

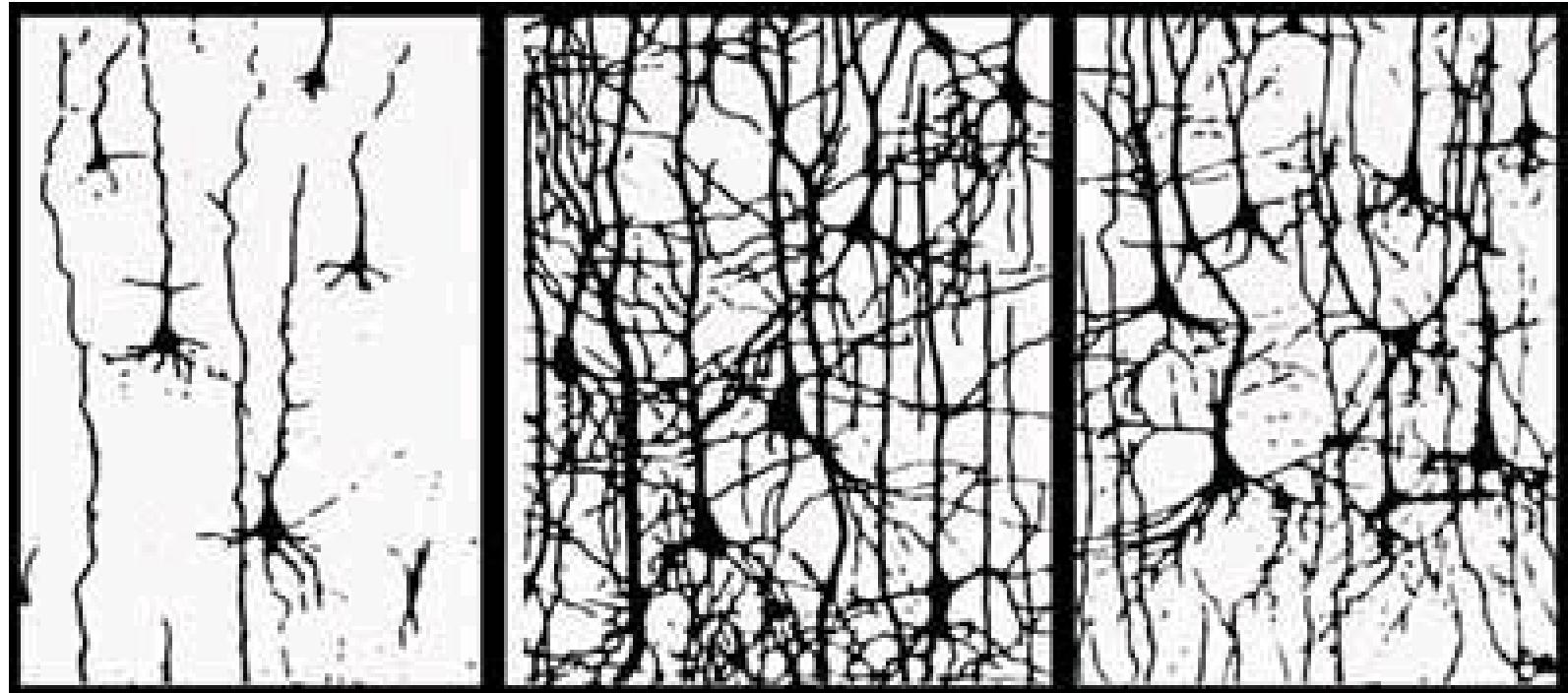
–Cerebral Cortex  
–Limbic system  
–Basal Ganglia

Thalamus  
Hypothalamus  
Epithalamus

Pons:  
Cerebellum

portion of the fourth ventricle;  
trigeminal nerve (CN V),  
abducens nerve (CN VI),  
facial nerve (CN VII), and a portion of the vestibulocochlear nerve (CN VIII).

Myelencephalon  
Medulla



At Birth

6 Years Old

14 Years Old

## Synaptic Density in the Human Brain

# Key words that you need to know

- Cerebrum :

- Cerebral hemispheres
- Longitudinal fissures
- Cerebral cortex
- Sulcus
- Gyri
- all lobes
- Gyruses
- Insula
- Cerebral white matter
- Corpus callosum
- Fornix
- Septum pellucidum
- ventricles

- Cerebellum

- Transverse fissure
- Vermis
- Cerebellar hemispheres
- Arbor vitae

- Cranial nerves

- Olfactive
- Olfactive bulbs
- Olfactory tracts
- Optic nerves
- Optic chiasma
- Oculomotor nerves
- Trigeminal nerves

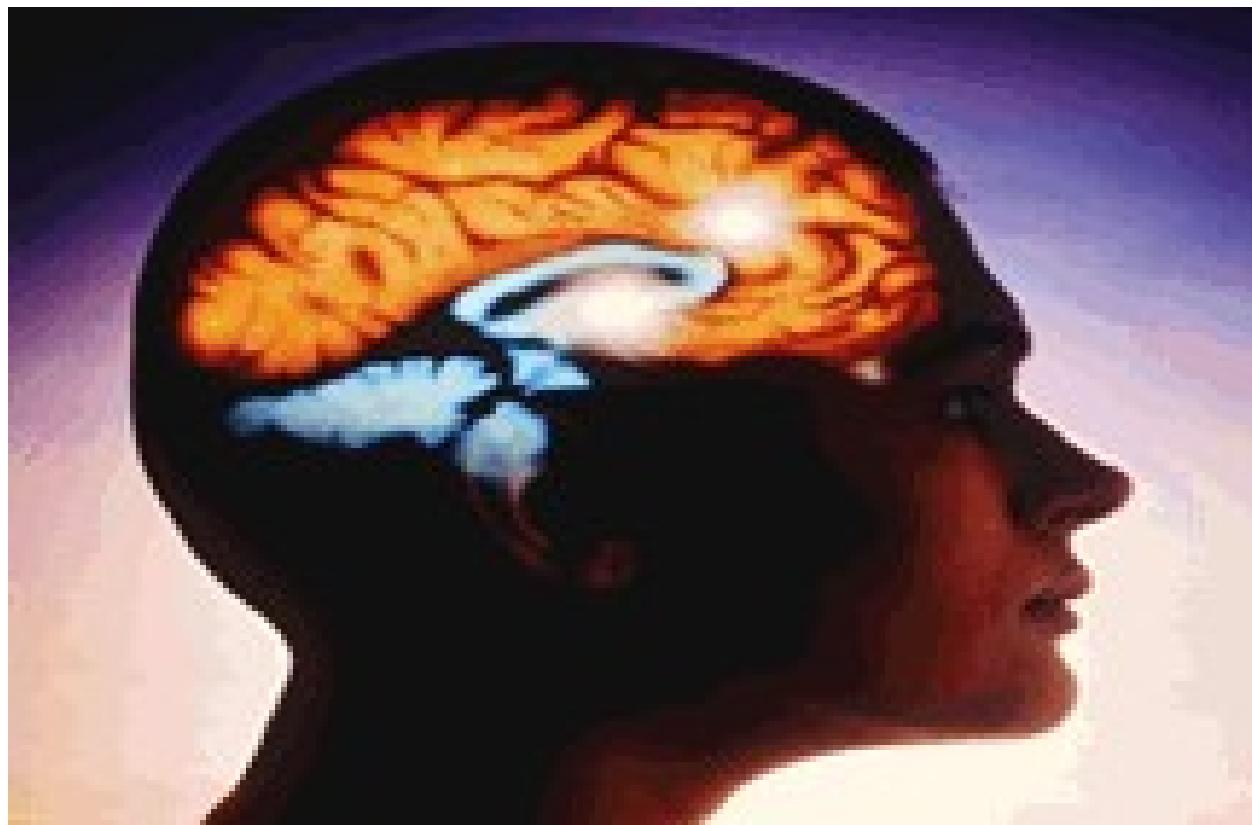
- Diencephalon

- Thalamus
- Hypothalamus
- Intermediate mass
- Mamillary bodies
- Pituitary gland
- Infundibulum
- Choroid plexus
- 3<sup>rd</sup> ventricle
- Csf

- Brain stem

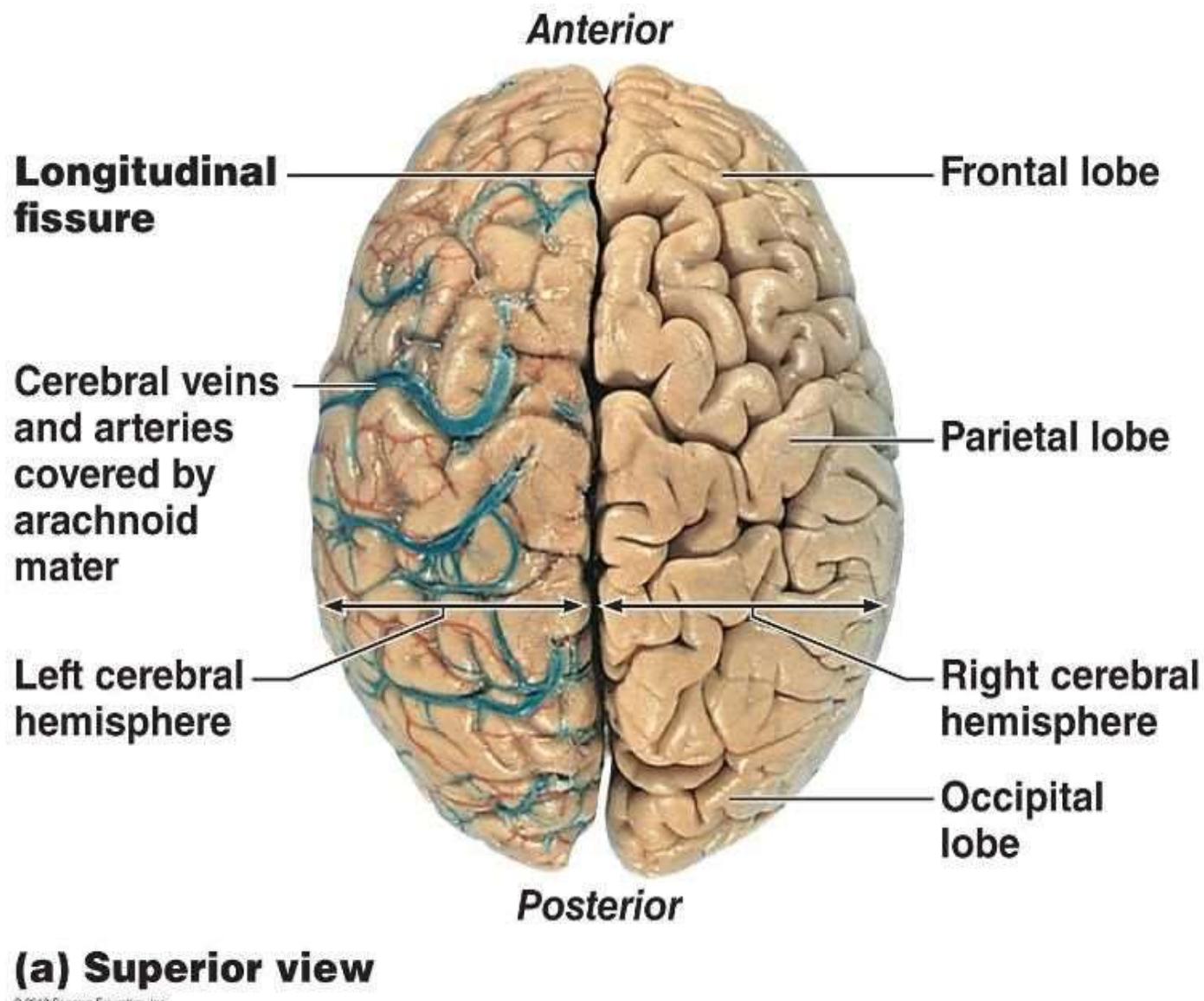
- Midbrain
- Tectum
- Corpora quadrigemina
- Superior and inferior colliculi
- Pons
- Nuclei
- Medulla oblongata [medulla]
- Cerebral aquaduct
- 4<sup>th</sup> ventricle

# Cerebrum

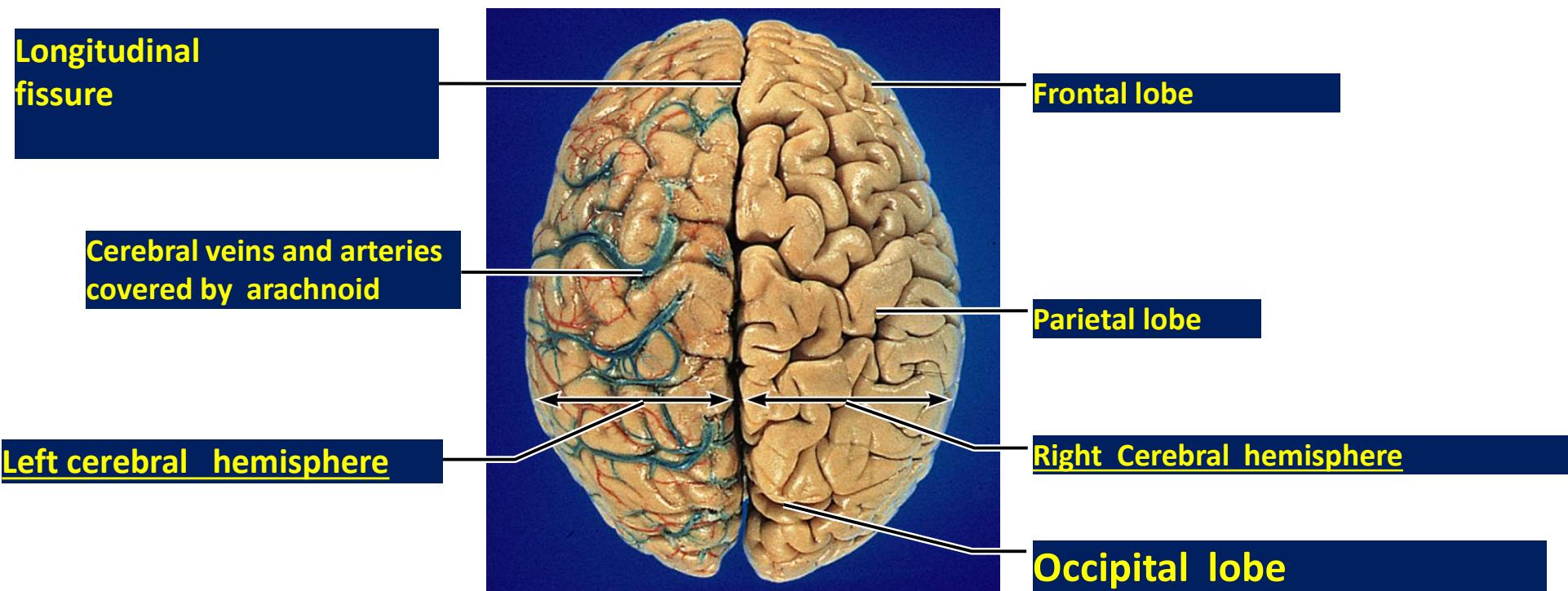


# Cerebrum -The largest division of the brain.

- The cerebrum is divided in to two hemispheres, **the right and left hemispheres** each of which is divided into four lobes
- The dividing point is a deep groove called **the longitudinal cerebral fissure**.
- The different sides of the cerebrum do different things for the opposite sides of the body.
  - The right side** of the cerebrum controls things such as imagination and 3-D forms.
  - the left side**, controls numbering skills, posture, and reasoning.



