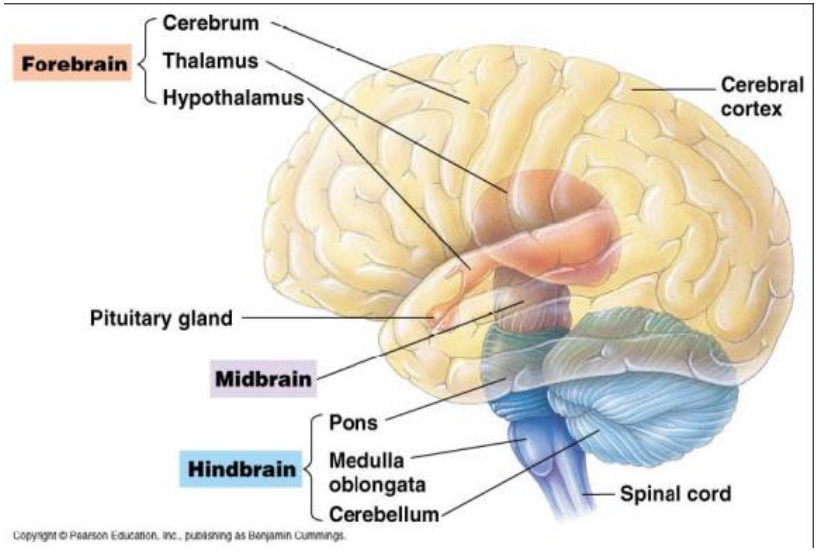
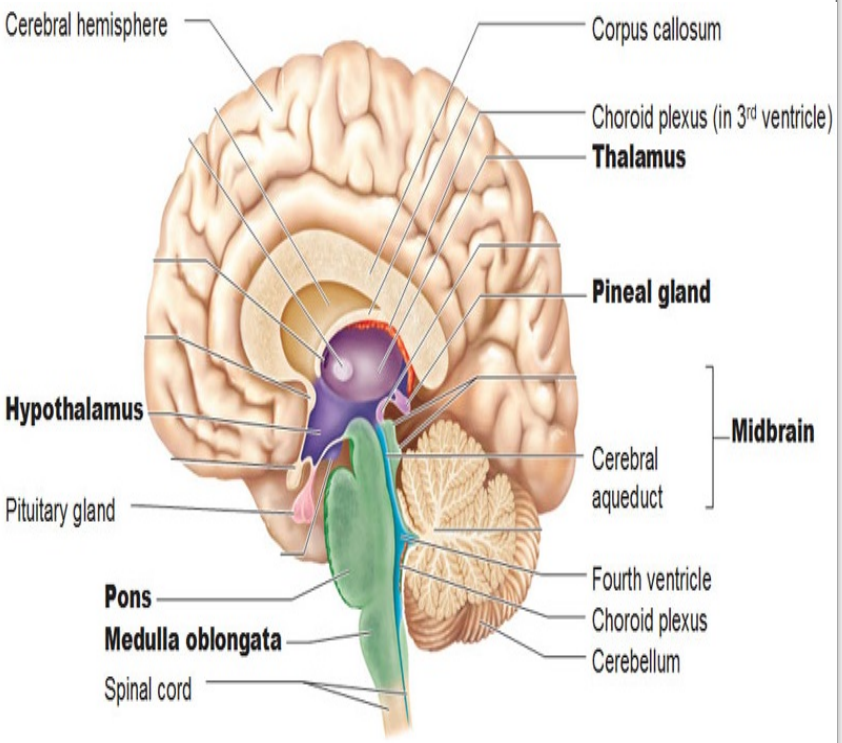
ANATOMY / 2nd Stage

Head and Neck

Lec.8

The brain



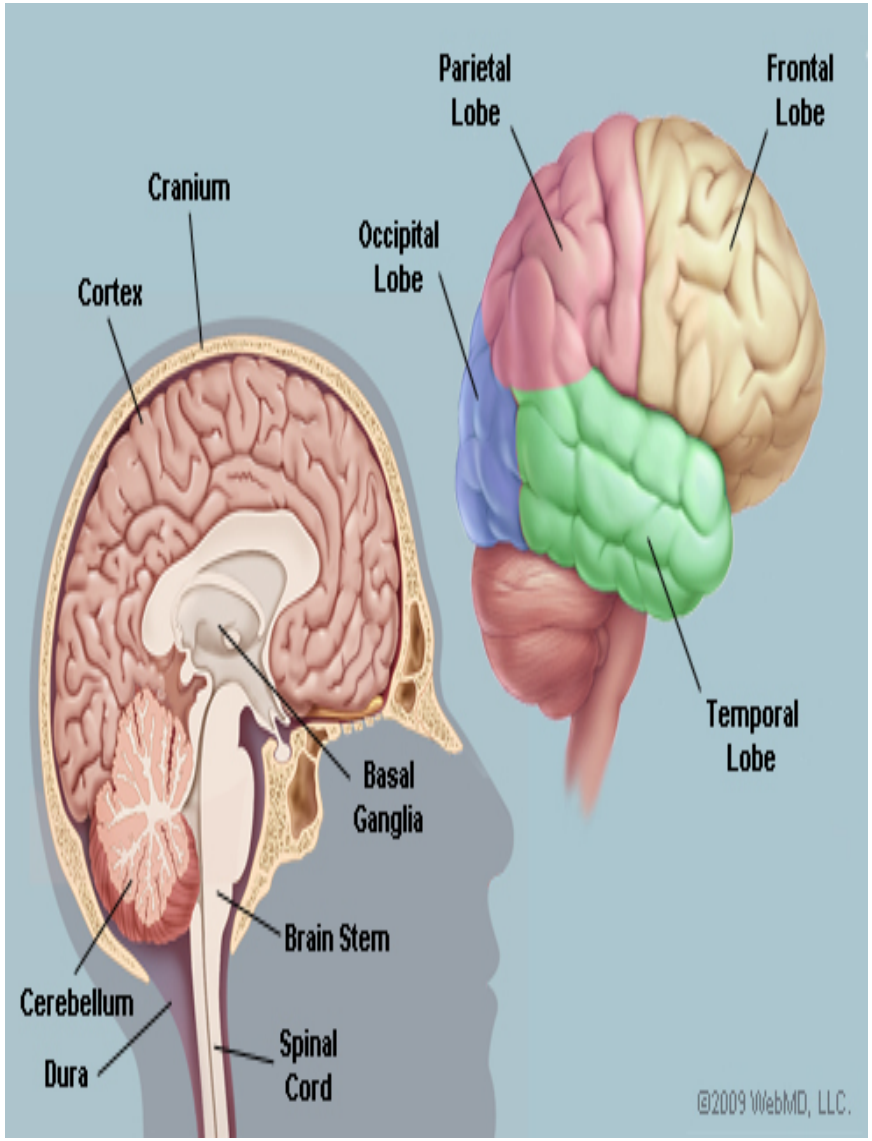


Major Parts of the Brain		Cavities of the Brain
Forebrain	Cerebrum	Right and left lateral ventricles
	Diencephalon	Third ventricle
Midbrain		Cerebral aqueduct
Hindbrain	Pons	Fourth ventricle and central canal
	Medulla oblongata	
	Cerebellum	

The Brain

Is that part of the central nervous system that lies inside the cranial cavity.

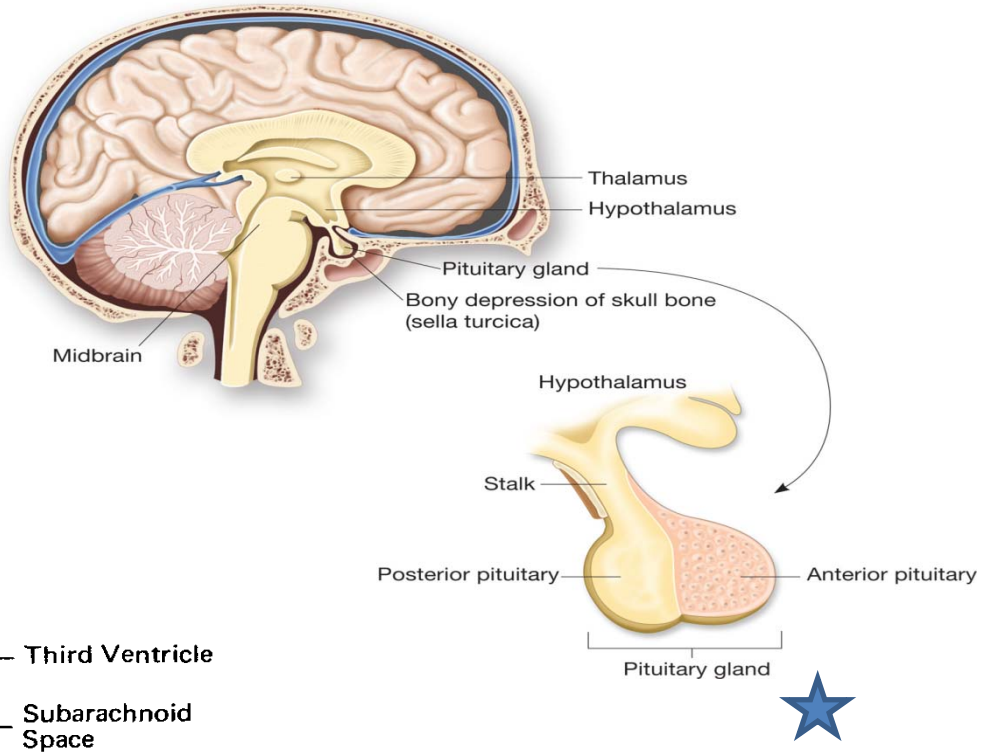
Is continuous with the spinal cord through the foramen magnum.



Pituitary Gland (Hypophysis Cerebri)

Is a small, oval structure attached to the undersurface of the brain by the infundibulum.

Its location in the sella turcica of the sphenoid bone.



