Final revision of practical (brain slides) Medicine (3rd year)

Dr. Maha ELBeltagy

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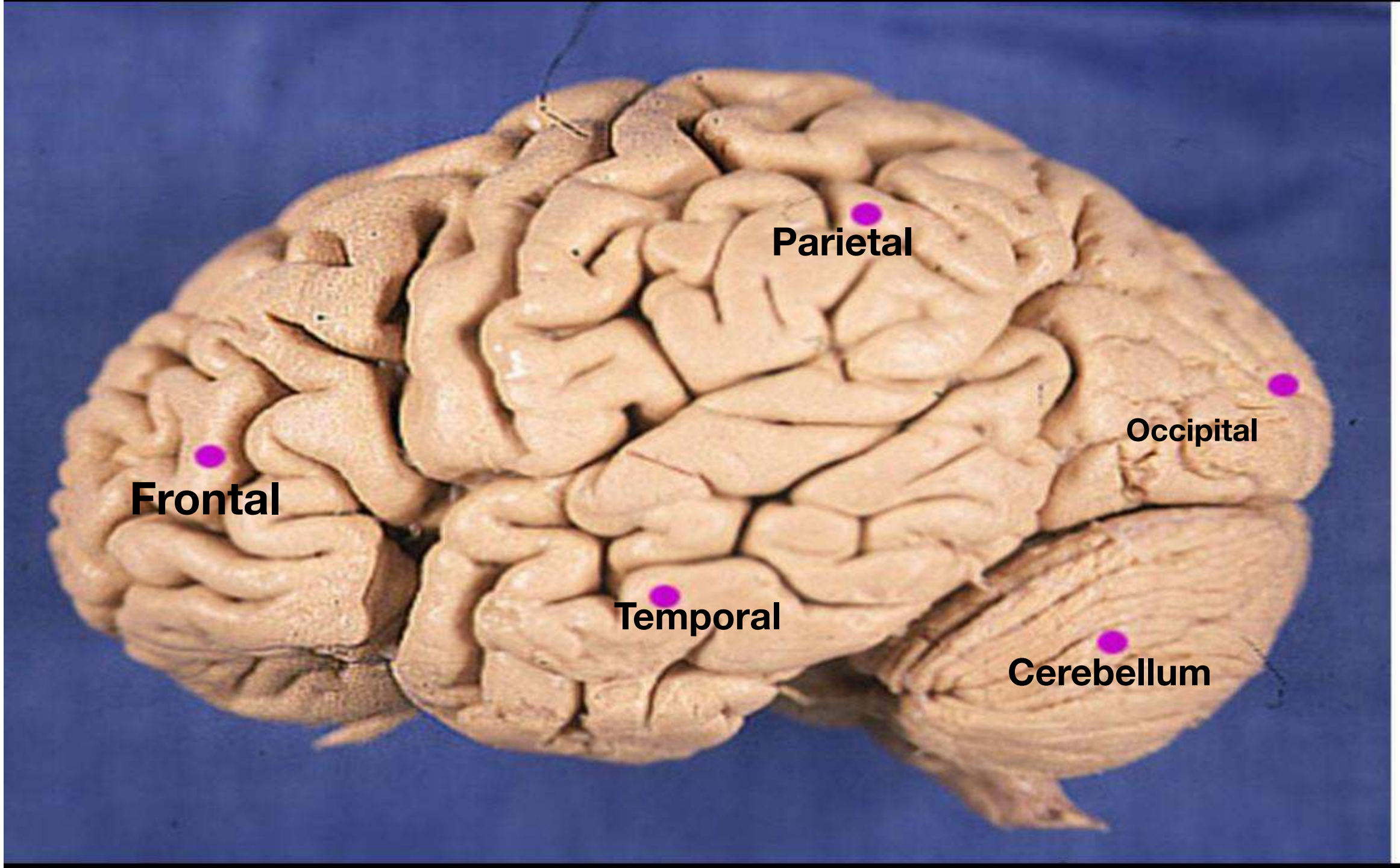
Modefied by Aya Kotkot

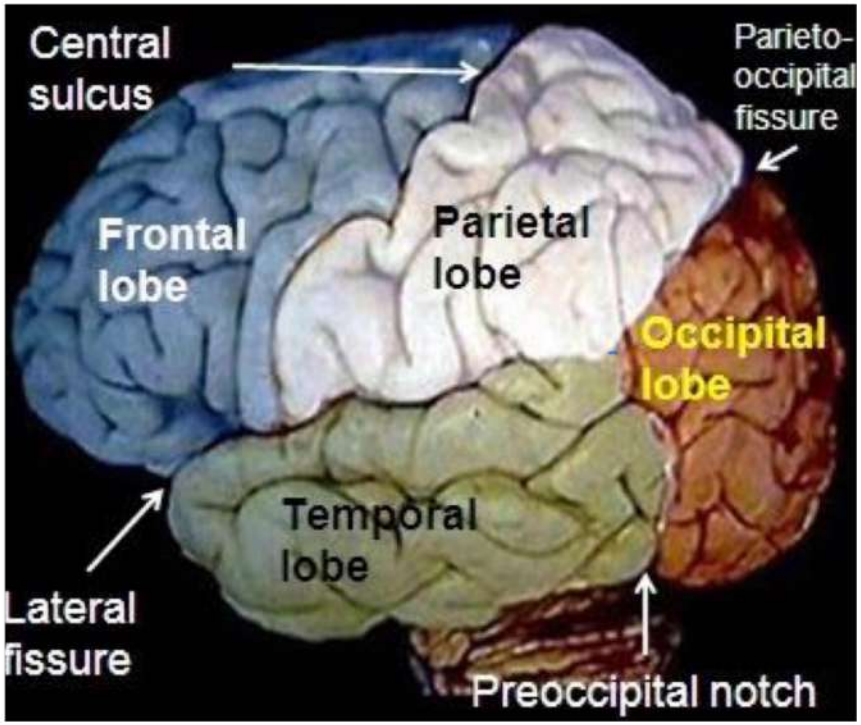
Lateral surface of the brain


Parietal
Occipital
Frontal
Temporal
Cerebellum

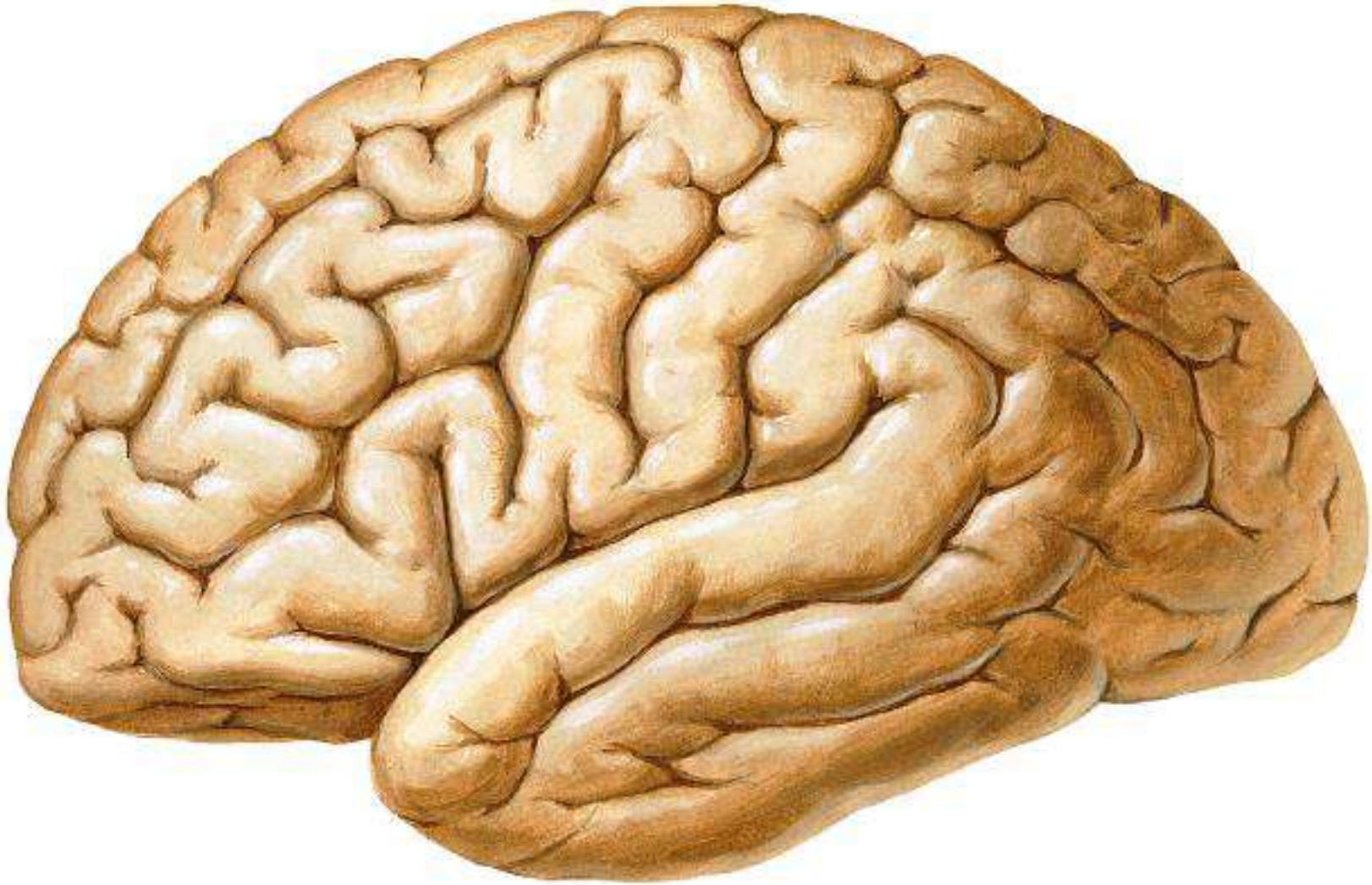
The brain is composed of 4lobes
Frontal /temporal/parietal/occipital

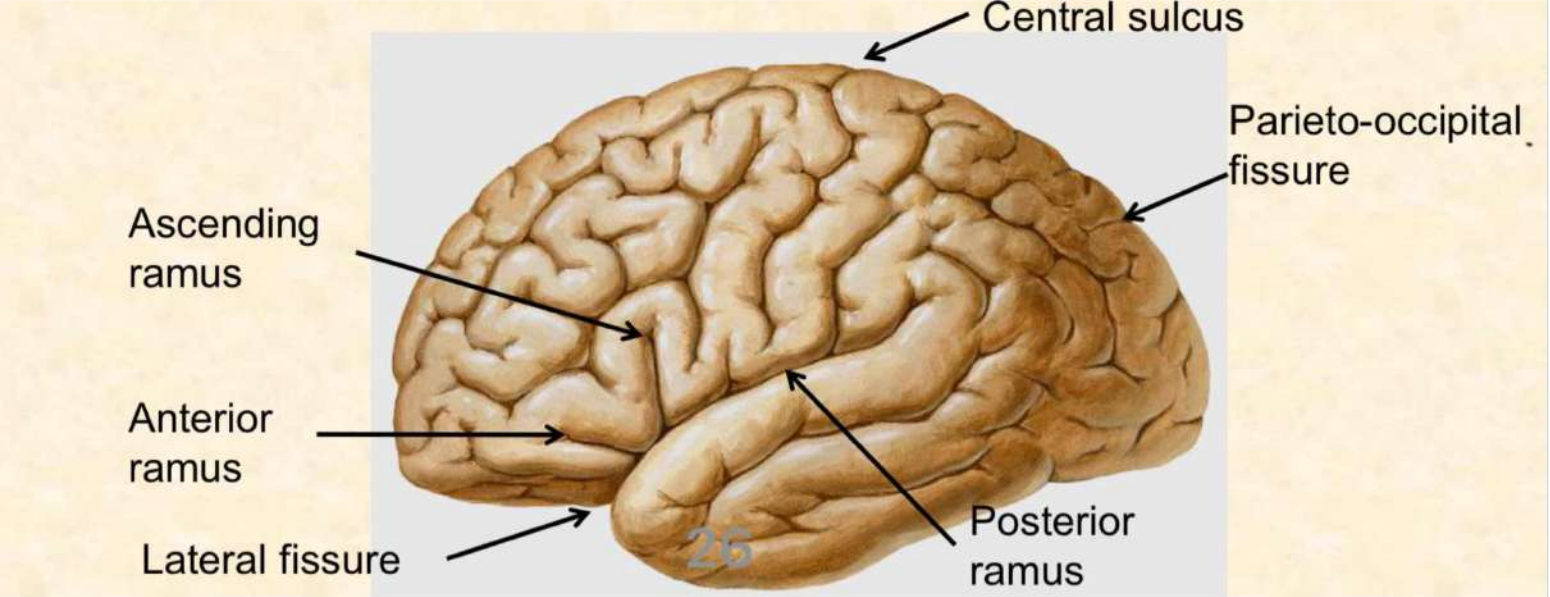
2 poles ;temporal anterior & occipital posterior

2 major sulci;central/lateral fissure(posterior ramus of lateral fissure



The superolateral surface





Important sulci & gyri:

Central sulcus (of Rolando):

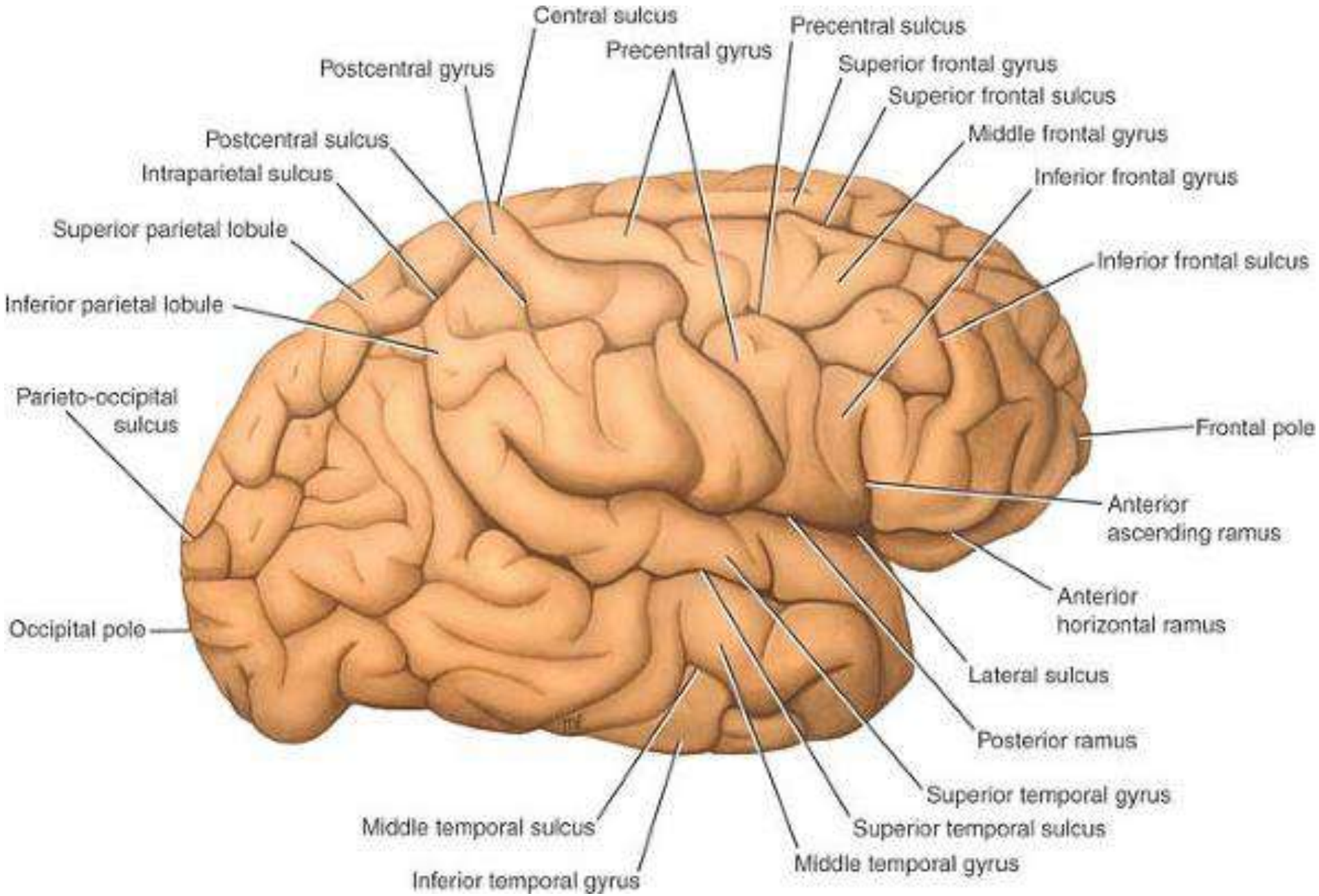
- **Extends from the superomedial border at a point a little behind the midpoint between the frontal & occipital poles. It ends slightly above the middle of the posterior ramus of lateral fissure. Begins on medial surface**

Lateral fissure (of Sylvius):

It begins on the inferior surface (stem) lateral to the anterior perforated substance & extends laterally to reach the lateral surface where it divides into 3 branches:

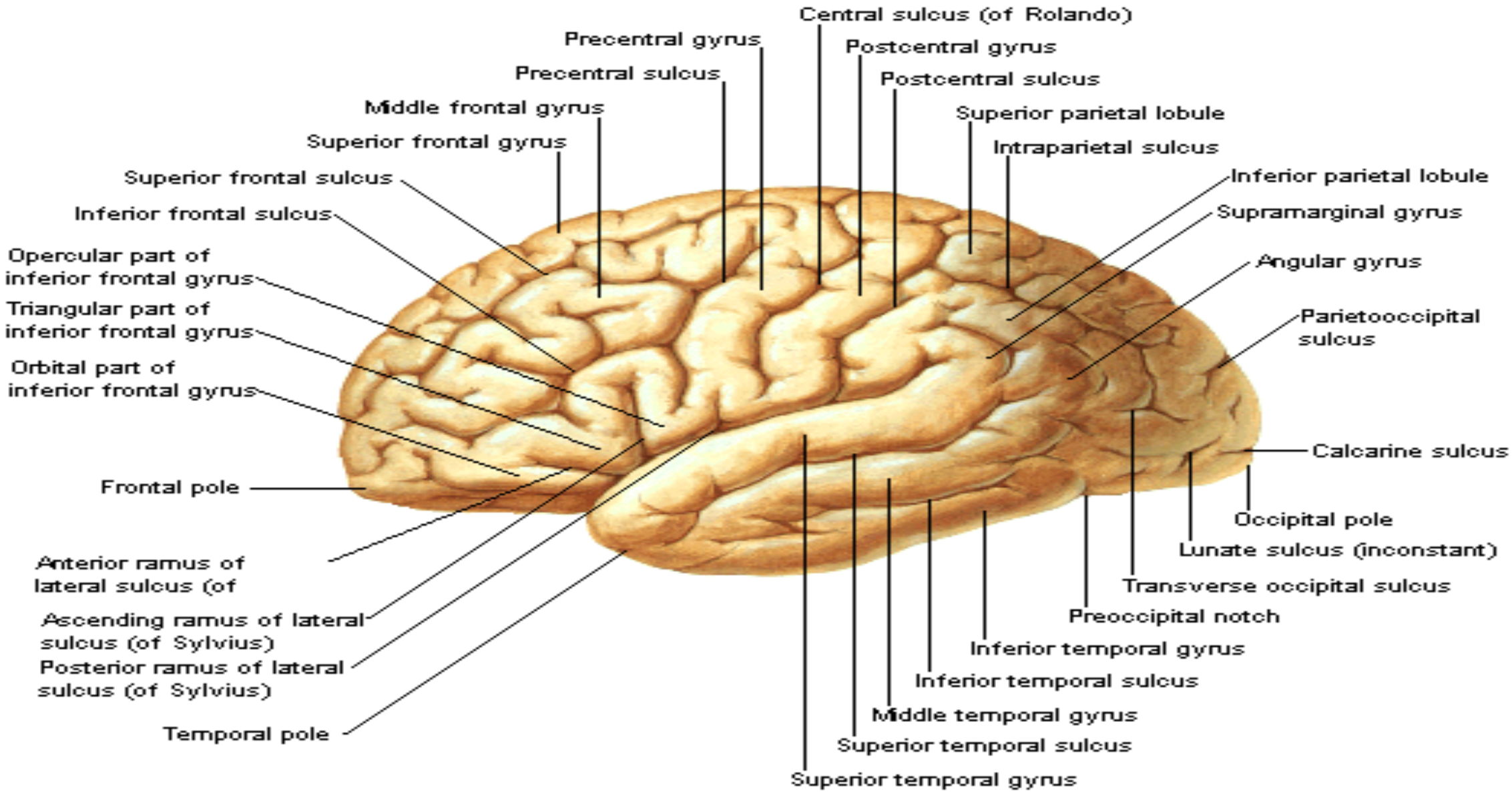
- **Anterior ramus: Runs forwards in the inferior frontal gyrus**
- **Ascending ramus: Ascends in the inferior frontal gyrus.**
- **Posterior ramus: Runs backwards & ends by turning upwards in the parietal lobe.**

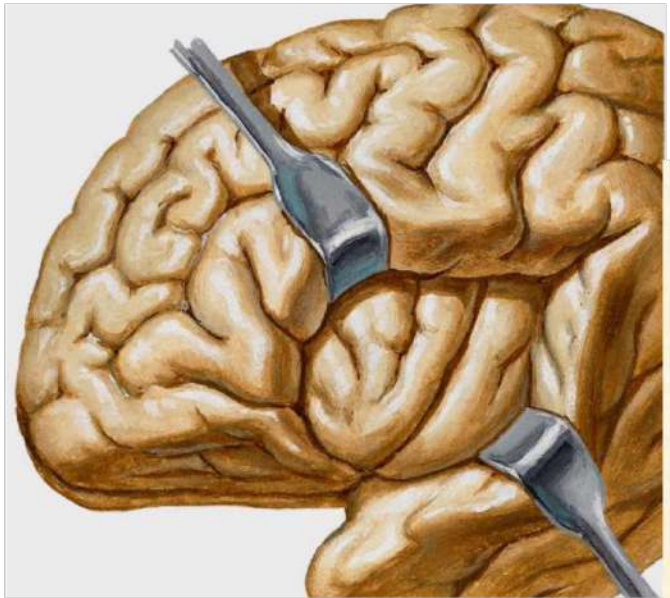
Parieto – occipital fissure: Between Parietal & occipital lobes.