# Anterior



(c)

# Posterior

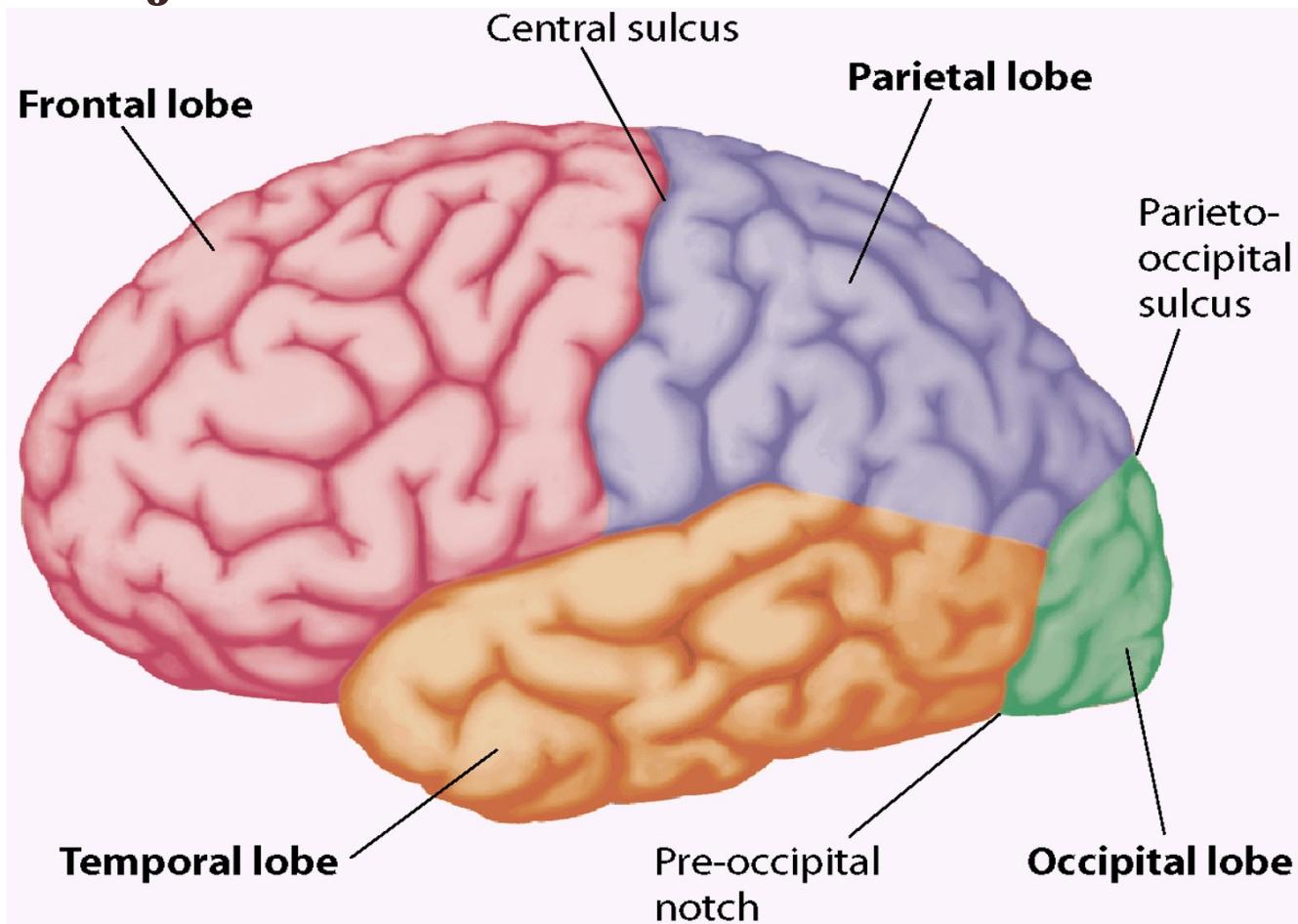
# Major Structures of the Cortex

- 5 Lobes

- Frontal Lobe
  - Parietal Lobe
  - Occipital Lobe
  - Temporal Lobe
  - Insula

- Major Fissures

- Central Sulcus
  - Longitudinal Fissure
  - Sylvian Fissure



- The lobes are distinguished both structurally and functionally*

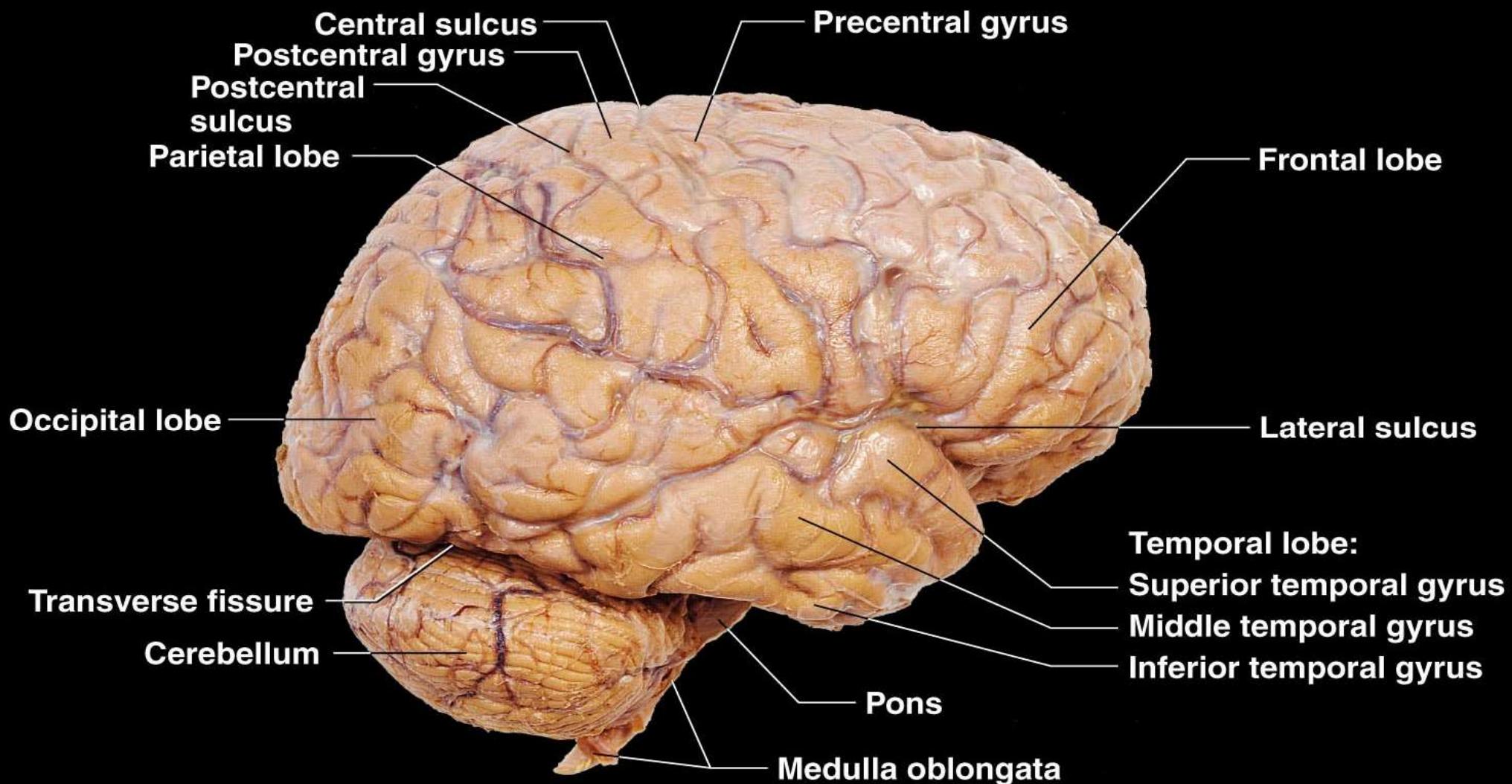


Figure 48 Right cerebral hemisphere (arachnoid mater removed).

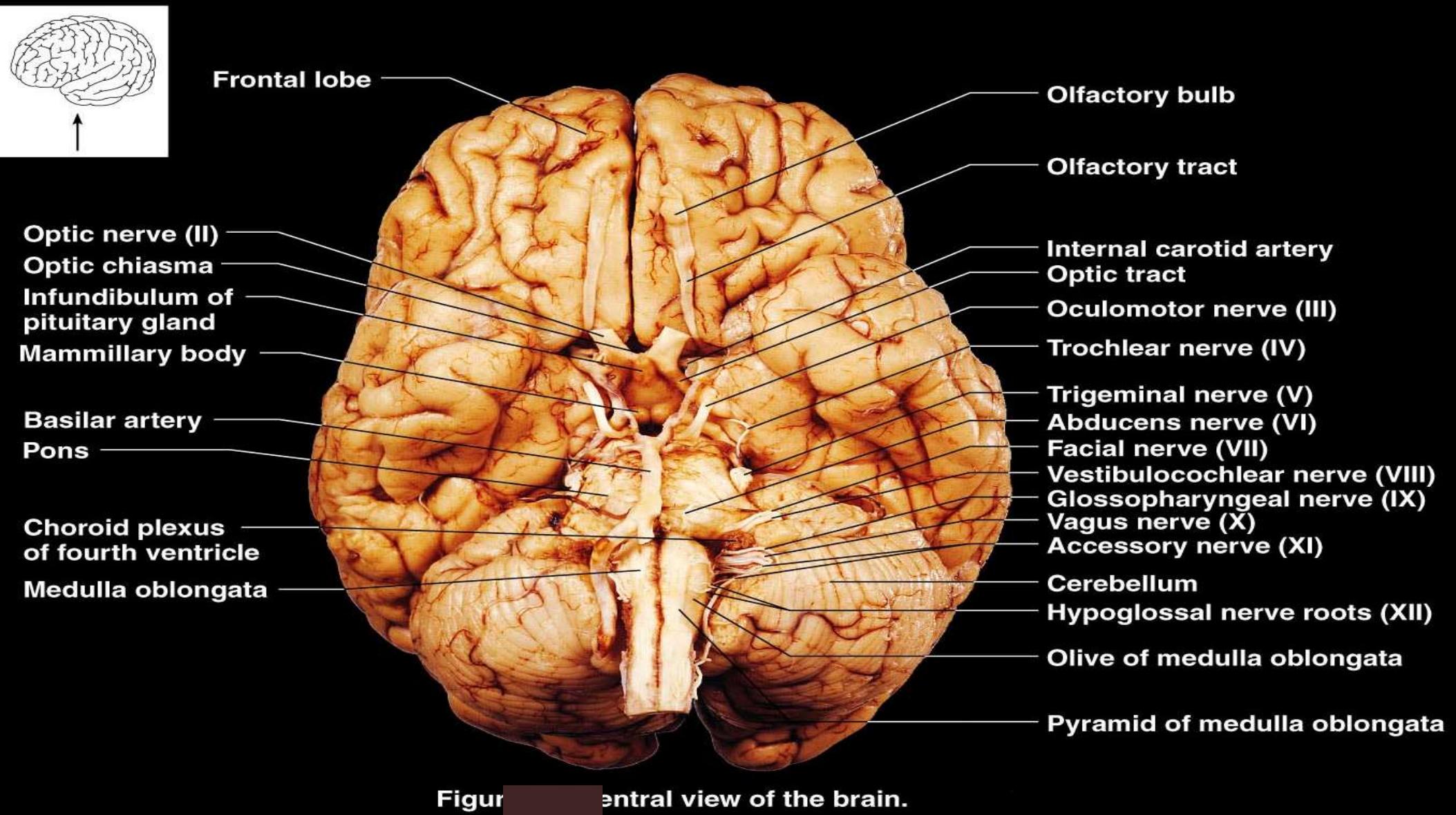


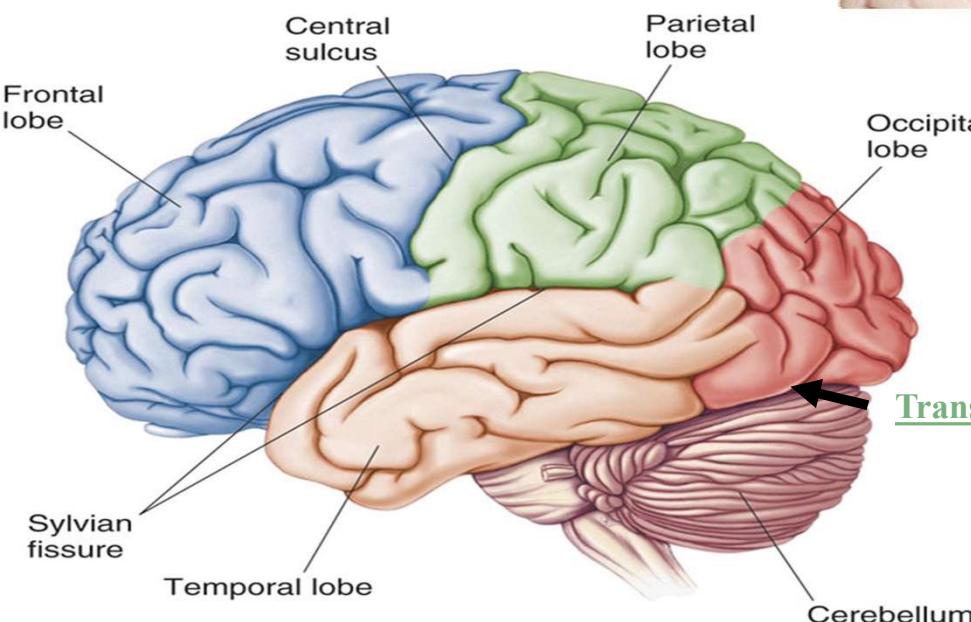
Figure 11-1 Central view of the brain.

Cerebral  
Features:

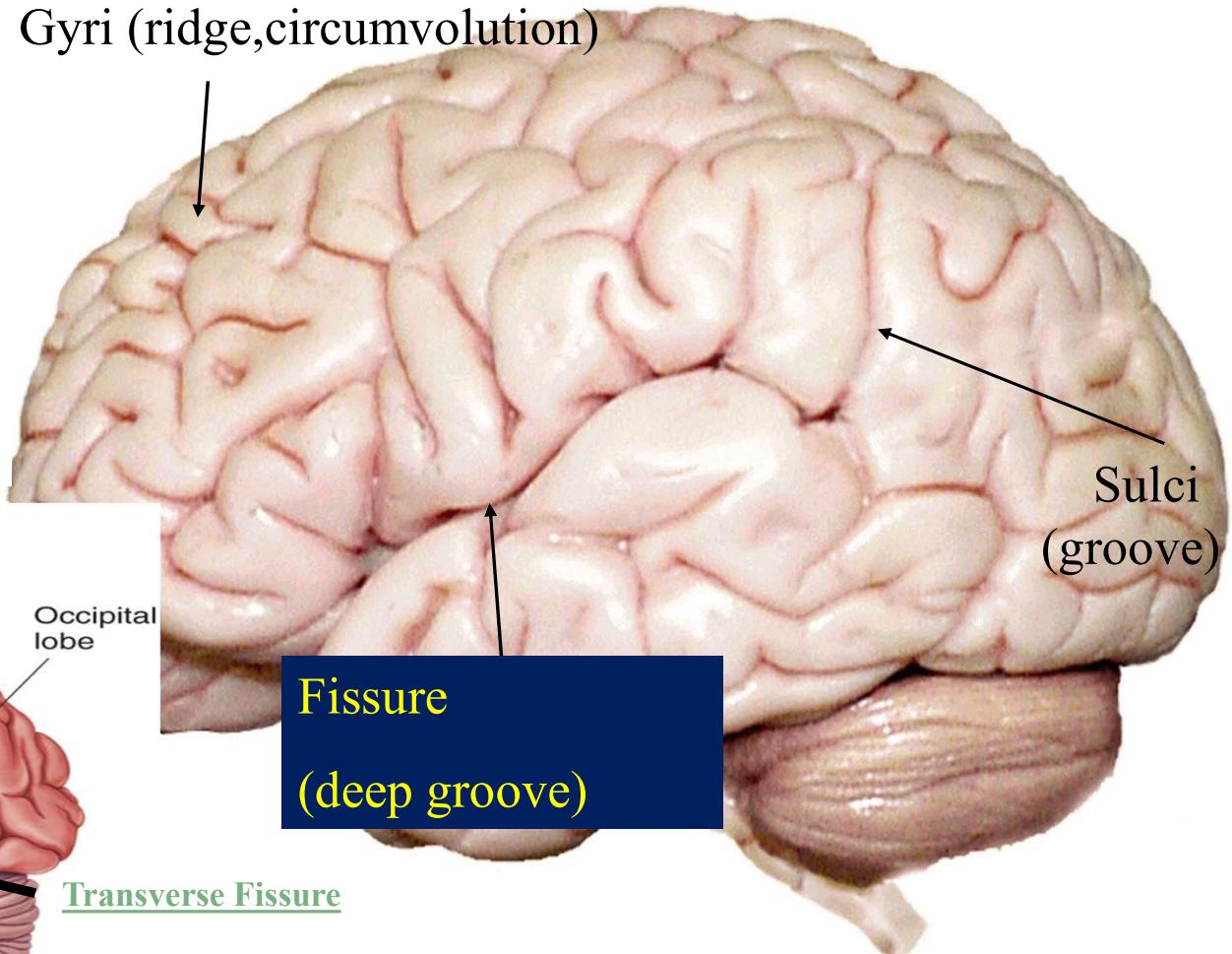


- Cerebral Features:

- **Gyri** – Elevated ridges “winding” around the brain.
- **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

