



Horizontal and Sagittal Sections of the Brain (Basal Ganglia & White Matter)

By:

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Intended Learning Outcomes (ILOs)

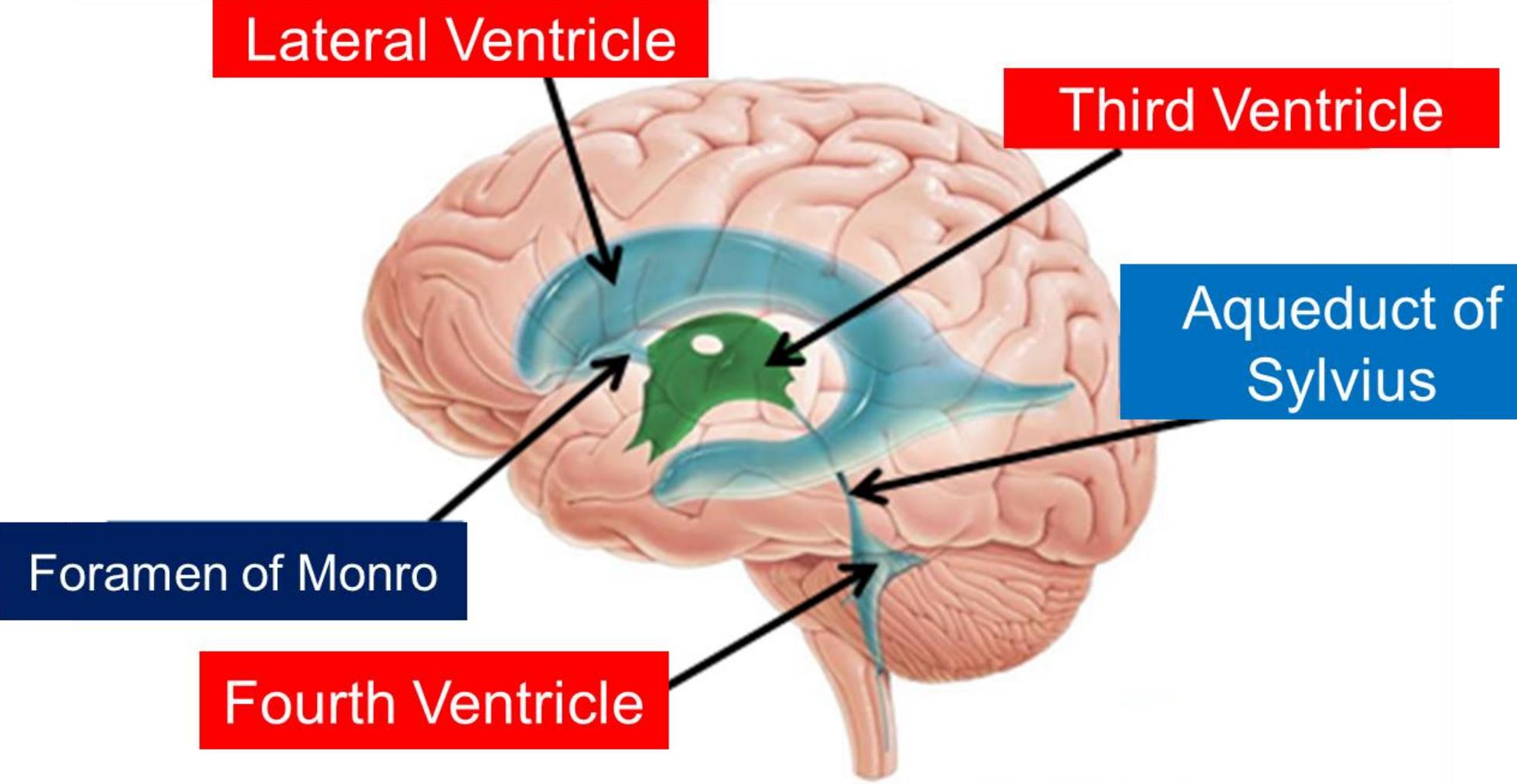
- 1. Identify the anatomical components of the basal ganglia.**
- 2. Recognize the types of white fibers in the cerebral cortex.**
- 3. Identify the structures seen on horizontal section of the brain.**
- 4. Identify the structures seen on midsagittal section of the brain.**

