

BRAIN STEM: FUNCTIONAL REGIONS

Midbrain (Mesencephalon)

- Visual and auditory reflex processing
- Motor movement control (specifically eye movement)
- Regulation of alertness and temperature
- Substantia nigra (dopamine production)

Pons

- Relay station between cerebellum and cerebral cortex
- Regulation of breathing rhythm (pneumotaxic center)
- Management of sleep cycles and dreaming
- Origin of cranial nerves V, VI, VII, and VIII

Medulla Oblongata

- Autonomic centers (heart rate, blood pressure)
- Reflex centers (vomiting, coughing, sneezing, swallowing)
- Respiratory drive and oxygen/CO₂ monitoring
- Decussation (crossing) of motor pyramids

Reticular Formation

- Reticular Activating System (RAS) for consciousness
- Filtering of repetitive sensory stimuli
- Regulation of muscle tone and posture
- Pain modulation and habituation