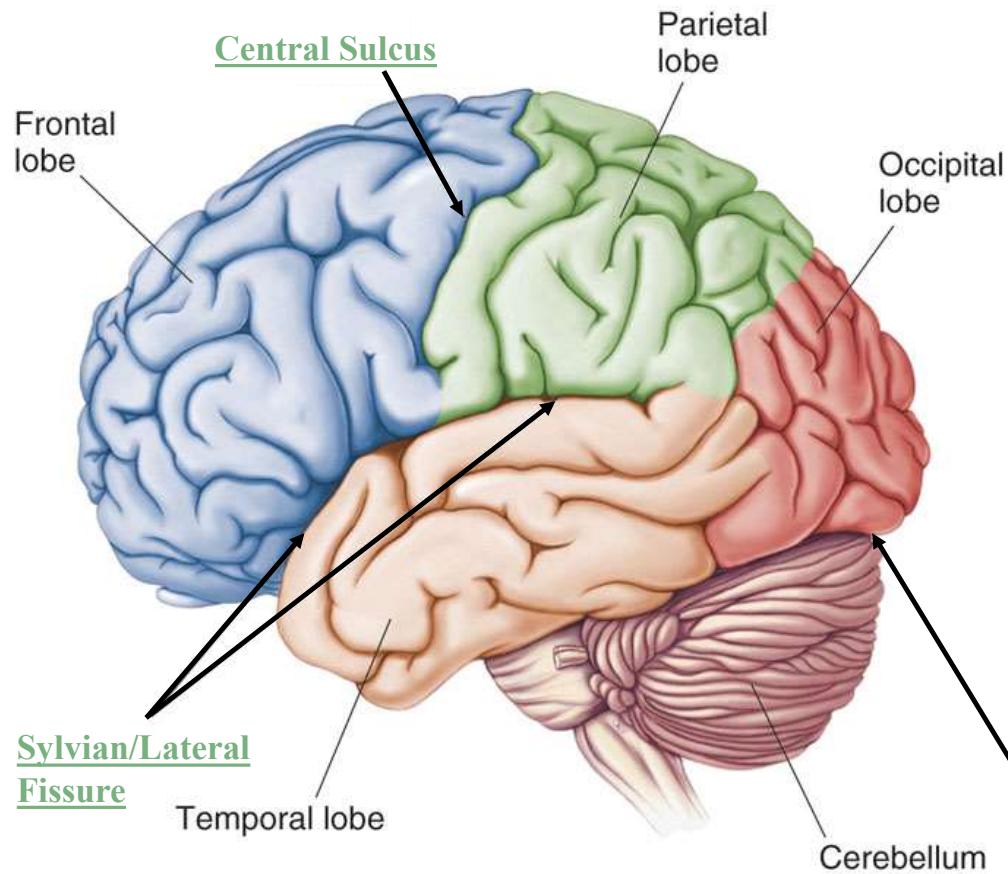


## Gyri (ridge, circumvolution)

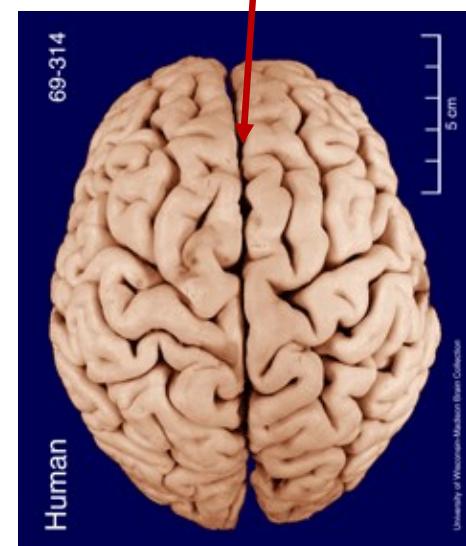


['orAllSeasons/img/bonoboLH-humanLH-viaTWD.gif](#)

## Specific Sulci/Fissures:



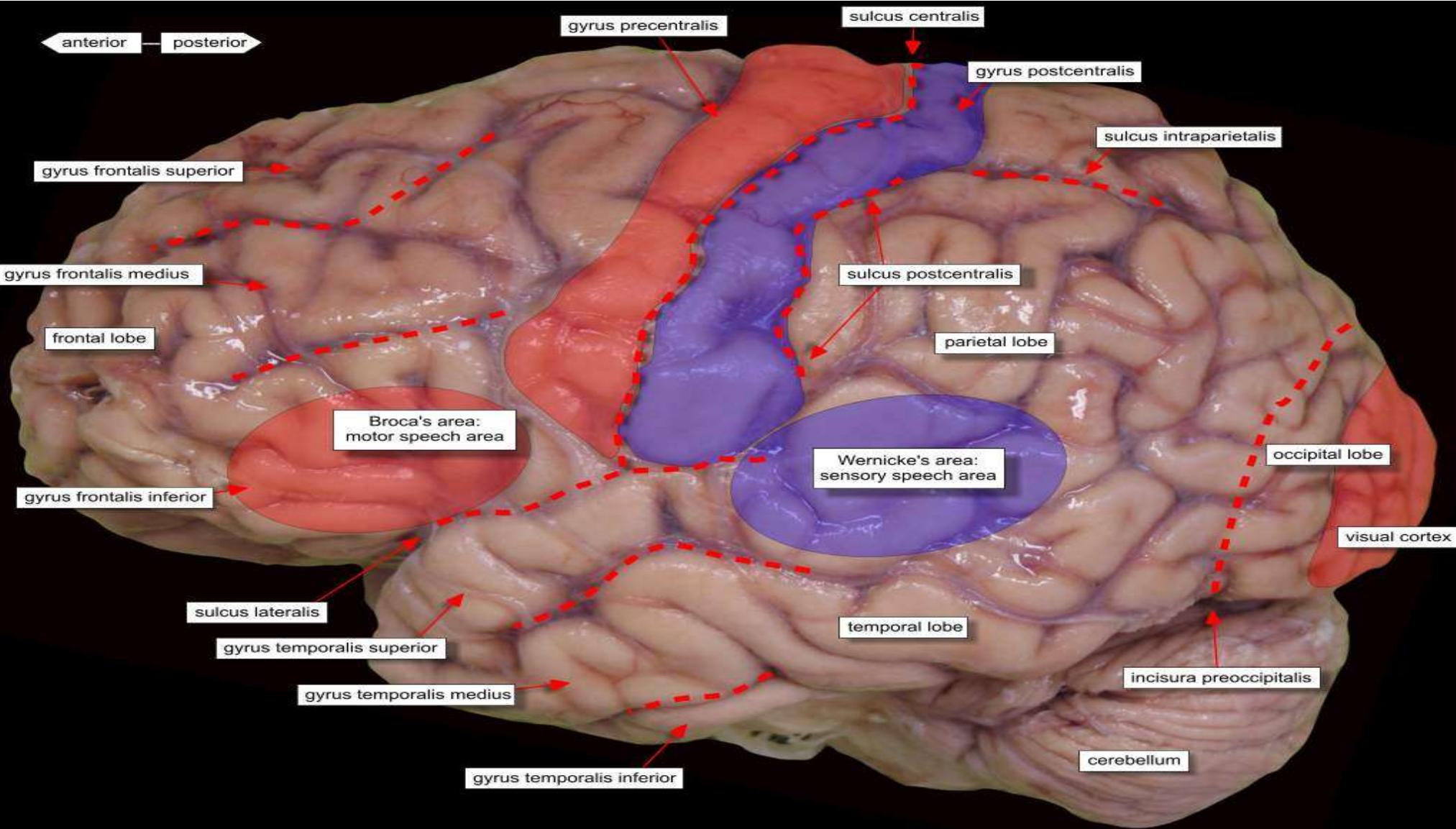
## Longitudinal Fissure



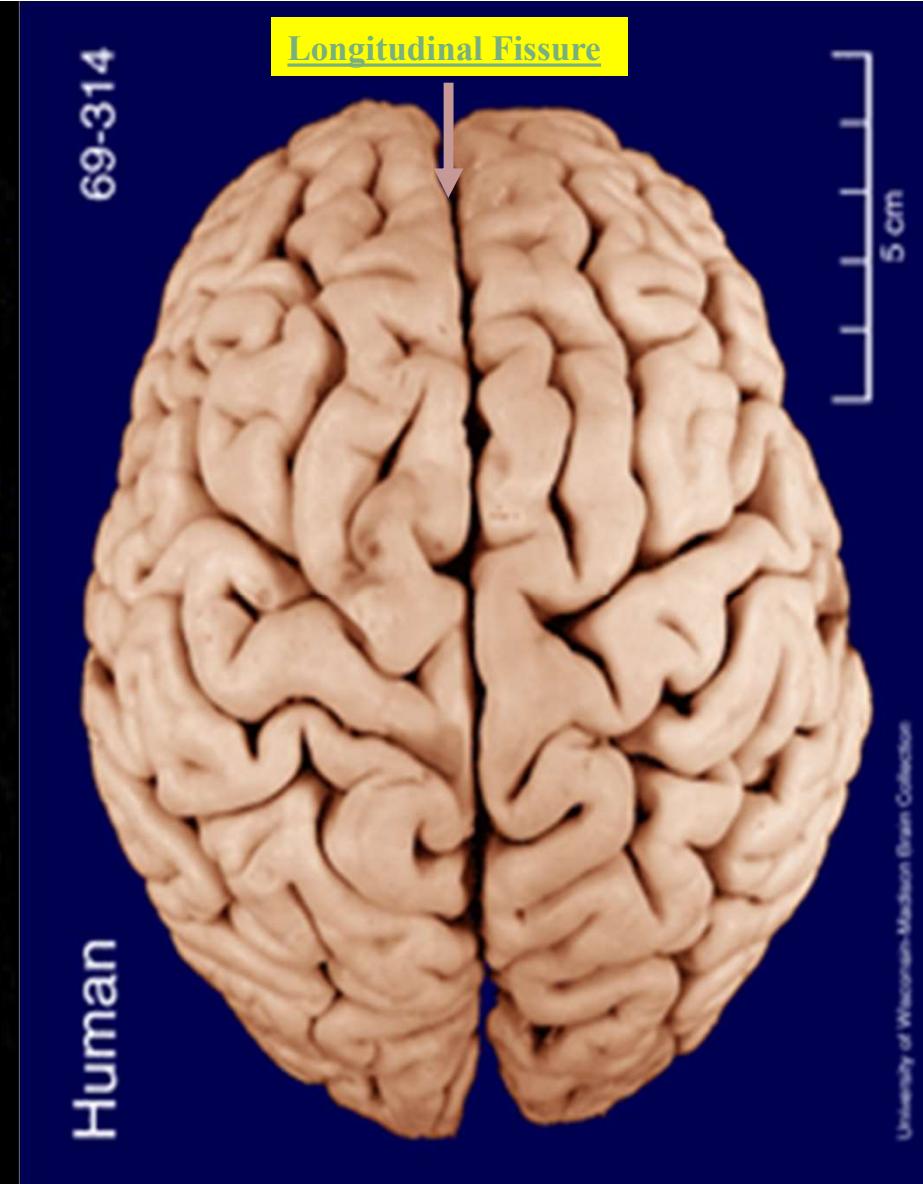
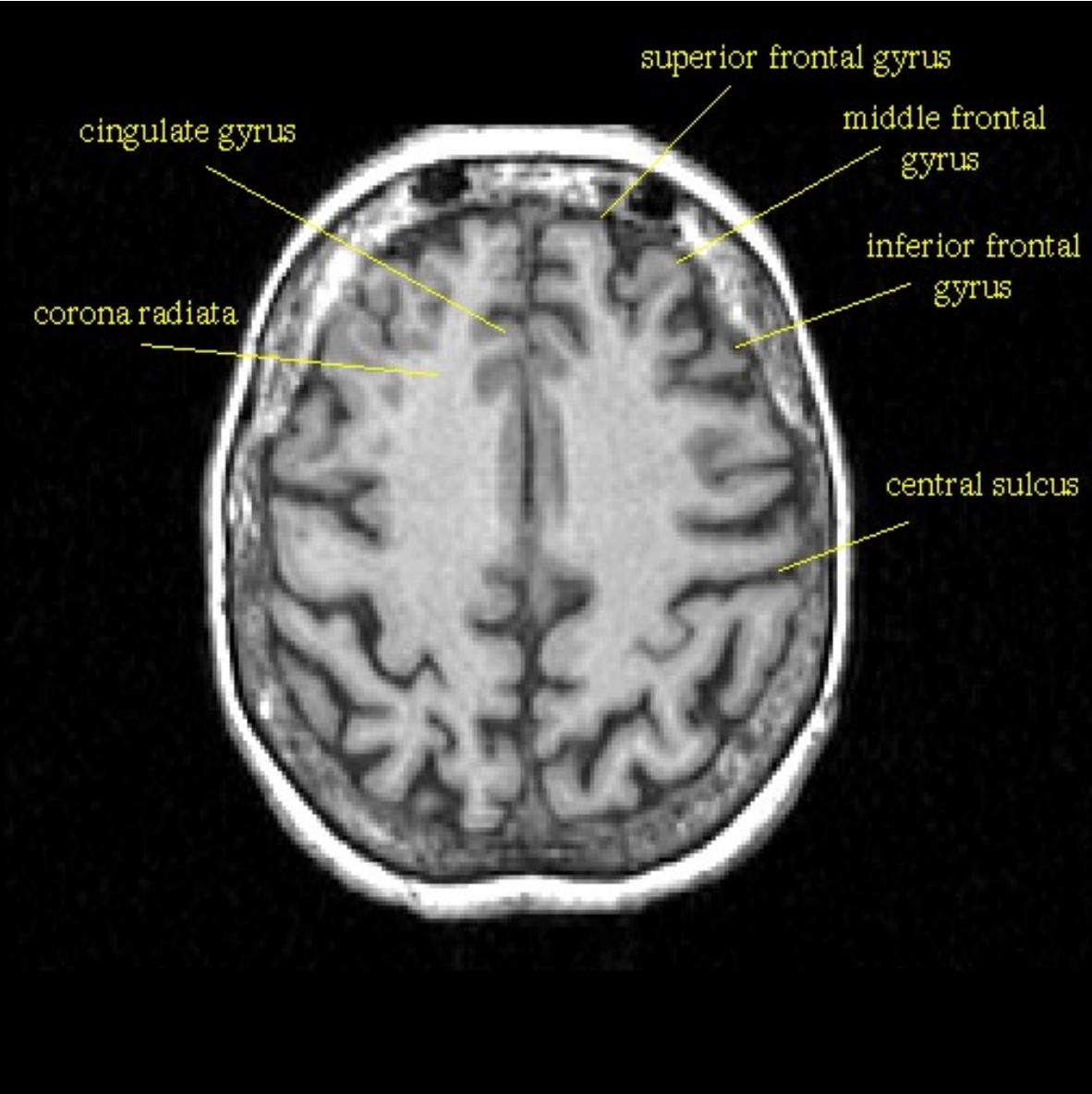
## Transverse Fissure

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

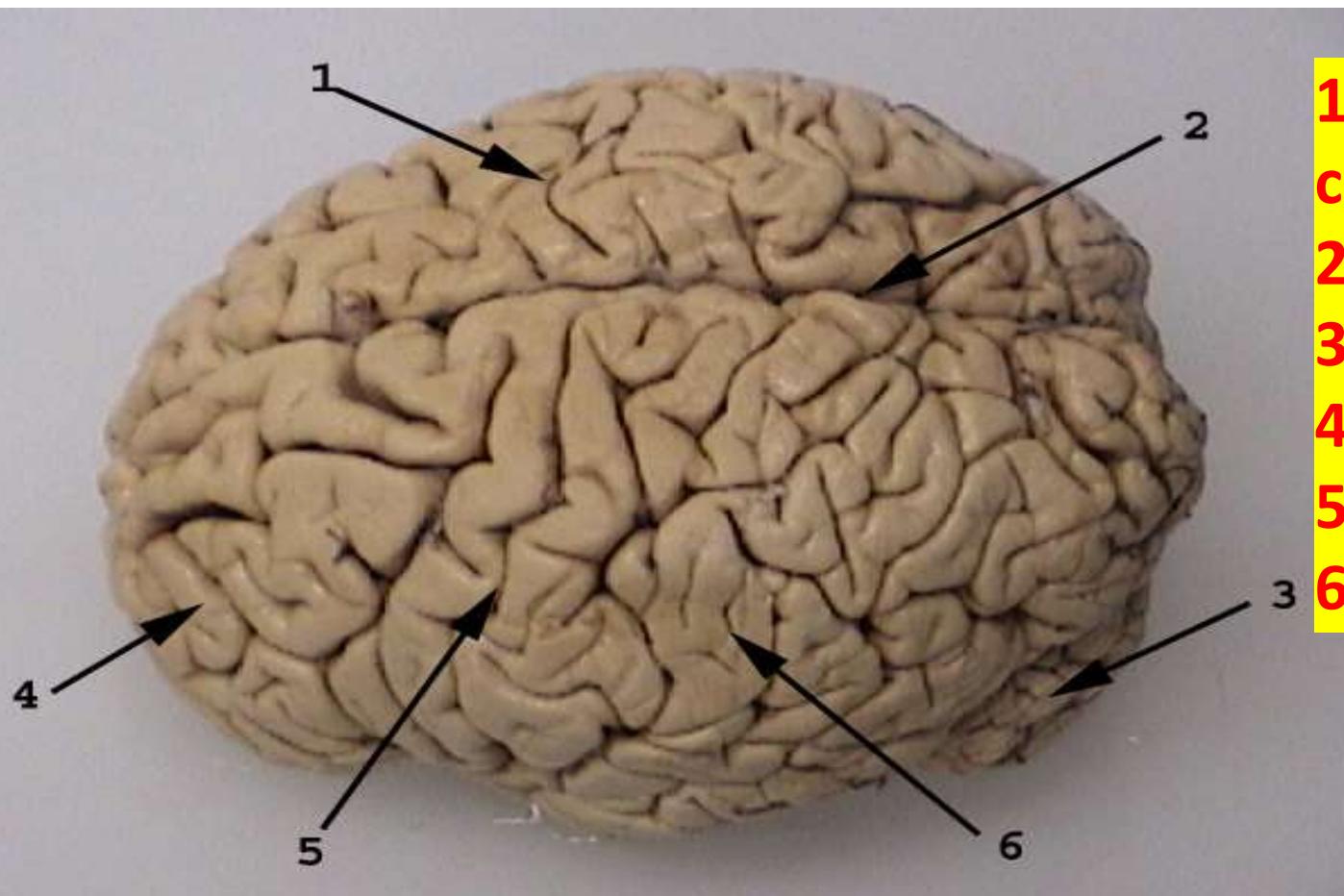
[http://www.dalbsoutss.eq.edu.au/Sheepbrains\\_Me/human\\_brain.gif](http://www.dalbsoutss.eq.edu.au/Sheepbrains_Me/human_brain.gif)







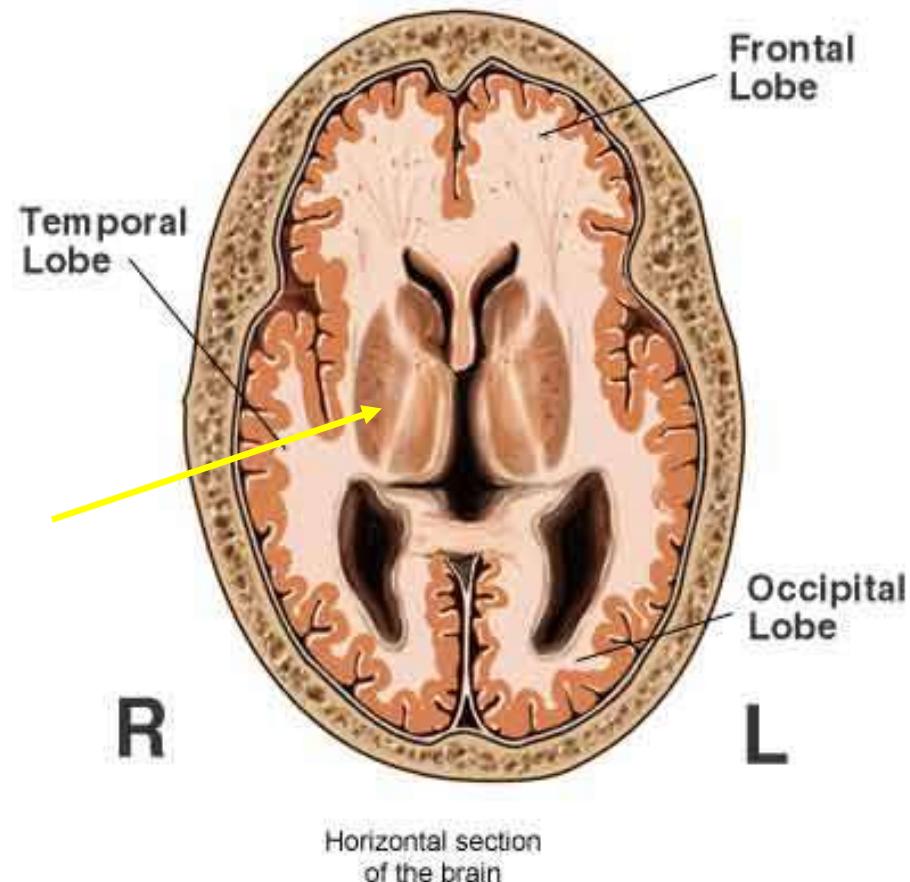
- The medial longitudinal fissure (or longitudinal cerebral fissure, or longitudinal fissure, or interhemispheric fissure) is the deep groove which separates the two hemispheres of the vertebrate brain.
- The falx cerebri, a dural brain covering, lies within the medial longitudinal fissure.