Agenda

- 1. What are the anatomical components of the basal ganglia?**
- 2. What are the types of white fibers in the cerebral cortex?**
- 3. What are the structures seen on horizontal section of the brain?**
- 4. What are the structures seen on midsagittal section of the brain?**



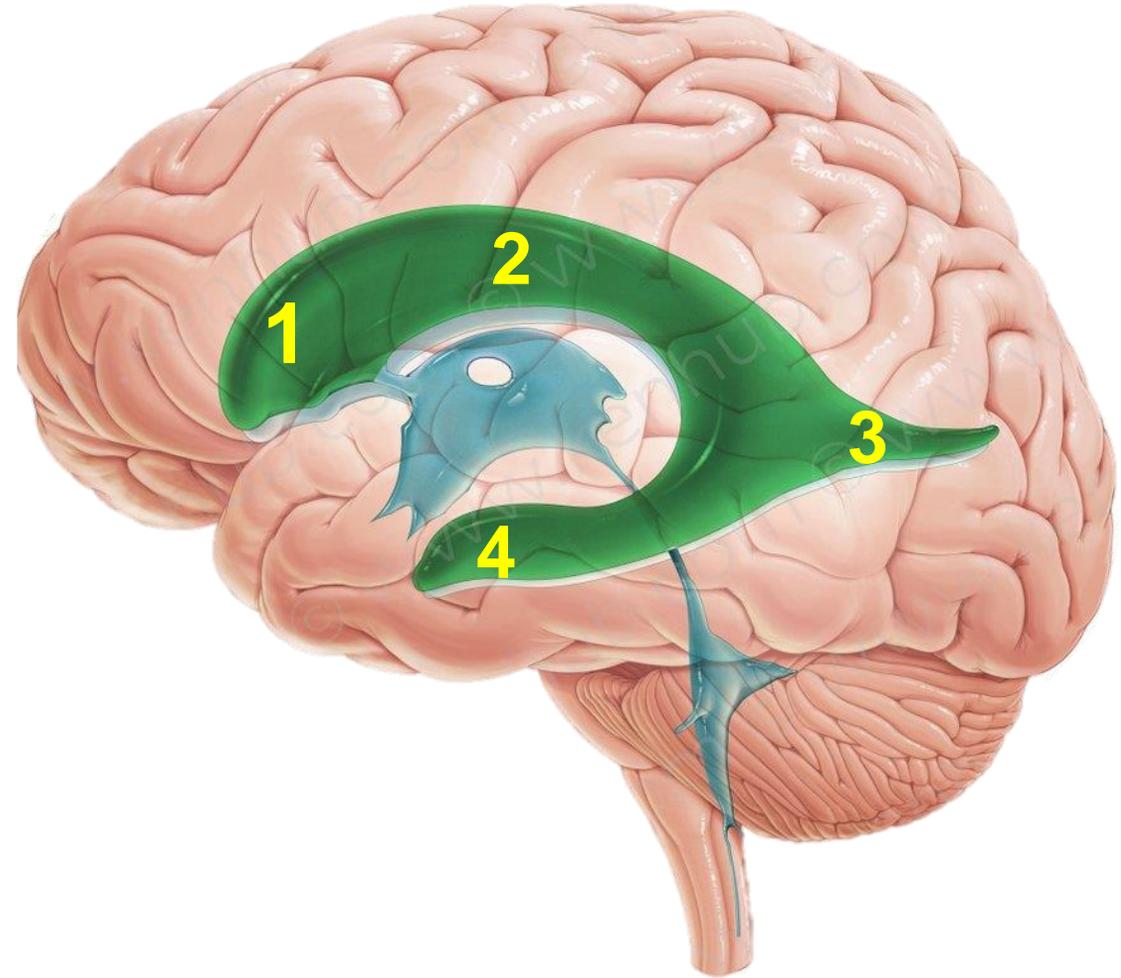
Ventricular System of the Brain



Lateral Ventricle

Parts:

- 1- Anterior (frontal) horn:**
in the frontal lobe.
- 2- Body:** in the parietal lobe.
- 3- Posterior (occipital) horn:**
in the occipital lobe.
- 4- Inferior (temporal) horn:**
in the temporal lobe.

