

Amygdala: A structure in the forebrain that is an important component of the limbic system and plays a central role in emotional learning, particularly within the context of fear.

Auditory Nerve: A bundle of nerve fibers extending from the cochlea of the ear to the brain that contains two branches: the cochlear nerve, which transmits sound information, and the vestibular nerve, which relays information related to balance.

Axon: The fiberlike extension of a neuron by which it sends information to target cells.

Basal Ganglia: Structures located deep in the brain that play an important role in the initiation of movements. These clusters of neurons include the caudate nucleus, putamen, globus pallidus, and substantia nigra. Cell death in the substantia nigra contributes to Parkinson's disease.

Broca's Area: The brain region located in the frontal lobe of the left hemisphere that is important for the production of speech.

Cell Body: The part of a neuron that contains the nucleus (with DNA) and the organelles, but not the projections such as the axon or dendrites.

Cerebrum: The largest part of the human brain associated with higher order functioning, such as thinking, perceiving, planning, and understanding language, as well as the control of voluntary behavior.

Cerebellum: A large structure located at the back of the brain that helps control the coordination of movement by making connections to the pons, medulla, spinal cord, and thalamus. It also may be involved in aspects of motor learning.

Cerebral Cortex: A sheet of tissue covering the outermost layer of the cerebrum.

Cerebrospinal Fluid: A liquid found within the ventricles of the brain and the central canal of the spinal cord.

Cochlea: A snail-shaped, fluid-filled organ of the inner ear responsible for converting sound into electrical potentials to produce an auditory sensation.

Cone: A primary receptor cell for vision located in the retina. It is sensitive to color and is used primarily for daytime vision.

Corpus Callosum: The large bundle of nerve fibers linking the left and right cerebral hemispheres.

Dendrite: A treelike extension of the neuron cell body. The dendrite is the primary site for receiving and integrating information from other neurons.

Frontal Lobe: One of the four subdivisions of the cerebral cortex. The frontal lobe has a role in controlling movement and in the planning and coordinating of behavior.

Hair Cells: Sensory receptors in the cochlea that convert mechanical vibrations to electrical signals; they in turn excite the 30,000 fibers of the auditory nerve that carry the signals to the brainstem.

Hippocampus: A seahorse-shaped structure located within the brain and considered an important part of the limbic system. One of the most studied areas of the brain, it is involved in learning, memory, and emotion.

Hypothalamus: A complex brain structure composed of many nuclei with various functions, including regulating the activities of internal organs, monitoring information from the autonomic nervous system, controlling the pituitary gland, and regulating sleep and appetite.

Ions: Electrically charged atoms or molecules.

Mitochondria: Small cylindrical organelles inside cells that provide energy for the cell by converting sugar and oxygen into special energy molecules, called adenosine triphosphate (ATP).

Motor Neuron: A neuron that carries information from the central nervous system to muscle.

Myelin Sheath: Compact fatty material that surrounds and insulates the axons of some neurons and accelerates the transmission of electrical signals.

Nerve Terminal: The tip of the axon where neurotransmitters are released.

Neuron: A nerve cell specialized for the transmission of information and characterized by long, fibrous projections called axons and shorter, branchlike projections called dendrites.

Neurotransmitter: A chemical released by neurons at a synapse for the purpose of relaying information to other neurons via receptors.

Nociceptors: Nerve endings that signal the sensation of pain.

Occipital Lobe: One of the four subdivisions of the cerebral cortex. The occipital lobe plays a role in processing visual information.

Olfactory Bulb: A round, knoblike structure of the brain responsible for processing the sense of smell. Specialized olfactory receptor cells are located in a small patch of mucous membrane lining the roof of the nose. Axons of these sensory cells pass through perforations in the overlying bone and enter two elongated olfactory bulbs lying on top of the bone.

Parietal Lobe: One of the four subdivisions of the cerebral cortex. The parietal lobe plays a role in sensory processes, attention, and language.

Photoreceptor: A nerve ending, cell, or group of cells specialized to sense or receive light.

Pons: A part of the hindbrain that, with other brain structures, controls respiration and regulates heart rhythms. The pons is a major route by which the forebrain sends information to and receives information from the spinal cord and peripheral nervous system.

Retina: A multilayered sensory tissue that lines the back of the eye and contains the receptor cells to detect light.

Rod: A sensory neuron located in the periphery of the retina. The rod is sensitive to light of low intensity and is specialized for nighttime vision.

Spinal Cord: A bundle of nerve fibers running through the vertebral column that primarily functions to facilitate communication between the brain and the rest of the body.

Stem Cell: Unspecialized cells that renew themselves for long periods through cell division.

Synapse: A physical gap between two neurons that functions as the site of information transfer from one neuron to another.

Temporal Lobe: One of the four major subdivisions of each hemisphere of the cerebral cortex. The temporal lobe functions in auditory perception, speech, and complex visual perceptions.

Thalamus: A structure consisting of two egg-shaped masses of nerve tissue, each about the size of a walnut, deep within the brain. The key relay station for sensory information flowing into the brain, the thalamus filters out information of particular importance from the mass of signals entering the brain.

Vertebral Column: The column of bones, or vertebrae, that extends down the back and functions as a structural element for the body while also surrounding and protecting the spinal cord.

Wernicke's Area: A brain region responsible for comprehension of language and production of meaningful speech.