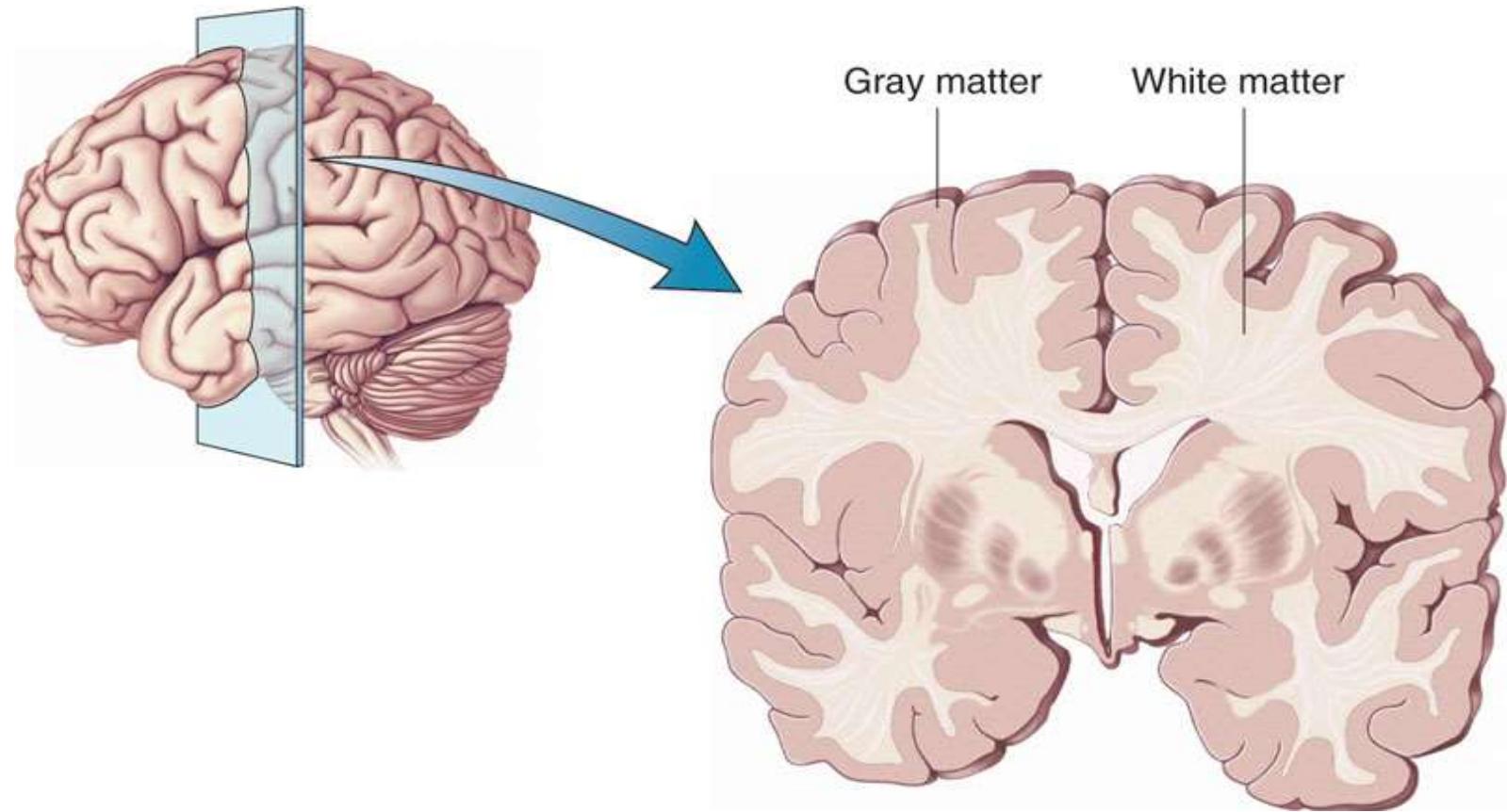


1. right cerebral cortex
2. longitudinal fissure
3. cerebellum
4. frontal lobe
5. central sulcus
6. parietal lobe

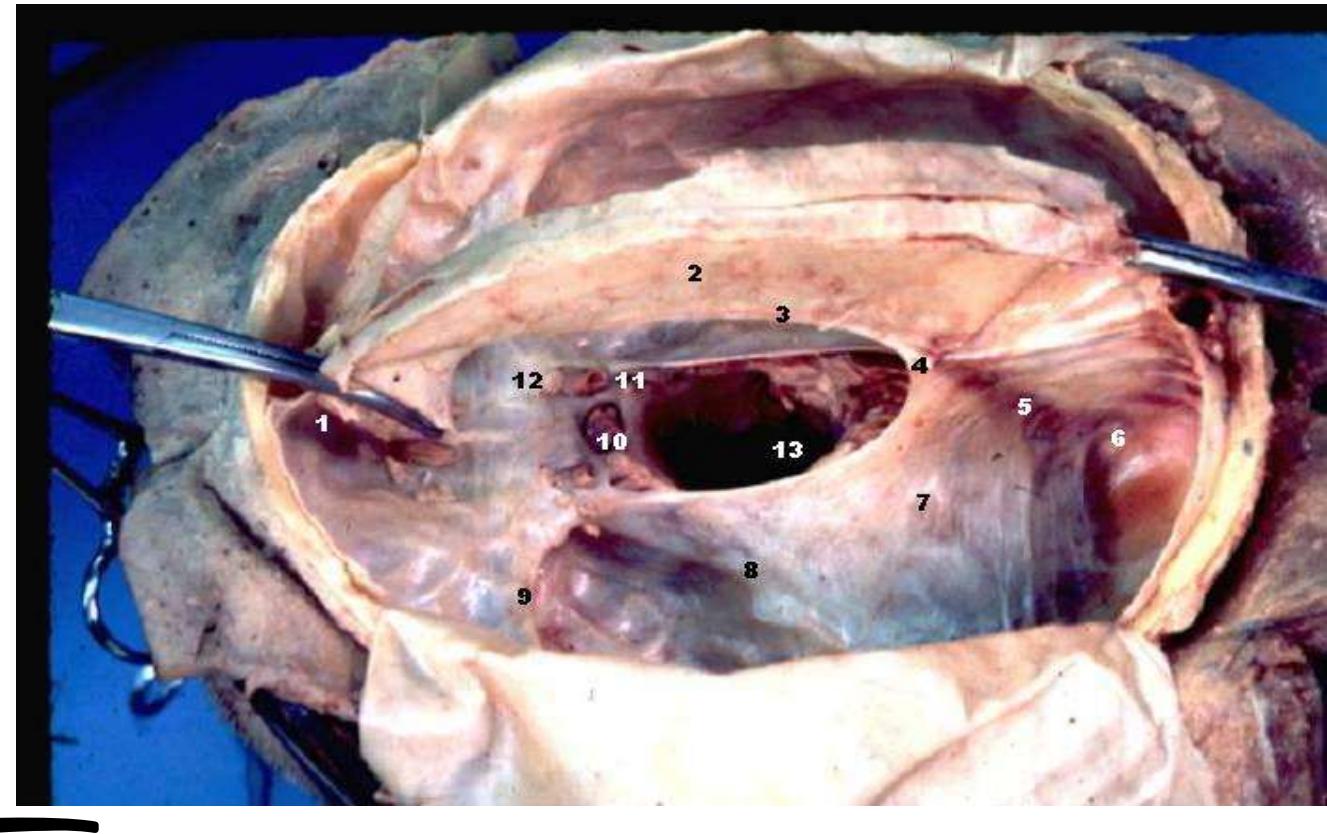
# Cerebrum

- Each cerebral hemisphere is divided into 3 regions:
  1. Superficial cortex of gray matter
  2. Internal white matter
  3. The basal nuclei – islands of gray matter found deep within the white matter

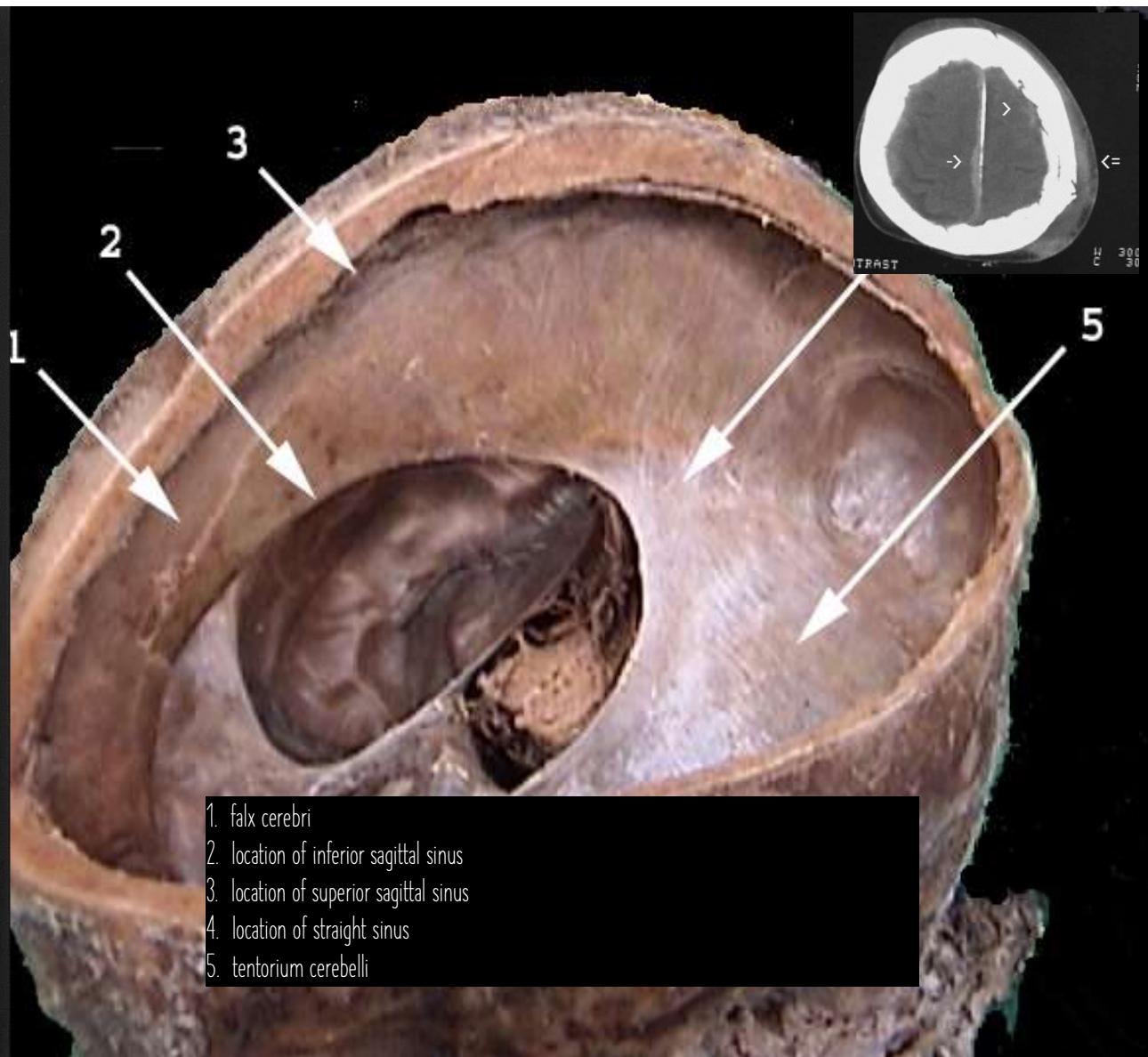




- Strong, arched fold of dura mater which descends vertically in the longitudinal fissure between the cerebral hemispheres.
  - It is narrow in front, where it is attached to the crista galli of the ethmoid; and broad behind, where it is connected with the upper surface of the tentorium cerebelli.
  - Its upper margin is convex, and attached to the inner surface of the skull in the middle line, as far back as the internal occipital protuberance; it contains the superior sagittal sinus.
  - Its lower margin is free and concave, and contains the inferior sagittal sinus.

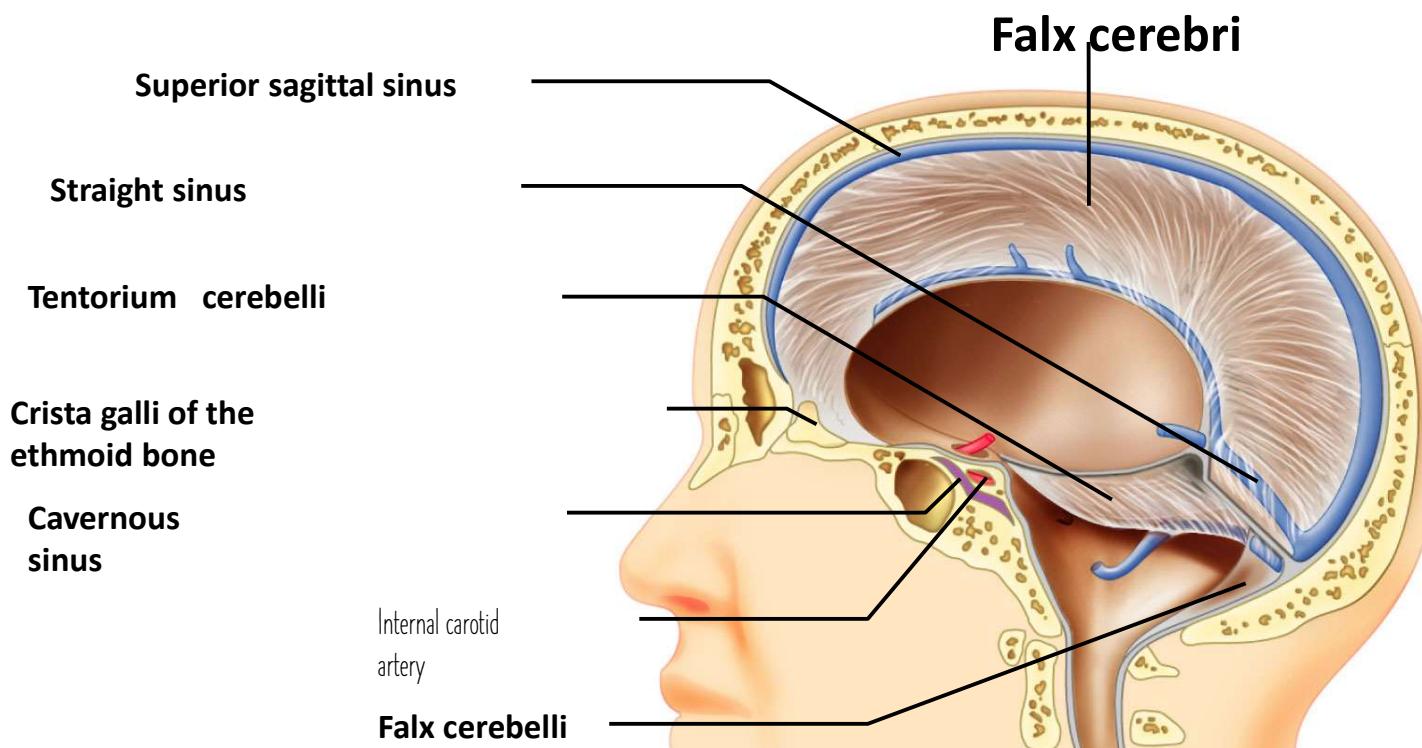


**Falk  
Cerebri**



1. falx cerebri
2. location of inferior sagittal sinus
3. location of superior sagittal sinus
4. location of straight sinus
5. tentorium cerebelli