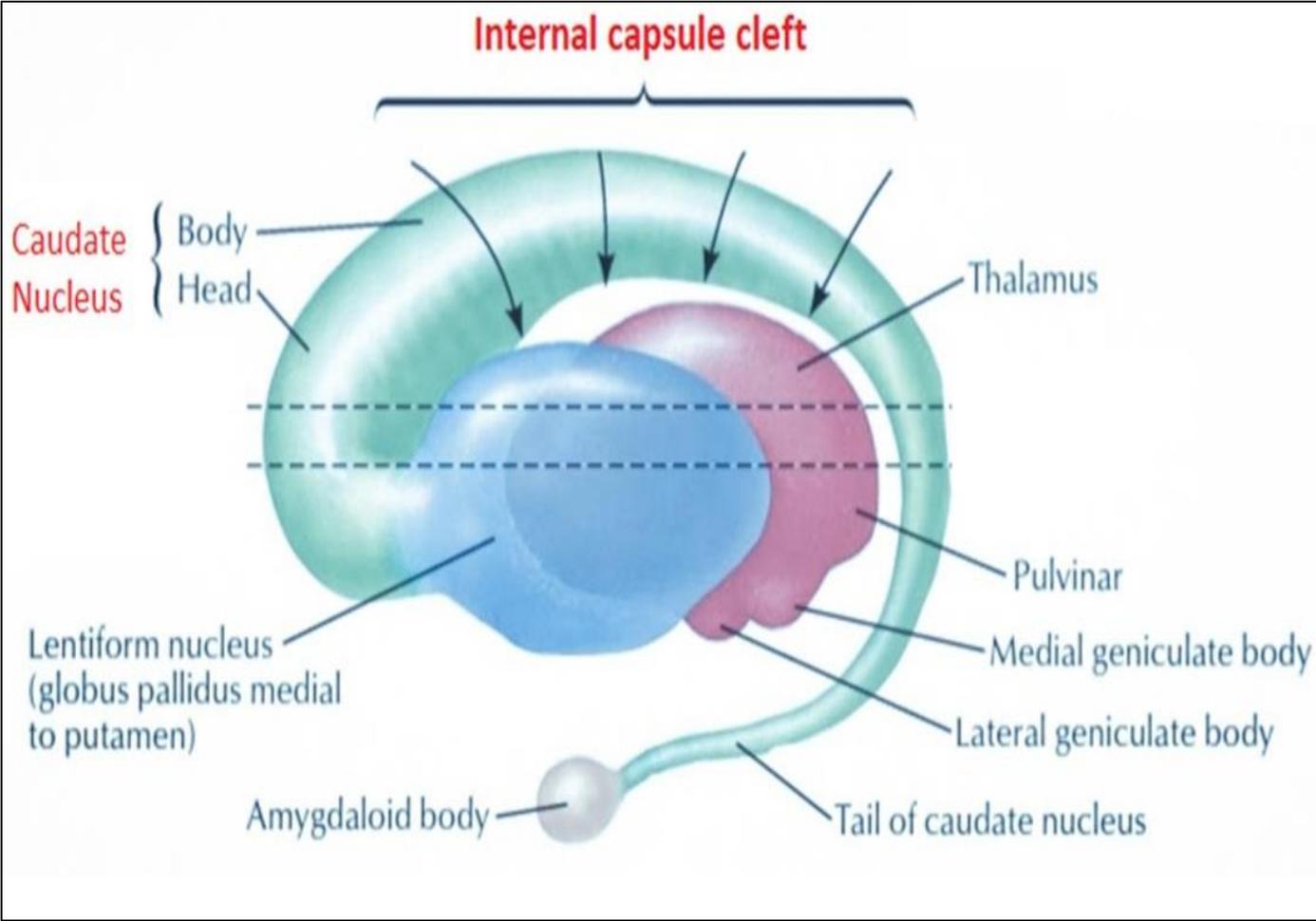


Basal Ganglia

They are composed of:

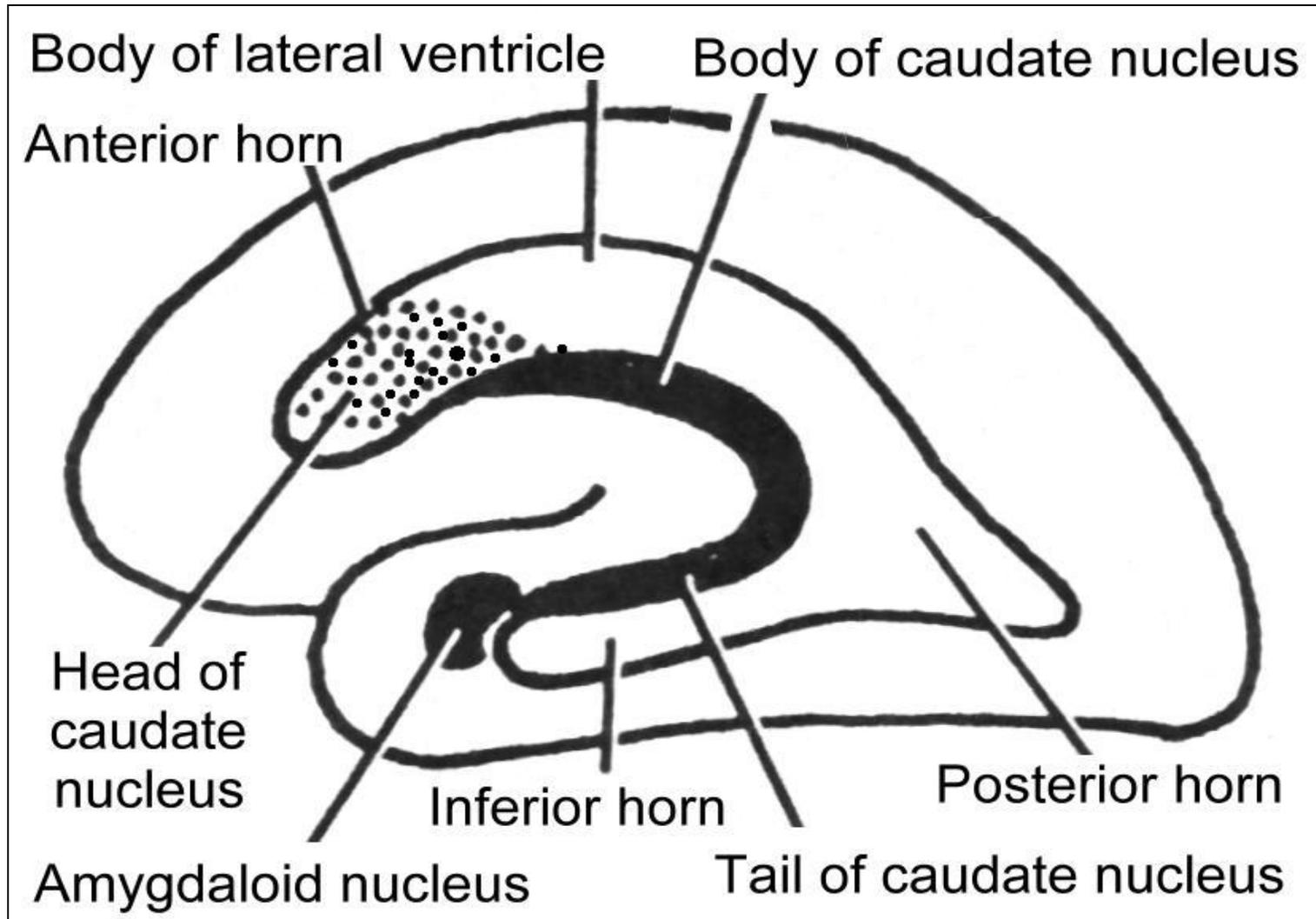
Corpus Striatum: formed of:

- Caudate nucleus: has
 - ❖ Head.
 - ❖ Body.
 - ❖ Tail.
- Lentiform nucleus: made up of
 - ❑ Globus pallidus (medially)
 - ❑ Putamen (laterally)
- **Amygdaloid nucleus**
- **Clastrum**



Relation of Basal Ganglia to Lateral ventricle

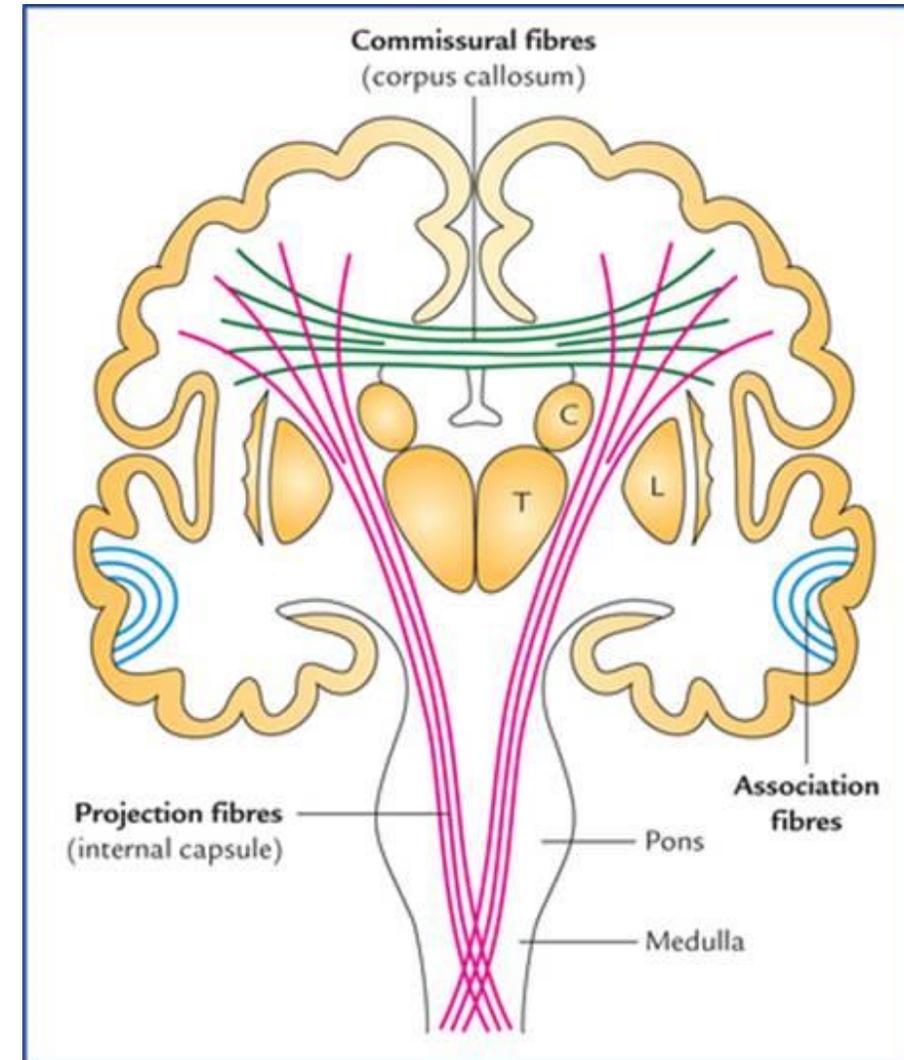
- ❑ Head of caudate → Lateral wall of anterior horn.
- ❑ Body of caudate → Floor of the body.
- ❑ Tail of caudate → Roof of inferior horn.
- ❑ Amygdaloid nucleus → Roof of inferior horn.