Central sulcus
Precentral sulcus
Postcentral gyrus
Precentral gyrus
Superior frontal gyrus
Superior frontal sulcus
Middle frontal gyrus
Postcentral sulcus
Intraparietal sulcus
Inferior frontal gyrus
Superior parietal lobule
Inferior frontal sulcus
Inferior parietal lobule
Parieto-occipital sulcus
Frontal pole
Anterior ascending ramus
Anterior horizontal ramus
Occipital pole
Lateral sulcus
Posterior ramus
Superior temporal gyrus
Middle temporal sulcus
Superior temporal sulcus
Middle temporal gyrus
Inferior temporal gyrus

Cerebrum

Lateral View



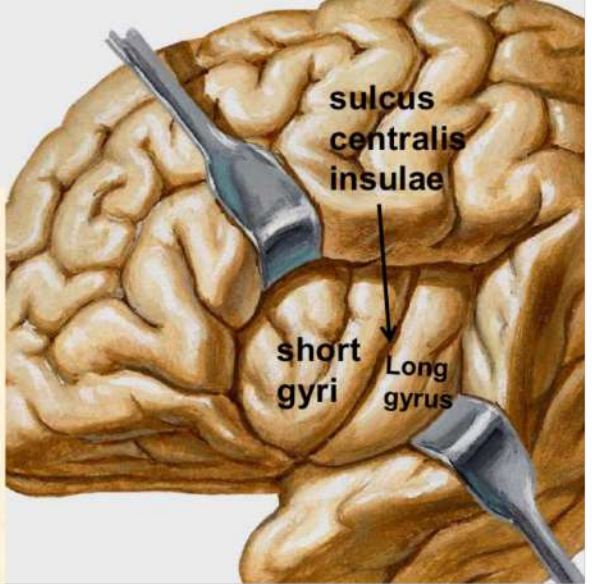


Insula(Island of Reil)

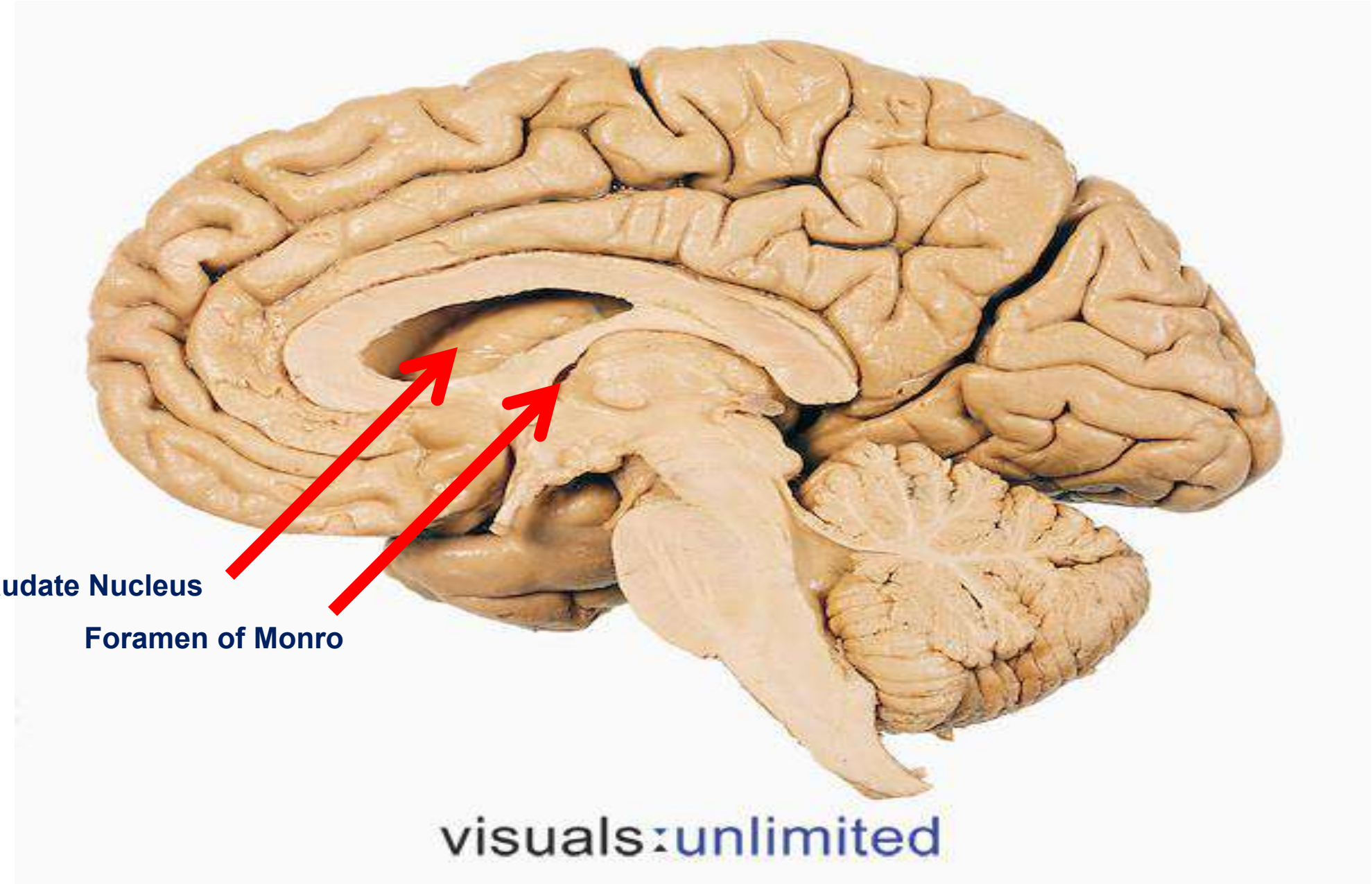
- It lies at the bottom of the lateral fissure. It is conical in shape having a base (surrounded by circular sulcus) & an apex directed inferiorly towards the anterior perforated substance.

- It is divided by sulcus centralis insulae into:
  - Anterior part divided into 3-4 short gyri.
  - Posterior part with one long gyrus which is usually divided near its upper part.

-Its function is related to taste (gustatory area)

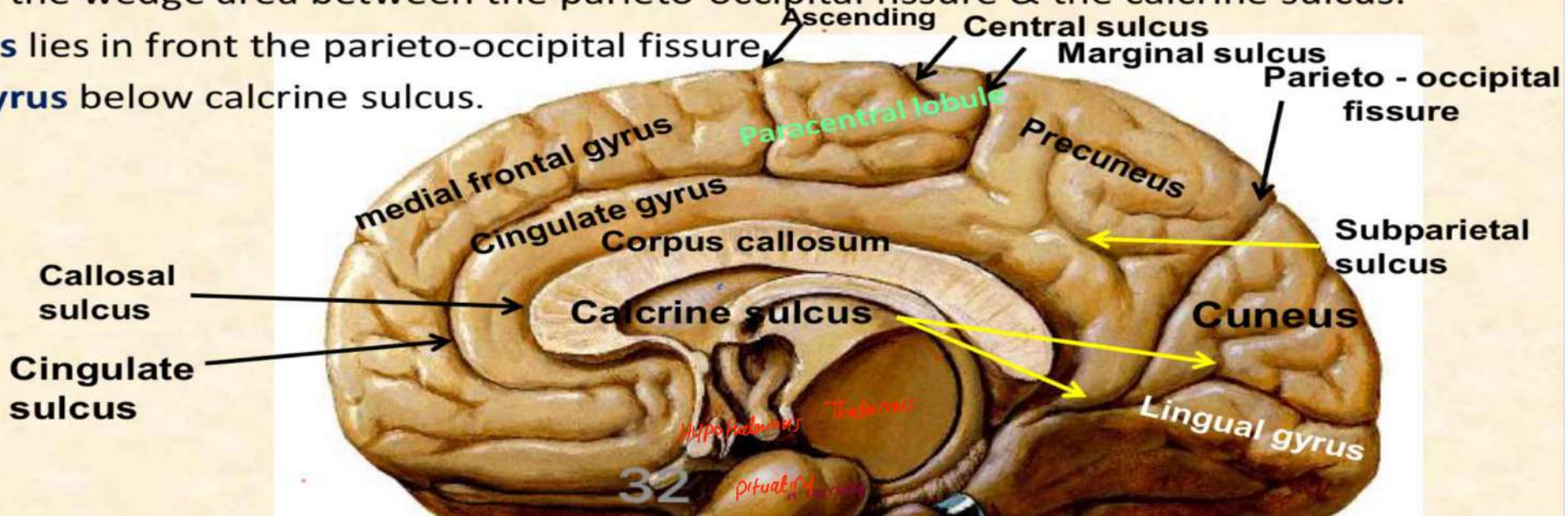


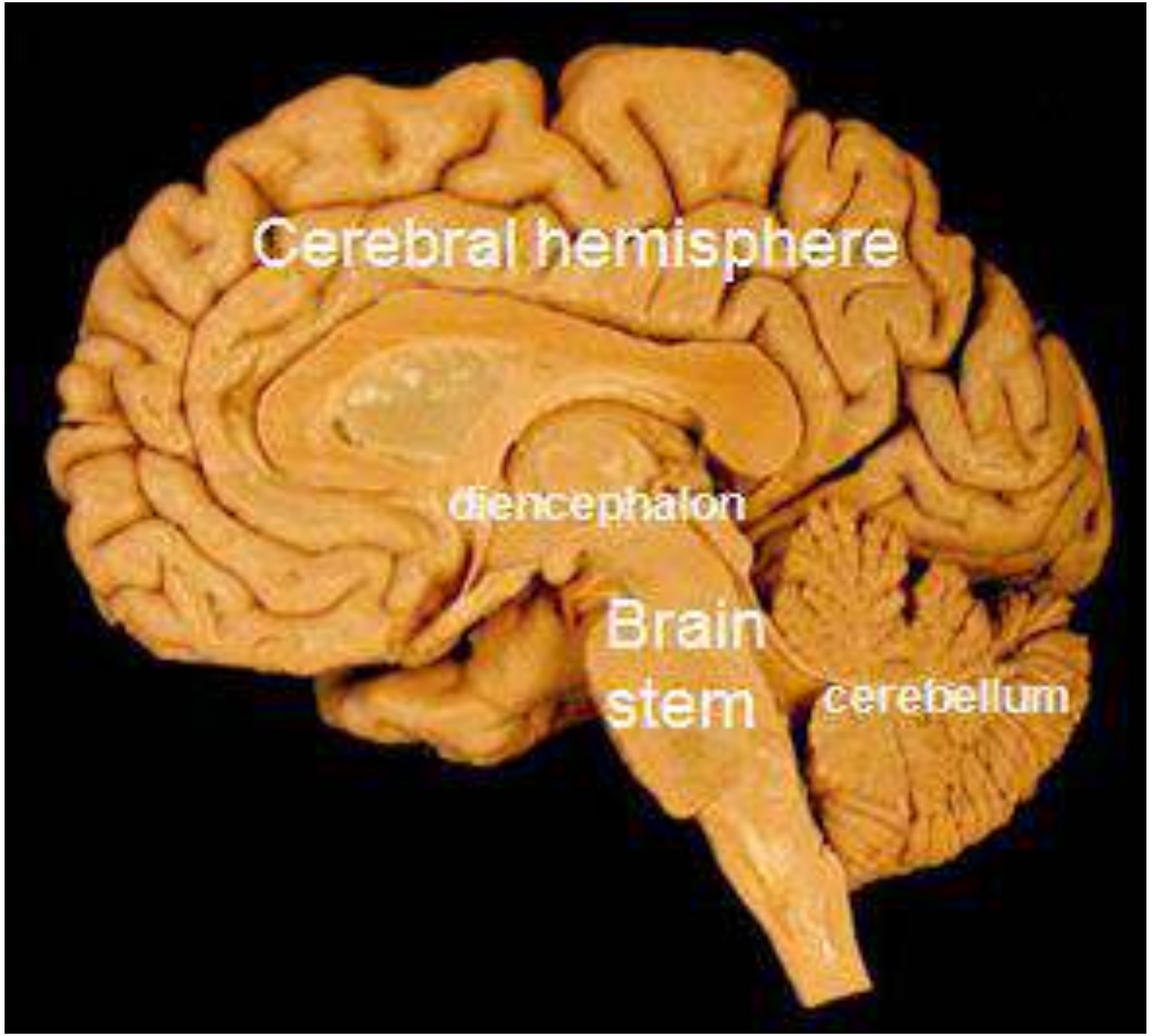
Medial surface of the brain

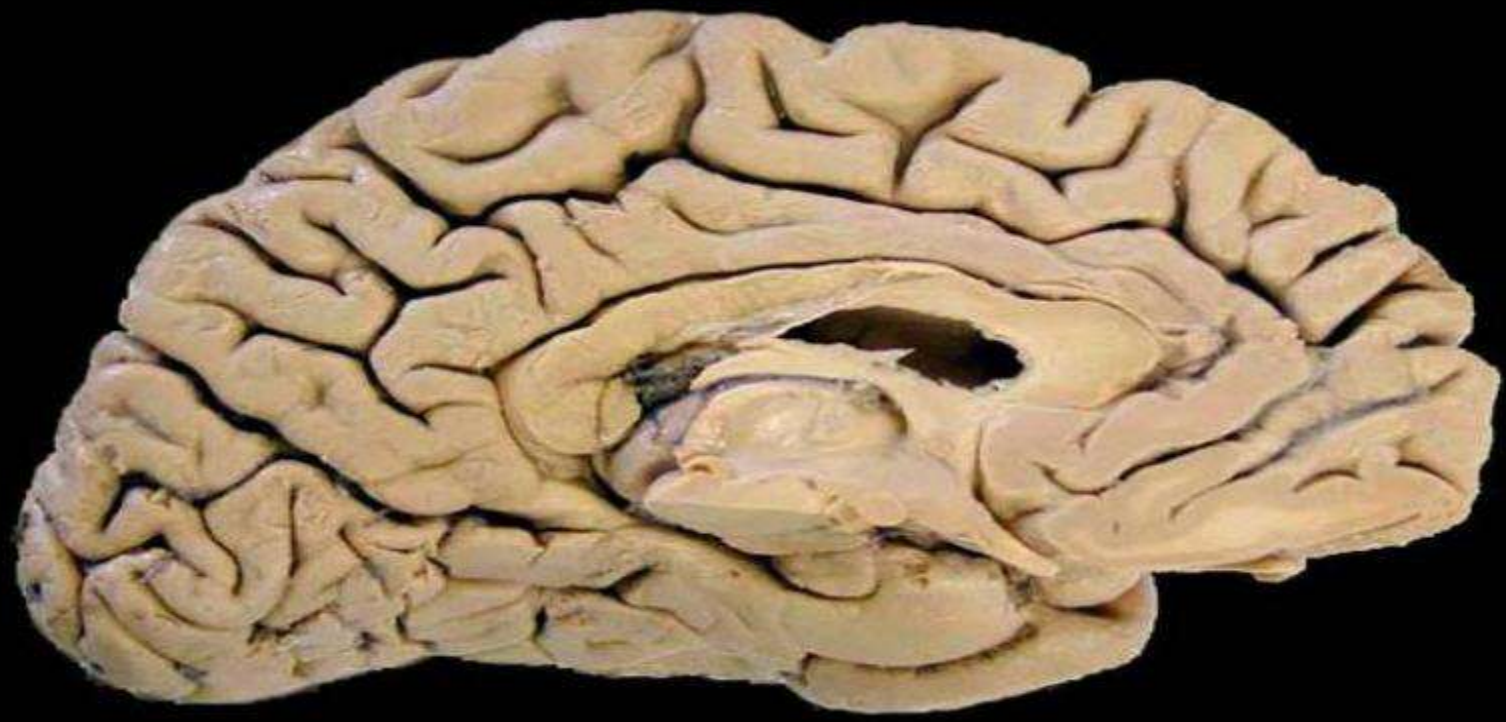

Caudate Nucleus
Foramen of Monro
visuals:unlimited

Sulci & Gyri of the medial surface

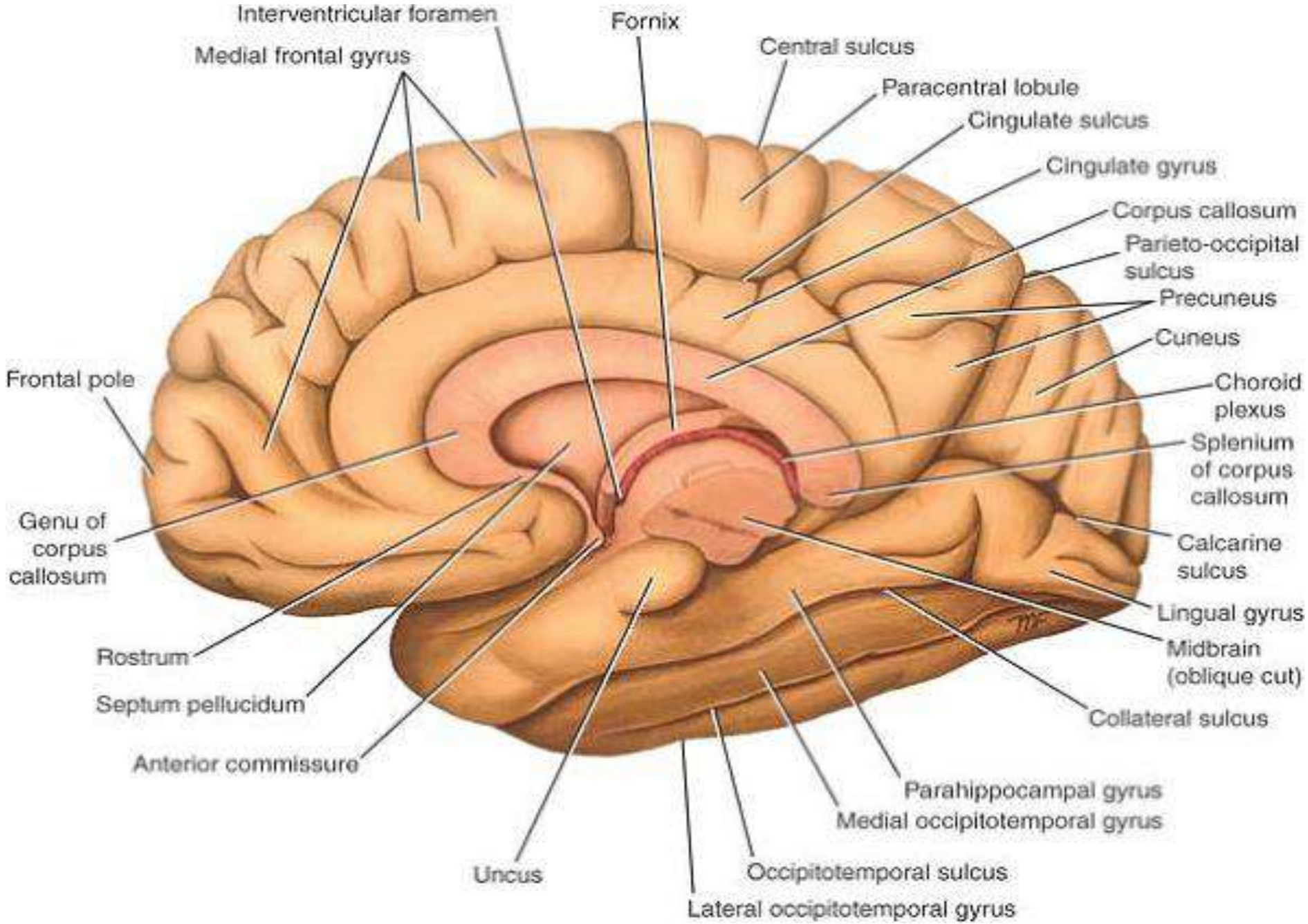
- **Callosal sulcus** surrounds CC.
- **Cingulate sulcus** runs parallel to CC & terminates by turning upwards to meet the superomedial border. It gives ascending branch above the middle of the body of CC which divides the area above cingulate sulcus into anterior part: medial frontal gyrus & **paracentral lobule** (around central sulcus). Ends above as marginal sulcus.
- **Cingulate gyrus** lies between CC & cingulate sulcus.
- **Subparietal (suprasplenial) sulcus** appears as a continuation of cingulate sulcus.
- **Parieto-occipital fissure** between the parietal & occipital lobes.
- **Calcrine sulcus** begins near the occipital pole.
- **Cuneus** is the wedge area between the parieto-occipital fissure & the calcrine sulcus.
- **Precuneus** lies in front the parieto-occipital fissure.
- **Lingual gyrus** below calcrine sulcus.




