

Anatomy and Physiology

FOR ENGLISH LANGUAGE LEARNERS

Chapter 6: The Nervous System Part 2

The Brain and the Spinal Cord

The central nervous system (CNS) is comprised of the brain and the spinal cord. The spinal cord is comprised of white and gray matter. The gray matter is where reflex decisions are made. The white matter is white due to myelination, which enables messages to be sent to and from the spinal cord and the brain more quickly.

Brain Tissue

The outer layer of brain tissue is gray matter. This is where interpretation, thought and conscious decision making takes place. The inner white matter contains only myelinated axons. These axons carry messages between all parts of the brain.

Brain Structures

The cerebrum and cerebellum are the two largest regions in the brain. The cerebrum is the largest region. It contains 4 lobes: the frontal lobe which controls motor activity as well as motivation and judgment; the temporal lobe which is important in memory as well as interpreting messages from the ear; the parietal lobe, which interprets most sensory information coming from the skin and internal organs; and the occipital lobe which interprets visual images. The cerebellum is important in helping the body maintain balance.

The Diencephalon

The diencephalon is an area of the brain which contains four major parts crucial to survival: the thalamus which is a relay station sending messages from sensory organs and receptors to the correct part of the brain for interpretation; the hypothalamus which regulates body temperature, food and water intake and helps control heart rate, blood pressure, breathing rate and digestion; the pituitary gland which produces many essential hormones including growth hormone and finally the pineal gland which scientists think controls a person's sense of time.

The Brainstem

The brainstem connects the spinal cord to the brain. It has three areas: the midbrain which controls sight and hearing reflexes; the pons which makes sure you breathe very smoothly and the medulla oblongata which maintains homeostasis of heart rate, blood pressure, breathing, as well as coughing, sneezing, swallowing and vomiting.



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