

MEDULLA OBLONGATA, CEREBELLUM AND PONS

1/11/82, 11 Jan 00, 10 Jan 01, 15 Jan 03, 12 Jan 04, 10 Jan 05, 30Jan08, 12Jan09, 6Jan10, 5Jan11, 2Apr13
S&M p 312, Martini's 4th: 448-456 (meninges, CSF), 471-474, 6th: 473-479, 7th: 453-, 8th: 469-474, 10th: 462-477

MEDULLA OBLONGATA (same as. myelencephalon):(p 471) **Controls the most basic functions.**

pyramids (center) and **olives** on anterior surface. Cavity within is lower region of fourth ventricle, continuous with central canal.

Pyramidal tracts (cord (corticospinal tracts = motor) originate in cerebrum, pass thru **peduncles**, some cross in medulla.

decussation of the pyramids crossing of pyramids on ventral surface of medulla.

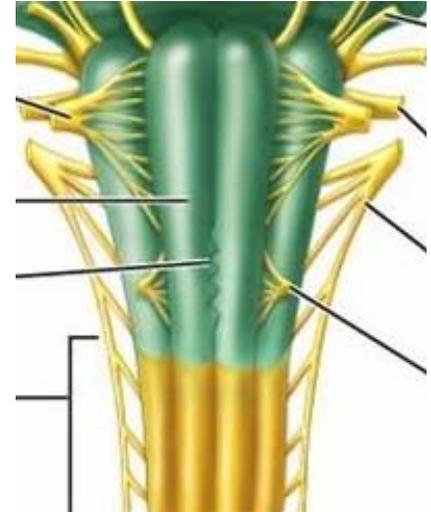
Seen as cross hatching on ventral surface of medulla

Olives: transmit motor pyramidal impulses, relay into to cerebellum

MEDULLARY FUNCTION: **regulates heart rate and force** **respiration rate**
(Most primitive functions) vasomotor coughing
 swallowing vomiting

Last **four cranial nerves** leave fr medulla:

- IX glossopharyngeal
- X vagus
- XI spinal accessory
- XII hypoglossal



BRAIN STEM: **medulla, pons and midbrain (mesencephalon)** 471, 472

Reticular formation: **gray matter within brain stem**
 receives info from all sensory tracts

Reticular Activating system (RAS) maintains consciousness, state of arousal
Selects impulses to relay to cortex, raising to consciousness.

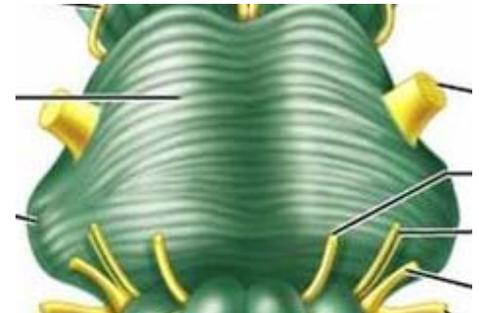
Damage to reticular formation produces coma.

PONS: contains two tracts, longitudinal and transverse (p 473)

longitudinal communicates between brain stem and cerebrum **Projection tract**
transverse between hemispheres of cerebellum **Commissural tract**

Contains nuclei of **four cranial nerves:**

- V trigeminal
- VI abducens
- VII facial
- VIII vestibulocochlear



Pons centers regulate respiration centers in medulla, leading to regular rhythmic breathing:

apneustic [without air] inhibits urge to breathe
pneumotaxic [air move] stimulates urge to breathe

CEREBELLUM: (p 474)

tentorium cerebelli dura mater extension separates it from the cerebrum
vermis Band of cortex separates R & L halves
Folia gyri on surface
arbor vitae internal white matter pathways
4th ventricle ventricle between cerebellum and pons

Cerebellum is connected to three other portions of brain by **peduncles:**

superior cerebellar peduncle to the **mesencephalon**
middle cerebellar peduncle to the **pons**
inferior cerebellar peduncle to the **medulla oblongata**

Cerebellum can mediate some responses without consciousness

Serves as a coordinating unit

- 1) **initiates voluntary movements, skilled physical movements**
- 2) **calculates best way** to do cerebrum's will
- 3) **proprioceptors** deliver info here
- 4) **comparator:** adjusts motor activity to most accurately perform activity