Cerebral hemisphere
diencephalon
Brain stem
cerebellum

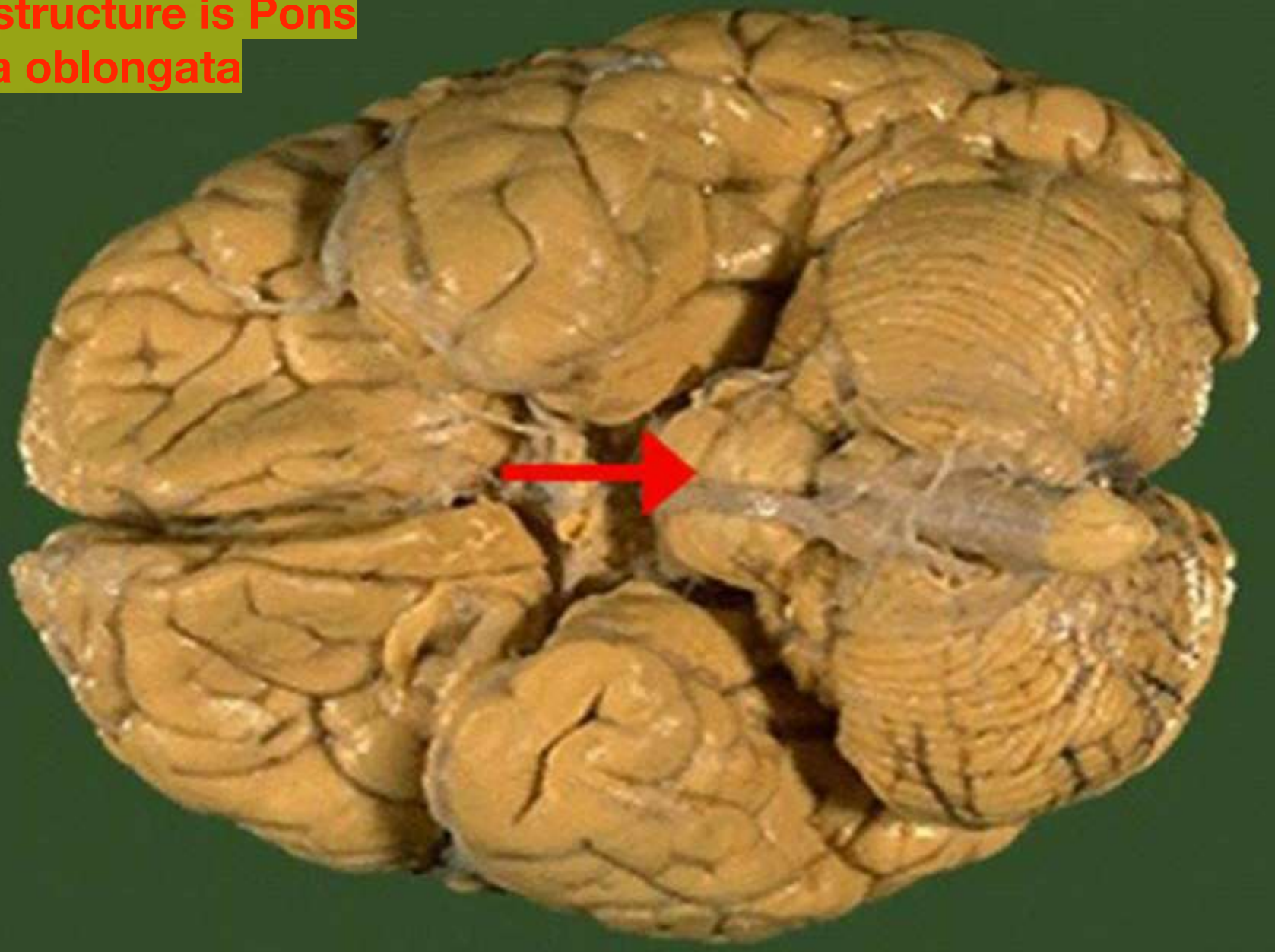


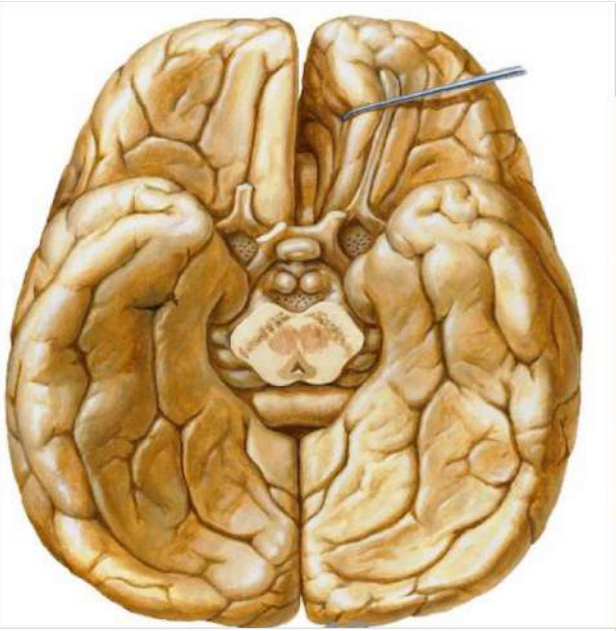
MEDIAL SAGITTAL ASPECT


Interventricular foramen
Medial frontal gyrus
Fornix
Central sulcus
Paracentral lobule
Cingulate sulcus
Cingulate gyrus
Corpus callosum
Parieto-occipital sulcus
Precuneus
Cuneus
Choroid plexus
Splenium of corpus callosum
Calcarine sulcus
Lingual gyrus
Midbrain (oblique cut)
Collateral sulcus
Parahippocampal gyrus
Medial occipitotemporal gyrus
Occipitotemporal sulcus
Lateral occipitotemporal gyrus
Uncus
Anterior commissure
Septum pellucidum
Rostrum
Genu of corpus callosum
Frontal pole

Inferior surface of the brain

The pointed structure is Pons
Then medulla oblongata





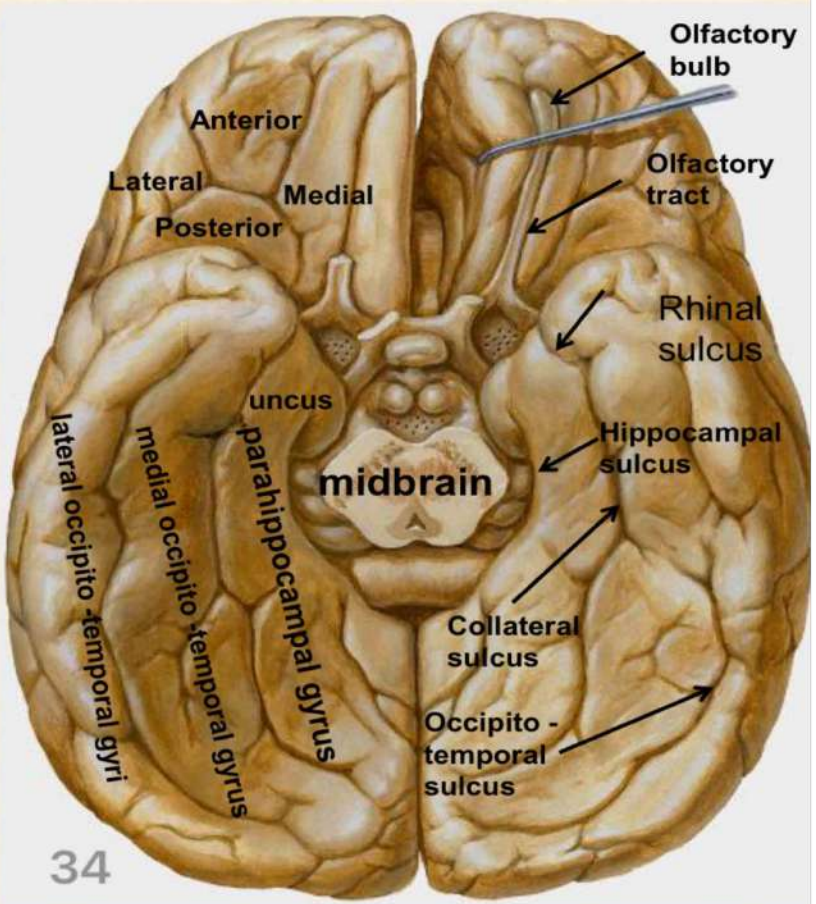
The tentorial surface:

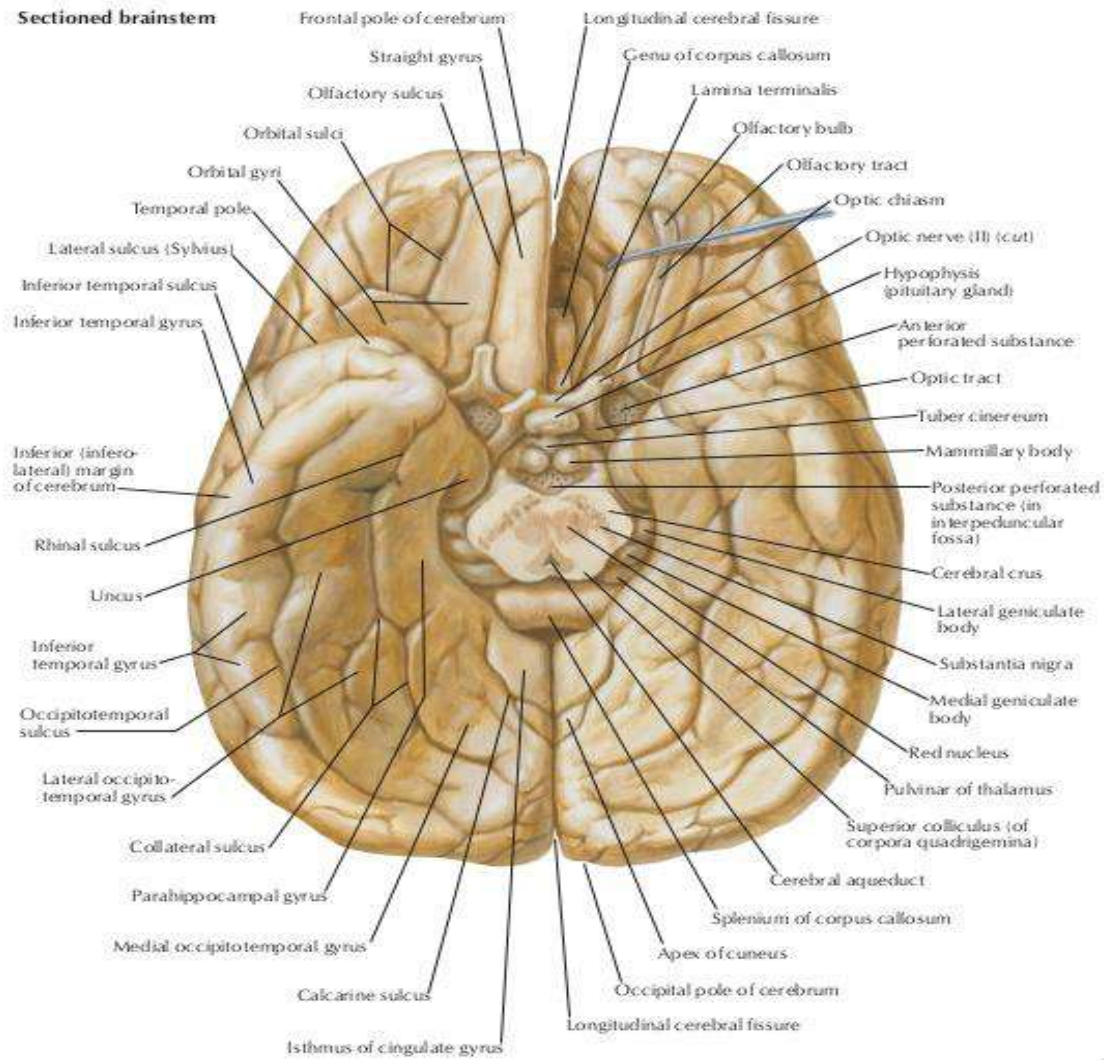
Hippocampal sulcus separates the parahippocampal gyrus from the midbrain.

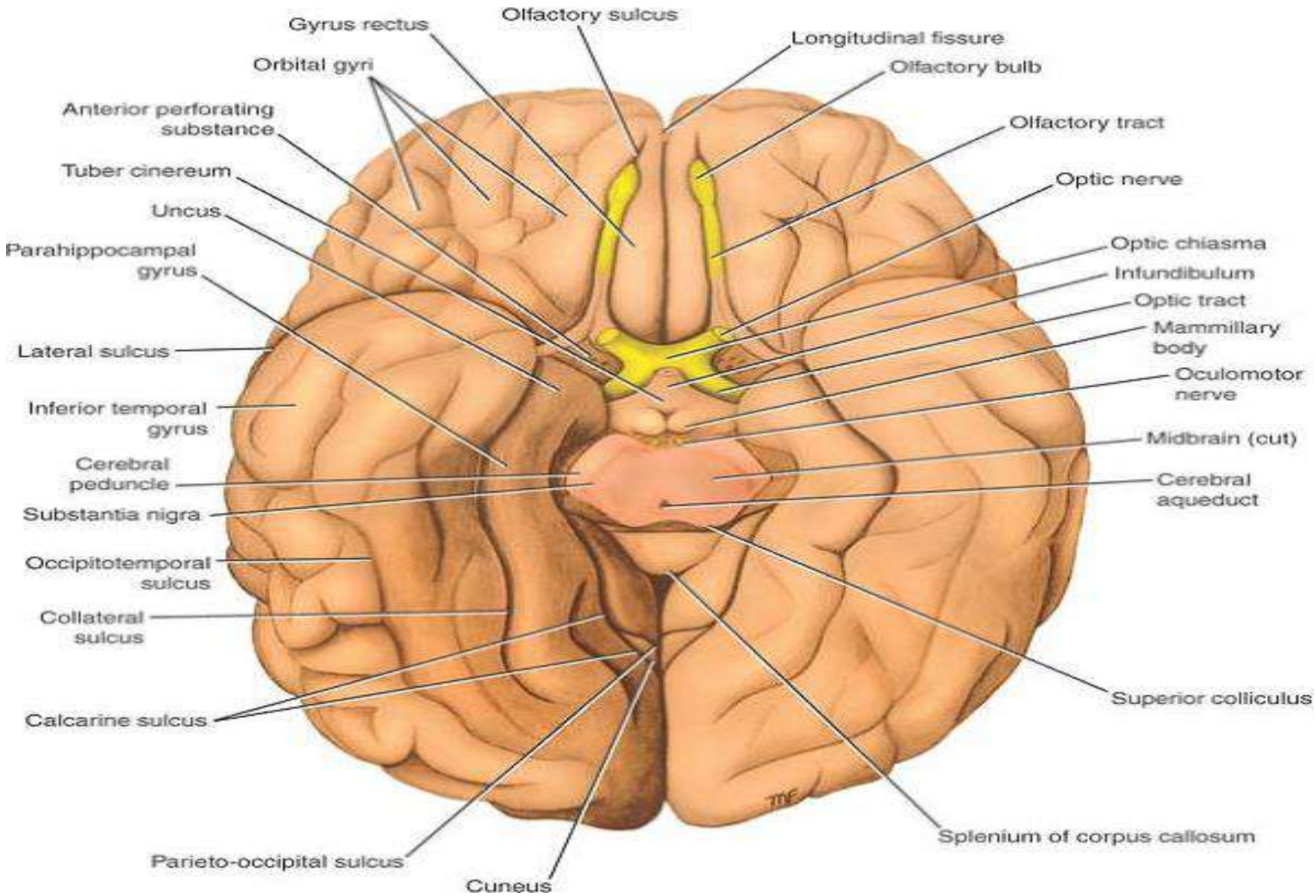
Collateral sulcus: below & parallel to the calcrine sulcus.

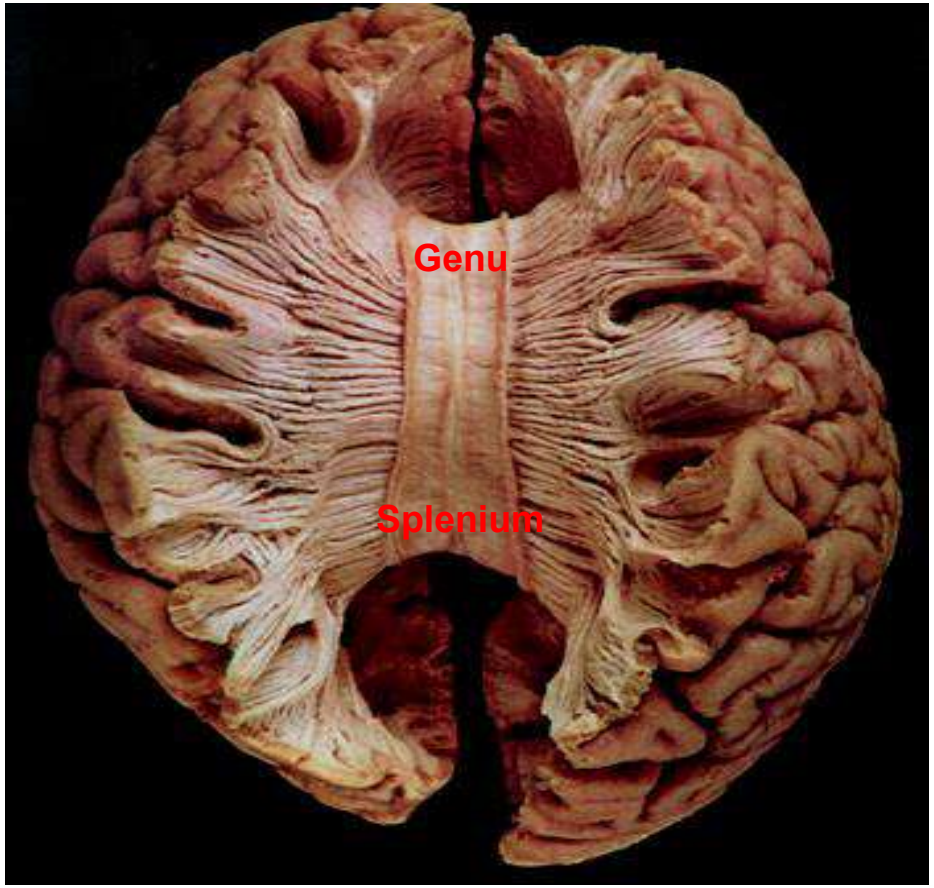
Rhinal sulcus separates the temporal pole from the uncus.