## **Partitioning folds of dura mater in the cranial cavity,**



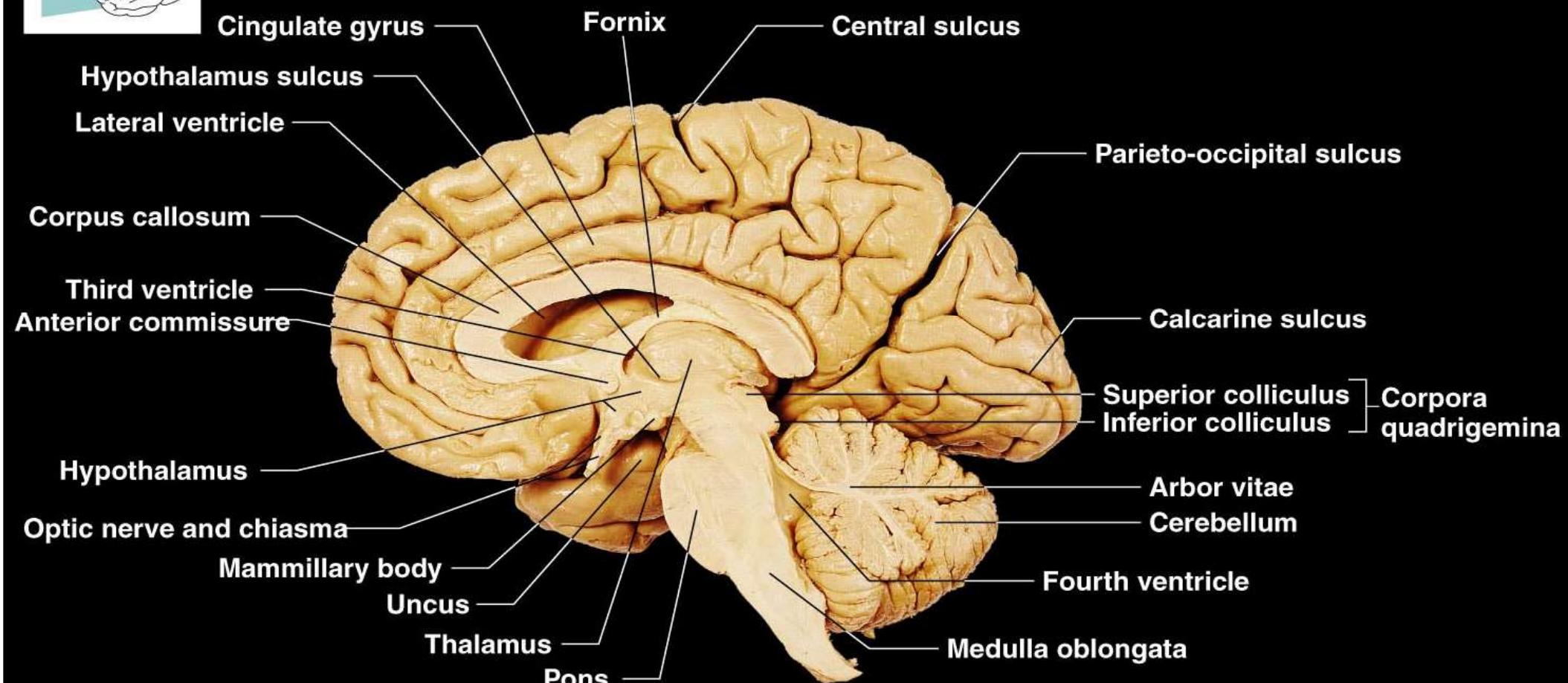
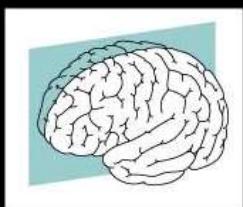
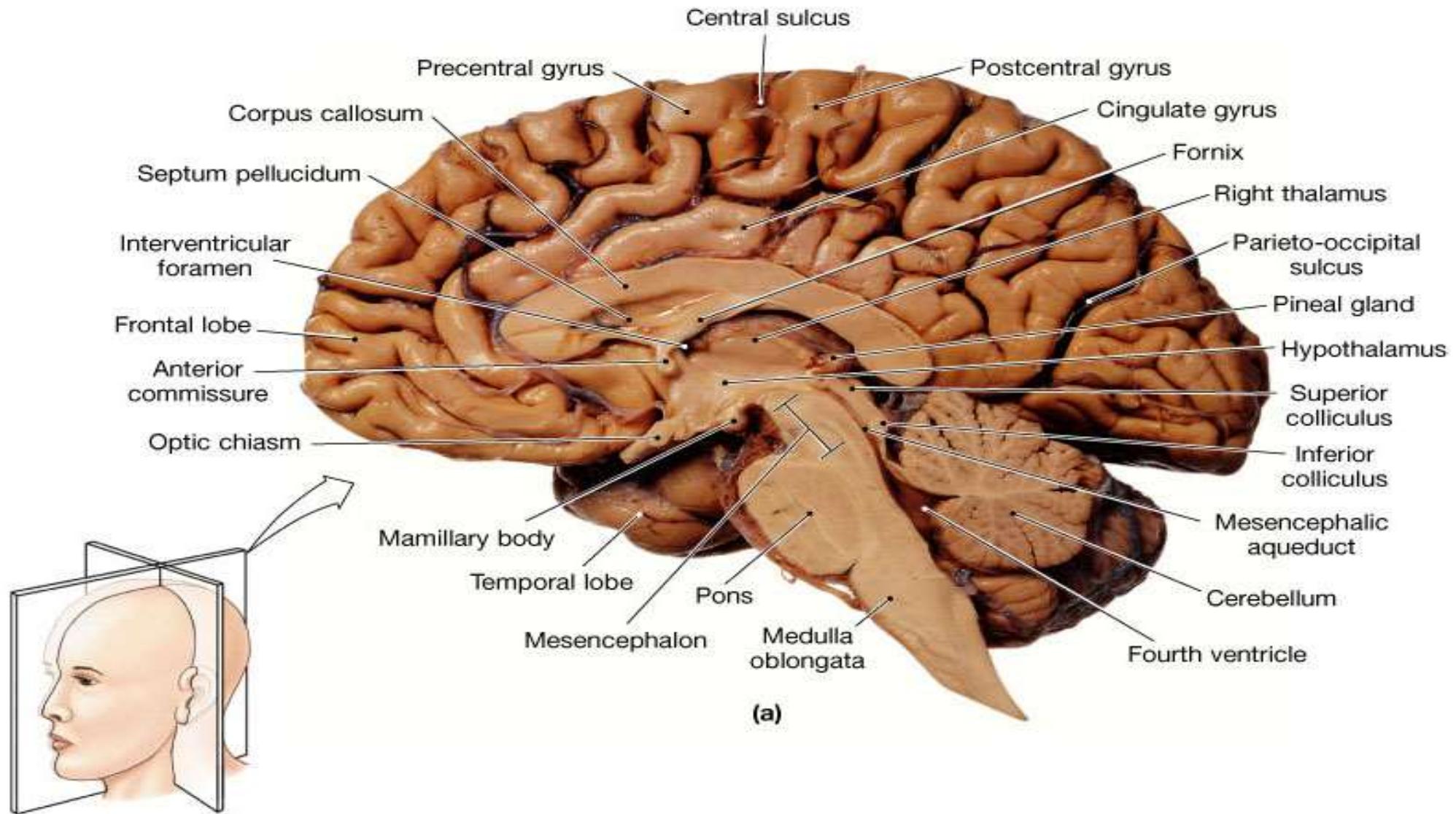
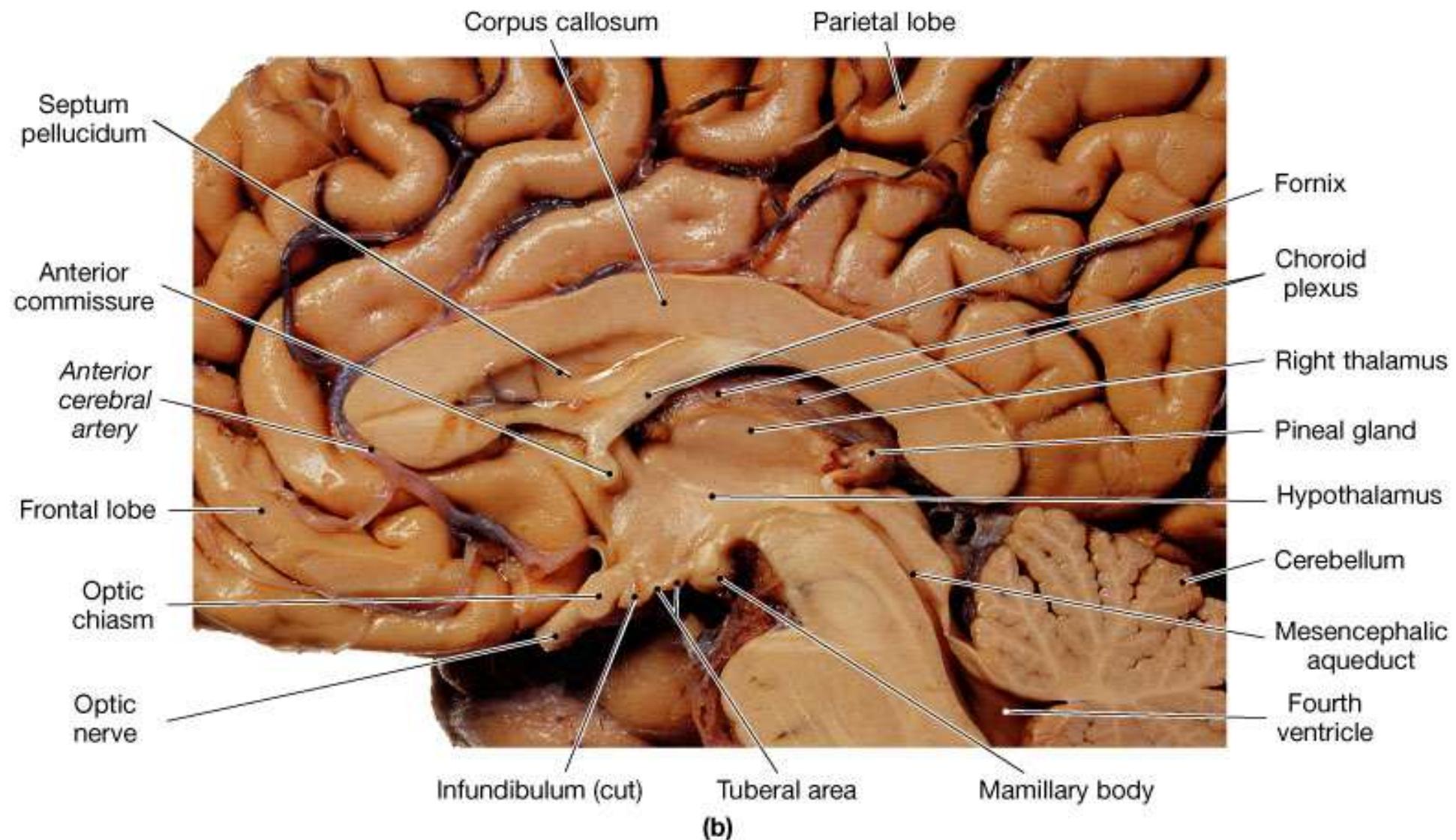


Figure 50 Midsagittal section of the brain.