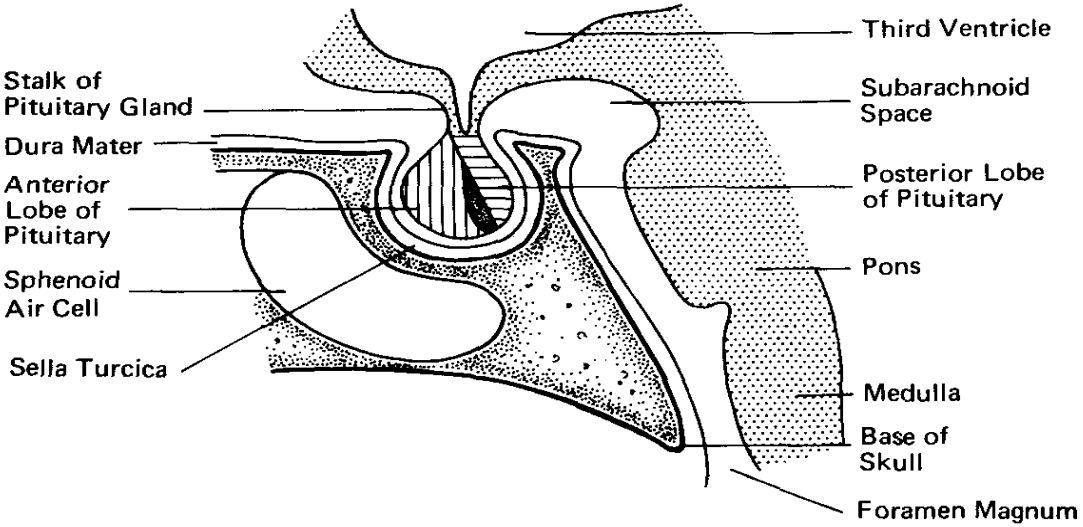
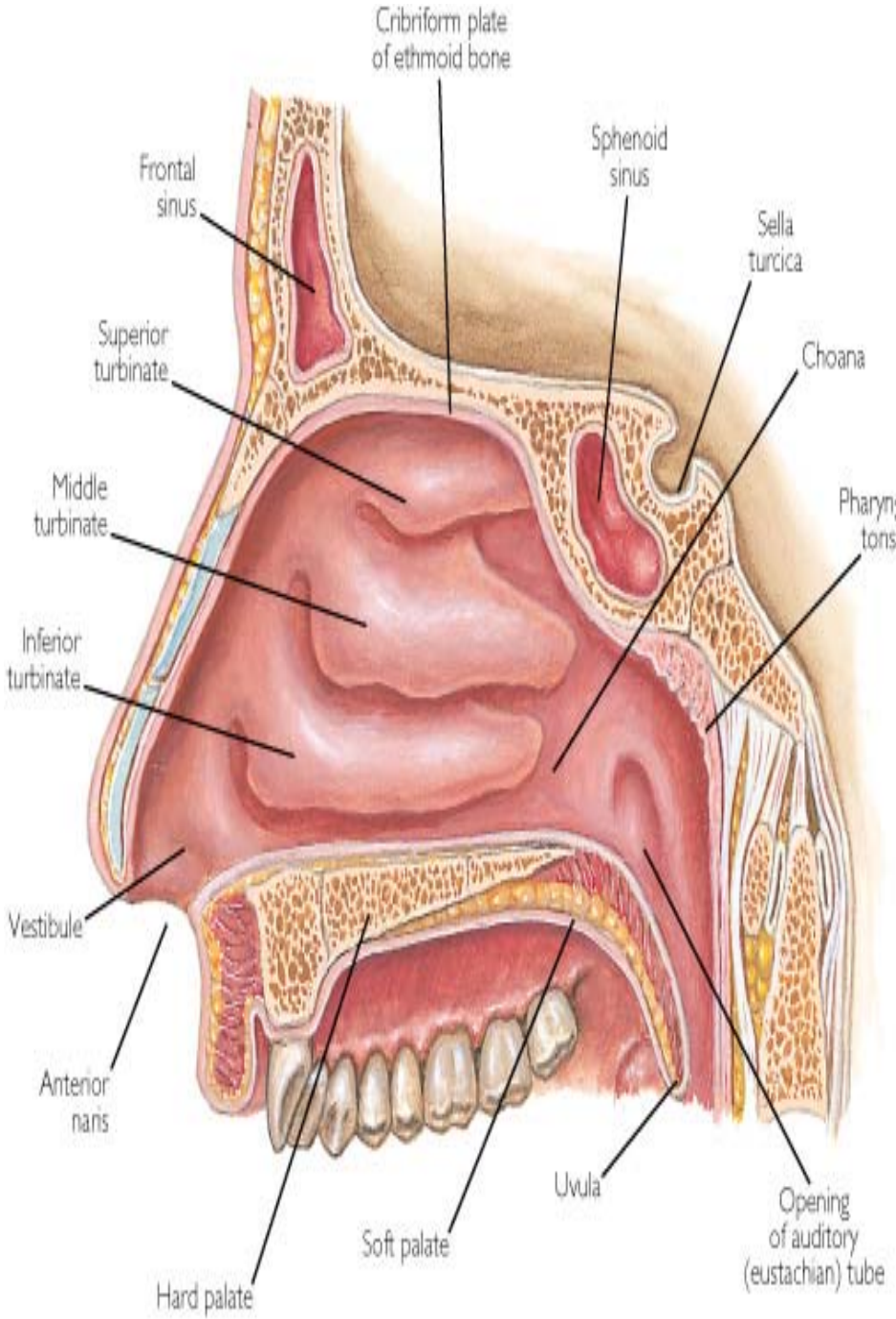
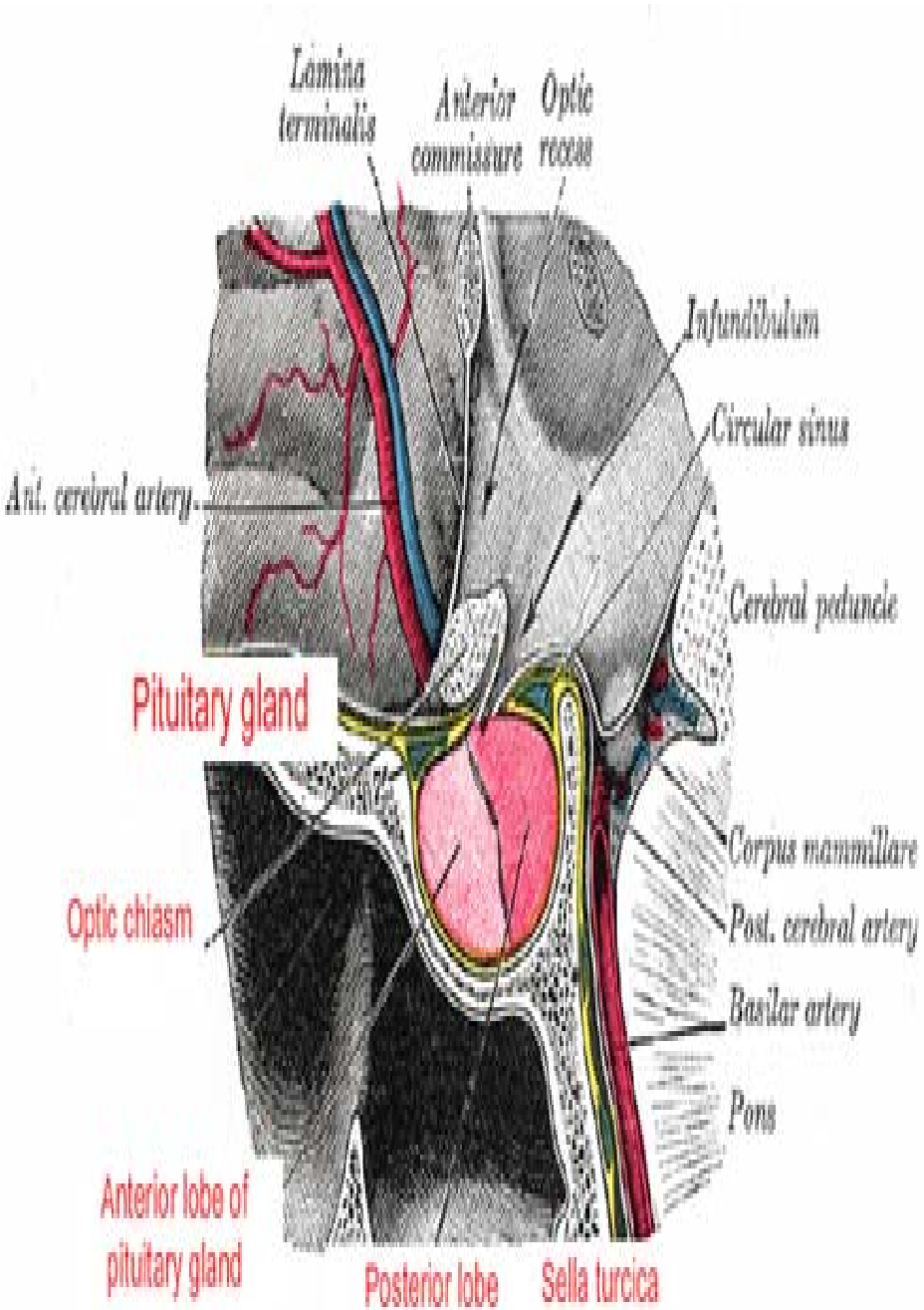


Diagram of pituitary gland.

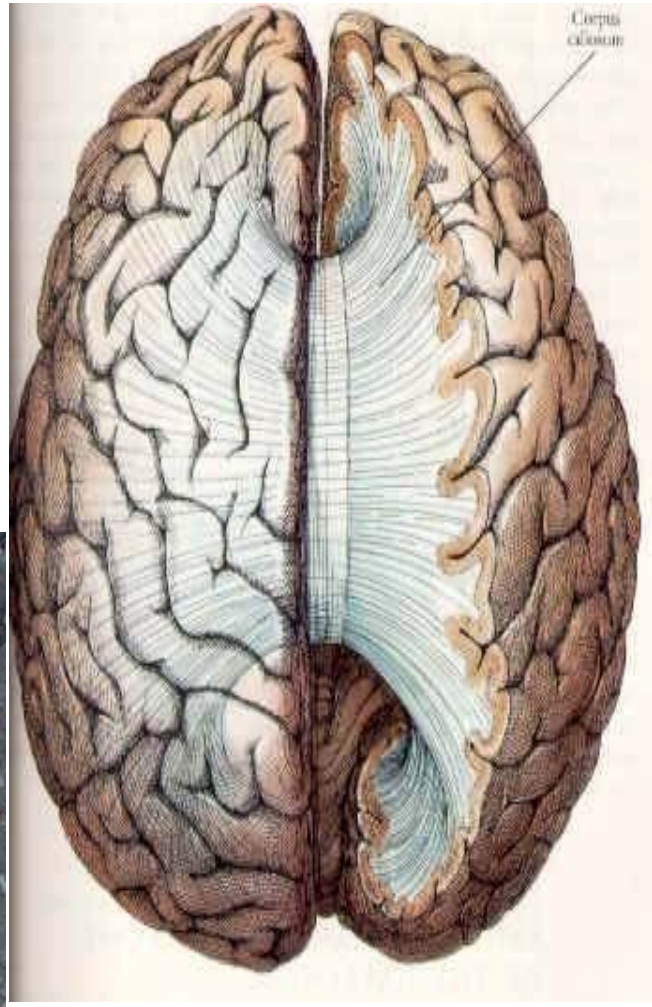

Cribriform plate of ethmoid bone
Frontal sinus
Sphenoid sinus
Sella turcica
Superior turbinate
Choana
Middle turbinate
Pharyngeal tonsil
Inferior turbinate
Vestibule
Anterior nans
Uvula
Soft palate
Hard palate
Opening of auditory (eustachian) tube

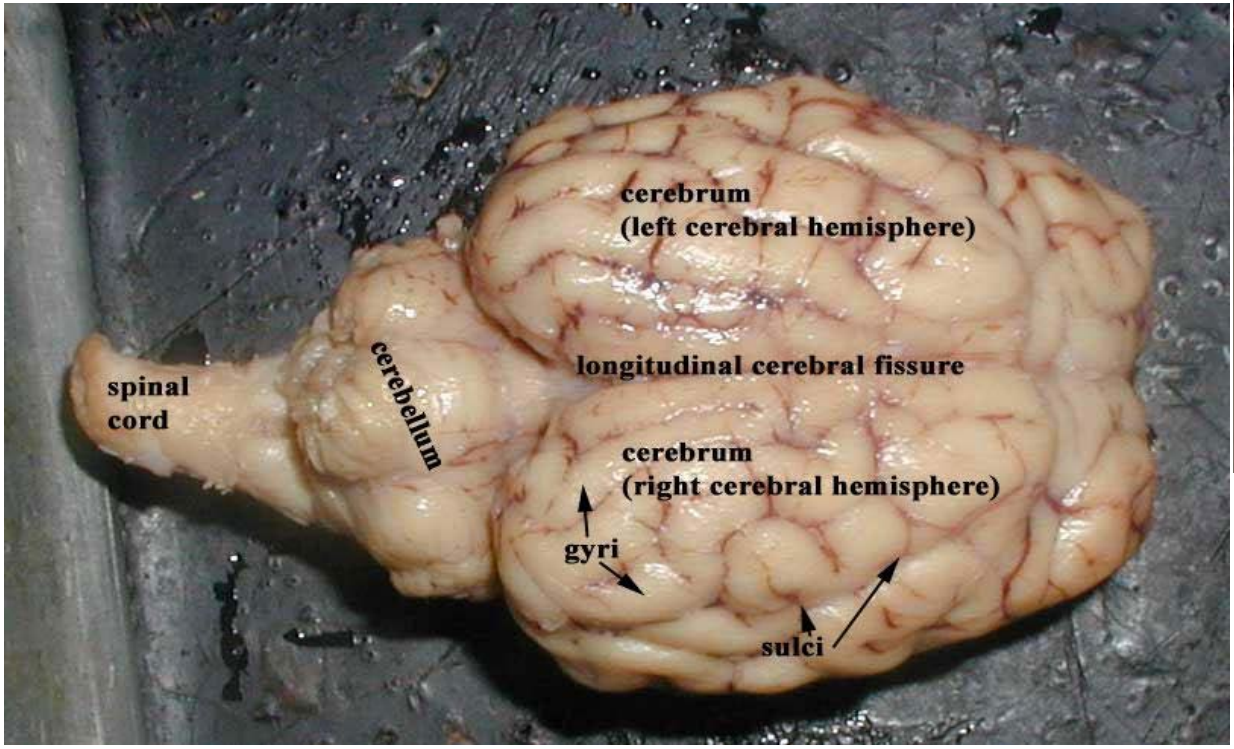

Lamina terminalis
Anterior commissure
Optic recess
Infundibulum
Circular sinus
Ant. cerebral artery
Cerebral peduncle
Pituitary gland
Corpus mammillare
Optic chiasm
Post. cerebral artery
Basilar artery
Pons
Anterior lobe of pituitary gland
Posterior lobe
Sella turcica

