



Nervous System III

Brain Regions

Major Region	Name	Localization/Shape	Characteristics
	Cortical gray matter	Cortical	Localizes and interprets sensory inputs, intellectual/emotional processing, controls voluntary and skilled skeletal muscle movements.
	Basal nuclei	Subcortical motor centers	Initiates skeletal muscle movements.
	Thalamus	Egg-shaped, forming the central core of the forebrain	Relay station in conduction of sensory impulses to cerebrum for interpretation and impulses from and to motor cortex and motor centers. Involved in memory processing.
	Hypothalamus	Below the thalamus	Regulation of body temperature, food intake, water balance, thirst, biological rhythms. Endocrine organ
	Epithalamus	Most dorsal portion of the diencephalon	Pineal gland is visible externally. Secretes melatonin *sleep-wake/mood
	Midbrain	Between the diencephalon and the pons	Vision and audition
	Pons	Between the midbrain and the medulla oblongata	Cooperates with the respiratory center/rhythm of breathing. Relay station for conversations between motor cortex and cerebellum.
	Medulla oblongata	Between the pons and the spinal cord	Path for ascending somatic sensory information (skin). Cardiovascular center, respiratory center, vomiting, coughing.
Cerebellum		Dorsal to the pons and medulla. Cauliflower-like.	Processes information leading to a proper balance and posture and smooth, coordinated skeletal muscle movements.



Types of Neurons

Classification	Category	Type	Localization	Characteristics
	Anaxonic		Brain and special sense organs	Small, no distinction between dendrites and axons.
	Bipolar		Special sense organs (they are rare)	One dendritic process that branches extensively at its distal tip, one axon, and a cell body between the two.
	Unipolar or pseudounipolar		Most commons in the PNS	Dendrites and axon fused. Cell body lies at one side. Axons may extend a metre or more.
	Multipolar		Most commons in the CNS	Two or more dendrites and a single axon. May be very long.
		Somatic sensory	Cell bodies of sensory neurons are located in peripheral sensory ganglia	Monitor the outside world and our position within.
		Visceral sensory		Monitor internal world and the status of other organs.
		Somatic motor	Innervate skeletal muscles	Carries information to skeletal muscles. You have control over them.
		Visceral motor	Innervate smooth and cardiac muscles, glands, and adipose tissue	Carries information to other types of muscles, glands, and adipose tissue. You do not have control over it.

