



Nervous System

Introduction to Anatomy and Embryology Lab 9 Brain & Spinal Cord

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 Longitudinal Fissure: Divides the two Cerebral Hemispheres

Transverse Fissure : Separates the Cerebrum from the Cerebellum

Lateral Fissure : Divides the Temporal
Lobe from the Frontal and Parietal Lobes

 Central Sulcus: Divides the Frontal Lobe from the Parietal Lobe

 Parieto-occipital sulcus: Marks the boundary between the Parietal and Occipital lobes

Gyrus

Sulcus

The most prominent sagittal fissure, the **longitudinal fissure**, separates the cerebrum into right and left halves called **cerebral hemispheres**





Cerebral hemispheres are divided into lobes



Lobes are named according to the cranial bones under which they lie

□ Lobes are:

- > Frontal
- Parietal
- Femporal
- > Occipital











Parieto-occipital sulcus: Marks the boundary between the Parietal and Occipital lobes





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Corpus callosum



The third ventricle between the right and left

halves of the thalamus

Cerebral aqueduct

In the midbrain

The fourth ventricle

between the pons, medulla and the cerebellum

The numbering of the cranial nerves is based on the order in which they emerge from the brain, front to back



Pure Sensory: Olfactory Optic Vestibulocochlear

Pure Motor: Oculomotor Trochlear Abducent Accessory Hypoglossal

Mixed: Trigeminal Facial Glossopharyngeal Vagus

Containing parasympathetic: Oculomotor Facial Glossopharyngeal Vagus



Identify the following regions of the normal brain in the image below: frontal, parietal, occipital and temporal lobes- Corpus callosum– Lateral ventricle- Fourth ventricle - Midbrain - Pons - Cerebellum – Thalamus- Hypothalamus



Identify the following regions of the normal brain in the image below: Corpus callosum– Cerebral Aqueduct- Fourth ventricle - Midbrain - Pons - Cerebellum – Thalamus-Hypothalamus





Spinal Cord

- Length of the adult spinal cord ranges from 42 to 45 cm
- 30gm in weight
- Ends between L1 and L2
- Has two enlargements

- C: Lumbar enlargement
- D: Conus medullaris
- E: Cauda equina



Connective tissue membranes

- Pia mater
- Arachnoid mater
- Dura mater-

The **denticulate ligaments** are triangular shaped **ligaments** that anchor the spinal cord along its length, at each side, to the arachnoid mater and dura mater. 21 attachm

21 attachments per side

The **filum terminale** is continuous with the pia mater that extends inferiorly from the apex of the conus medullaris to the first segment of the coccyx

Conus medullaris Lumbar cistern (sub-arachnoid space) Filum terminale TeachMeAnatomy

Conus medullaris Tapered inferior end (conical structure)

Cauda equina

The nerve roots of lower 4 lumbar, 5 sacral and 1 coccygeal nerves take a vertical course to form a bunch of nerve fibers around the filum terminale.

> • Resemblance : cauda - tail equina - horse





Spinal Nerves

- Each spinal nerve is formed from two roots
 - Dorsal root sensory root and ganglion
 - Ventral root motor root





Spinal Nerves

- Branches **1) Posterior** (dorsal) ramus serves muscles and skin of the posterior surface of the trunk 2) Anterior (ventral) ramus serves the muscles and structures of the upper and lower limbs and the skin of the lateral and anterior surfaces of the trunk



Dorsal root





 1:Anterior Median Fissure
2: Pia Mater
3: Denticulate Ligaments
4: Arachnoid and Dura Mater (reflected)
5:Anterior spinal artery
6: Dorsal Root
7:Ventral Root