Cerebrum

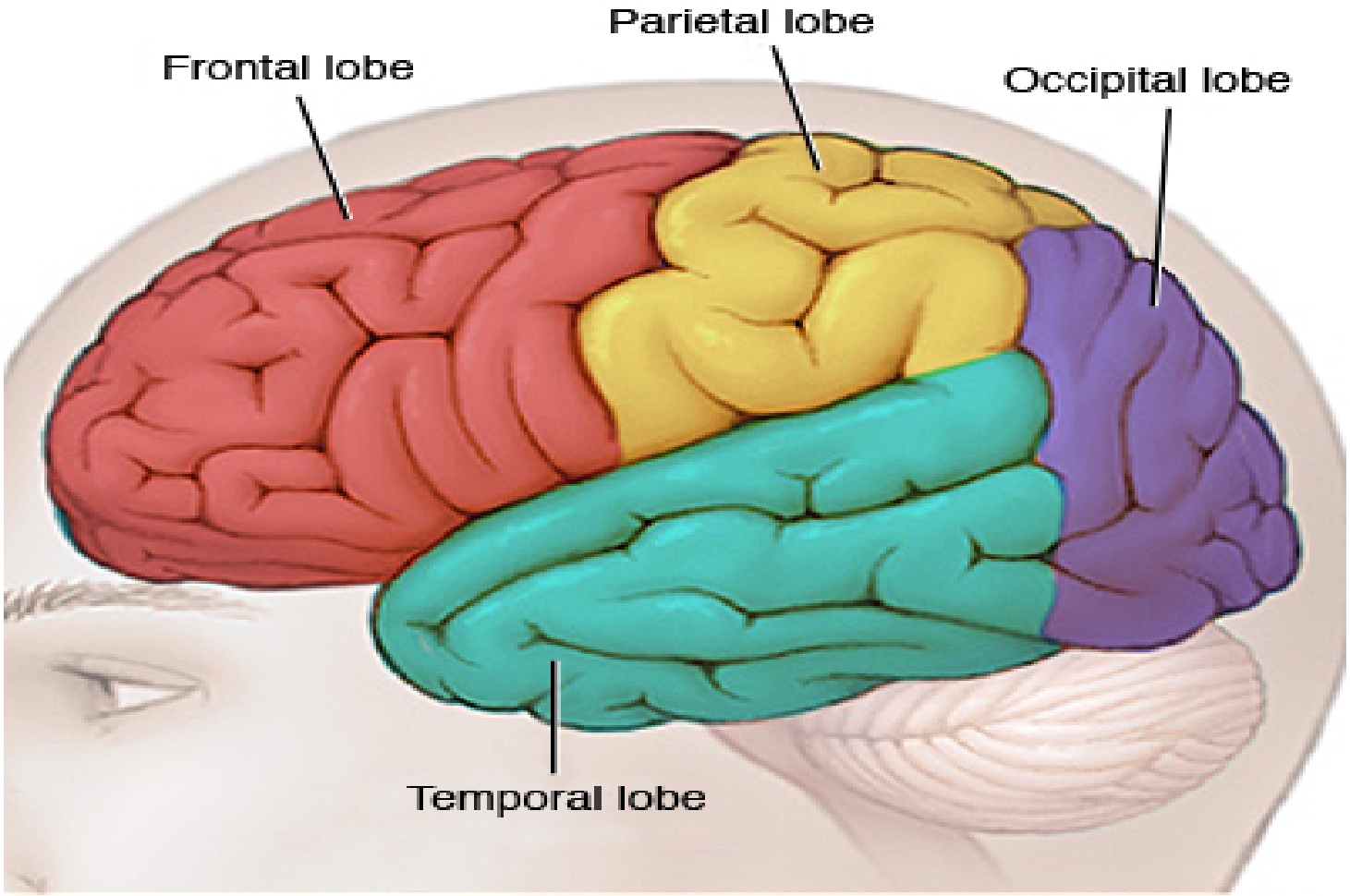
Is the largest part of the brain

consists of **two cerebral hemispheres** connected by a mass of white matter called the **corpus callosum.**



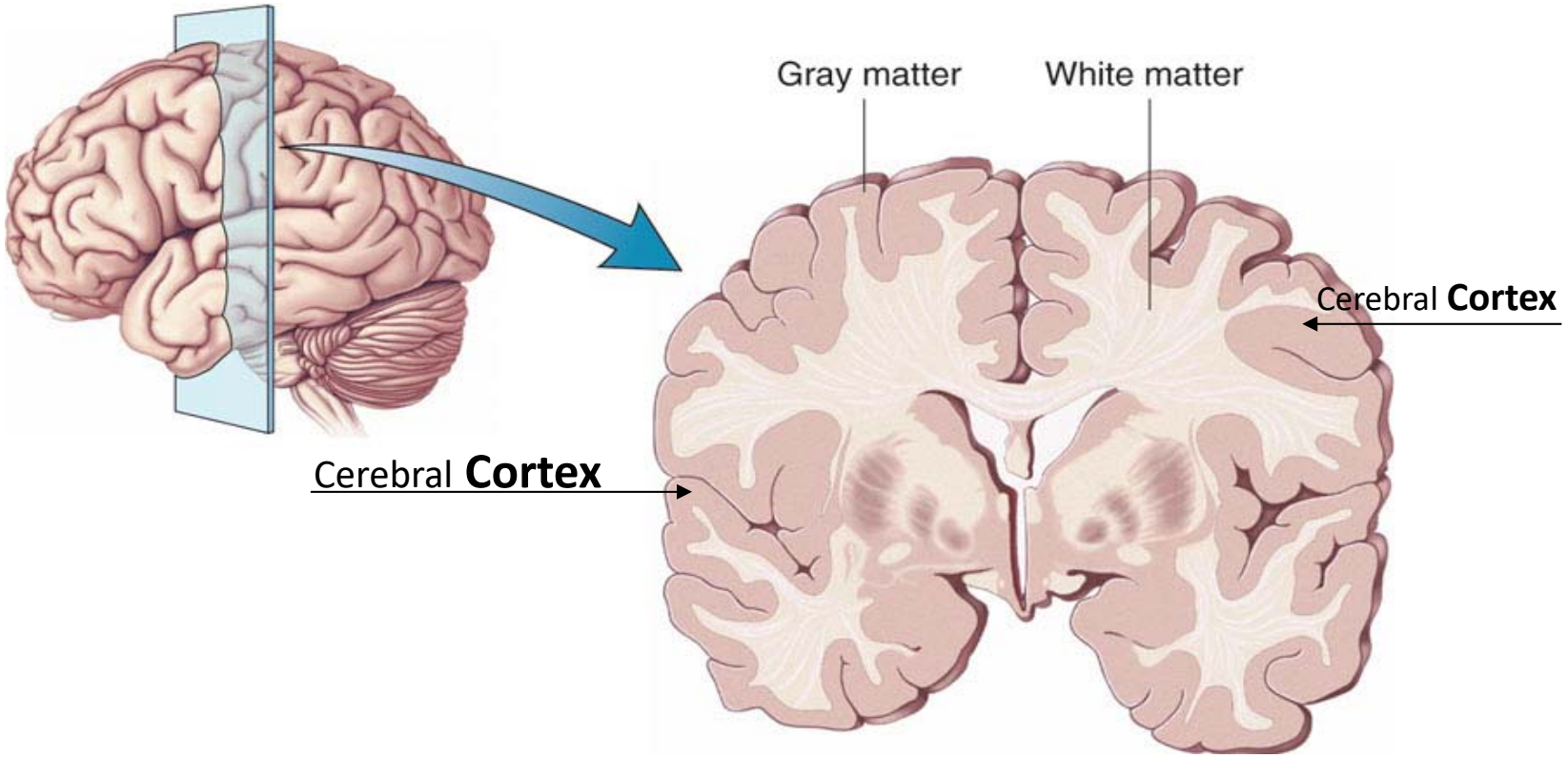


The cerebrum is divided into two hemispheres, each of them is divided into four lobes.



Cerebral Cortex

The outermost layer of gray matter making up the superficial aspect of the cerebrum.



Cerebral Features

Gyri : Elevated ridges.

Sulci : Small grooves dividing the gyri.

Central Sulcus : Divides the Frontal Lobe from the Parietal Lobe.

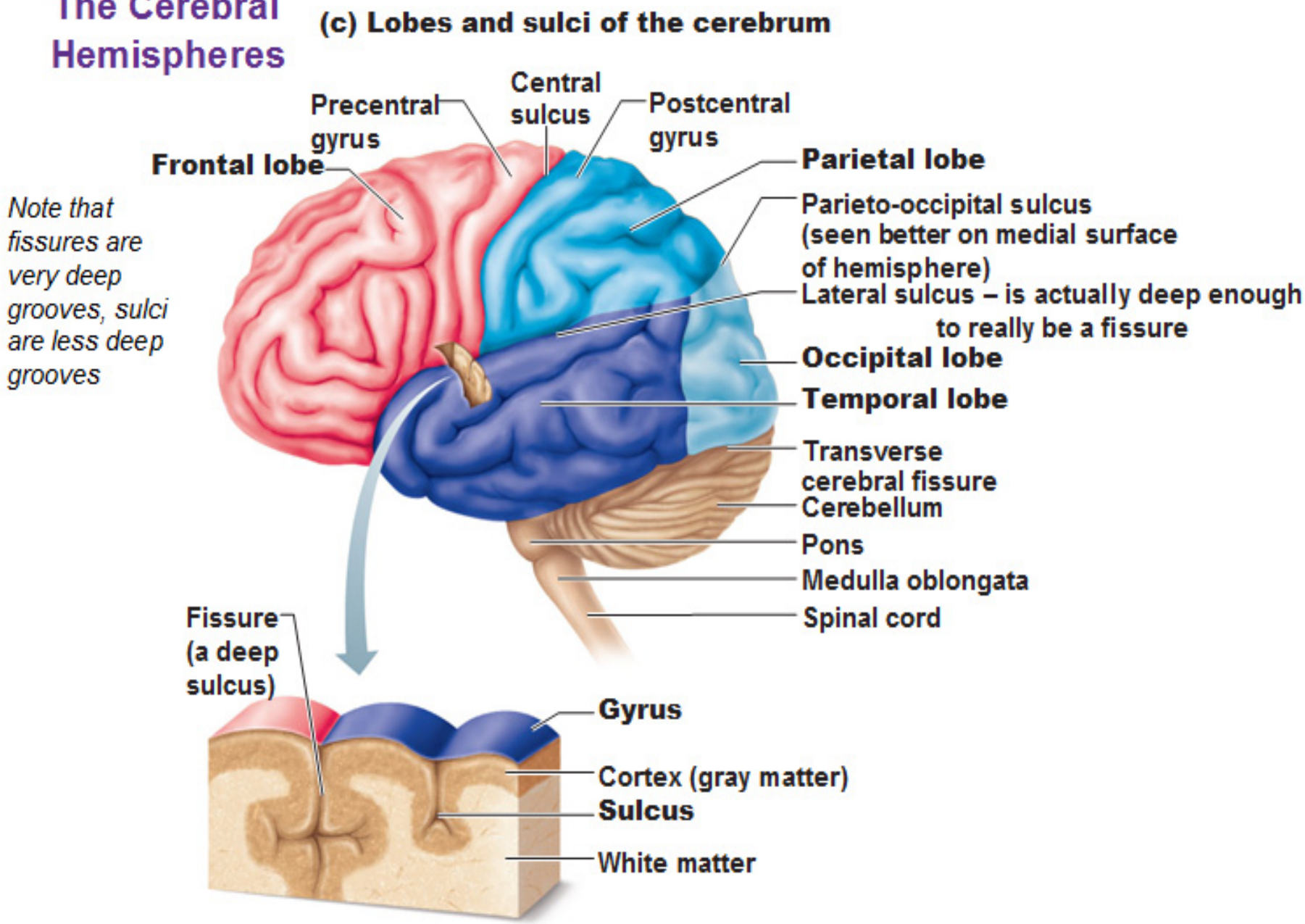
Fissures : Deep grooves, generally dividing large regions/lobes of the brain.