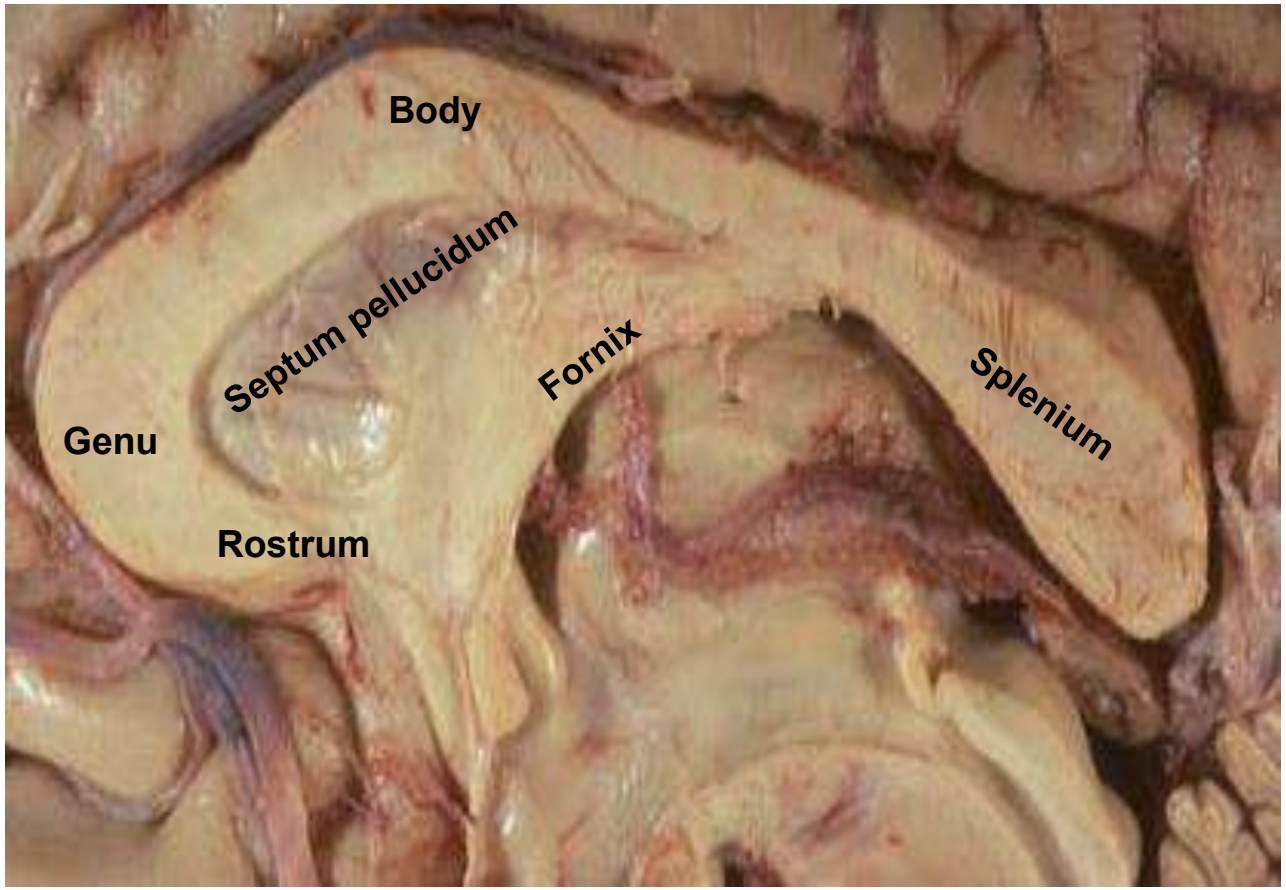
Occipito -temporal sulcus lies between the medial occipitotemopral or fusiform gyrus which is involved in face recognition & lateral occipito - temporal or inferior temporal gyrus. which is involved in location recognition memory




Sectioned brainstem
Frontal pole of cerebrum
Longitudinal cerebral fissure
Straight gyrus
Genu of corpus callosum
Olfactory sulcus
Lamina terminalis
Orbital sulci
Olfactory bulb
Orbital gyri
Olfactory tract
Temporal pole
Optic chiasm
Lateral sulcus (Sylvius)
Optic nerve (II) (cut)
Inferior temporal sulcus
Hypophysis (pituitary gland)
Inferior temporal gyrus
Anterior perforated substance
Optic tract
Tuber cinereum
Inferior (infero-lateral) margin of cerebrum
Mammillary body
Posterior perforated substance (in interpeduncular fossa)
Rhinal sulcus
Cerebral crus
Uncus
Lateral geniculate body
Inferior temporal gyrus
Substantia nigra
Medial geniculate body
Occipitotemporal sulcus
Red nucleus
Lateral occipito-temporal gyrus
Pulvinar of thalamus
Superior colliculus (of corpora quadrigemina)
Collateral sulcus
Cerebral aqueduct
Parahippocampal gyrus
Splenium of corpus callosum
Medial occipitotemporal gyrus
Apex of cuneus
Calcarine sulcus
Occipital pole of cerebrum
Longitudinal cerebral fissure
Isthmus of cingulate gyrus


Gyrus rectus
Olfactory sulcus
Longitudinal fissure
Orbital gyri
Olfactory bulb
Anterior perforating substance
Olfactory tract
Tuber cinereum
Optic nerve
Uncus
Optic chiasma
Parahippocampal gyrus
Infundibulum
Optic tract
Lateral sulcus
Mammillary body
Oculomotor nerve
Inferior temporal gyrus
Midbrain (cut)
Cerebral peduncle
Cerebral aqueduct
Substantia nigra
Occipitotemporal sulcus
Collateral sulcus
Superior colliculus
Calcarine sulcus
Splenium of corpus callosum
Parieto-occipital sulcus
Cuneus





Corpus Callosum

5- Corpus Callosum:

It is the great (10 cm) transverse commissure that connects the cerebral hemispheres & roofs the lateral ventricle **(except ant part of temporal lobes which are connected by the anterior commissure).**

It is divided into 4 parts ; rostrum, genu, body & splenium.

Fibers of the genu curve forwards to connect frontal lobes forming **"Forceps minor".**

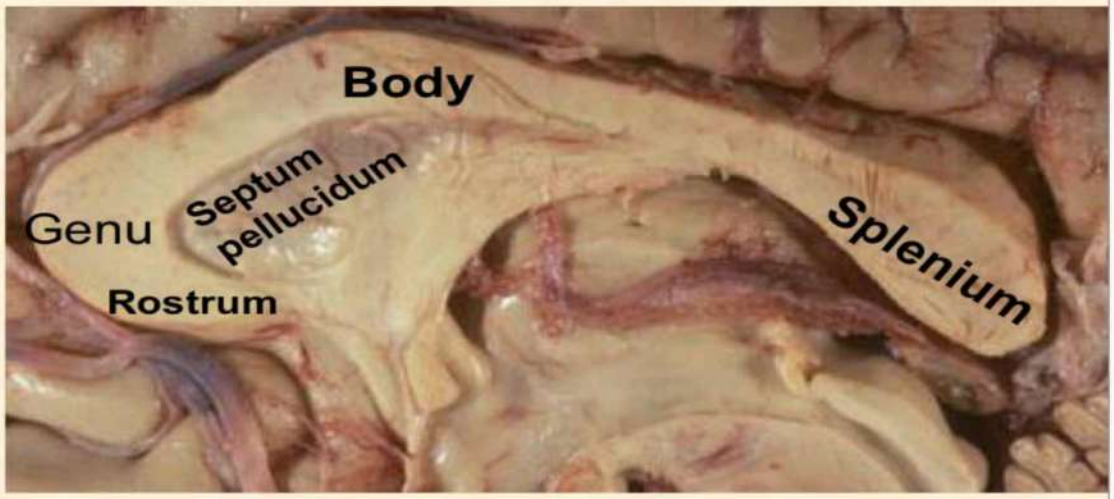
Fibers of splenium curve backwards to connect occipital lobes forming "**Forceps Major**".

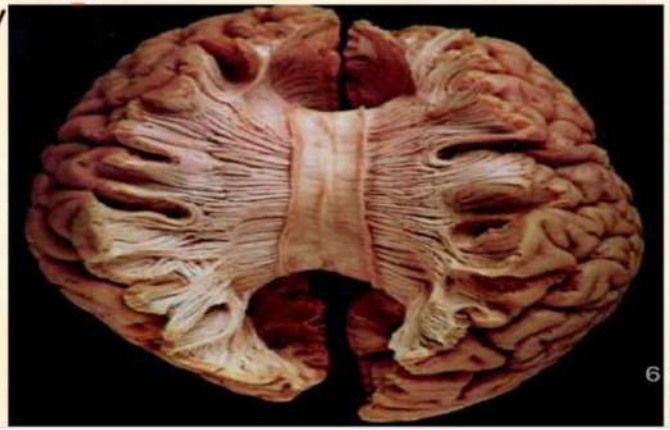
Tapetum: fibres of body and splenium intersecting with corona radiata of the internal capsule.

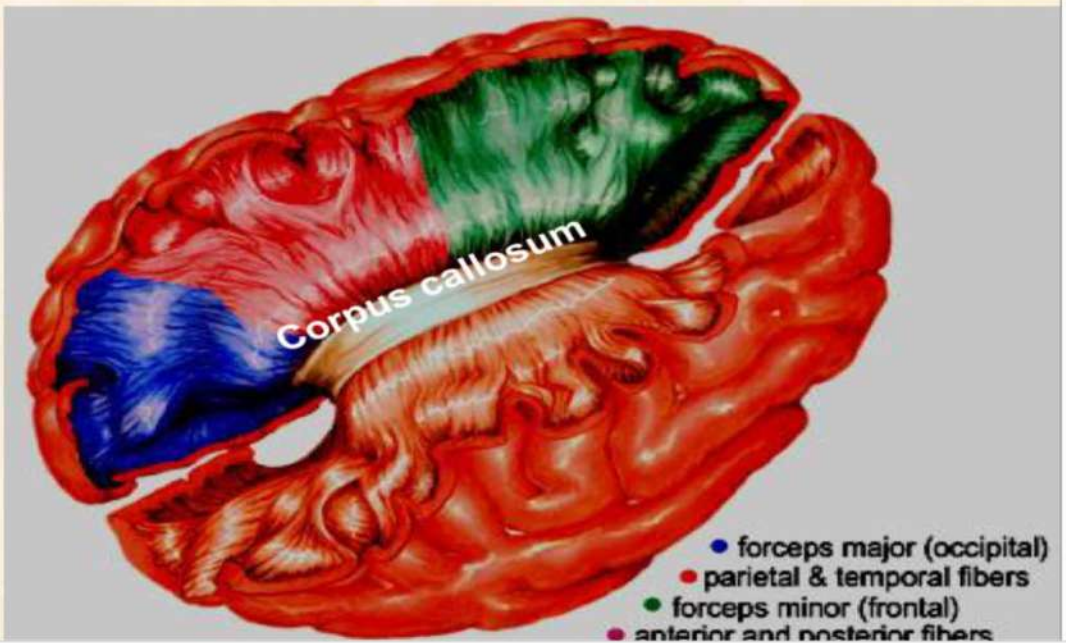
Blood Supply: It is supplied by anterior cerebral artery **except the splenium** by the posterior cerebral artery

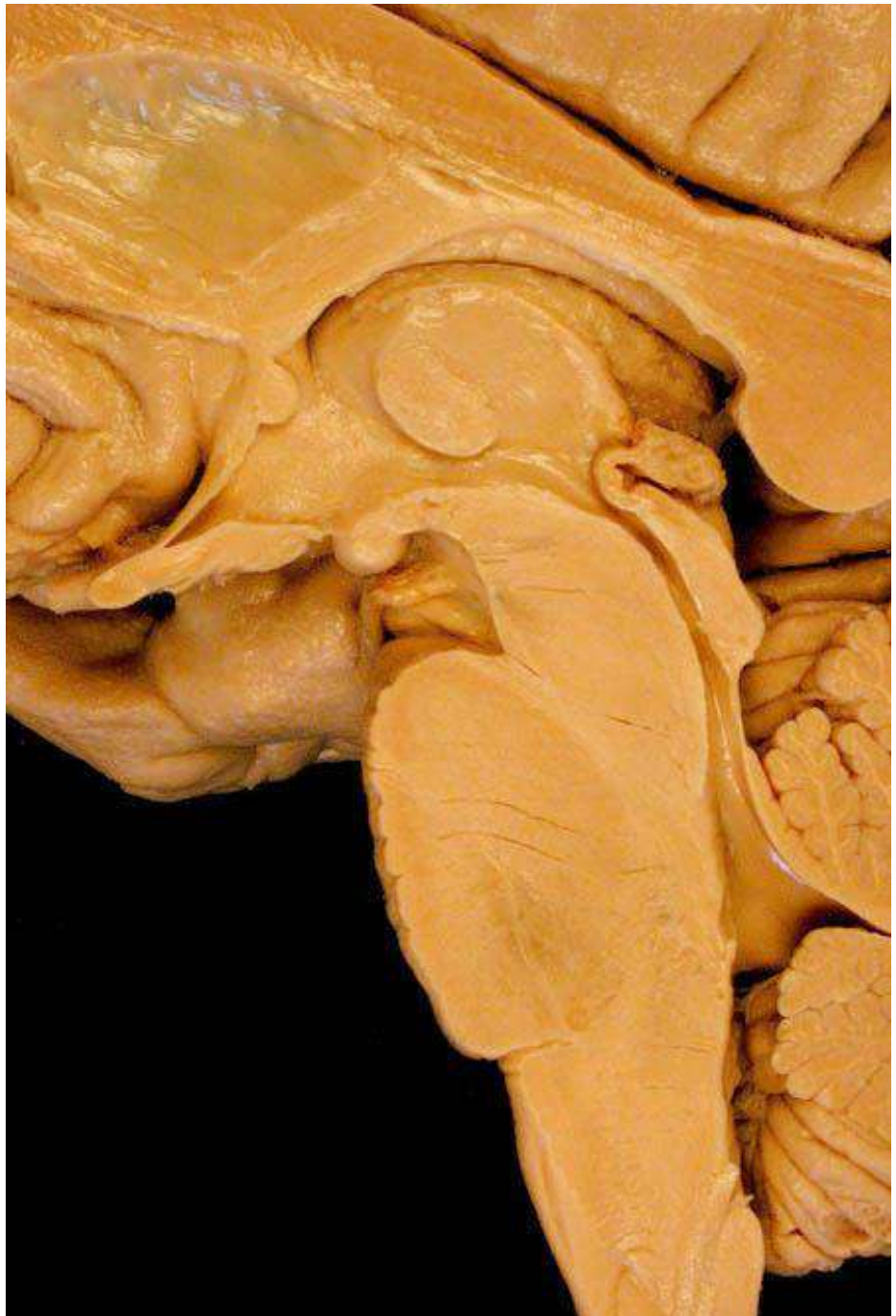
Lesion : 1- **callosal Syndrome (split brain)**

