between the lungs and the air

Punnett Square - graphic used to predict the results of a genetic cross

Q

Qualitative Data – any information that uses words to describe your data (shape, color, smell, etc.)

Quantitative Data – any information that is expressed in numbers or measured (height, weight, length, etc.)

R

Radial Nerve – a nerve that runs from the nerve ring to the tip of each arm in sea stars, controlling the arm

Radial Symmetry - a body plan in which the parts of an animal's body are organized in a circle around a central axis

Receptor - a specialized sensory nerve that responds to specific types of stimuli

Recessive - describes a trait or an allele that is expressed only when two recessive alleles for the same characteristic are inherited

Reflex - an involuntary and almost immediate movement in response to a stimulus

Respiration - the process by which cells produce energy from carbohydrates; atmospheric oxygen combines with glucose to form water and carbon dioxide

Rhizoid - a root like structure in nonvascular plants, such as mosses or liverworts, that holds the plants in place and aids in absorption

Rhizome - a horizontal, underground stem that provides a mechanism for asexual reproduction

Ribosome - a cell organelle that makes proteins; may float freely around the cytoplasm or be attached to Endoplasmic Reticulum

S

Sac Fungi – the largest group of fungi containing yeasts, mildews and truffles.

Sebaceous Gland – oil gland in the skin; typically attached to a hair follicle

Segment – identical, repeating body parts; seen in annelid worms like earthworms

Seminal Vesicles - a gland in males that secretes a fluid component of semen that nourishes sperm

Sepal - in a flower, one of the outermost rings of modified leaves that protect the flower bud

Septa – in earthworms, thread-like structures that hold the skin to the organs below it

Shell – in mollusks, a protective structure made by the mantle that helps prevent drying out

Skeletal Muscle - a voluntary muscle that is attached to the bones and that moves parts of the body

Slime Mold – a type of colorful protist that lives on decaying plants and feeds on bacteria and other microorganisms

Small Intestine - the region of the digestive tube between the stomach and the colon (large intestine) where food's acidity is neutralized and most of the nutrients are absorbed

Smooth Muscle - the elongated muscle that is not under voluntary control and that is found in the digestive tract, blood vessels, glands, and hair follicles, but not in the heart

Sponge - an aquatic invertebrate of the phylum Porifera that attaches to stones or plants and that has a porous structure and a tough, elastic skeleton

Spontaneous Generation – the theory of how life began that says that living things come from nonliving things

Spore - reproductive cell or multi-cellular structure that is resistant to environmental conditions and that can develop into an adult without fusion with another cell

Species - a group of organisms that are closely related and can mate to produce fertile offspring; *also* the level of classification below genus

Stamen - the male reproductive structure of a flower that produces pollen and consists of an anther at the tip of a filament

Stigma - the expanded apex of a pistil, supported by the style; the part of the pistil that receives the pollen

Stimulus - anything that causes a reaction or change in an organism or any part of an organism

Stoma - one of many openings in a leaf or a stem of a plant that enable gas exchange to occur (plural, *stomata*)

Stomach - the saclike, expandable digestive organ that is located between the esophagus and the small intestine and that breaks down food into a liquid by the action of muscles, enzymes, and acids

Stress - a physical or mental response to an unusual environmental condition

Style - in plants, the slender, upper part of the pistil

Subcutaneous Layer – the lowest, or bottom layer of the skin that is mostly made up of fat; also known as the hypodermis

Sweat Gland – a “spaghetti-like” shaped gland embedded in the dermis of mammals that secretes sweat

Swim Bladder - a gas filled internal sac that helps bony fish maintain buoyancy

Systemic circulation - the movement of blood from the heart to all parts of the body and back to the heart

T

Taxonomy - the science of describing, naming, and classifying organisms

Tendon - a tough connective tissue that attaches a muscle to a bone or to another body part

Theory - an explanation for some phenomenon that is based on observation, experimentation, and reasoning

Thorax - in higher vertebrates, the part of the body between the neck and the abdomen; in other animals, the body region behind the head; in arthropods, the mid-body region

Threadlike Fungus – shapeless, fuzzy molds that decompose rotting material

Trachea - the tube that connects the pharynx to the lungs

Trait - a genetically determined characteristic

Transpiration - the process by which plants release water vapor into the air through stomata

Tympanic membrane - the eardrum

U

Urinary Bladder - a hollow, muscular organ that stores urine

V

Vaccine - a harmless pathogen used to stimulate a host's immune system to defend against the pathogen

Vacuole – organelle in plant and animal cells that stores food, waste and water; is much larger in plant cells

Vascular plant - a plant that has a vascular system composed of xylem and phloem, specialized tissues that conduct materials from one part of the plant to another

Veins - a vessel that carries blood to the heart

Vertebrate - an animal that has a backbone; includes mammals, birds, reptiles, amphibians, and fish

Virus - a small infectious agent that can replicate only inside the cells of other organisms; not a living thing

Visceral Mass - the region of the bivalve body containing most of the digestive, excretory, circulatory and nervous systems; between the gills and the foot

Volume - a measure of the size of a body or region in three-dimensional space

Vomerine teeth - two rough pads in the roof of the mouth.

W

Water Vascular System - a system of canals filled with a watery fluid that circulates throughout the body of an echinoderm

X

Xylem - the type of tissue in vascular plants that provides support and conducts water and nutrients from the roots

Y

Yolk - the spherical part of an egg that feeds the developing embryo