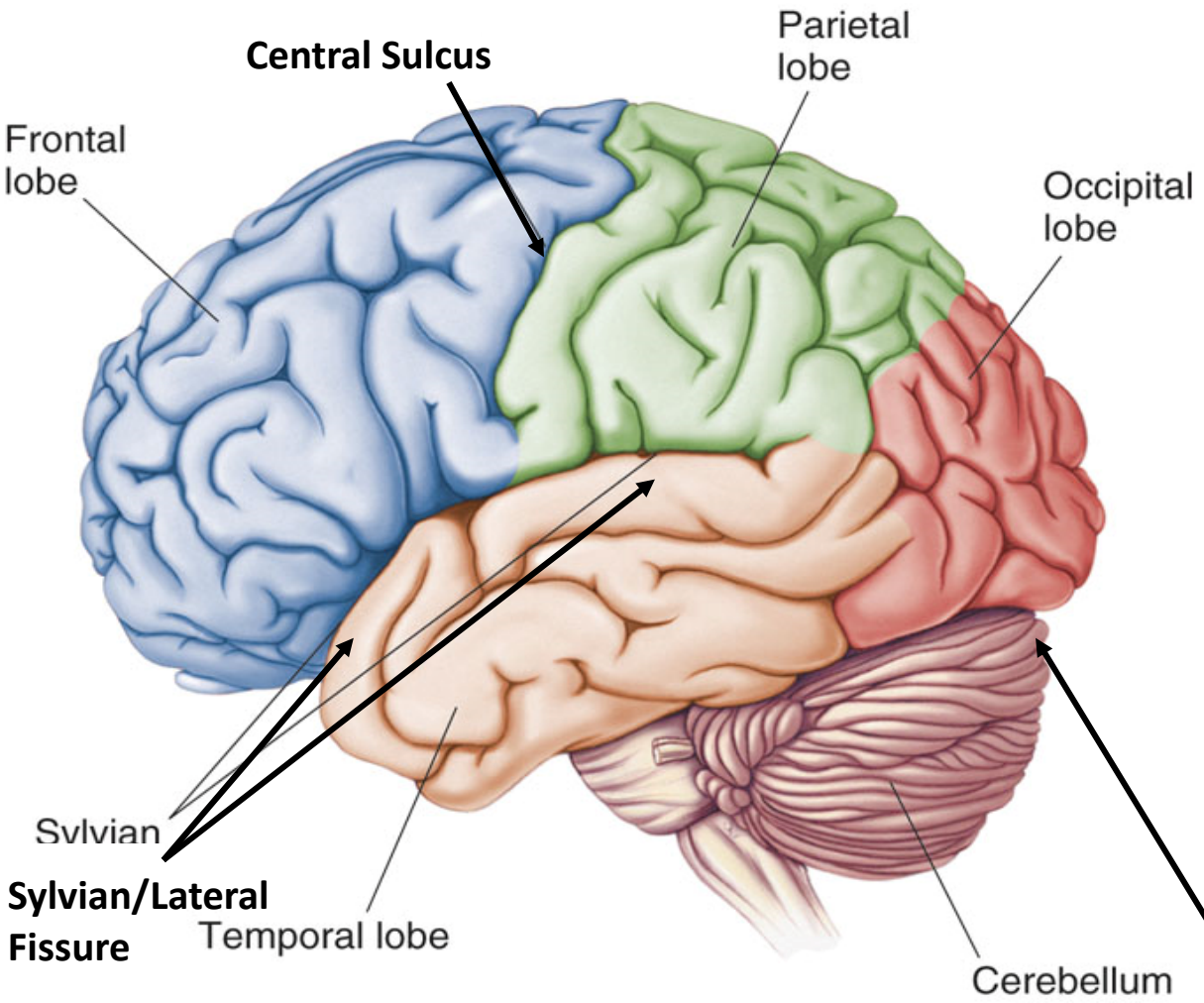
Longitudinal Fissure : Divides the two Cerebral Hemispheres.

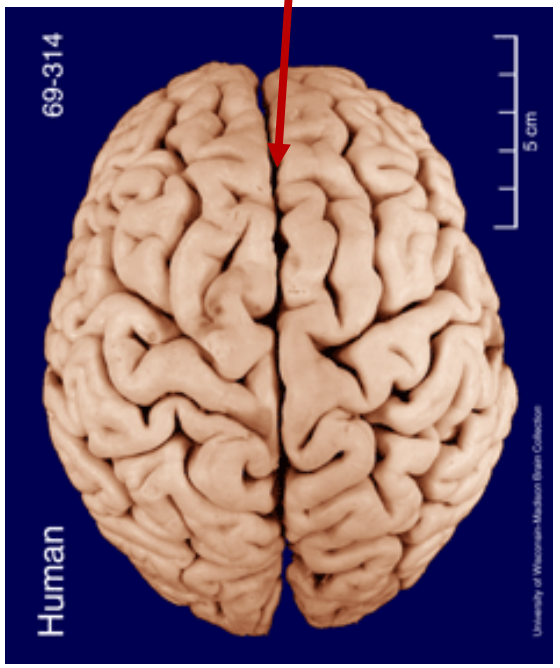
Transverse Fissure : Separates the Cerebrum from the Cerebellum.

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

The Cerebral Hemispheres

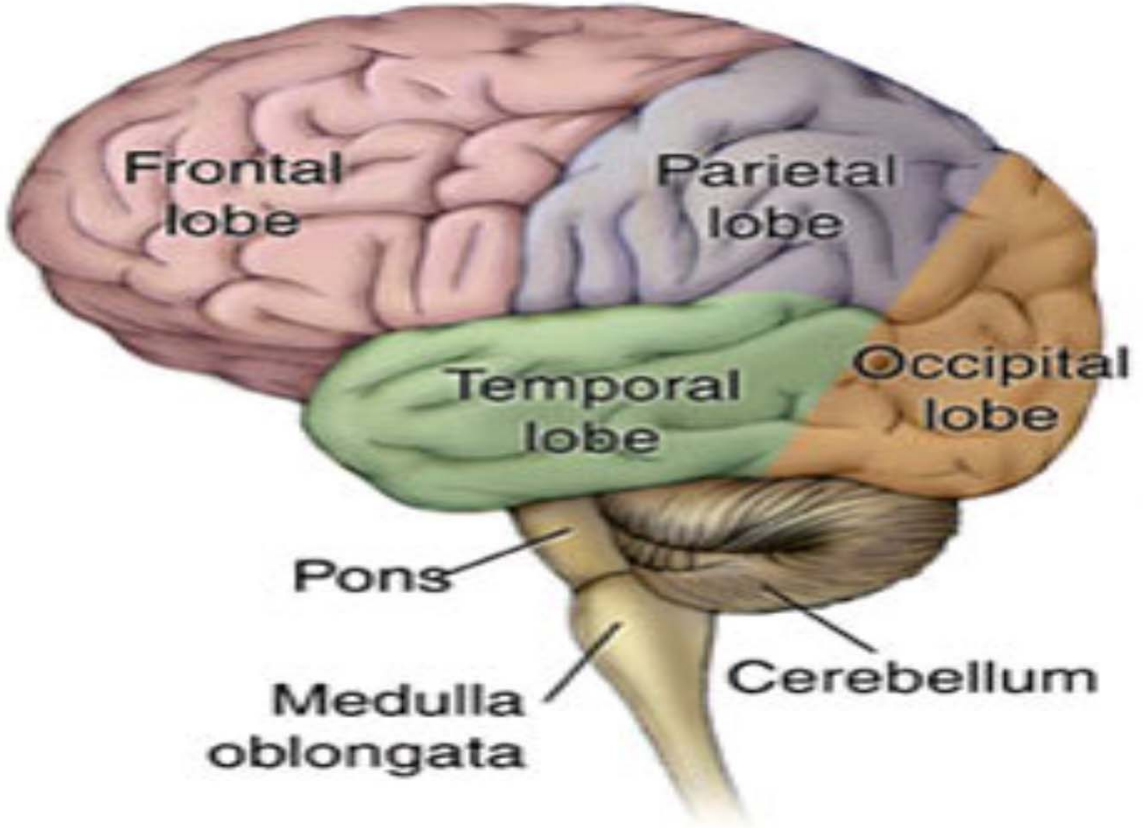






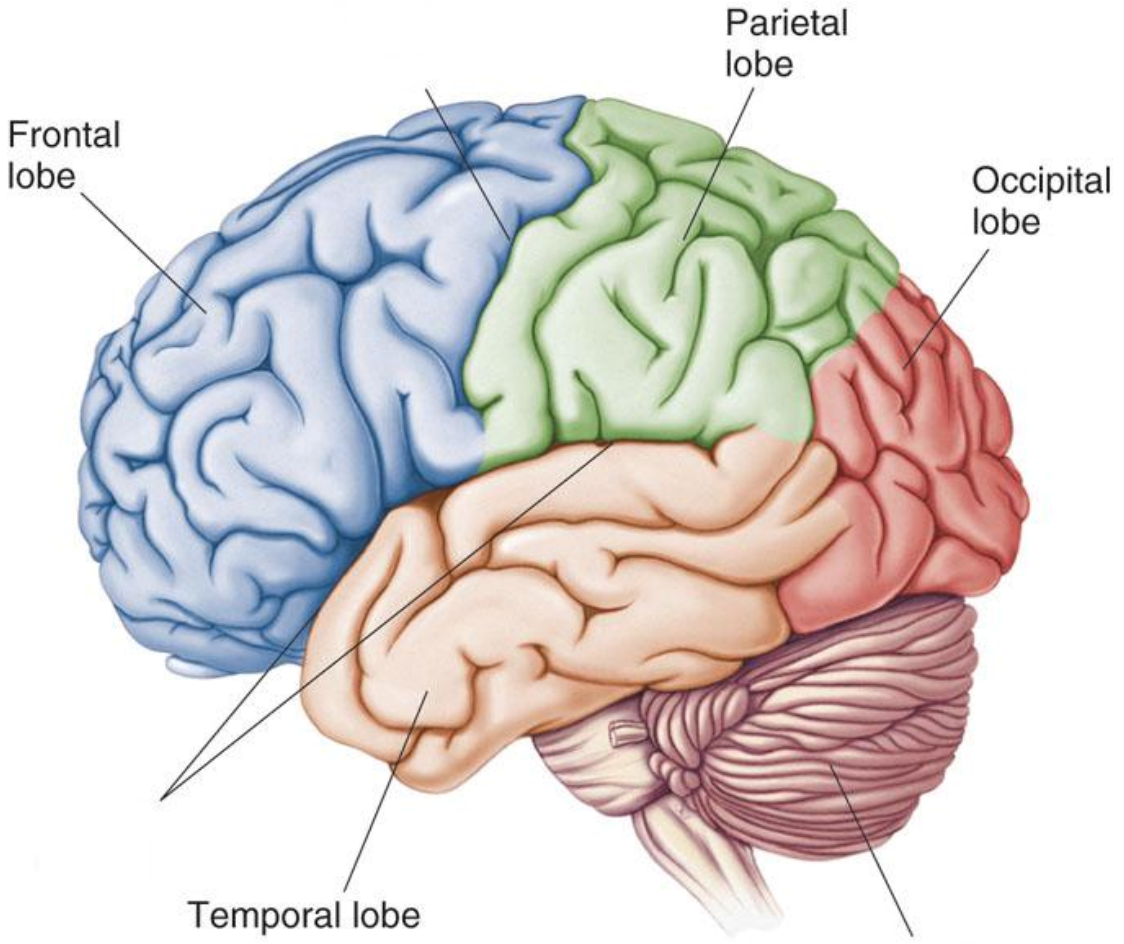
Transverse Fissure

- The lobes are named for the bones of the cranium under which they lie.



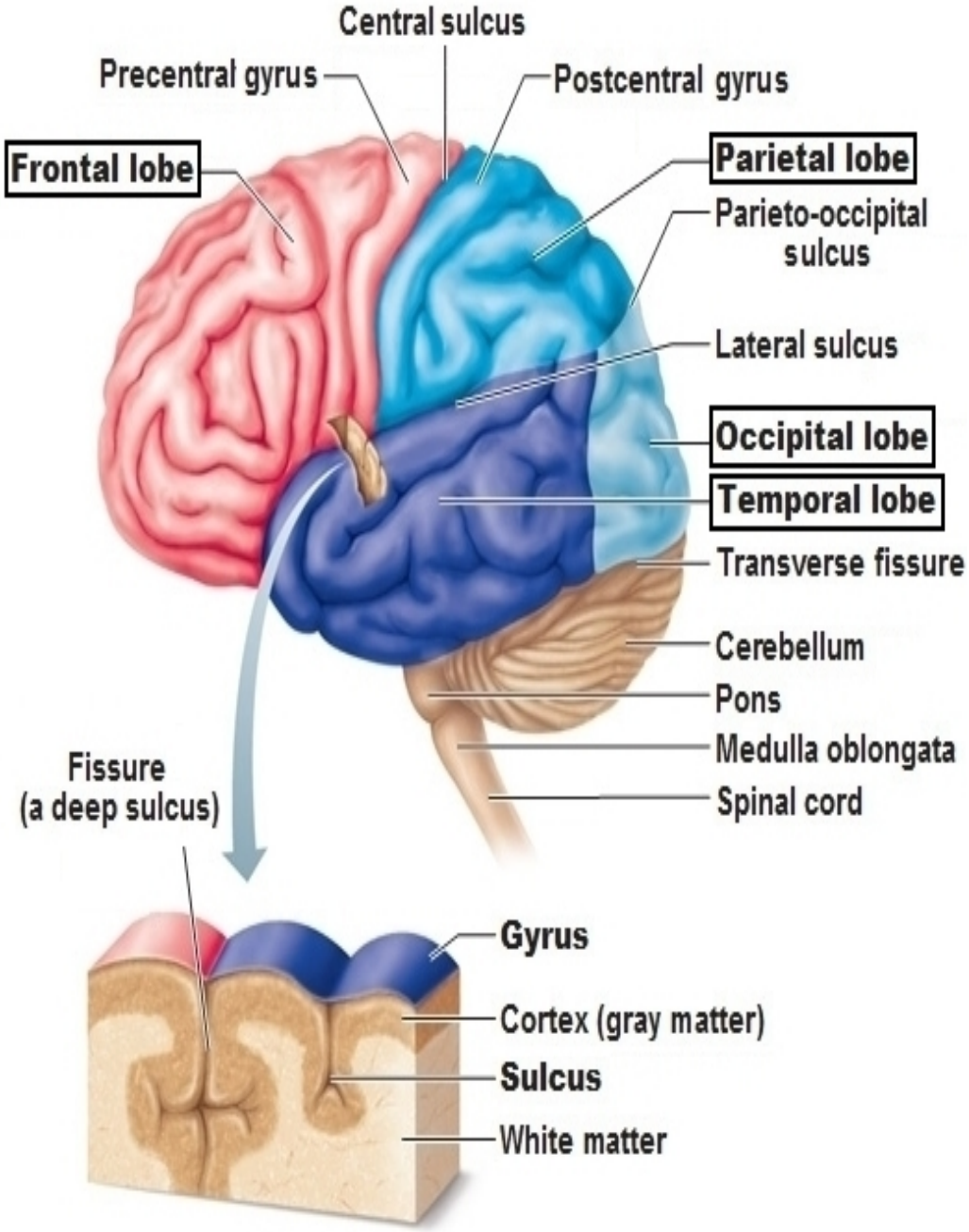
Lobes of the Brain (4)