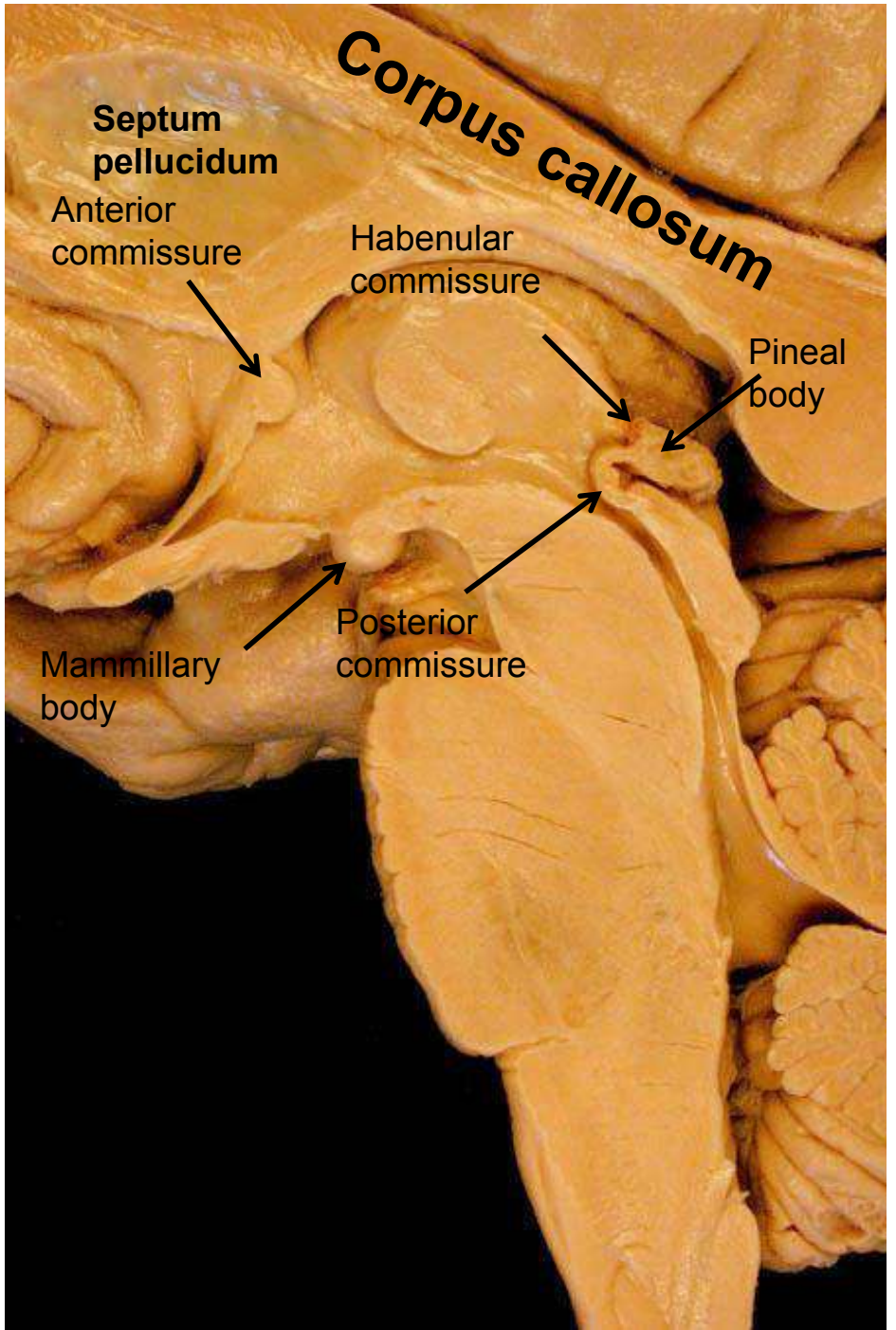
2- Apraxia



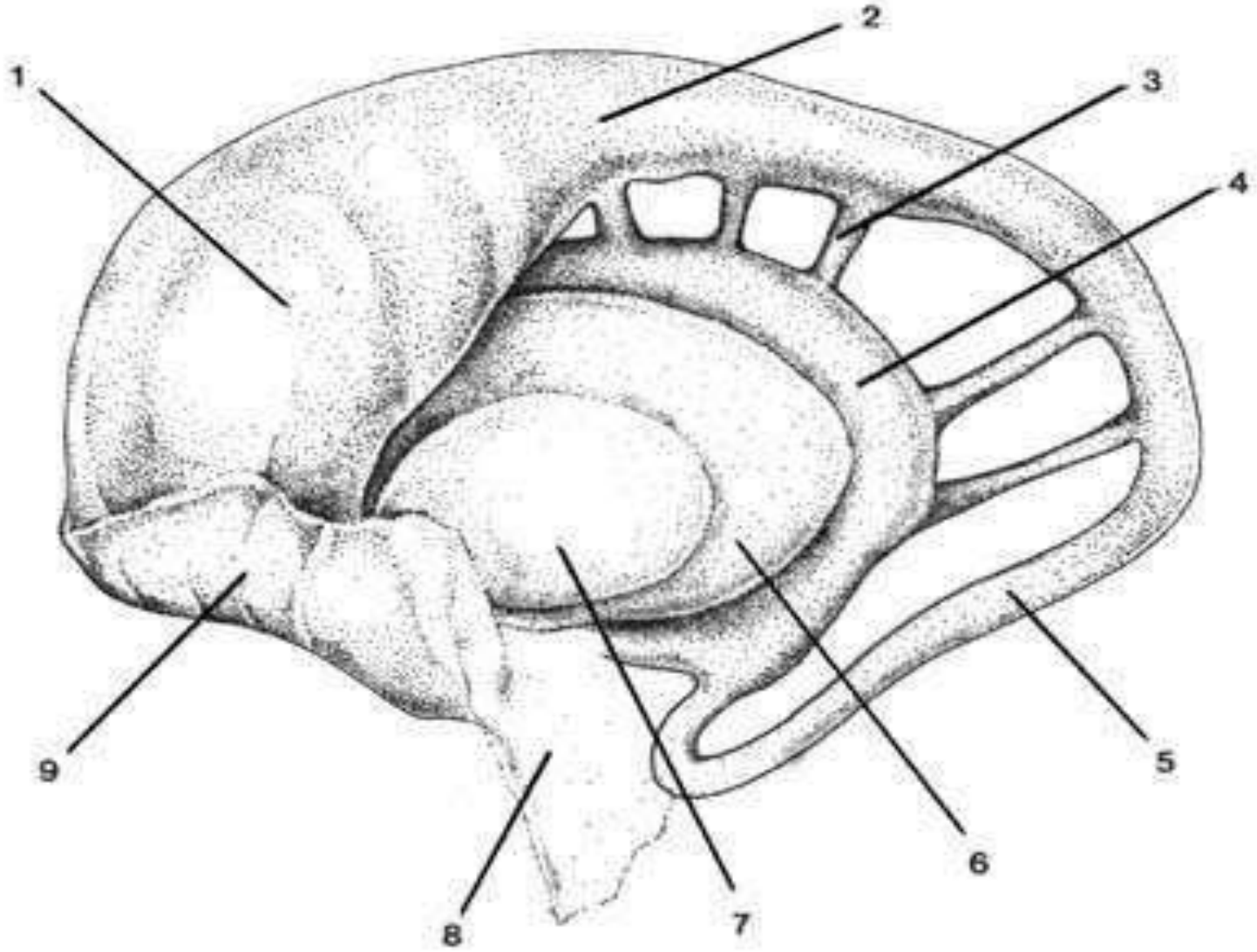






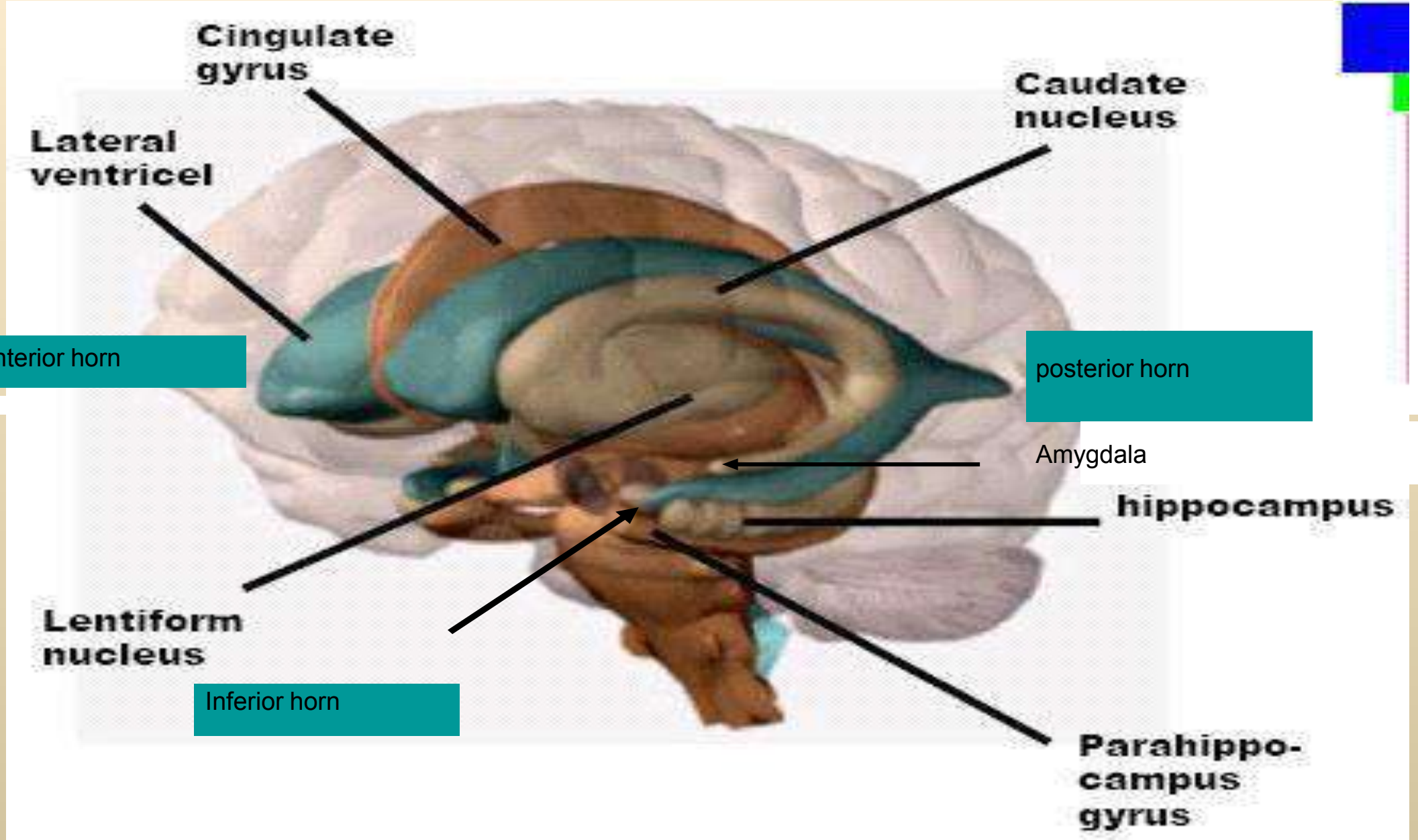

Corpus callosum
Septum pellucidum
Anterior commissure
Habenular commissure
Pineal body
Posterior commissure
Mammillary body

Basal Nuclei



1. head of caudate nucelus
2. body of caudate nucelus
3. caudatolenticular “gray bridge”
4. putamen
5. tail of caudate nucleus
6. external segment of globus pallidus
7. internal segment of globus pallidus
8. amygdaloid body
9. nucleus accumbens

Relation of the basal ganglia and the lateral ventricle



Roof : body of the Corpus callosum

Floor: body of Caudate Nucleus and body of the thalamus.
Stria terminalis between thalamus and caudate. (connects between amygdala and venteral nucleus of the hypothalmus)

Medial wall:

Septum Pellucidum

Body of the fornix (choroid fissure between fornix and thalamus (choroid plexus)

Relations of body

Relations of Anterior horn

Roof : genu of the Corpus callosum

Floor: Head of Caudate Nucleus

Medial wall: Rostrum of corpus callosum

Septum Pellucidum

Anterior column of the fornix

- **Roof and lateral wall**
  - Tapetum of the corpus callosum
  - Optic radiation lying against the tapetum in the lateral wall.
- **Medial wall** --- two convexities:
  - Upper (bulb of the posterior horn)
    - Splenium of the corpus callosum (bulb)
  - Lower (Calcar avis)
    - Calcarine sulcus.
    - If Calcar avis is well developed, it obliterates the posterior horn.

Relations of Posterior horn

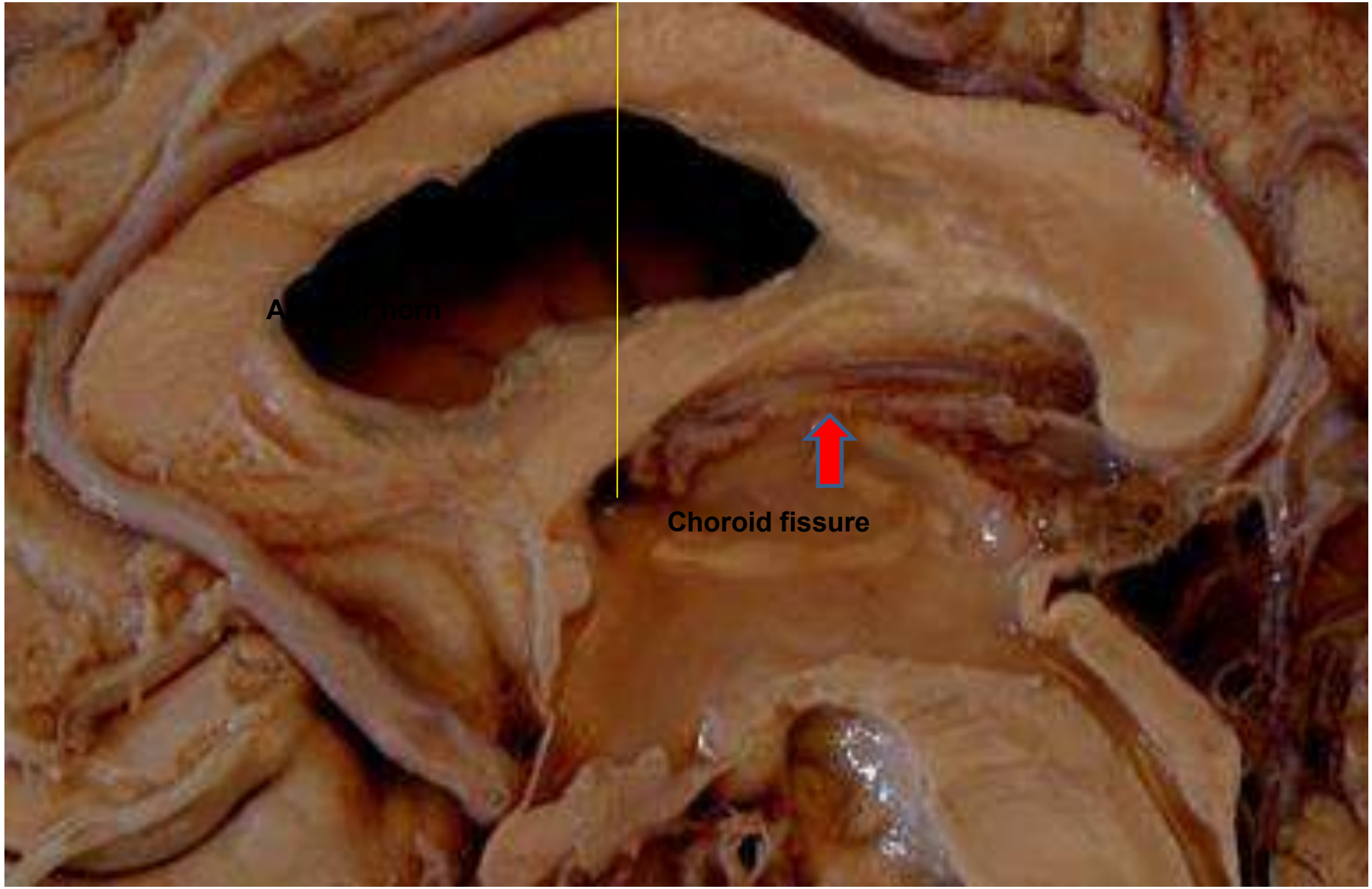
Relations of inferior horn

- **Roof**
  - tail of the caudate nucleus, amygdaloid body
- **Lateral wall**
  - Tapetum of corpus callosum and optic radiation
- **Floor**
  - medially
    - hippocampus
  - laterally
    - collateral eminence (by collateral fissure)

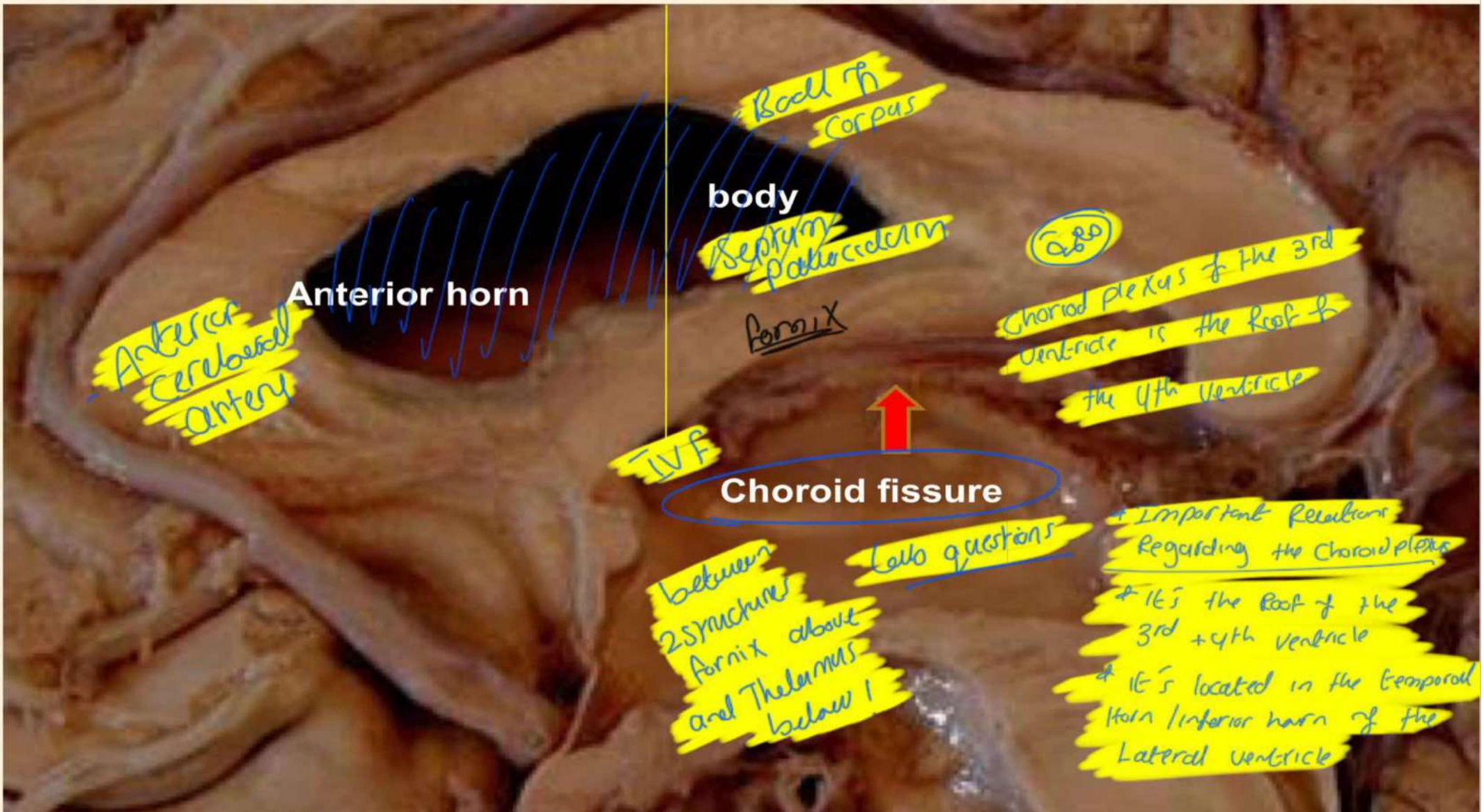
Lower part of choroid plexus enter this horn from the temporal part of the choroid fissure

Brain Ventricles

Relations of lateral ventricle



Relations of lateral ventricle

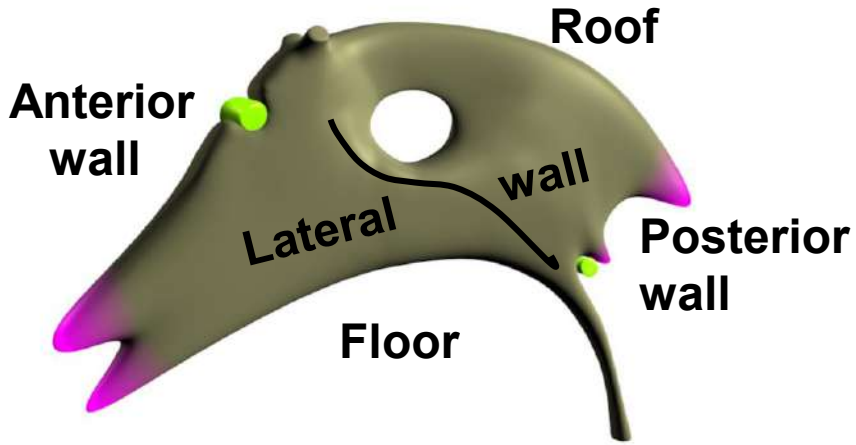


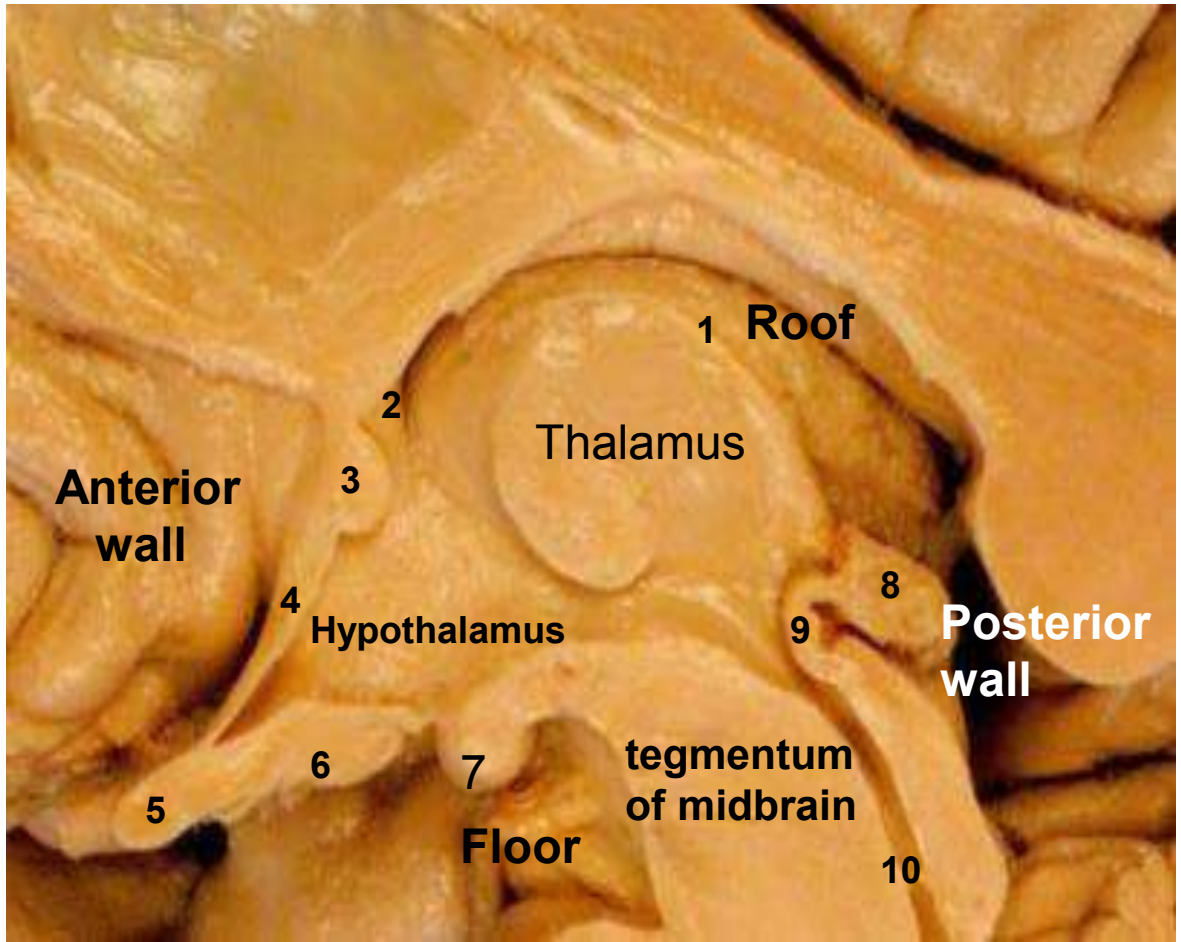
The third ventricle

It is a narrow slit like cleft between the 2 halves of the diencephalon.