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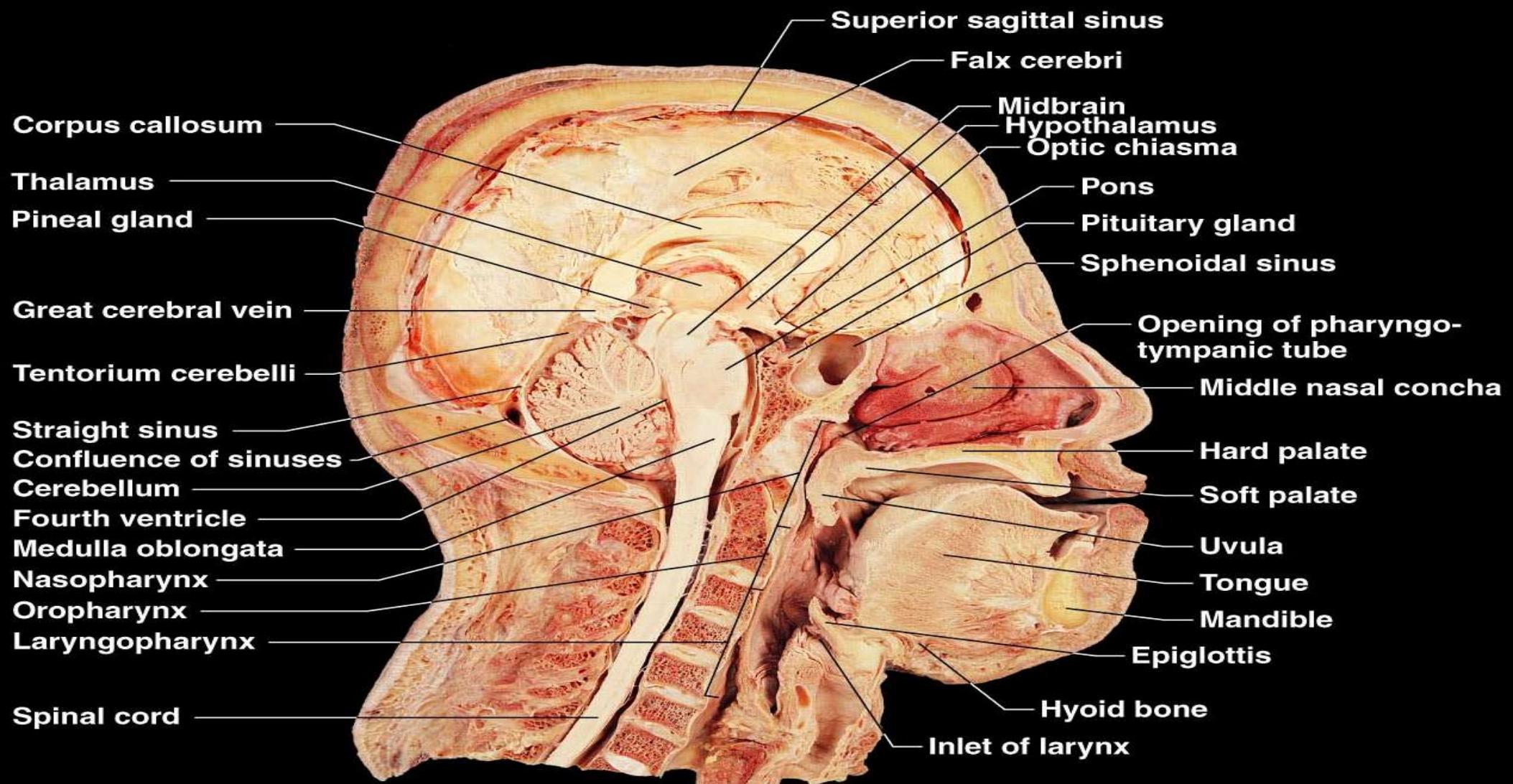
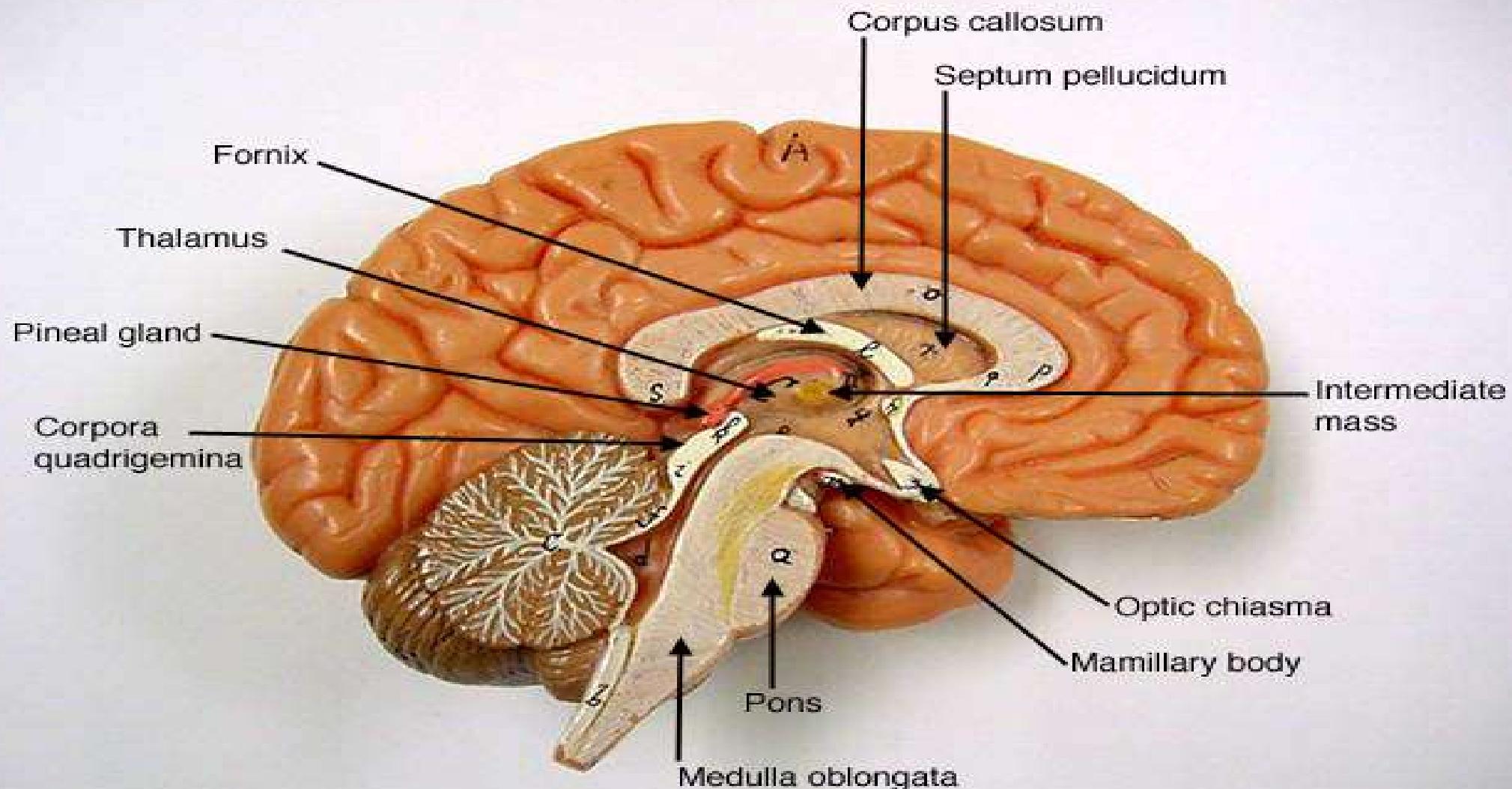
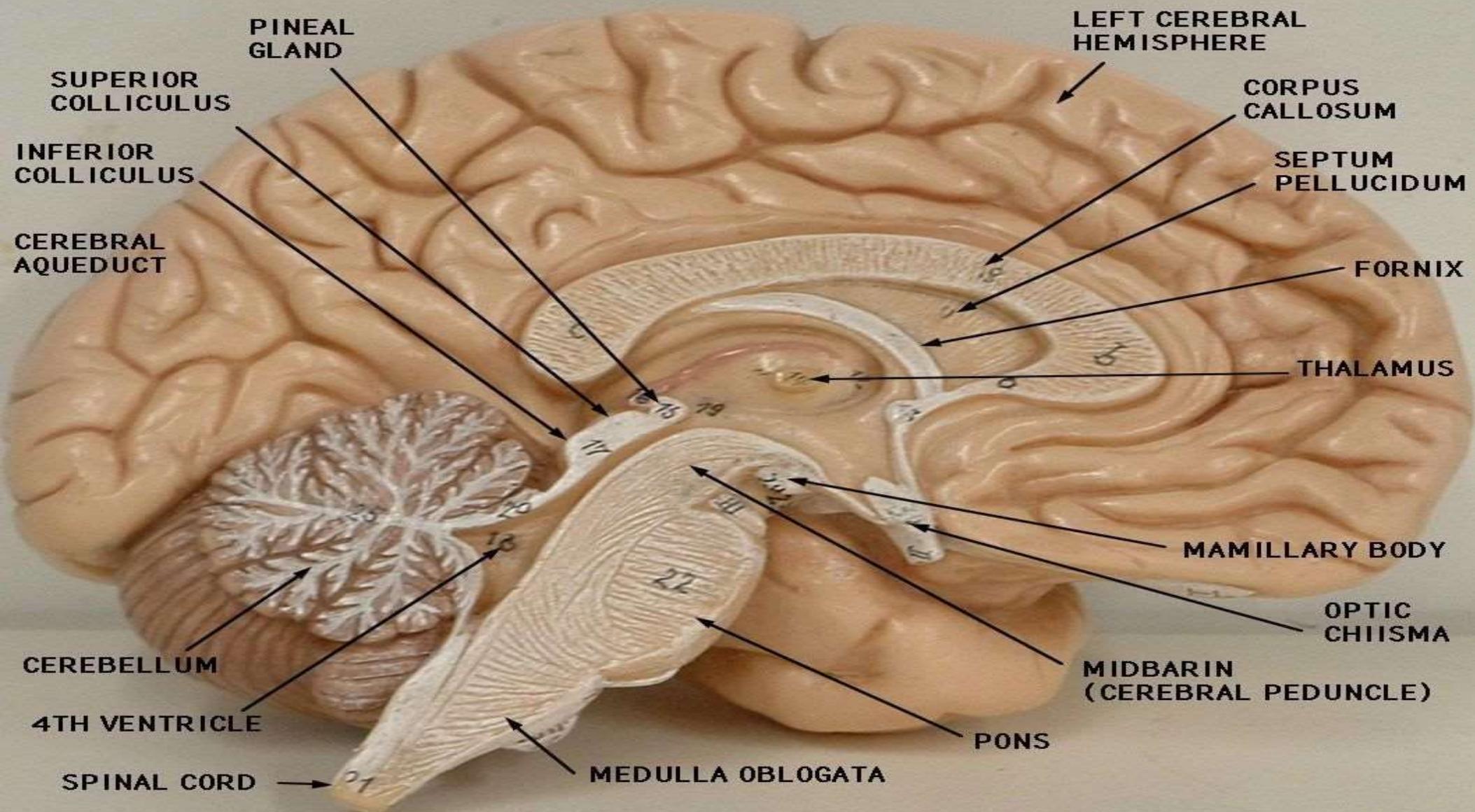
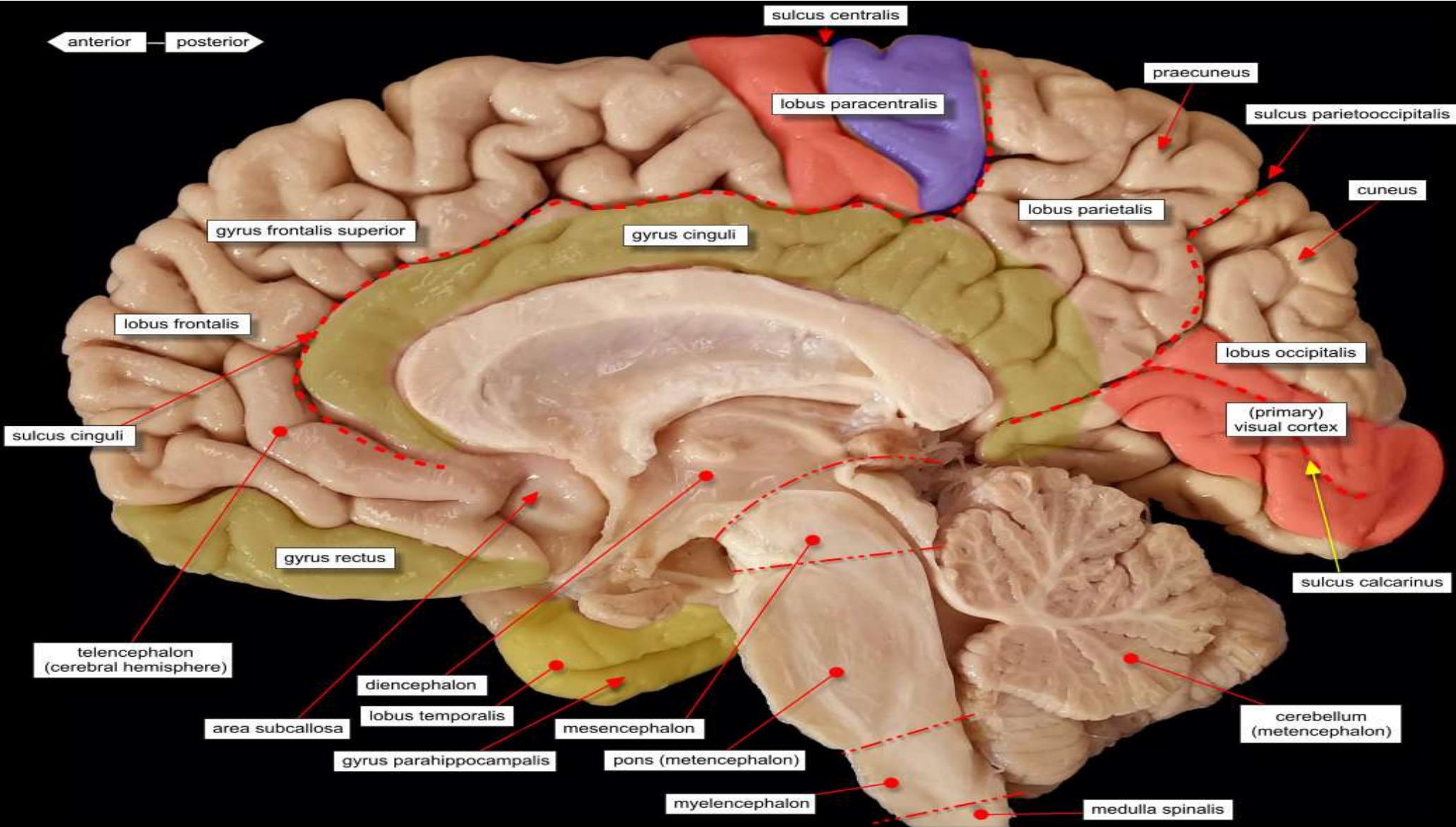
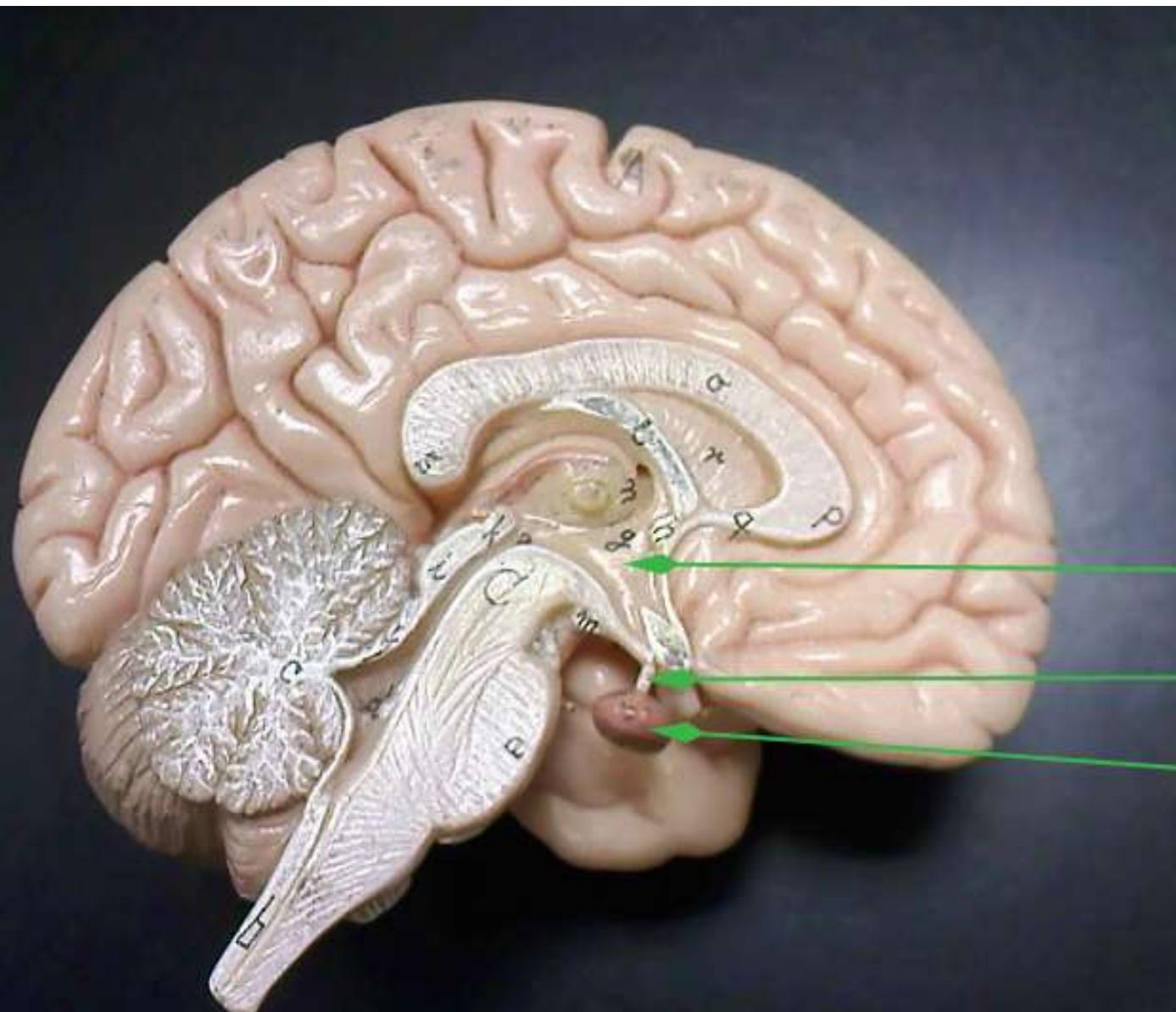


Figure 46 Sagittal section of the head.





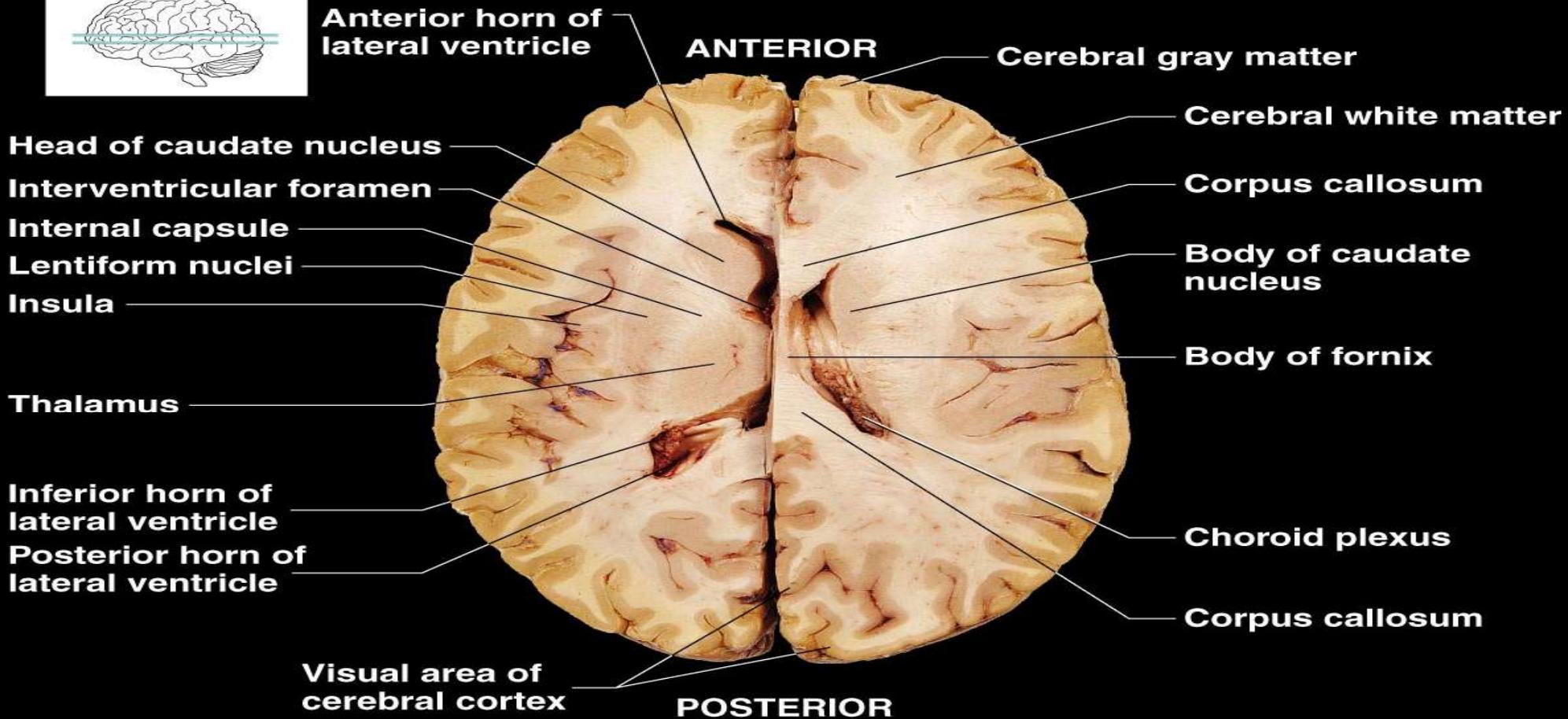
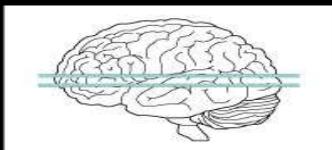




Hypothalamus  
(lateral to 3rd ventricle)