- Frontal
- Parietal
- Occipital
- Temporal



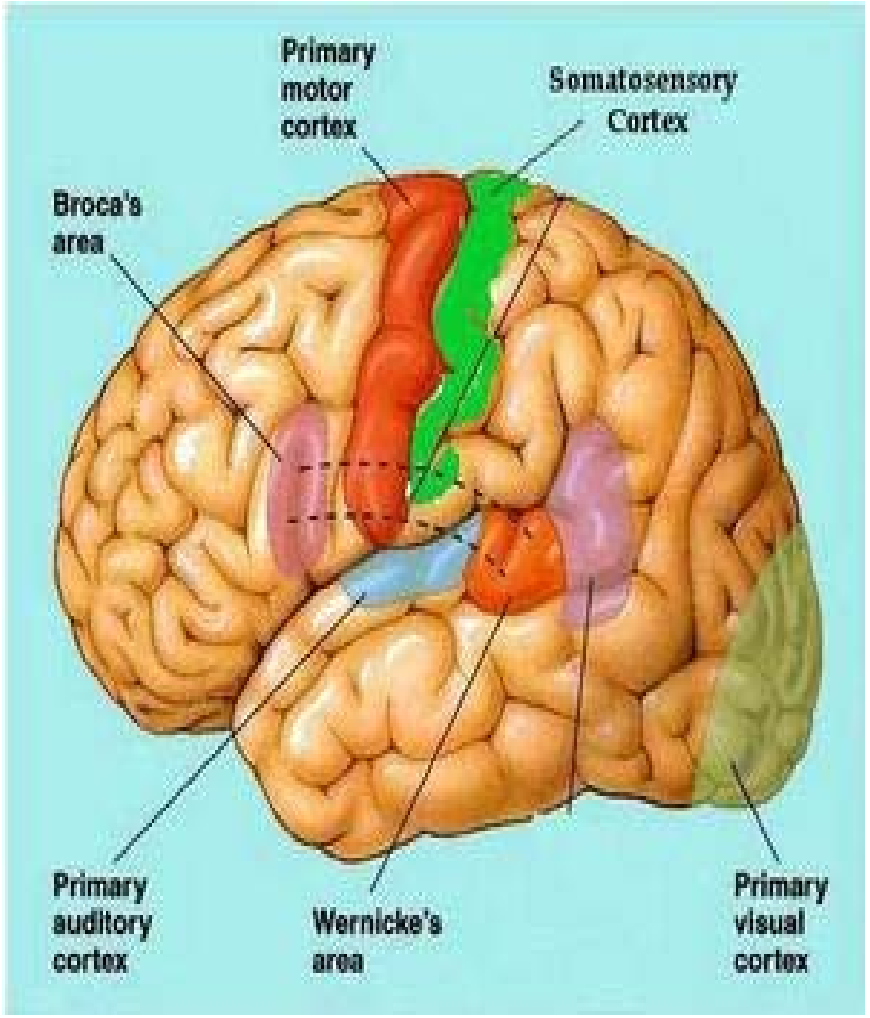
http://www.bioon.com/book/biology/whole/image/1/1-8.tif.jpg

- **Frontal lobe** is situated in front of the central sulcus and above the lateral sulcus.
- **Parietal lobe** is situated behind the central sulcus and above the lateral sulcus.
- **Occipital lobe** lies below the parieto-occipital sulcus.
- **Temporal lobe:** lies below the lateral sulcus



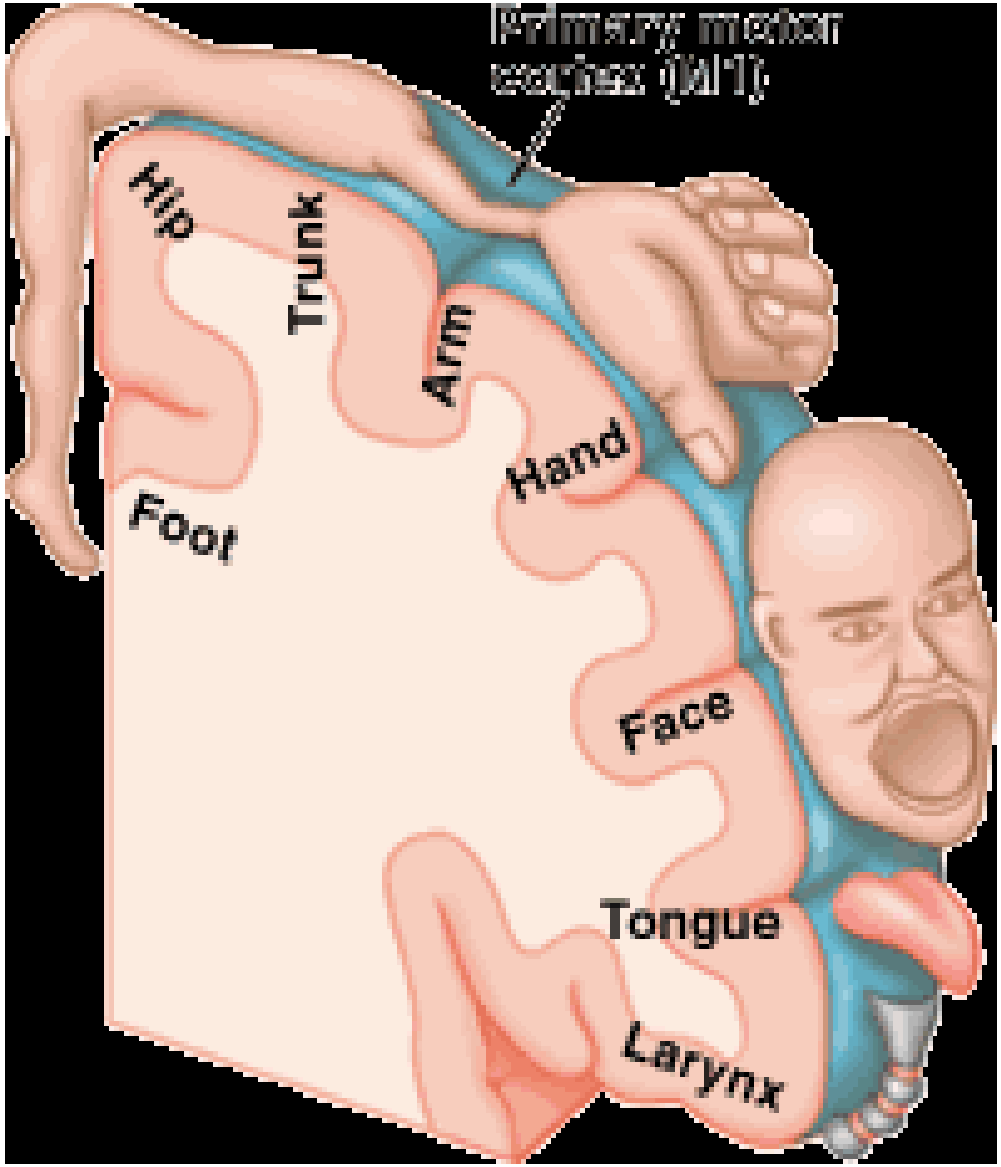
The precentral gyrus (the motor area)

- Lies immediately anterior to the central sulcus.
- Control voluntary movements on the opposite side of the body.



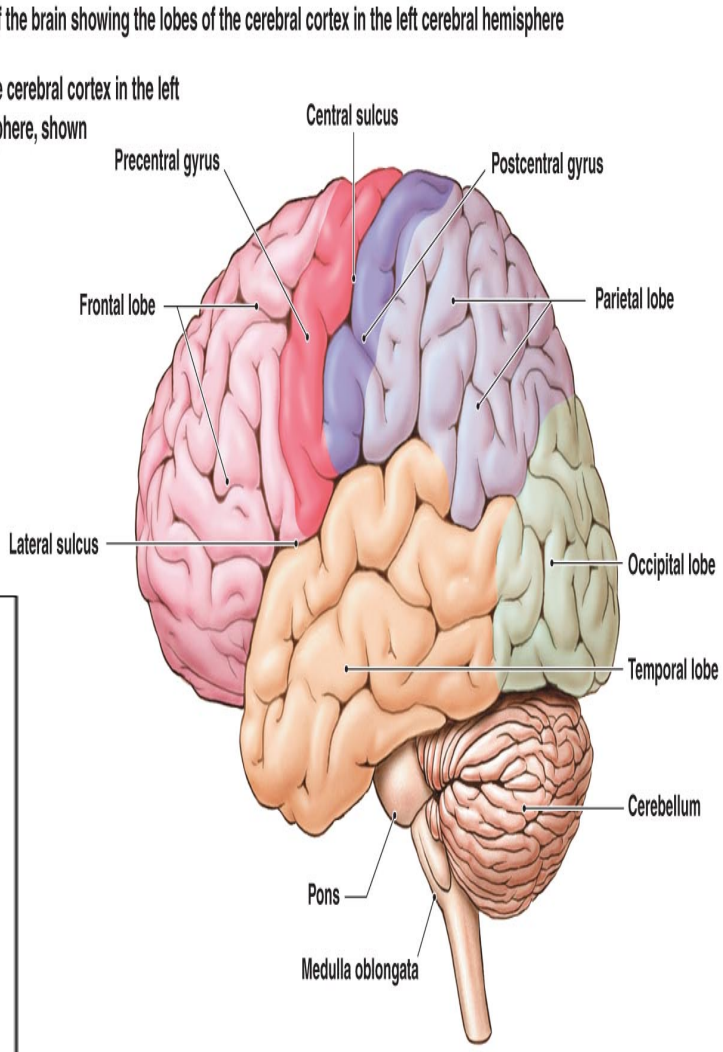
The precentral gyrus (the motor area)

- It is represented in an inverted position So that:
- The nerve cells controlling the movements of the feet located in the upper part
- Those controlling the movements of the face and hands in the lower part .



The postcentral gyrus (sensory area)

- Lies immediately posterior to the central sulcus.
- The nerve cells in this area receive sensations of pain, temperature, touch, and pressure from the opposite side of the body.