Boundaries:

- **Roof**: Thin layer of ependyma stretched between lateral walls containg choroid plexus (1).
- More superiorly, fornix, septum pellicidum and corpus callosum
- **Anterior wall**: Columns of fornix (2), anterior commissure (3), Lamina terminalis (4) &
- **Floor**: Hypothalamus [optic chiasma (5), tuber cinereum (6) Mammillary body (7)] & tegmentum of midbrain.
- **Posterior wall**: Pineal body (8), posterior commissure (9) & aqueduct of sylvius (10).
- **Lateral wall:** Thalamus & hypothalamus.



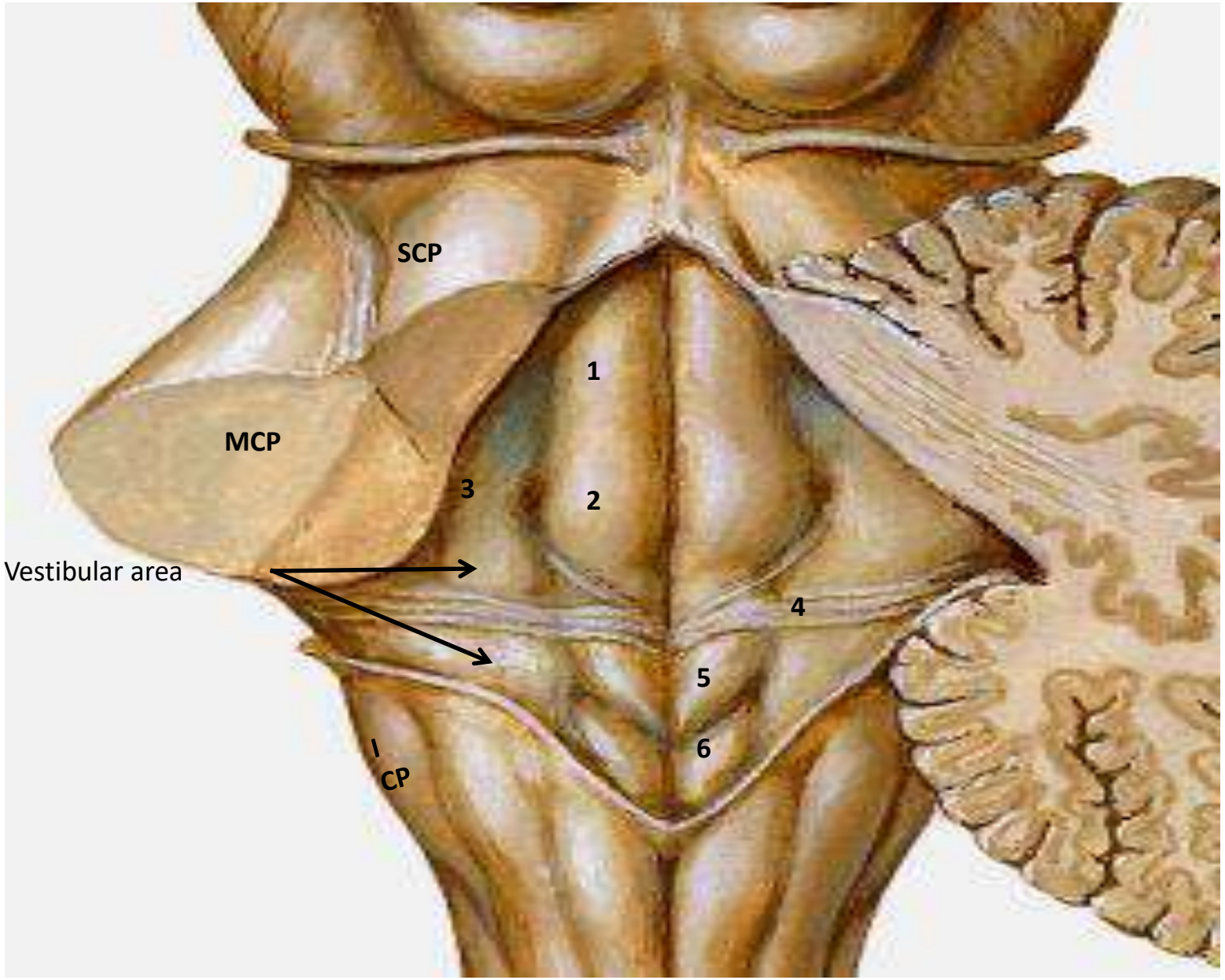


The floor of the Fourth ventricle:

Is formed of :

- **The posterior surface of the pons**

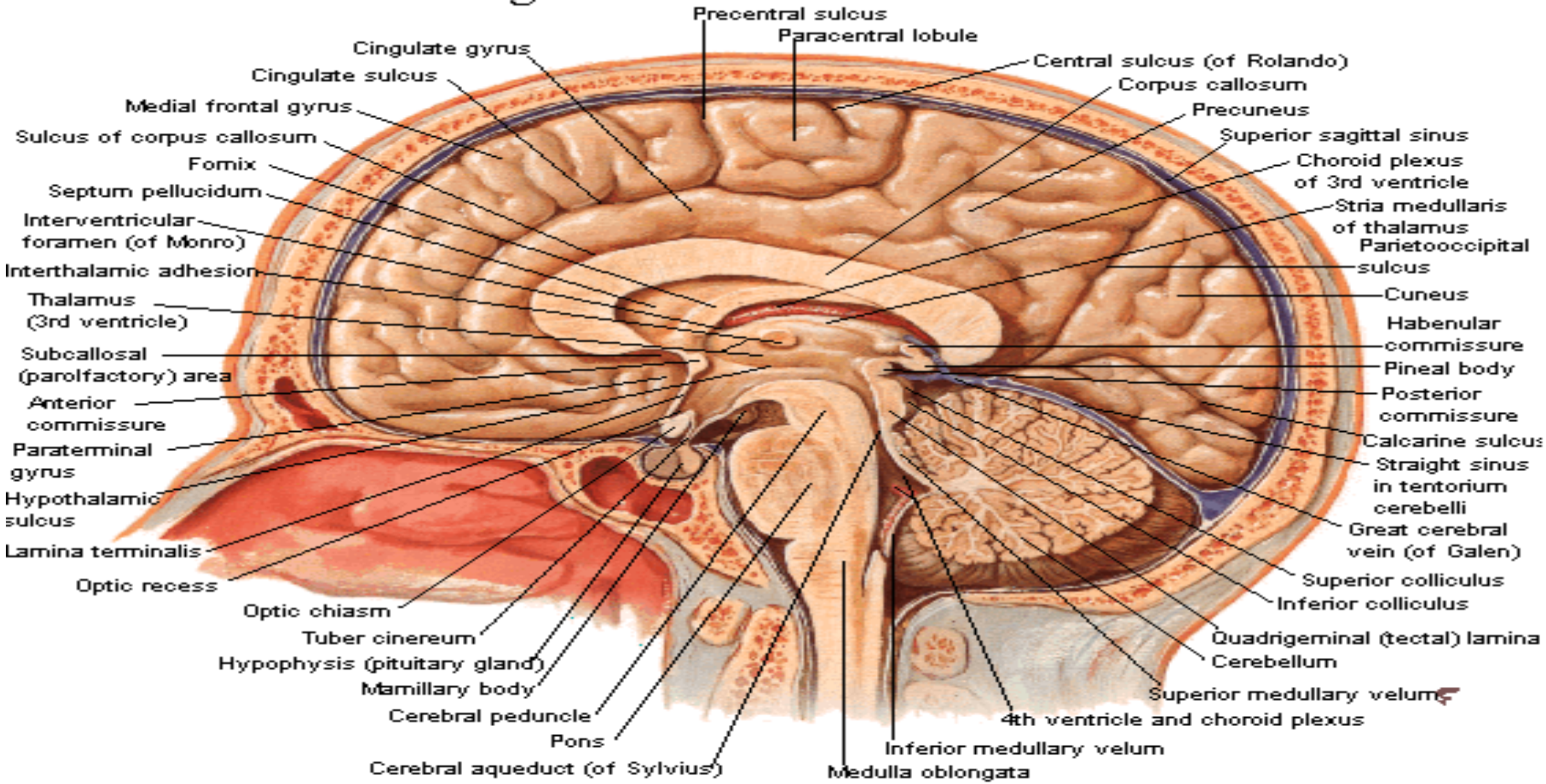
- **The posterior surface of the open medulla**