Infundibulum

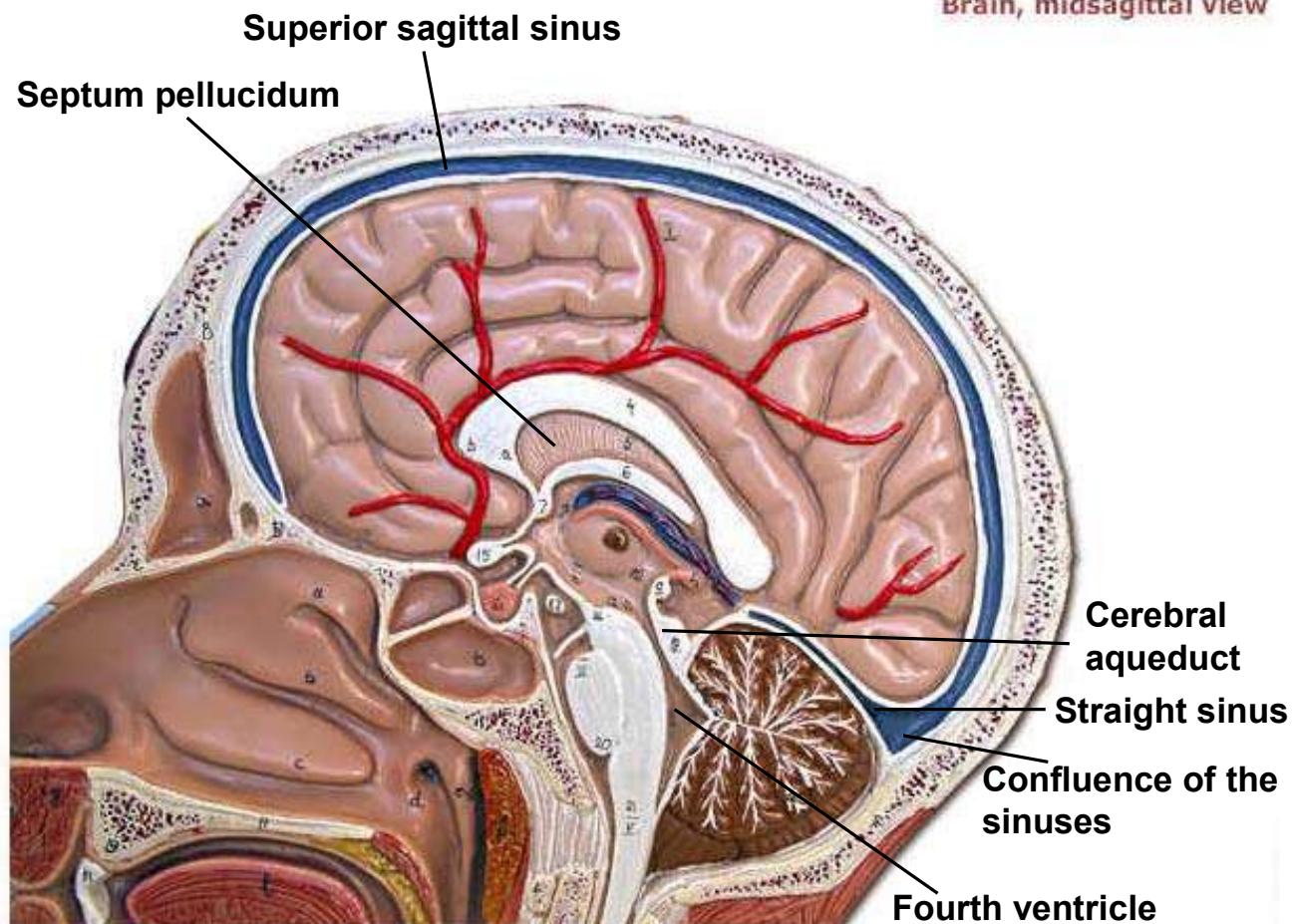
Pituitary gland



**Figure 51** Transverse section of the brain, superior view.  
Left: on a level with the intraventricular foramen;  
right: about 1.5 cm higher.

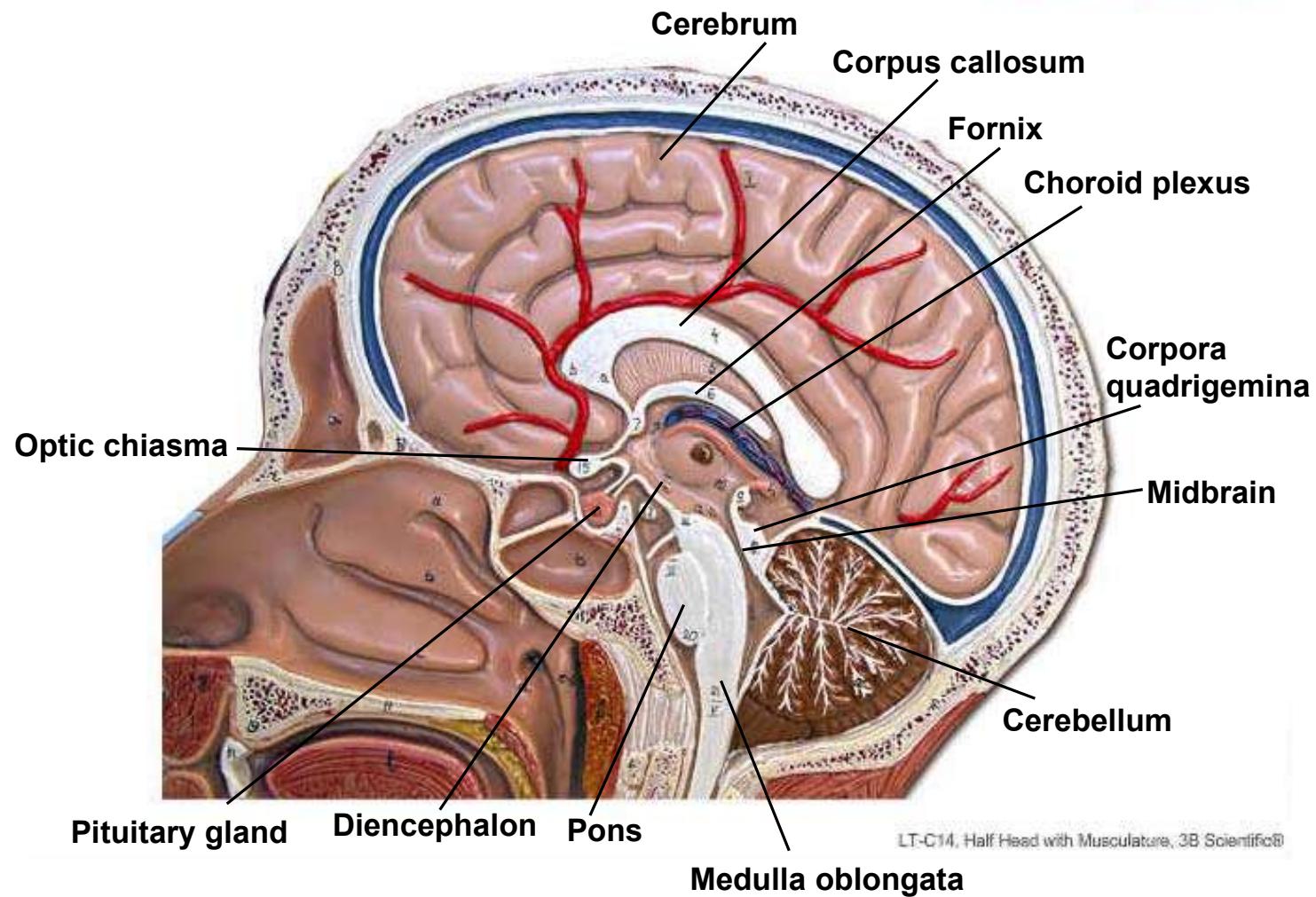
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Brain, midsagittal view

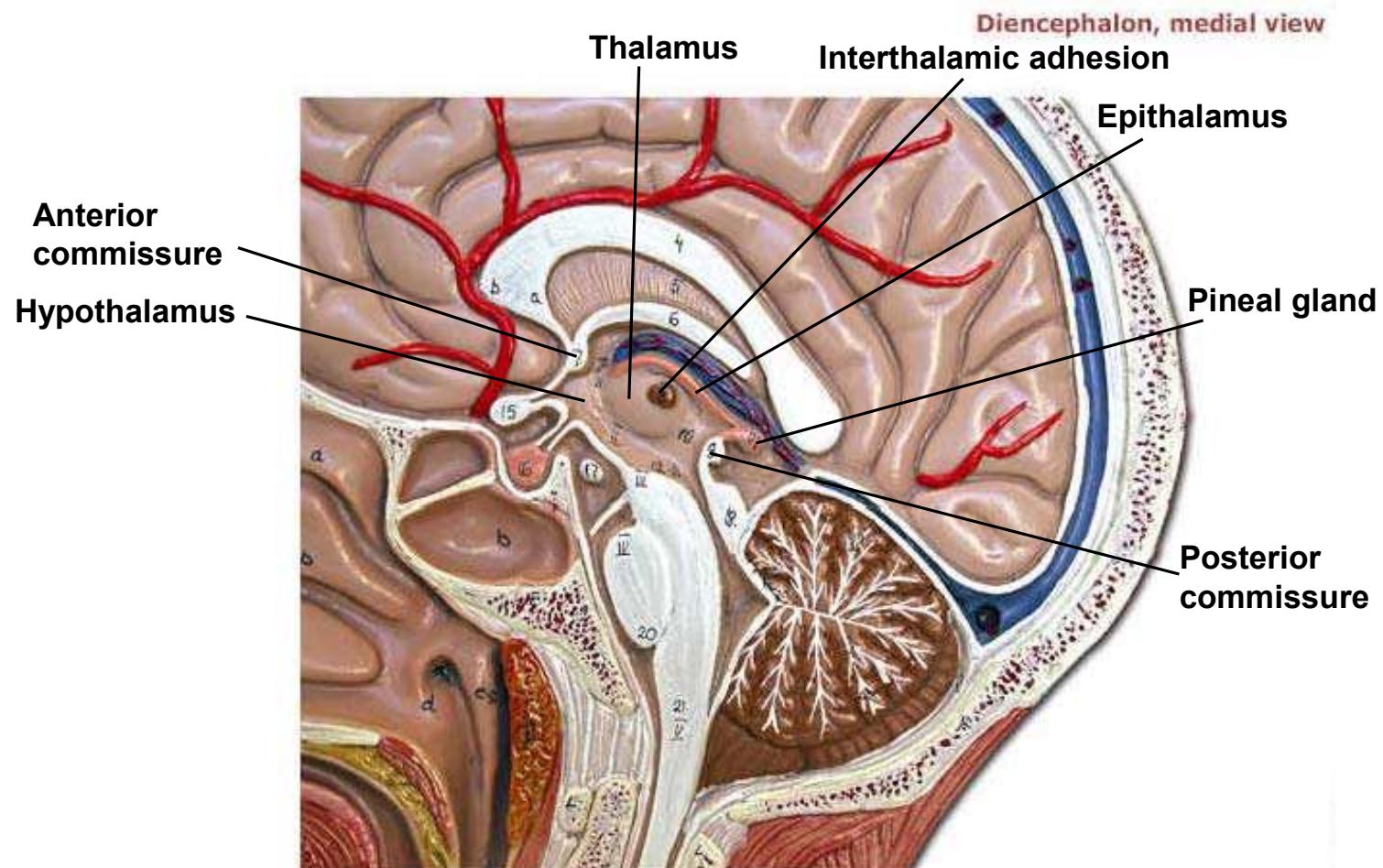


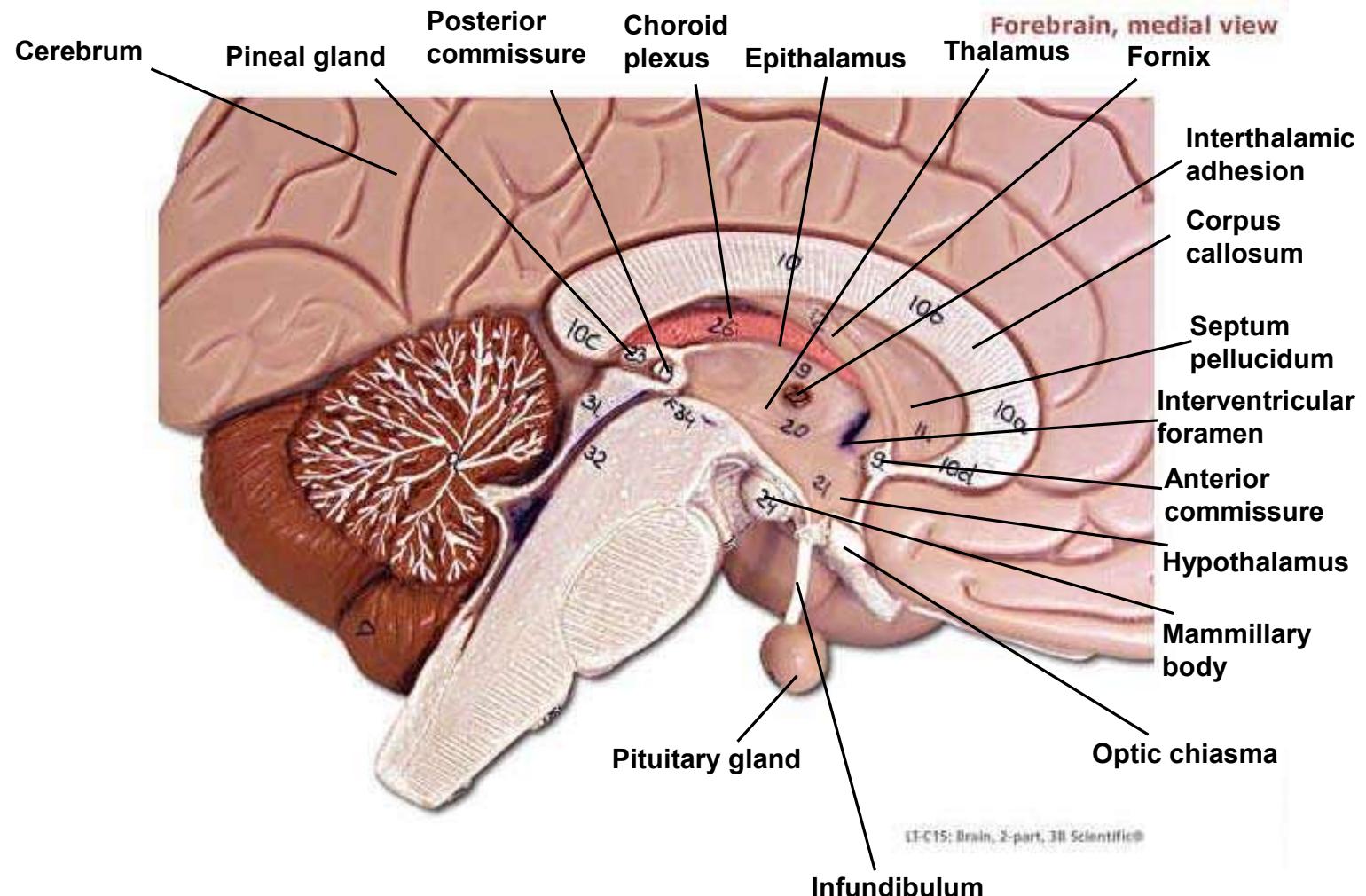
LT-C14, Half Head with Musculature, 3B Scientific®