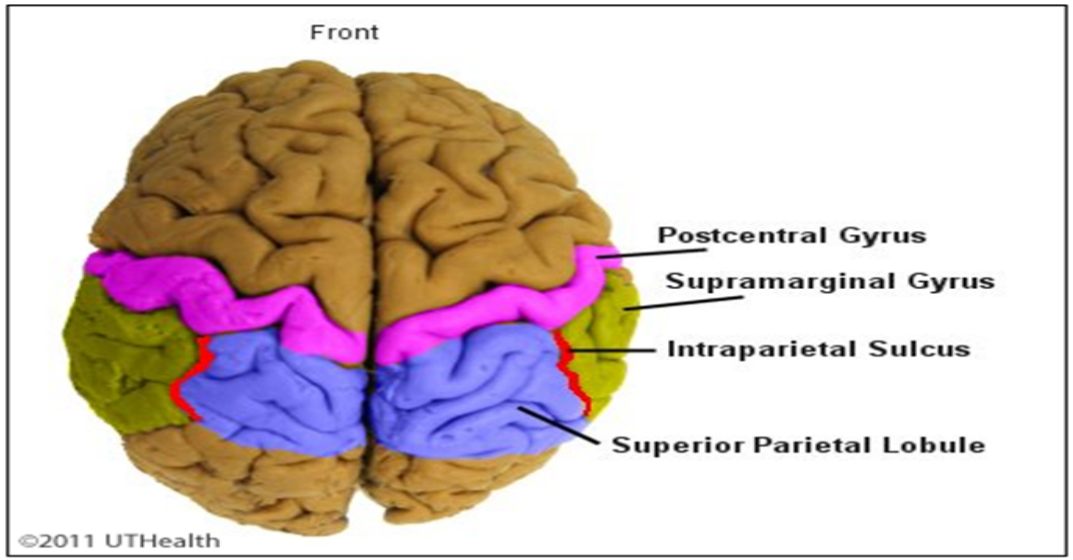
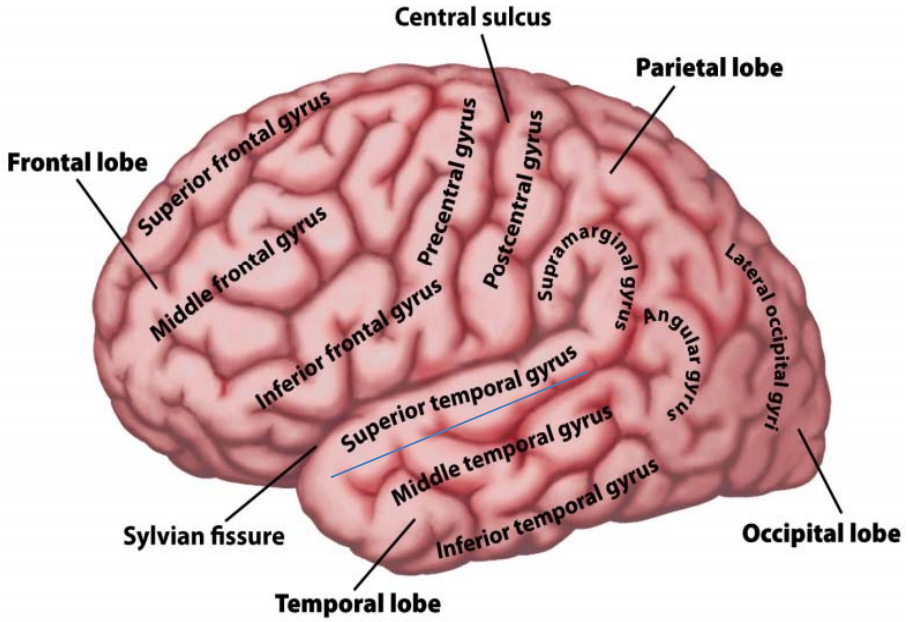


Figure 2 - Superior View

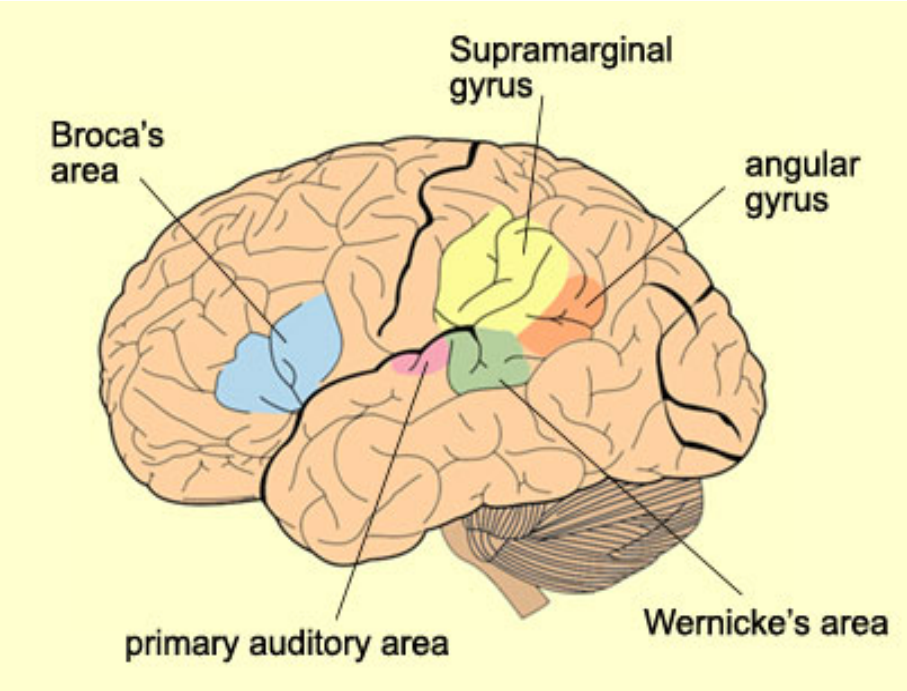
Superior temporal gyrus:

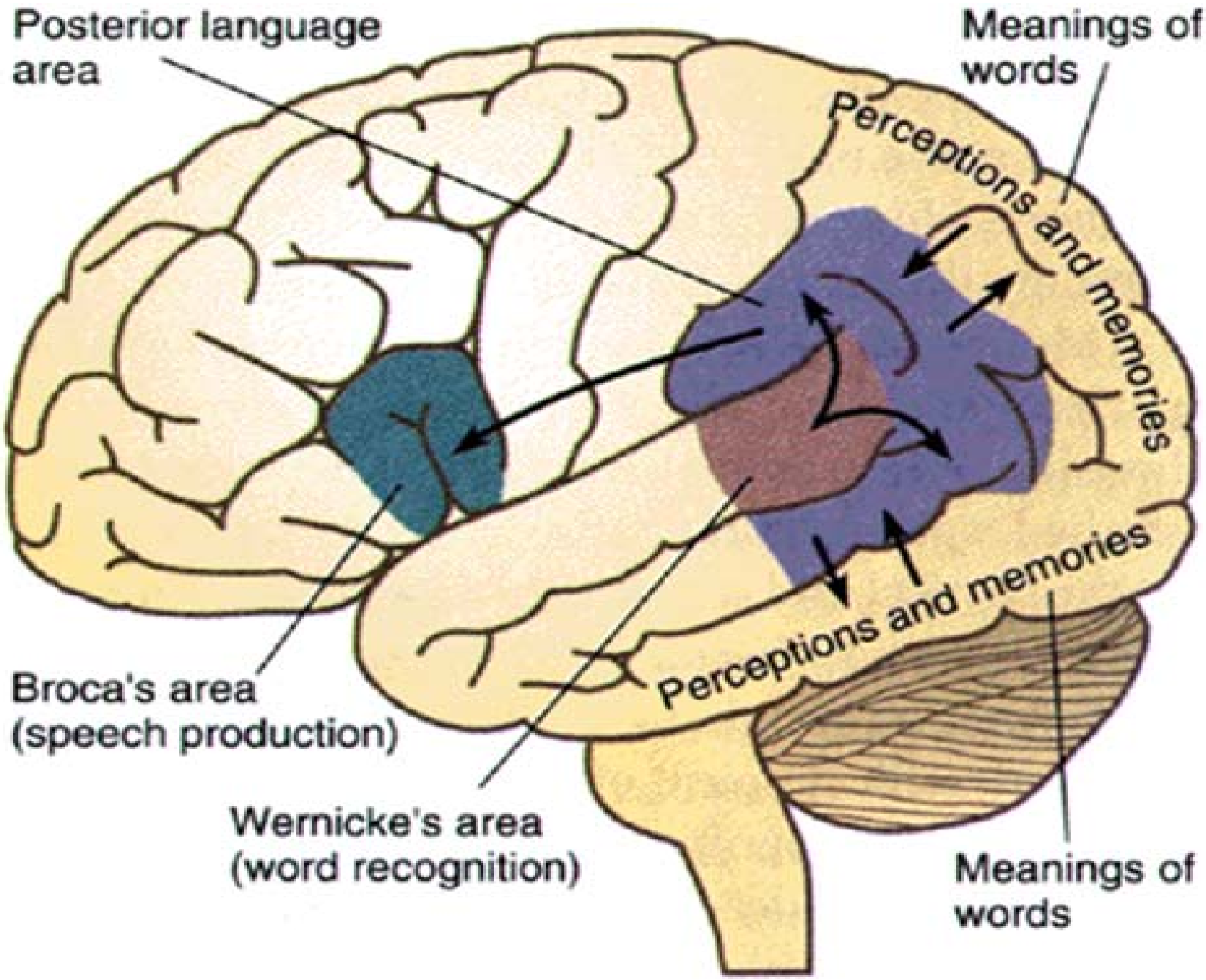
- Lies immediately below the lateral sulcus.
- The middle of this gyrus (auditory area).



Inferior frontal gyrus:

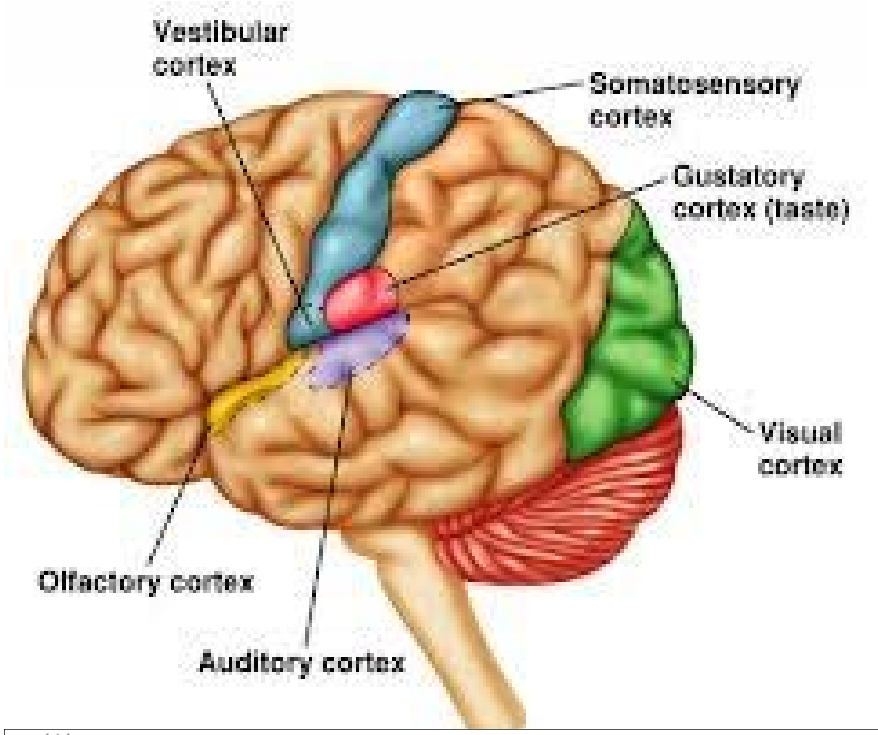
- Broca's area(motor speech area) , lies just above the lateral sulcus.

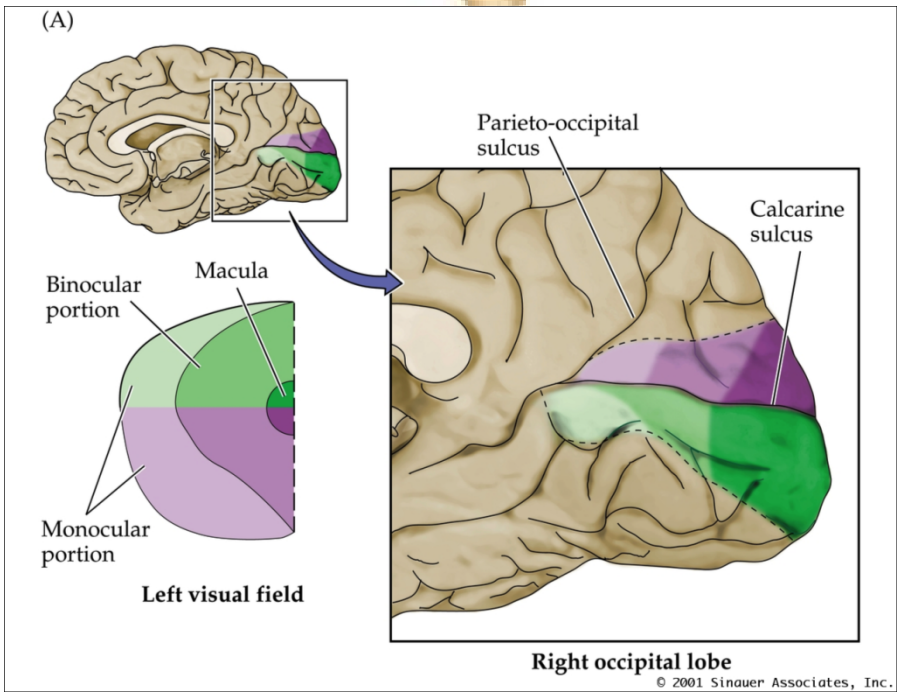



Posterior language area
Meanings of words
Perceptions and memories
Perceptions and memories
Broca's area (speech production)
Wernicke's area (word recognition)
Meanings of words

The visual area

- It is situated on the posterior and medial aspect of the cerebral hemisphere in the region of the calcarine sulcus .
- It is the receiving area for visual impressions.