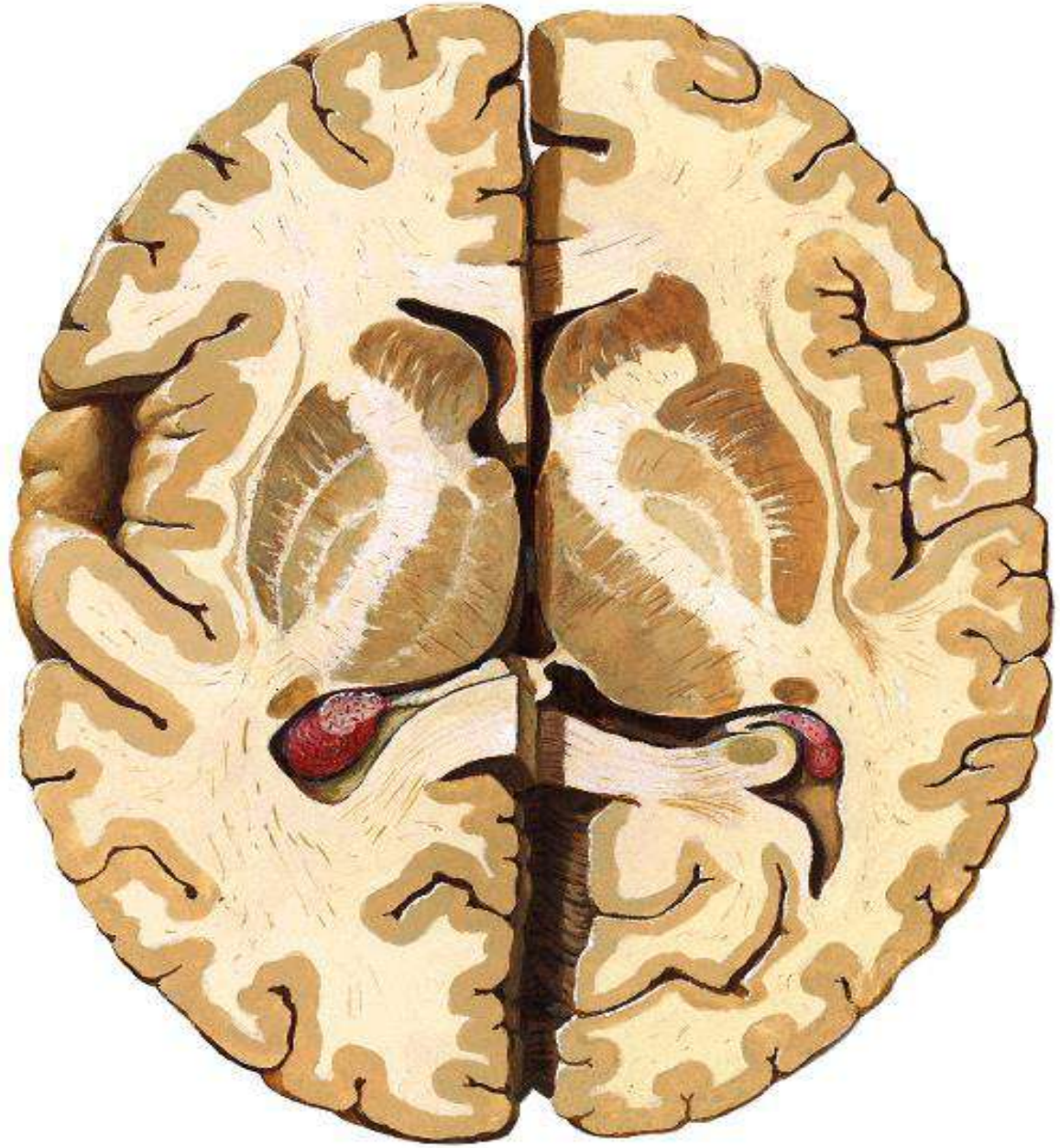
Sections of the brain

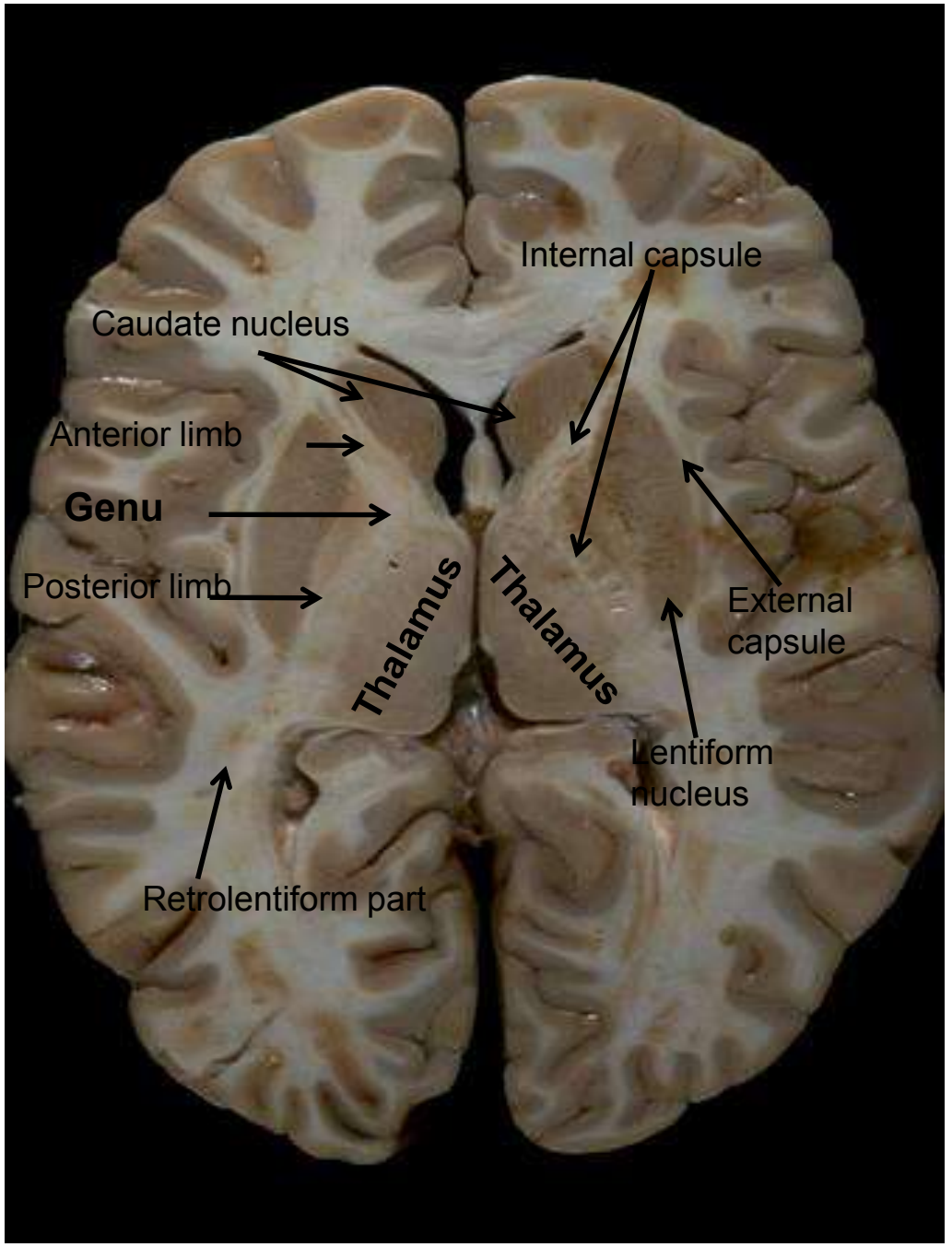
Cerebrum – Brain in Situ

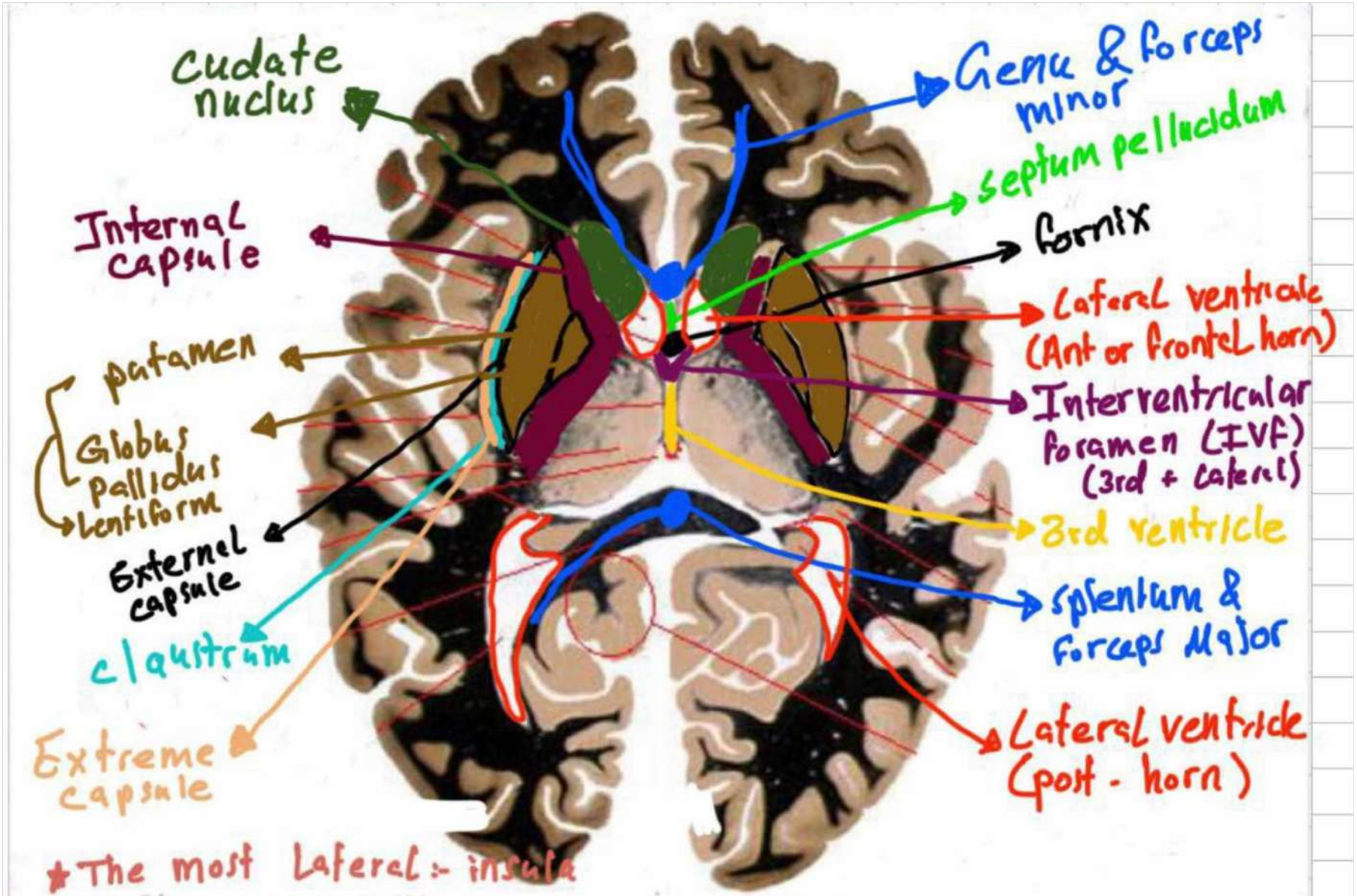
Sagittal Section - Medial View



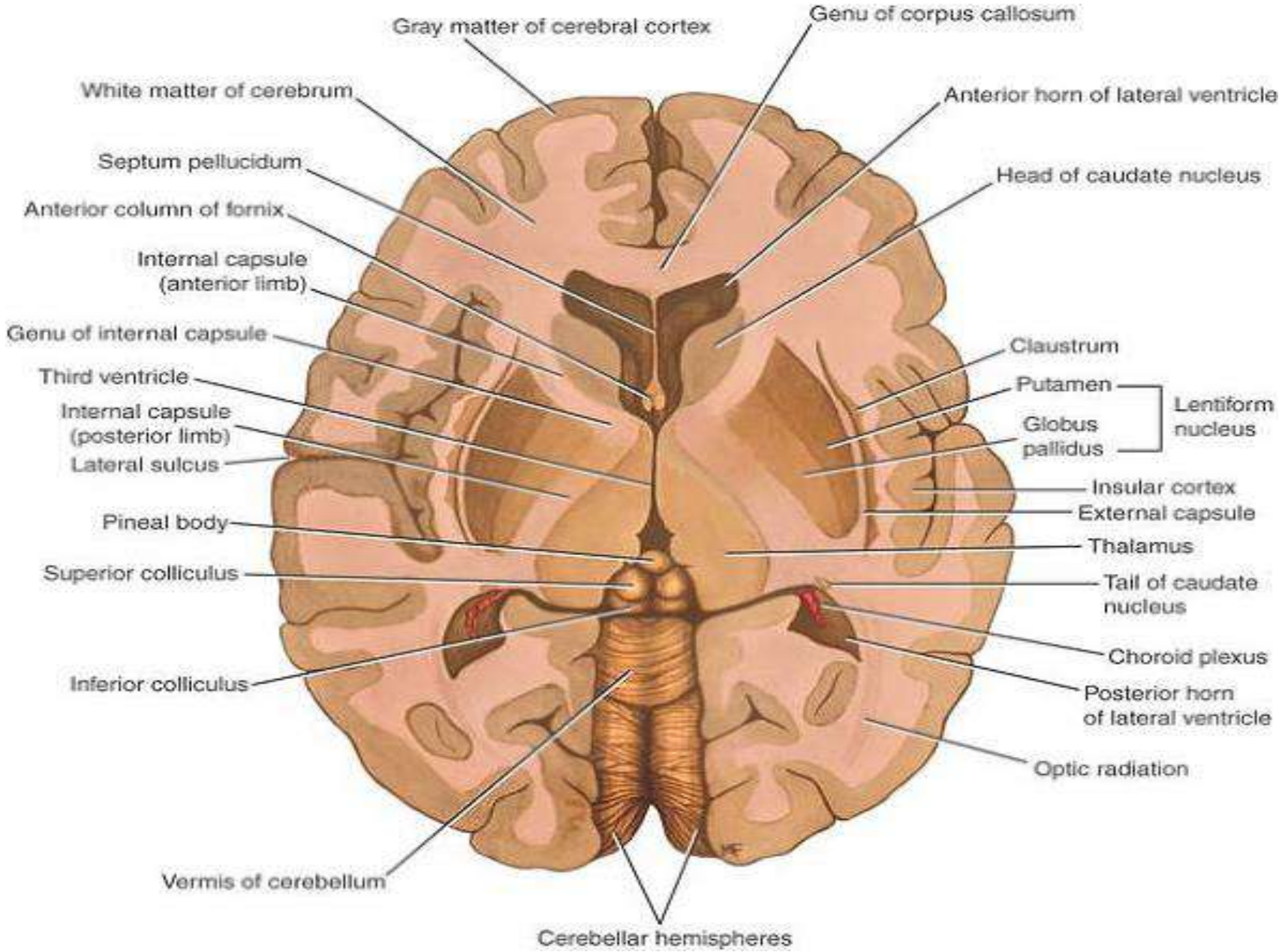
Horizontal section of the brain




Internal capsule
Caudate nucleus
Anterior limb
Genu
Posterior limb
Thalamus
Thalamus
External capsule
Lentiform nucleus
Retrolentiform part



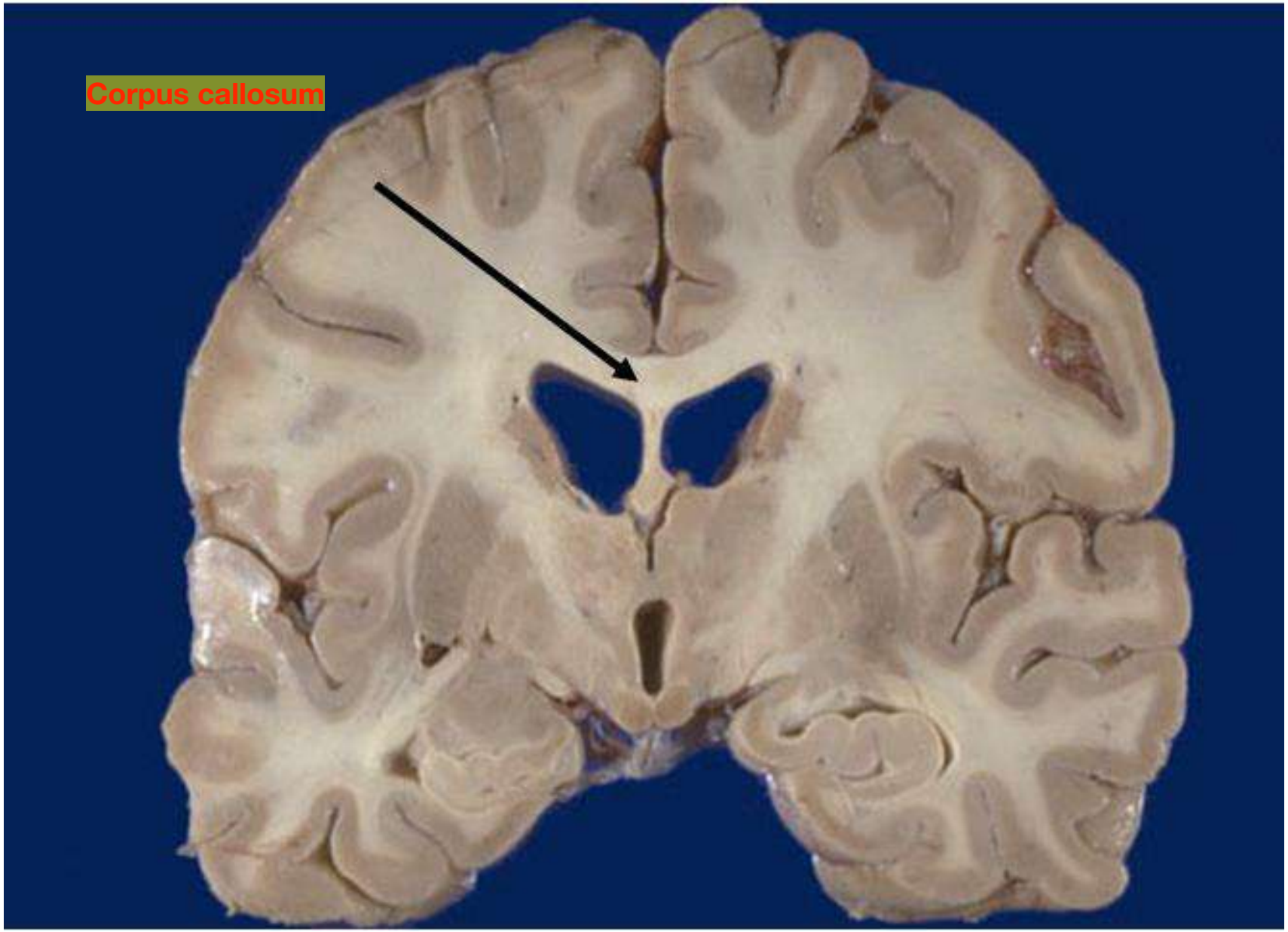
Thanks to whoever did this!💗

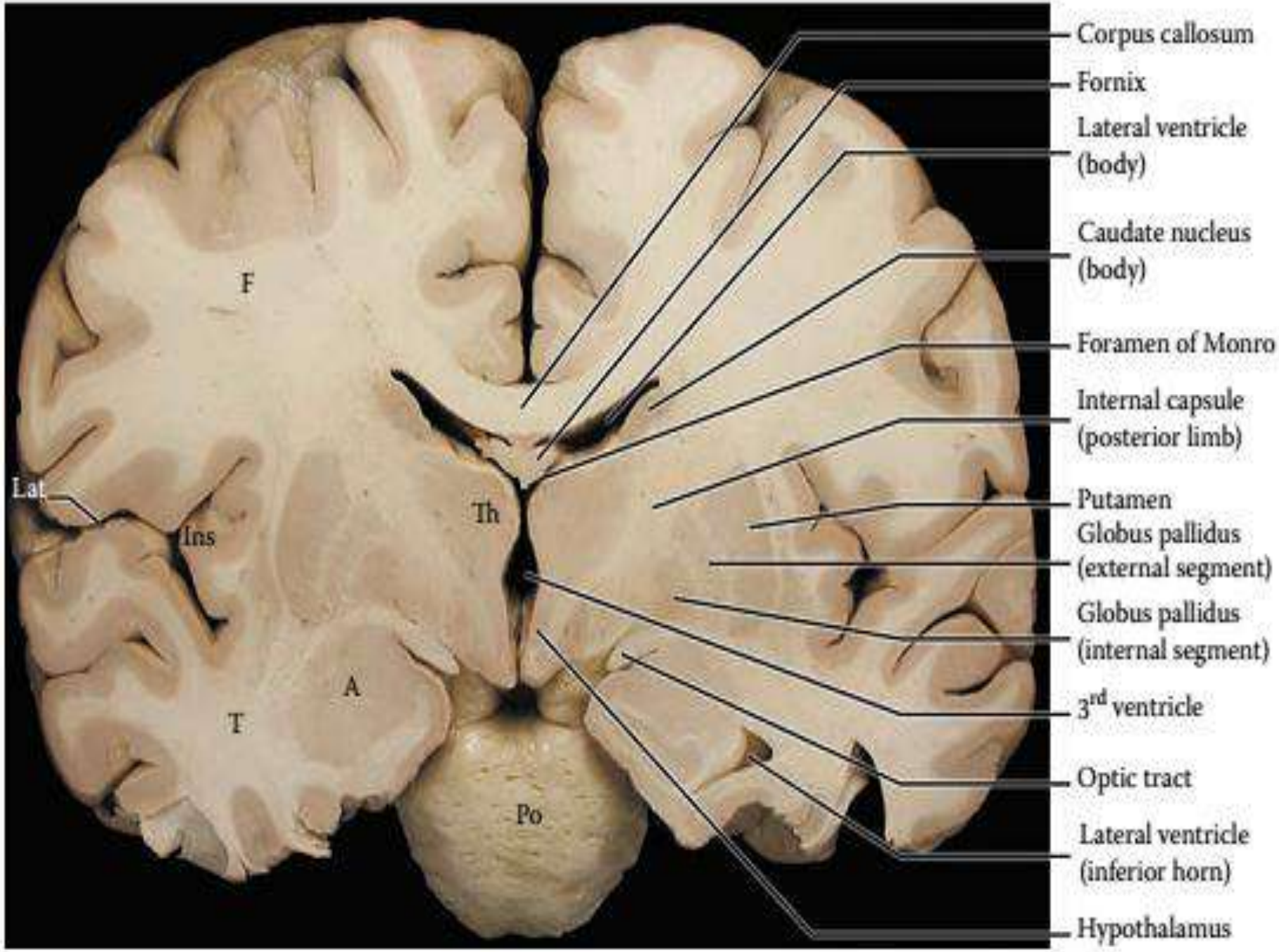

Gray matter of cerebral cortex
Genu of corpus callosum
White matter of cerebrum
Anterior horn of lateral ventricle
Septum pellucidum
Head of caudate nucleus
Anterior column of fornix
Internal capsule (anterior limb)
Genu of internal capsule
Claustrum
Third ventricle
Putamen
Lentiform nucleus
Internal capsule (posterior limb)
Globus pallidus
Lateral sulcus
Insular cortex
External capsule
Pineal body
Thalamus
Superior colliculus
Tail of caudate nucleus
Choroid plexus
Inferior colliculus
Posterior horn of lateral ventricle
Optic radiation
Vermis of cerebellum
Cerebellar hemispheres

Key to MRI:

1. anterior horn of lateral ventricle
2. posterior horn of lateral ventricle
3. septum pellucidum
4. head of caudate nucleus
5. internal capsule
6. lentiform nucleus
7. thalamus
8. 3rd ventricle
9. longitudinal fissure
10. corpus callosum
11. superior sagittal sinus

Coronal section of the brain


Corpus callosum


F
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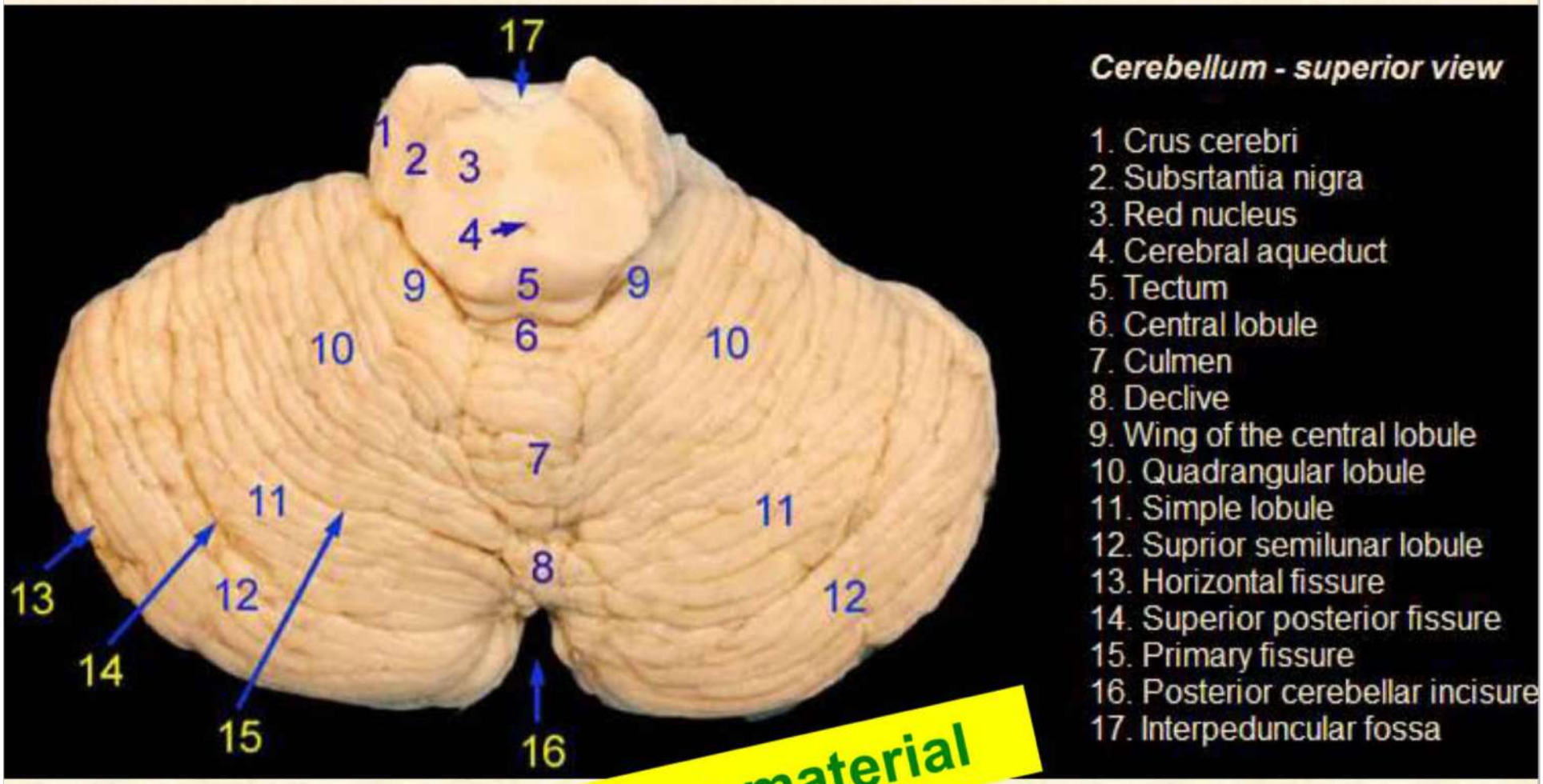
Corpus callosum
Fornix
Lateral ventricle (body)
Caudate nucleus (body)
Foramen of Monro
Internal capsule (posterior limb)
Putamen
Globus pallidus (external segment)
Globus pallidus (internal segment)
3rd ventricle
Optic tract
Lateral ventricle (inferior horn)
Hypothalamus

Cerebellum


superior surface of the cerebellum

Cerebellar lobules - Superior view



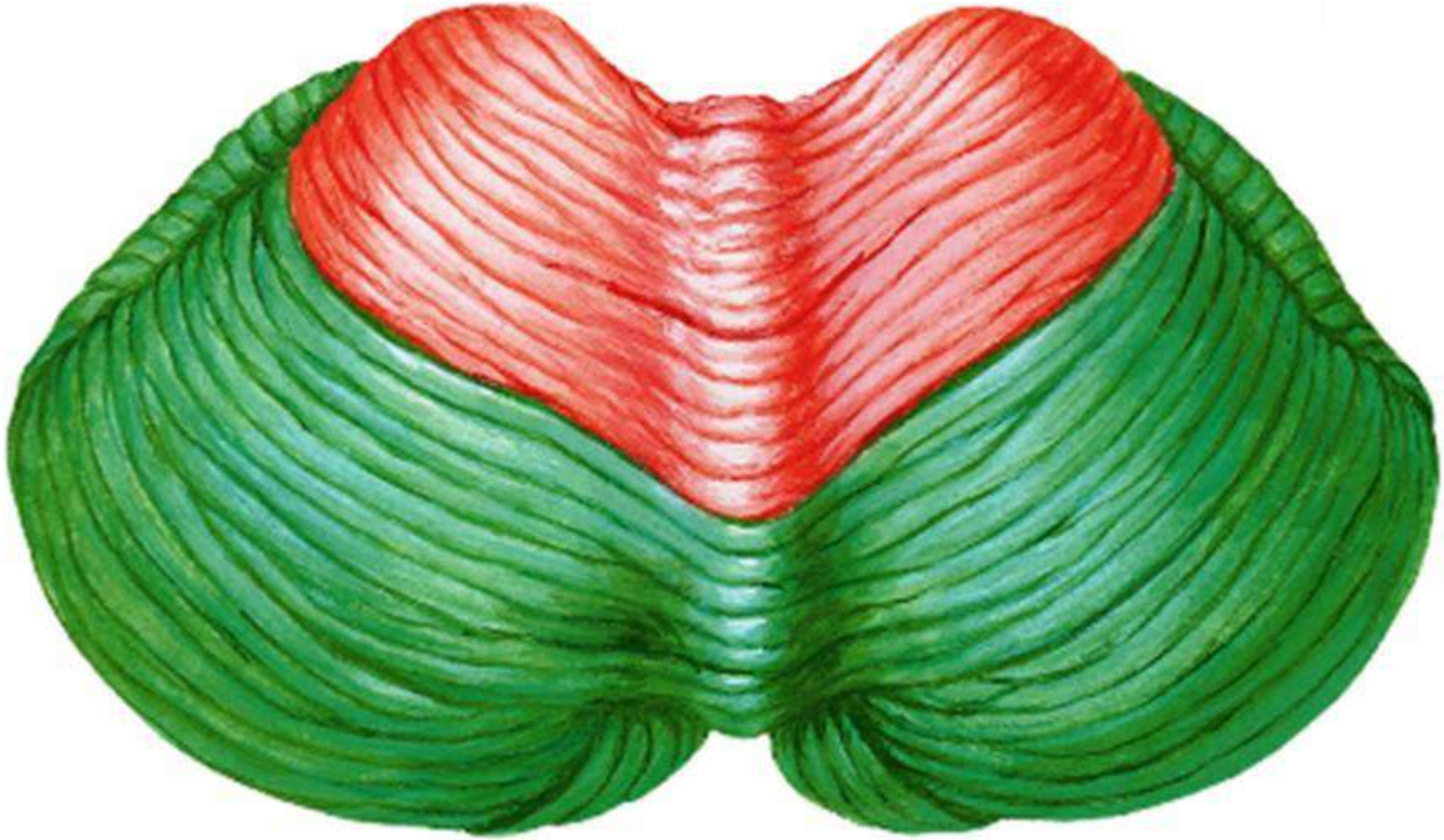
Cerebellum - superior view

1. Crus cerebri
2. Subsrtantia nigra
3. Red nucleus
4. Cerebral aqueduct
5. Tectum
6. Central lobule
7. Culmen
8. Declive
9. Wing of the central lobule
10. Quadrangular lobule
11. Simple lobule
12. Suprior semilunar lobule
13. Horizontal fissure
14. Superior posterior fissure
15. Primary fissure
16. Posterior cerebellar incisure
17. Interpeduncular fossa

