



Stimulations and Functions of Brain: A Gross Anatomy

Tarik Massoud*

Department of Radiology, Stanford University School of Medicine, Palo Alto, USA

DESCRIPTION

The central nervous system is composed of the brain and spinal cord. The peripheral nervous system, which has somatic and autonomic divisions, is made up of neuronal elements that extend beyond the central nervous system. There are three major structural divisions of the brain: the cerebellum, brainstem, and cerebrum. The brainstem is situated at the base of the brain and extends from the upper cervical spinal cord to the diencephalon of the cerebrum. The medulla, pons, and midbrain are the three sections of the brainstem. The cerebellum is located behind the brainstem.

Central nervous system anatomy

The nervous system is divided into two sections: the peripheral nervous system, which connects the central nervous system to the rest of the body, and the central nervous system, which is made up of the brain and spinal cord.

The brain and spinal cord are the primary locations in the central nervous system where correlation and integration of neural signals take place. The meninges, a network of membranes covering the brain and spinal cord, are suspended in cerebrospinal fluid and provide additional protection for the brain and spinal cord.

Numerous excitable nerve cells and their processes, known as neurons, make up the central nervous system. These neurons and their processes are maintained by specialized tissue known as neuroglia. Axons, also known as nerve fibers, are the lengthy processes of a neuron cell. Gray and white matters make up the central nervous system's interior. Gray matter is made up of nerve cells that are embedded in neuroglia. The myelin sheaths on many of the nerve fibers give many of the white matter's nerve fibers, which are buried in neuroglia, their characteristic white appearance. There are trillions of synapses connecting the brain's billions of neurons to neurons throughout the body.

Gross anatomy

More than 90% of the body's neurons are found in the brain. The

hindbrain, midbrain, and forebrain are the three distinct regions of the brain.

Even the most rudimentary vertebrates have a hindbrain. The medulla, pons, and cerebellum make up this structure. Numerous nerves from the left side of the body cross over to the right side of the brain at the medulla, a small structure located closest to the spinal cord. Blood pressure, heart rate, and breathing are all under the medulla's control. The top of the brain is connected to the cerebellum by the pons, which is situated immediately above the medulla. The pons produces chemicals that keep our sleep-wake cycle in check. The cerebellum, which is divided into two hemispheres, controls some reflexes, particularly those involving balance. It also plans how the body will move.

Between the hindbrain and the forebrain, the midbrain plays a critical role in hearing and vision.

The brain stem supports the forebrain, which develops above it and sags a little to fit inside the skull. The thalamus, hypothalamus, and cerebral cortex make up this structure. With the exception of smell receptors, the thalamus transmits and translates incoming data from the sense receptors. The hypothalamus controls motivation and mood and is thought to contribute to the coordination of the neurological system's reactions to stress.

The majority of the space inside the skull is occupied by the cerebral hemispheres, which are situated above the thalamus and hypothalamus. The cerebral cortex is the term for the outer layer that protects the cerebral hemispheres. Most people see the cerebral hemispheres when they think of the brain. They control the most sophisticated behavior since they are the area of the brain that has recently undergone evolution. Four lobes, one in each cerebral hemisphere, are separated by deep fissures on the surface of the brain.

The rear of the head's occipital lobe of the cortex is where visual information is received and processed. The temporal lobe, which lies roughly behind the temples, aids with complicated visual processes like face recognition as well as the sense of smell.

Correspondence to: Kim-Sun Jung, Department of Radiology, Stanford University School of Medicine, Palo Alto, USA, E-mail: Tarik@massoud.edu

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The parietal lobe, which is located above the temporal and occipital lobes, is involved in spatial abilities and receives sensory data from all over the body in the sensory projection areas. The parietal and temporal lobes contain two regions that are primarily responsible for language comprehension.

The cerebral cortex's frontal lobe is where voluntary movement, focused attention, and behavior with goals all occur. The motor projection areas of the brain are where the brain's response messages begin, from where they travel to the muscles and glands. Emotional temperament may also be related to the frontal lobe.