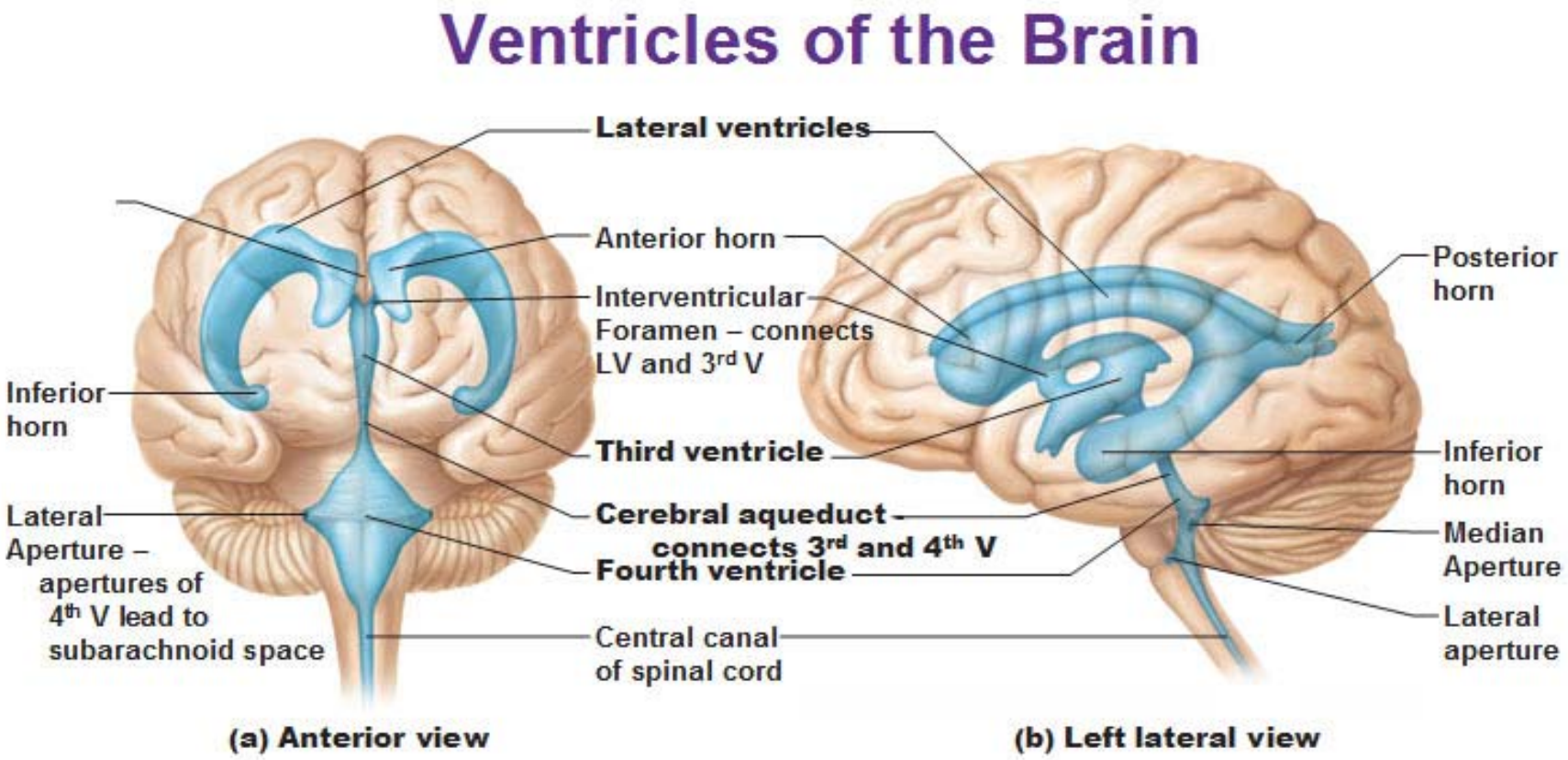




The lateral ventricles

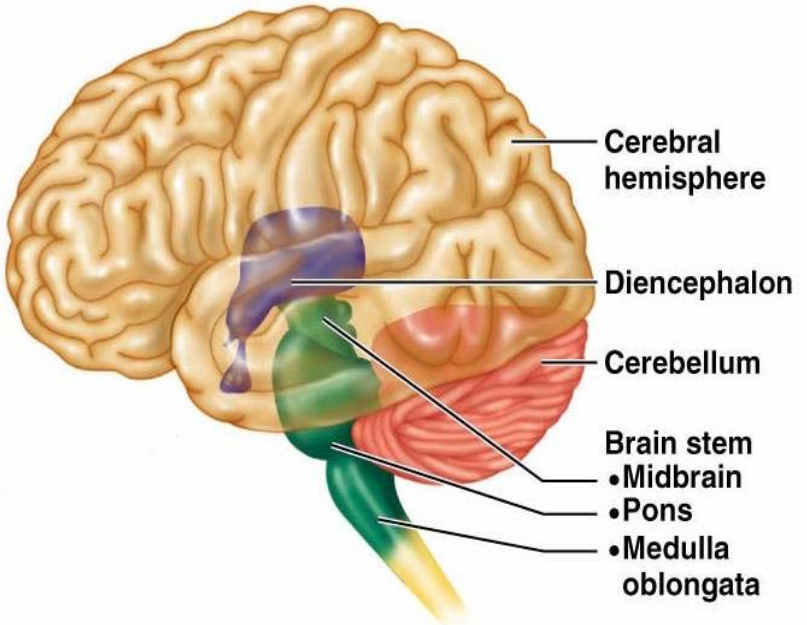
Is the cavity present within each cerebral hemisphere.

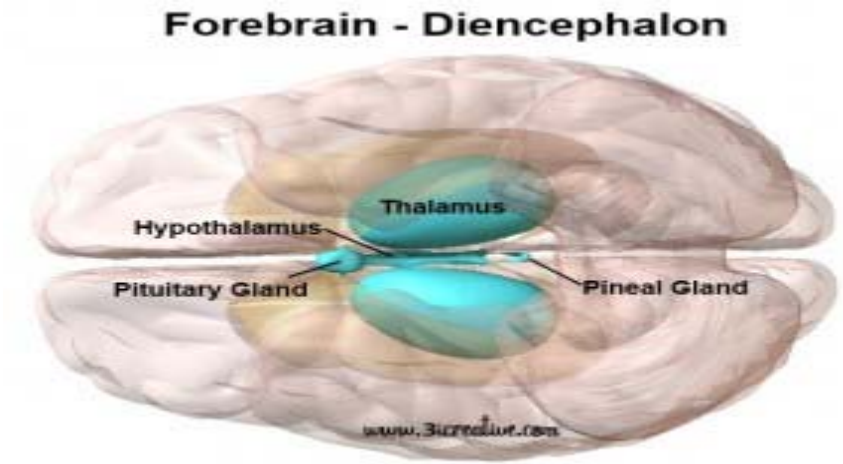
Communicate with the third ventricle through the interventricular foramina

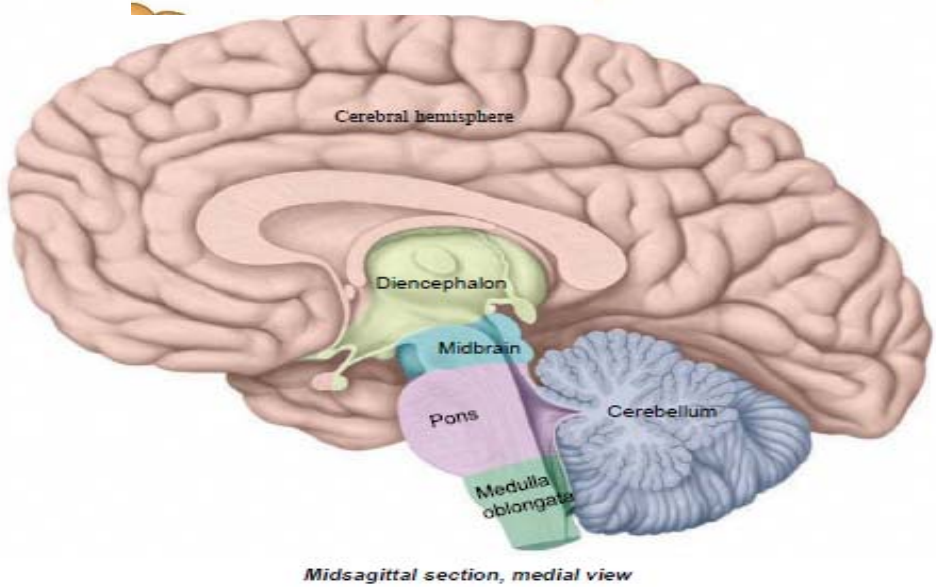


Diencephalon

- Paired structure
- Located between the brain stem and the cerebral hemisphere
- Forms the lateral wall of the 3rd ventricle

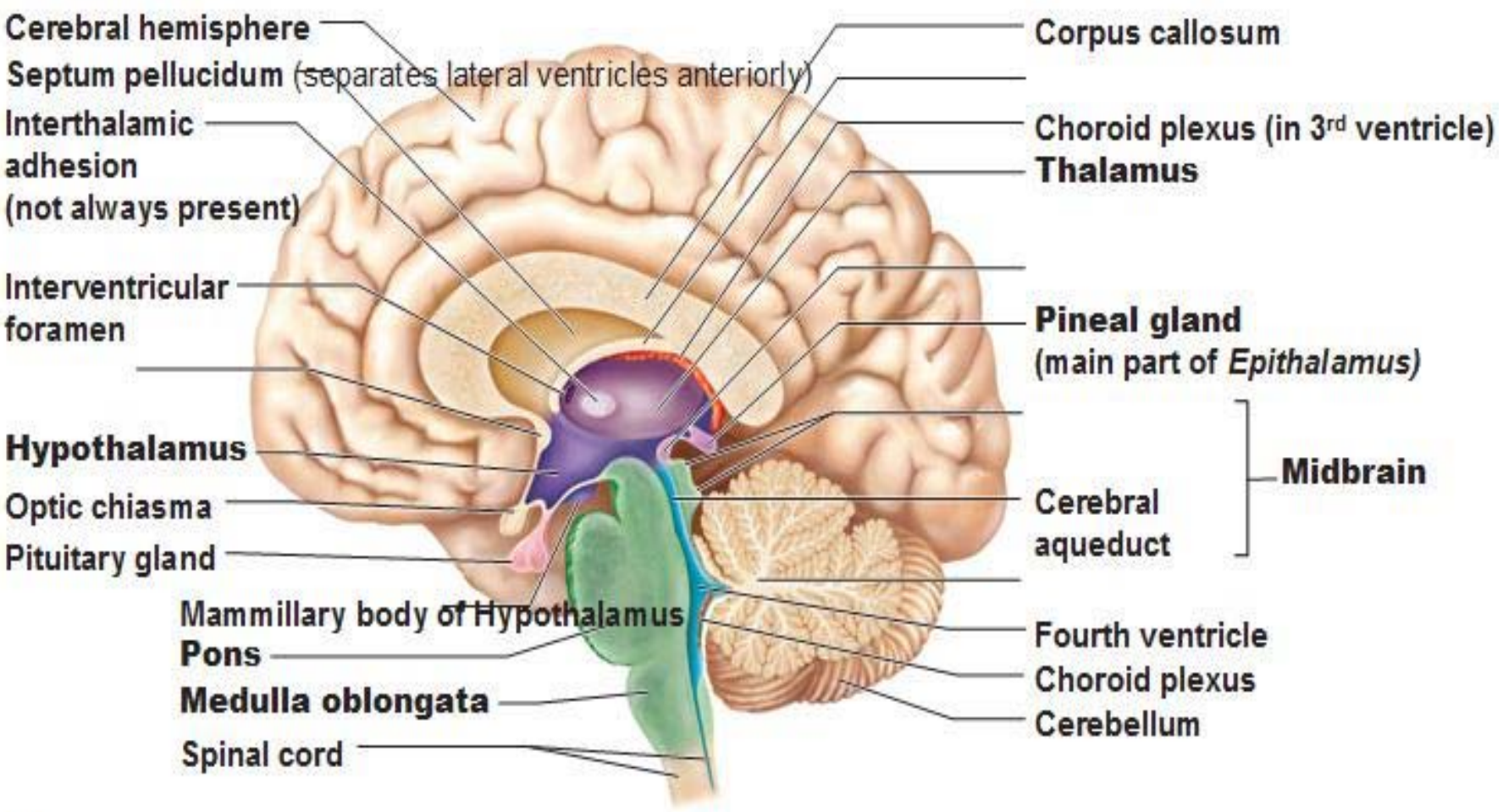






Midsagittal section, medial view

The Diencephalon (and Brainstem)

