

Neuroscience Quick Reference: Brain Structures

MIDBRAIN

Key Components: Tectum, Tegmentum

Primary Function: Unconscious sensory processing

Tectum ("Roof")

Two pairs of bumps on the dorsal surface of the midbrain.

Superior Colliculi (Top bumps, assoc. "260 mps"): Processes peripheral vision.

Inferior Colliculi (Bottom bumps): Processes unexpected sounds.

Tegmentum

Coordinates and motivates species-typical movements.

Contains areas that process pain and play out behavioral responses to threat.

FOREBRAIN

Primary Characteristics: More effective, facilitates conscious understanding.

Note: Performs actions similar to other brain regions (e.g., Midbrain).

Hypothalamus

Structure: Bilateral, composed of several nuclei.

Function: Regulates autonomic nervous system activity and behaviors critical for survival (e.g., temperature regulation, sleep).

Key Link: Links the nervous system to the endocrine system by releasing hormones into the blood via the pituitary gland.

Distinction from Medulla: Unlike the medulla which primarily uses axons, the hypothalamus releases hormones (signaling molecules) directly in threatening situations.

Hormones (General Definition): Chemical communication molecules released by endocrine glands.

FOREBRAIN (Continued)

Thalamus

Structure: Bilateral nuclei.

Function: Relays ascending sensory information to the cerebral cortex.

Examples of Sensory Relay:

Visual information from the eye passes through the **Lateral Geniculate Nuclei** of the thalamus.

Sound information from the ear passes through the **Medial Geniculate Nuclei** of the thalamus.

Additional Note: Possesses widespread cortical projections.