

APPENDIX A

GLOSSARY FOR SECTION 2.1

Sources: The Concise Columbia Encyclopedia. 1995. Columbia University Press; Solomon et al. 1993. Biology, Third Edition. Harcourt Brace Publishing

astrocyte - a star-shaped cell, especially a neuroglial cell of nervous tissue.

axon - the long, tubular extension of the neuron that conducts nerve impulses away from the cell body.

blood-brain barrier - system of capillaries that regulates the movement of chemical substances, ions, and fluids in and out of the brain.

central nervous system - the portion of the vertebrate nervous system consisting of the brain and spinal cord.

cerebellum - the trilobed structure of the brain, lying posterior to the pons and medulla oblongata and inferior to the occipital lobes of the cerebral hemispheres, that is responsible for the regulation and coordination of complex voluntary muscular movement as well as the maintenance of posture and balance.

cerebral cortex - the extensive outer layer of gray matter of the cerebral hemispheres, largely responsible for higher brain functions, including sensation, voluntary muscle movement, thought, reasoning, and memory.

cerebrum - the large, rounded structure of the brain occupying most of the cranial cavity, divided into two cerebral hemispheres that are joined at the bottom by the corpus callosum. It controls and integrates motor, sensory, and higher mental functions, such as thought, reason, emotion, and memory.

cognitive development - various mental tasks and processes (e.g. receiving, processing, storing, and retrieving information) that mediate between stimulus and response and determine problem-solving ability.

demyelination - to destroy or remove the myelin sheath of (a nerve fiber), as through disease.

dendrite - a branched protoplasmic extension of a nerve cell that conducts impulses from adjacent cells inward toward the cell body.

EEG (electroencephalogram) - a graphic record of the electrical activity of the brain as recorded by an electroencephalograph. Also called *encephalogram*.

ECoG (electrocorticogram) - a graphic record of the electrical activity of the brain; used to calculate parameters of activity, such as wave amplitude and frequency.

encephalitis - inflammation of the brain.

encephalopathy - any of various diseases of the brain.

enzyme - any of numerous proteins or conjugated proteins produced by living organisms and functioning as biochemical catalysts.

gavage - introducing material directly into the stomach using a tube.

genotoxic - causing chromosomal/genetic aberrations.

glial cells (neuroglia) - the delicate network of branched cells and fibers that supports the tissue (neurons) of the central nervous system.

gray matter - brownish-gray nerve tissue, especially of the brain and spinal cord, composed of nerve cell bodies and their dendrites and some supportive tissue.

heme (hematin) - ferrous component of hemoglobin, as well as a functional group in other hemoproteins involved in various functions throughout the body.

hematological - science encompassing the medical study of the blood and blood-producing organs.

hepatic - of, relating to, or resembling the liver.

hippocampus - a ridge in the floor of each lateral ventricle of the brain that consists mainly of gray matter and has a central role in memory processes.

histopathology - the study of the microscopic anatomical changes in diseased tissue.

hormone - a chemical messenger, usually a peptide or steroid, produced by one tissue and conveyed by the bloodstream to another to effect physiological activity, such as growth or metabolism.

limbic system - a group of interconnected deep brain structures, common to all mammals, and involved in olfaction, emotion, motivation, behavior, and various autonomic functions.

microtubules - any of the proteinaceous cylindrical hollow structures that are distributed throughout the cytoplasm of eukaryotic cells, providing structural support and assisting in cellular locomotion and transport.

mitochondrion (plural mitochondria) - a spherical or elongated organelle in the cytoplasm of nearly all eukaryotic cells, containing genetic material and many enzymes important for cell metabolism, including those responsible for the conversion of food to usable energy.

morphology - the form and structure of an organism or one of its parts; without consideration of function.

mutagenic - inducing or increasing the frequency of mutation in an organism.

myelin sheath - the insulating envelope of myelin that surrounds the core of a nerve fiber or axon and facilitates the transmission of nerve impulses. In the peripheral nervous system, the sheath is formed from the cell membrane of the Schwann cell and, in the central nervous system, from oligodendrocytes. Also called *medullary sheath*.

necrosis - death of cells or tissues through injury or disease, especially in a localized area of the body.

nerve - many neurons bound together by connective tissue.

neuroglia - see *glial cells*.

neuron - cell specialized for the conduction of electrochemical nerve impulses that constitute the brain, spinal column, and nerves, consisting of a nucleated cell body with one or more dendrites and a single axon. Also called *nerve cell*.

neurotransmitter - a chemical substance that transmits information (nerve impulses) across the junction (synapse) that separates one nerve cell (neuron) from another nerve cell or a muscle. There are more than 300 known neurotransmitters, including dopamine and glutamine.

parasympathetic nervous system - the part of the autonomic nervous system originating in the brain stem and the lower part of the spinal cord that, in general, inhibits or opposes the physiological effects of the sympathetic nervous system, as in tending to stimulate digestive secretions, slow the heart, constrict the pupils, and dilate blood vessels.

peripheral nervous system - the part of the vertebrate nervous system constituting the nerves outside the central nervous system and including the cranial nerves, the spinal nerves, and the sympathetic and parasympathetic nervous systems.

perseveration - uncontrolled, incessantly repetitive behavior, occurring even when it directly results in rewards being withheld.

renal - of, relating to, or in the region of the kidneys.

somatosensory - of or relating to the perception of sensory stimuli from the skin and internal organs.

sympathetic nervous system - the part of the autonomic nervous system originating in the thoracic and lumbar regions of the spinal cord that in general inhibits or opposes the physiological effects of the parasympathetic nervous system, as in tending to reduce digestive secretions, speeding up the heart, and contracting blood vessels.

synapse - the junction across which a nerve impulse passes from an axon terminal to a neuron, a muscle cell, or a gland cell.

teratogenic - of, relating to, or causing malformations of an embryo or a fetus.

tubulin - a globular protein that is the basic structural constituent of microtubules.