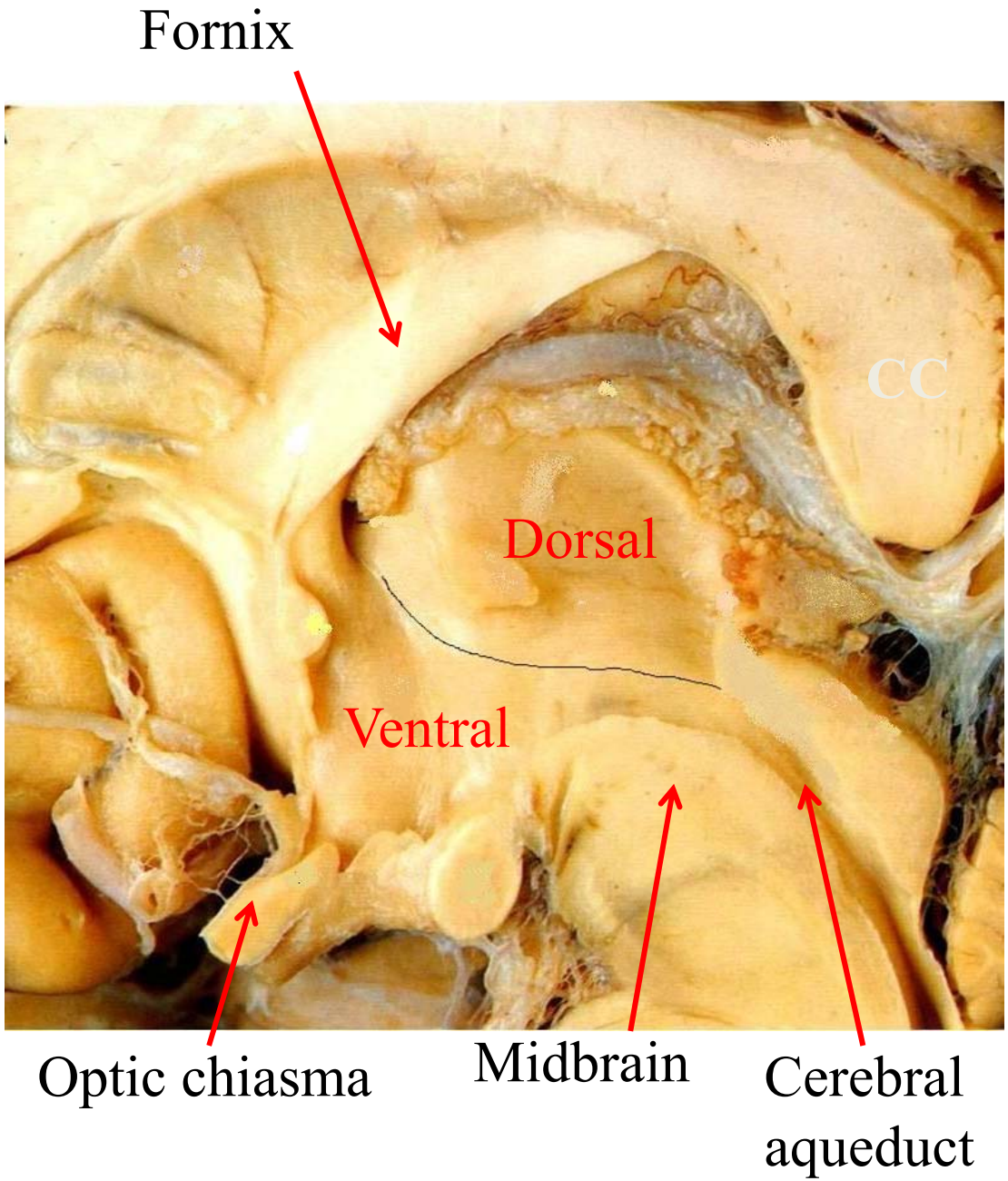


(a)

On the medial surface, the diencephalon is subdivided, by hypothalamic sulcus (indicated by black line) into:

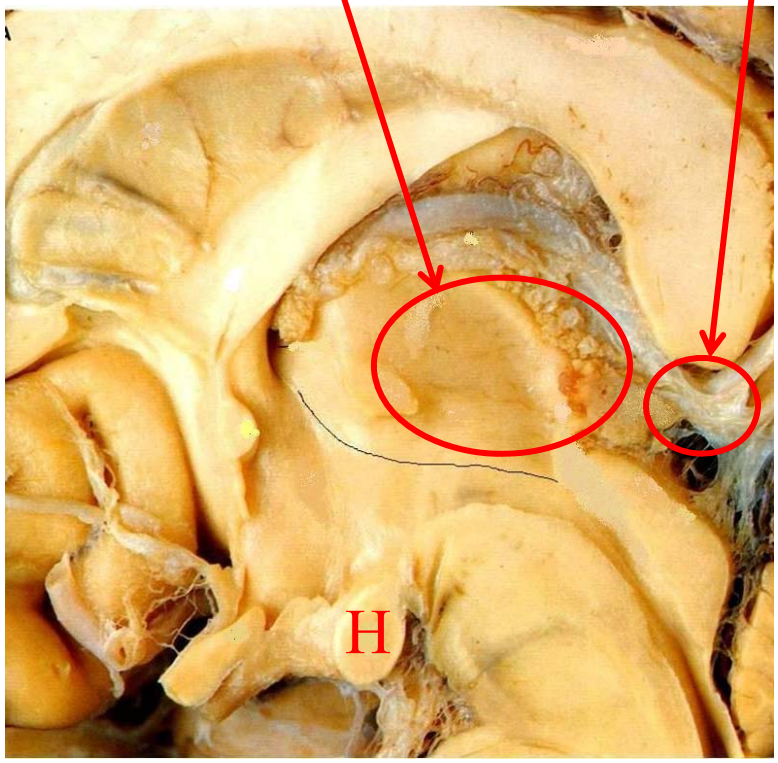
-Dorsal part

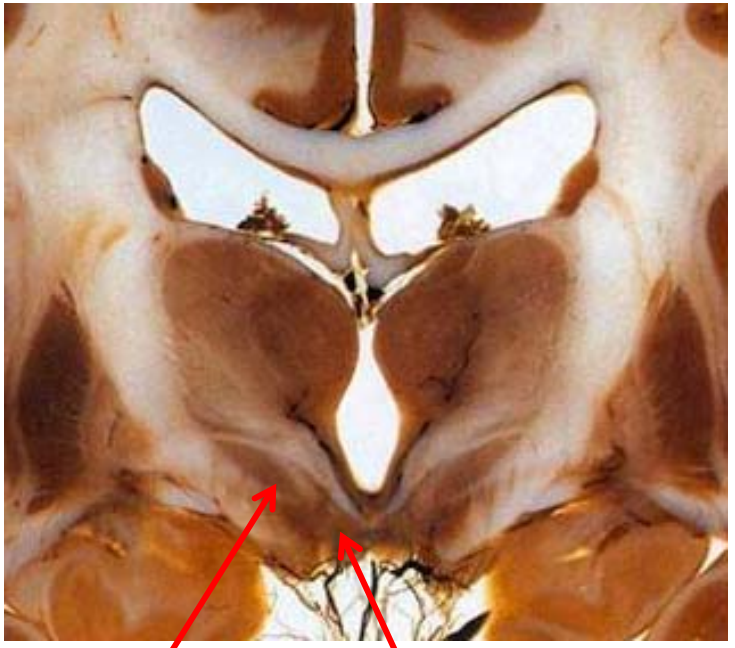
-Ventral part



Dorsal part

Thalamus & Epithalamus

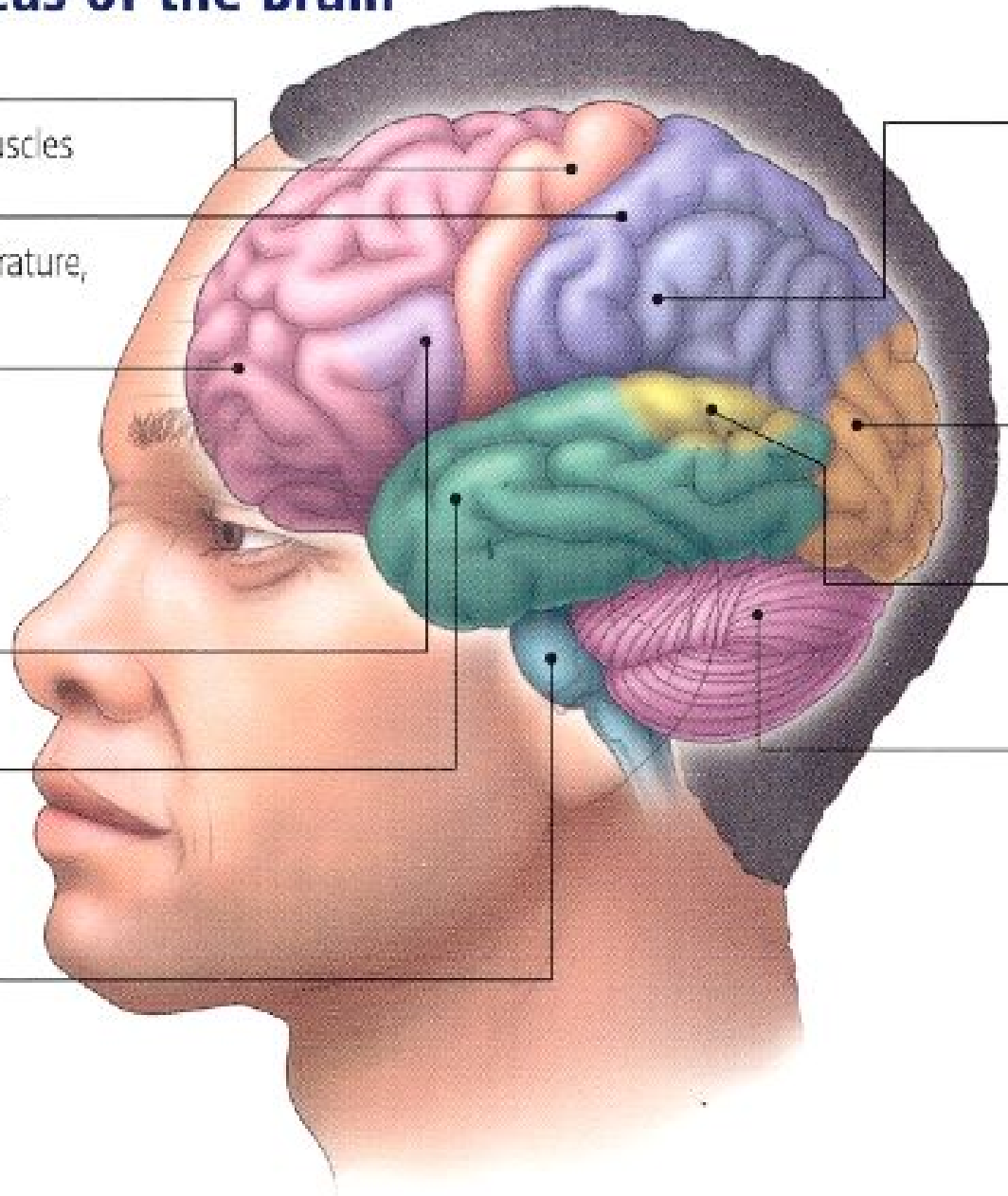




Subthalamus & Hypothalamus

Ventral part

Functional Areas of the Brain[1]



Motor Area
- control of voluntary muscles

Sensory Area
- skin sensations (temperature, pressure, pain)

Frontal Lobe
- movement
- problem solving
- concentrating, thinking
- behaviour, personality, mood

Broca's Area
- speech control

Temporal Lobe
- hearing
- language
- memory

Brain Stem
- consciousness
- breathing
- heart rate

Parietal Lobe
- sensations
- language
- perception
- body awareness
- attention

Occipital Lobe
- vision
- perception

Wernicke's Area
- language comprehension

Cerebellum
- posture
- balance
- coordination of movement