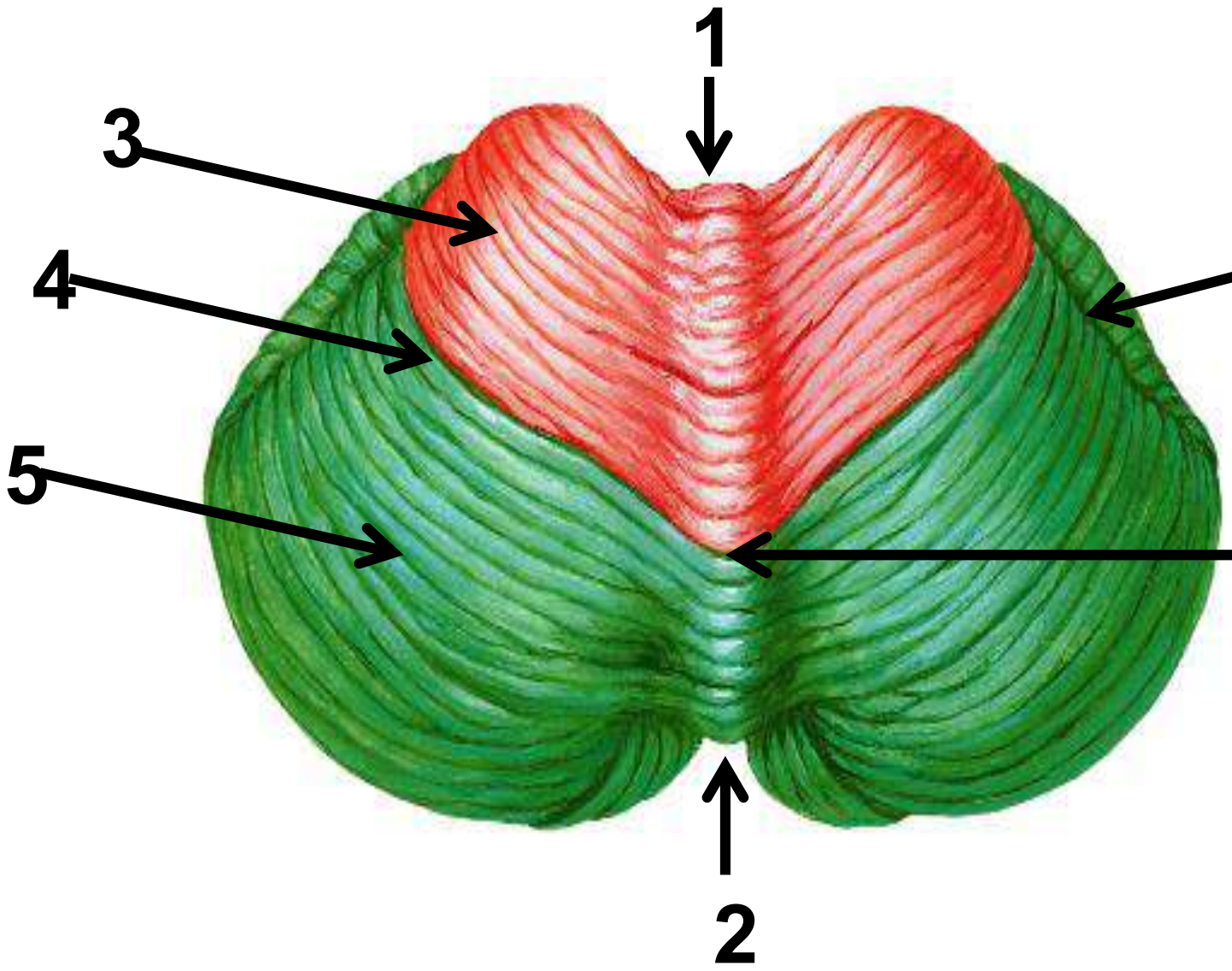
Not an exam material

I have no idea why i put this slide
Feel free to skip it

superior surface of the cerebellum

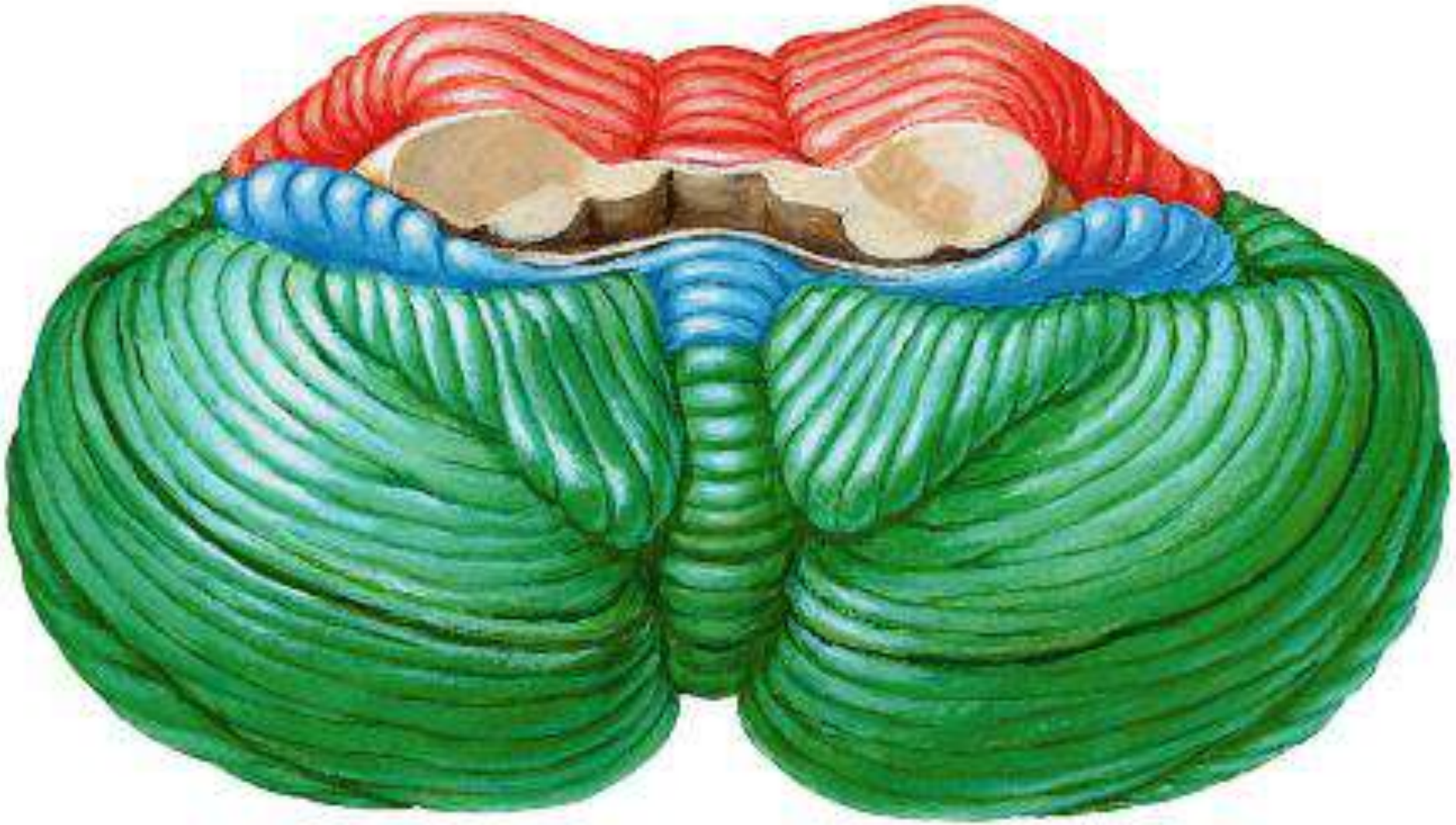


superior surface of the cerebellum

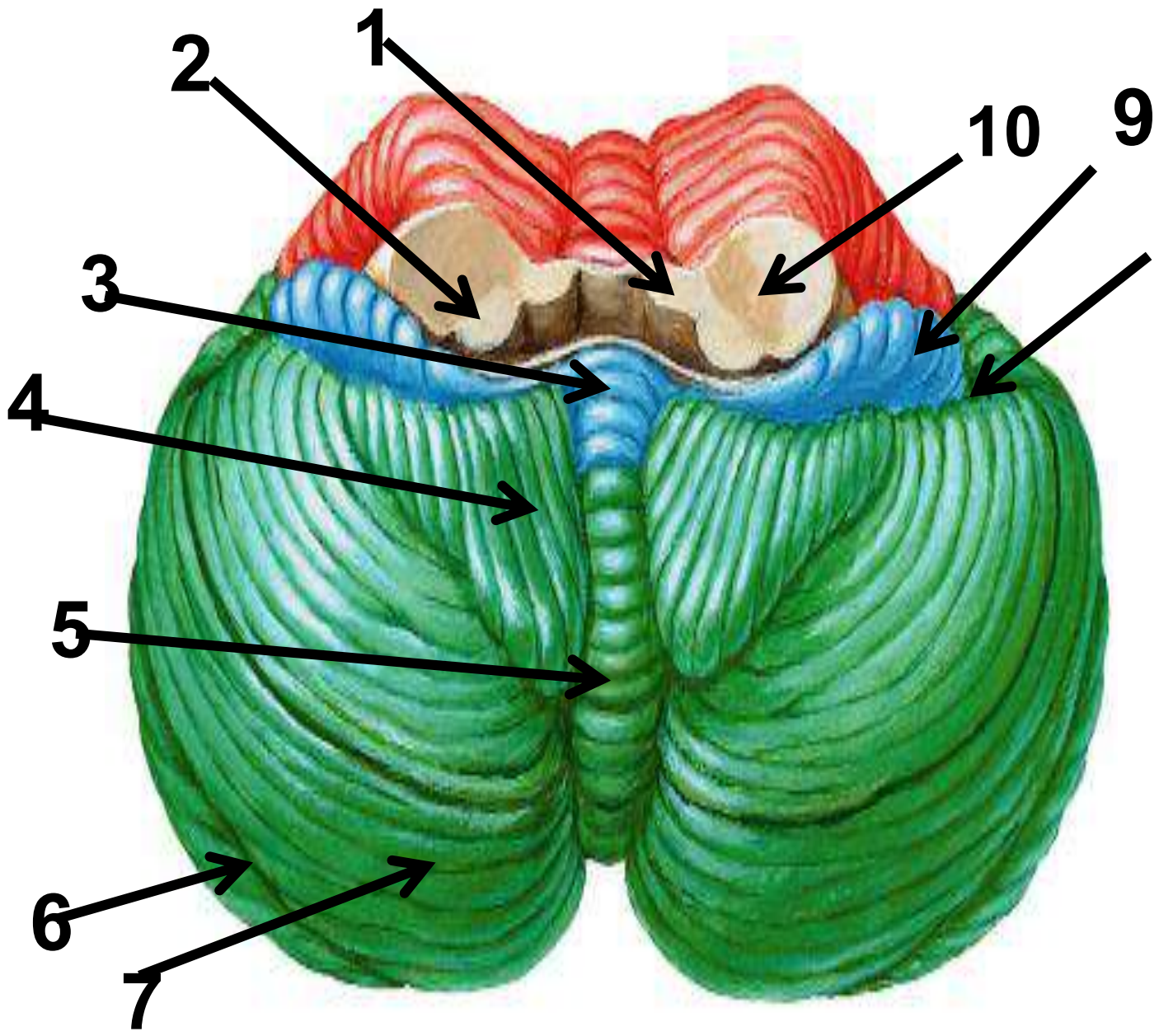


1- Antrior notch
2- posterior notch
3- anterior lobe
4- primary fissure
5- posterior lobe
6- superior vemis
7- horizontal fissure

Inferior surface of the cerebellum



Inferior surface of the cerebellum



1- superior cerebellar peduncle
2- inferior cerebellar peduncle
3- Nodule
4- cerebellar tonsil
5- inferior vermis
6- horizontal fissure
7- posterior lobe
8- posterolateral fissure
9- floculonodular lobe
10- middle cerebellar peduncle

Vertical subdivisions of the cerebellum

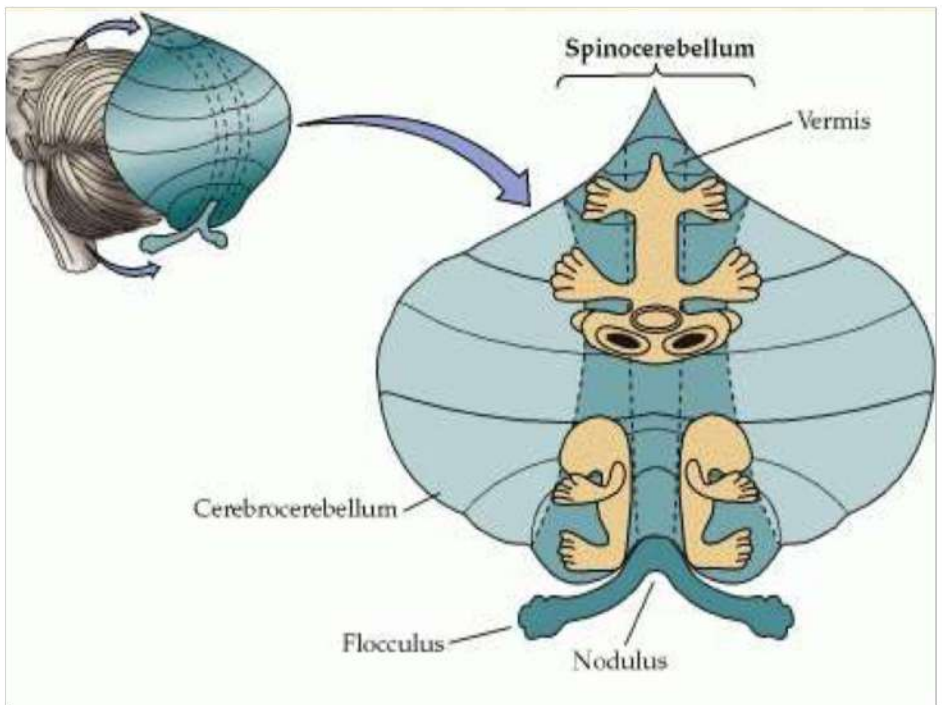
1- vermis (central part on superior and inferior surfaces) represents head, neck, trunk, shoulders and hips). Projects to **Fastigeal N**

2- Paravemis (lateral to vermis) represents muscles of upper and lower limbs Projects to **Globose and Emboliform N**

3- Rest of cerebellar hemispheres Project to **Dentate N**

7

Don't Eat Greasy Food



THANK YOU

5-Arrow pointing to:

- Precentral gyrus, thalamus

6-This place refers to?

- The floor of the fourth ventricle

7-The purple arrow refers to:

- Postcentral gyrus

8-The purple arrow refers to:

- Calcarine sulcus

9-The purple arrow refers to:

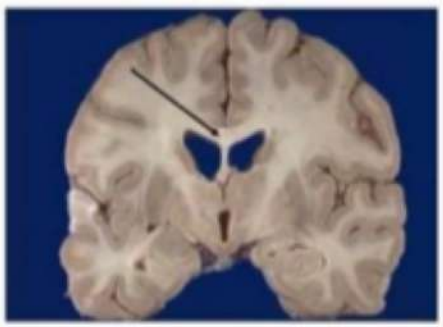
- Anterior limb of internal capsule

10-Number 3 refers to?

- Superior colliculus

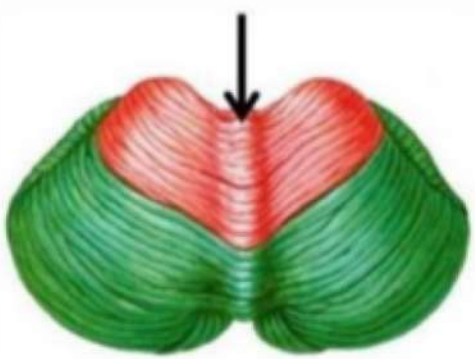
3-The pointed structure forms the roof of..... in this particular section:

a. Posterior horn of the lateral ventricle
b. Inferior horn of the lateral ventricle
c. Body of the lateral ventricle
d. Fourth ventricle
e. Anterior horn of the lateral ventricle



4-The pointed structure is connected with one of the following deep nuclei :

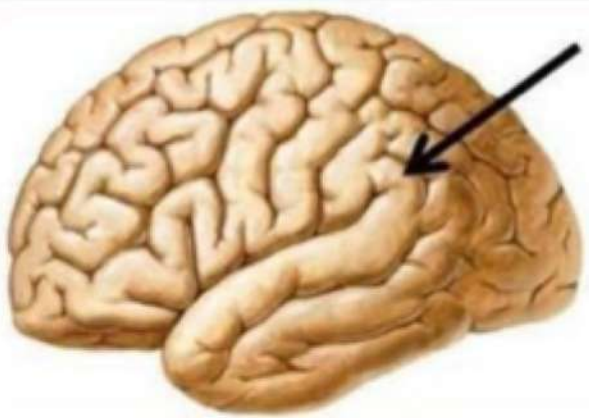
a. Fastigeal
b. Globose
c. Emboliform
d. Dentate
e. Floculonodular



5-The cell bodies in the pointed area are cell bodies of :

7-Which of the following statements is incorrect about the pointed structure ?

a. Responsible for understanding both written and spoken words
b. Its lesion produce sensory aphasia
c. Is connected to inferior frontal gyrus
d. Responsible for Controlling motor muscles that produce speech
e. Supplied by the Middle cerebral artery

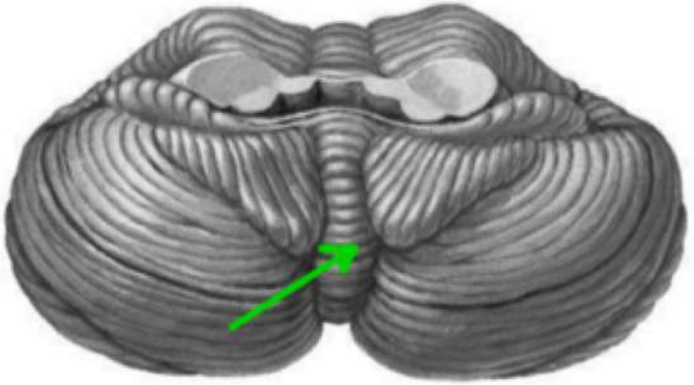


Answers

3	C	5	D	7	D
4	A	6	C	8	A

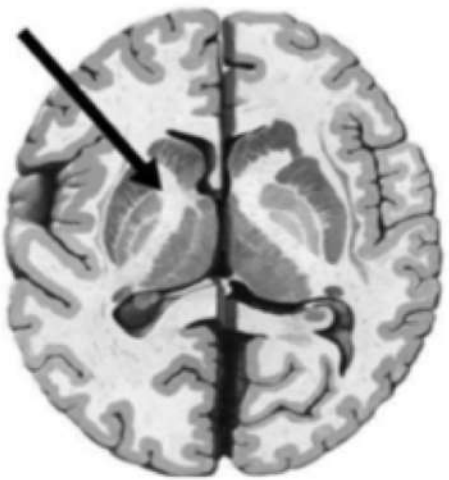
3-Identify the pointed structure:

Answer: inferior vermis

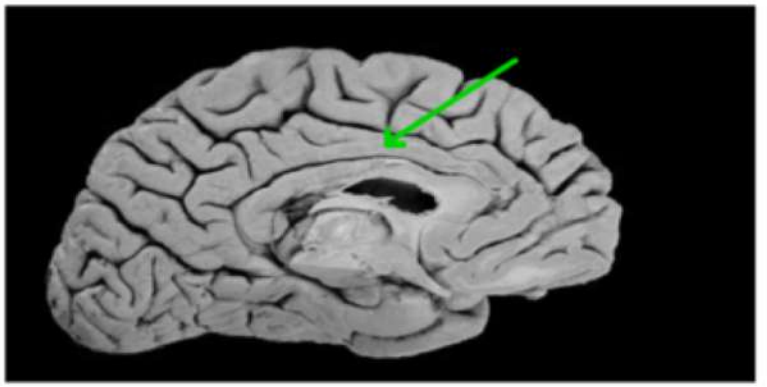


4-The pointed structure is situated between:

Answer: The Caudate and Lentiform nucleus



5-What is the function of the pointed gyrus:
Answer: Behavior and emotions



6-Identify the pointed structure:
Answer: Fornix

Don’t be so hard on yourself
You are doing So GREAT❤️