Brain, midsagittal view

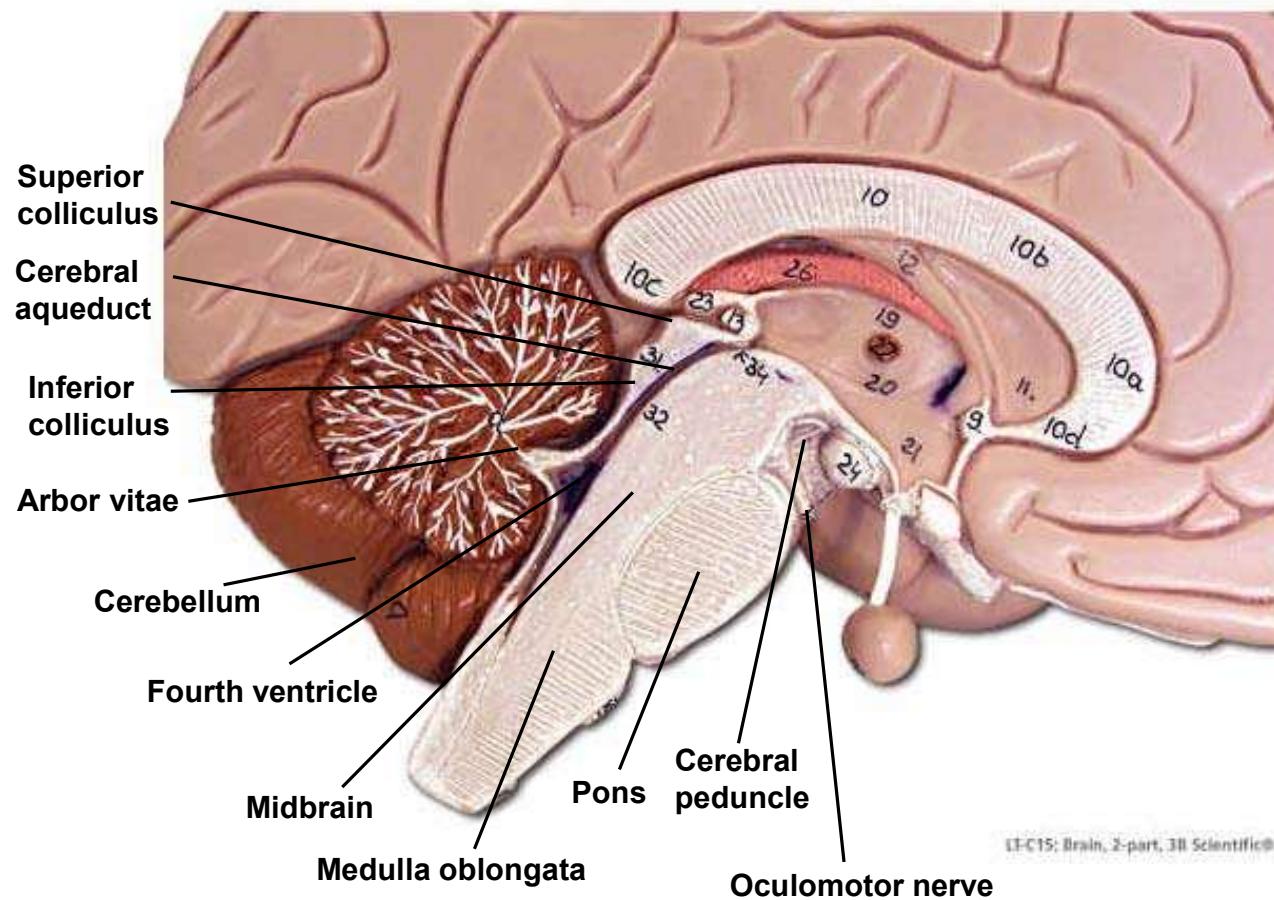


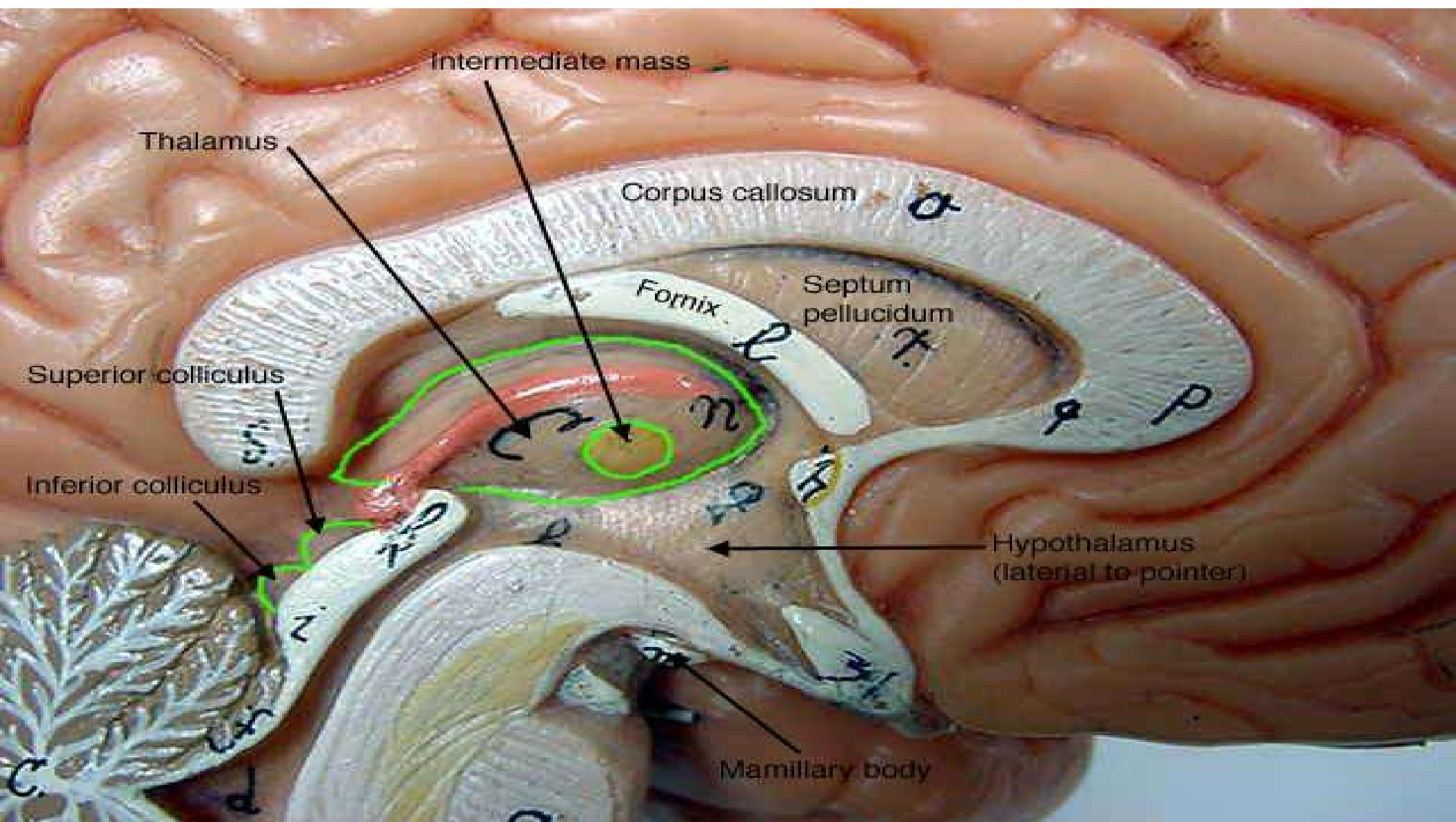
LT-C14, Half Head with Musculature, 3B Scientific®

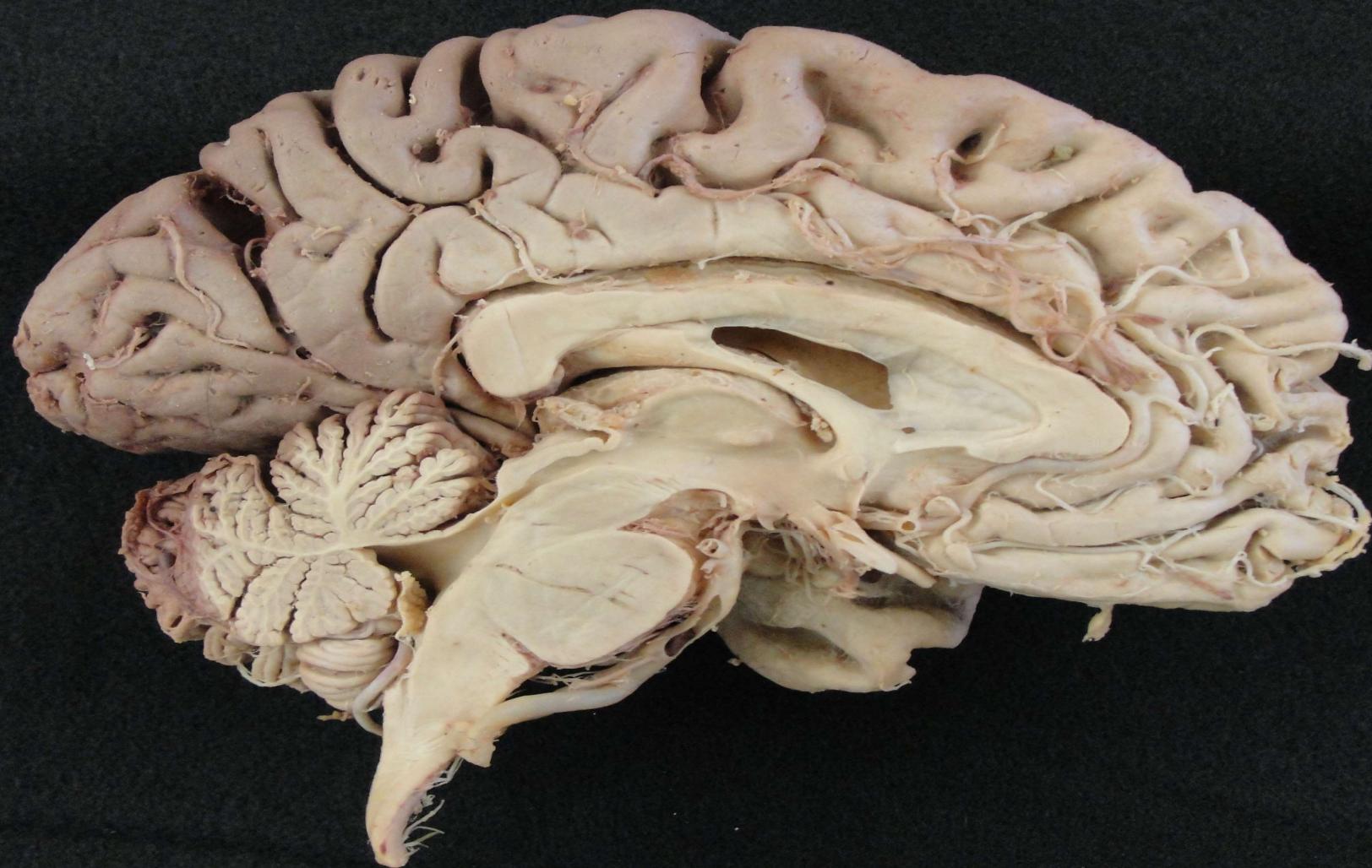




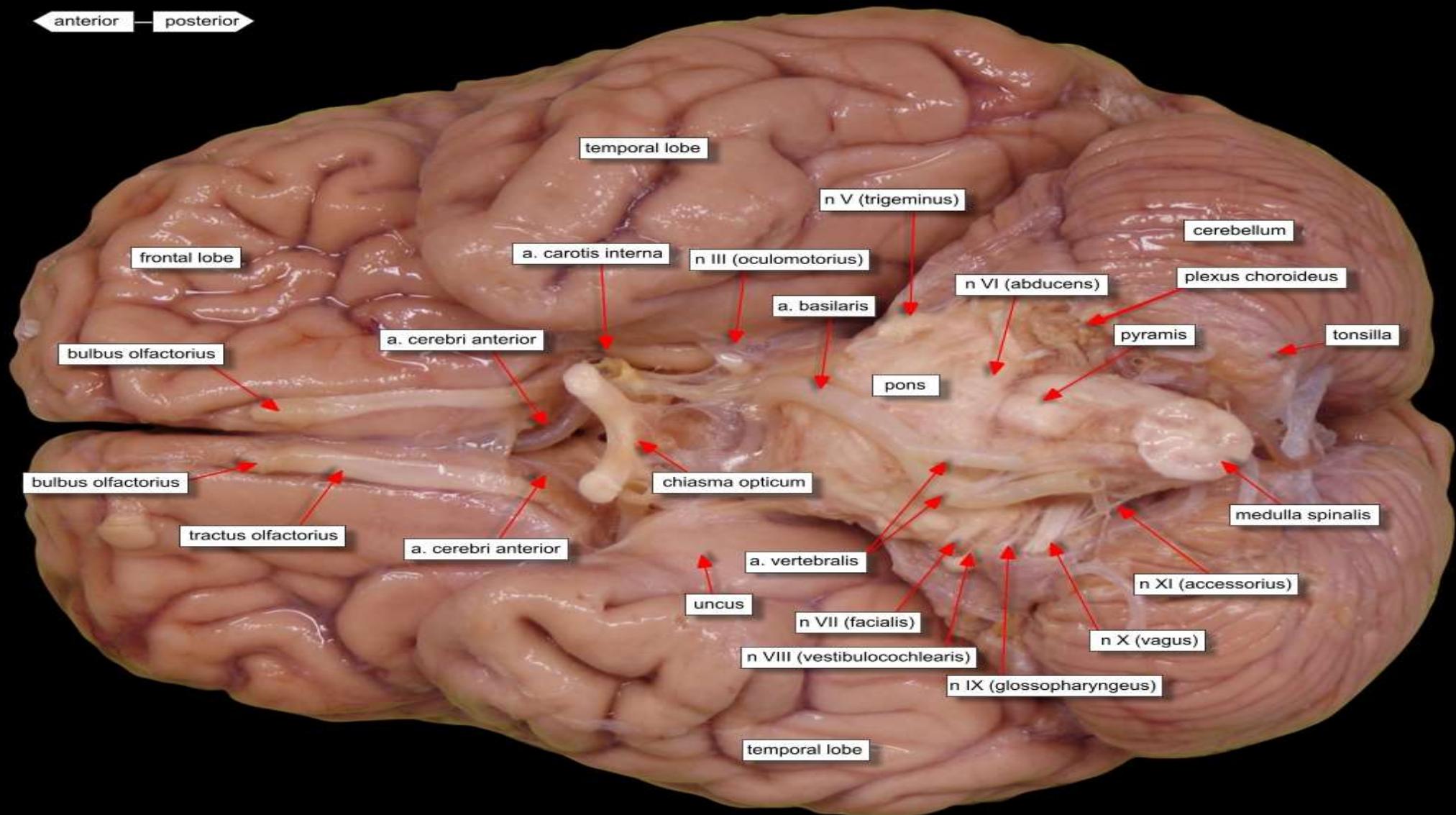
Forebrain, medial view







 anterior — posterior



**Central sulcus**= between frontal and parietal lobes.

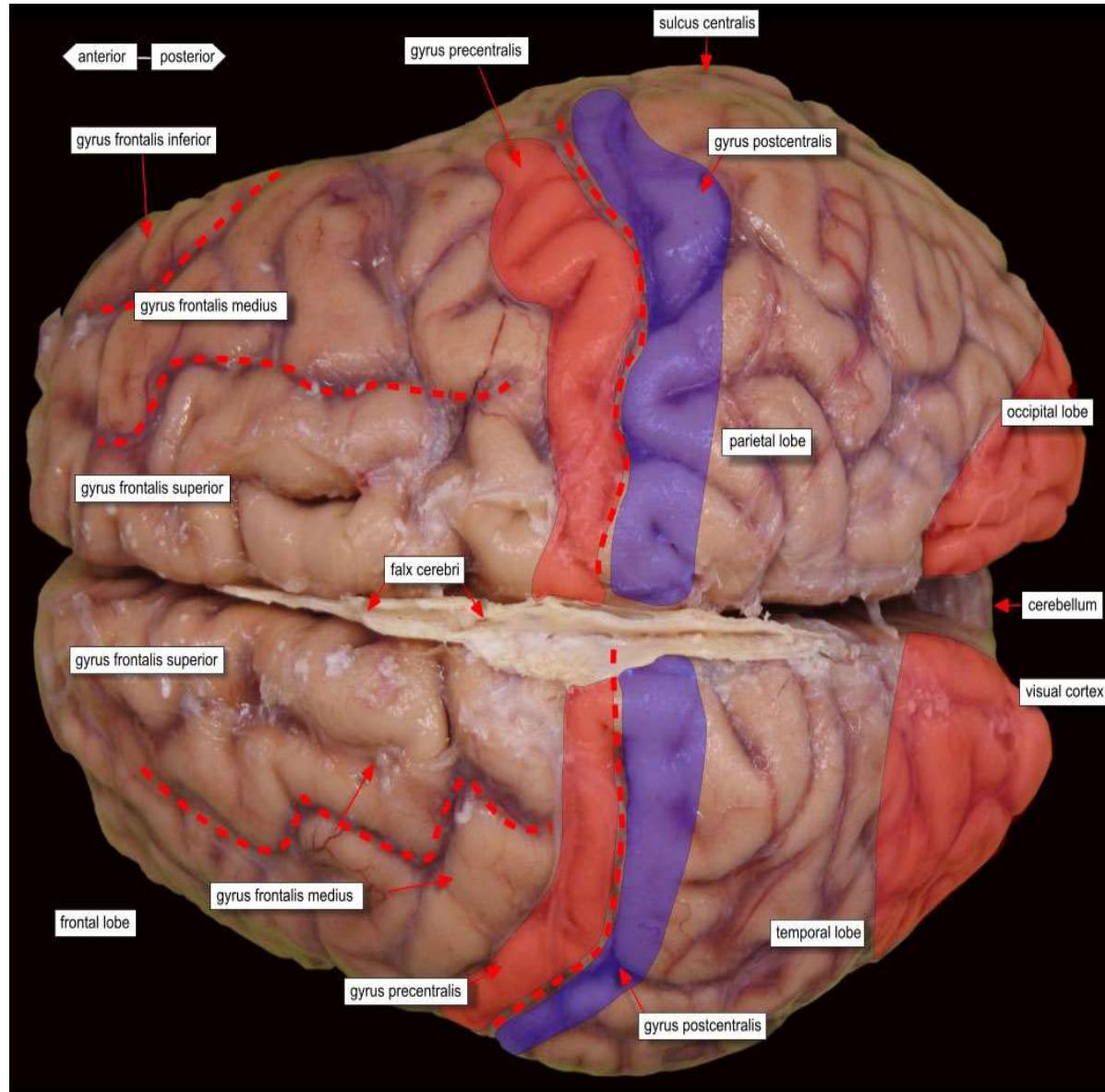
### Frontal lobe:

**precentral gyrus: motor neurons.**

### Parietal lobe:

**Postcentral gyrus: somesthetic sensation (cutaneous touch, pain, heat, muscles and joints).**

MAP of motor and of sensory control (homunculus)





- Frontal
- Parietal
- Temporal
- Occipital
- Insular
- Cingulate gyrus
- Thalamus
- Caudate nucleus
- Lentiform nucleus
- Hippocampus
- Midbrain
- Pons
- Medulla oblongata
- Cerebellum -
- Anterior lobe
- Posterior lobe