White Matter of the brain

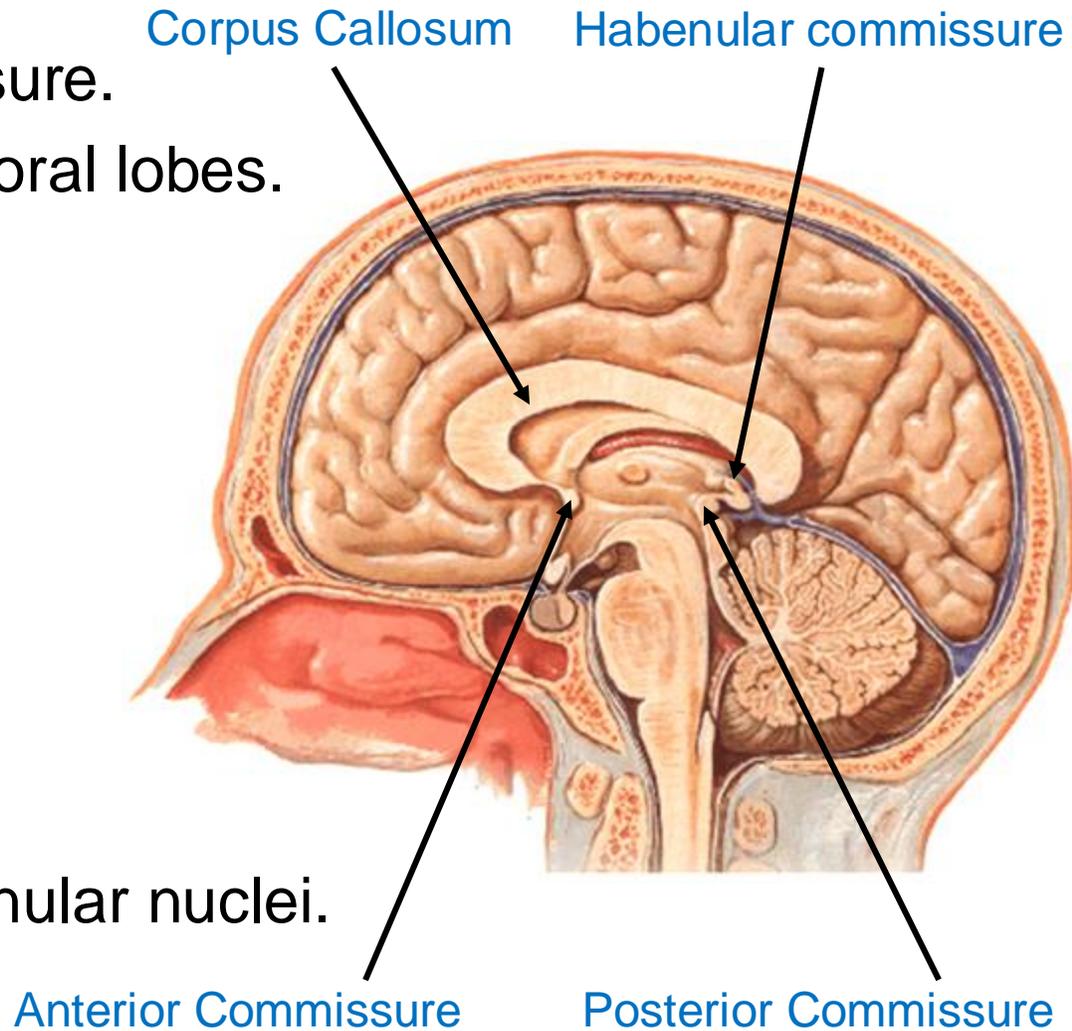
□ Three types of nerve fibers:

1. **Association fibers**: connect different areas of the same cerebral hemisphere.
2. **Commissural fibers**: connect the same area of the two cerebral hemispheres.
3. **Projection fibers**: connect the cerebral hemisphere with subcortical areas.



Commissural Fibers

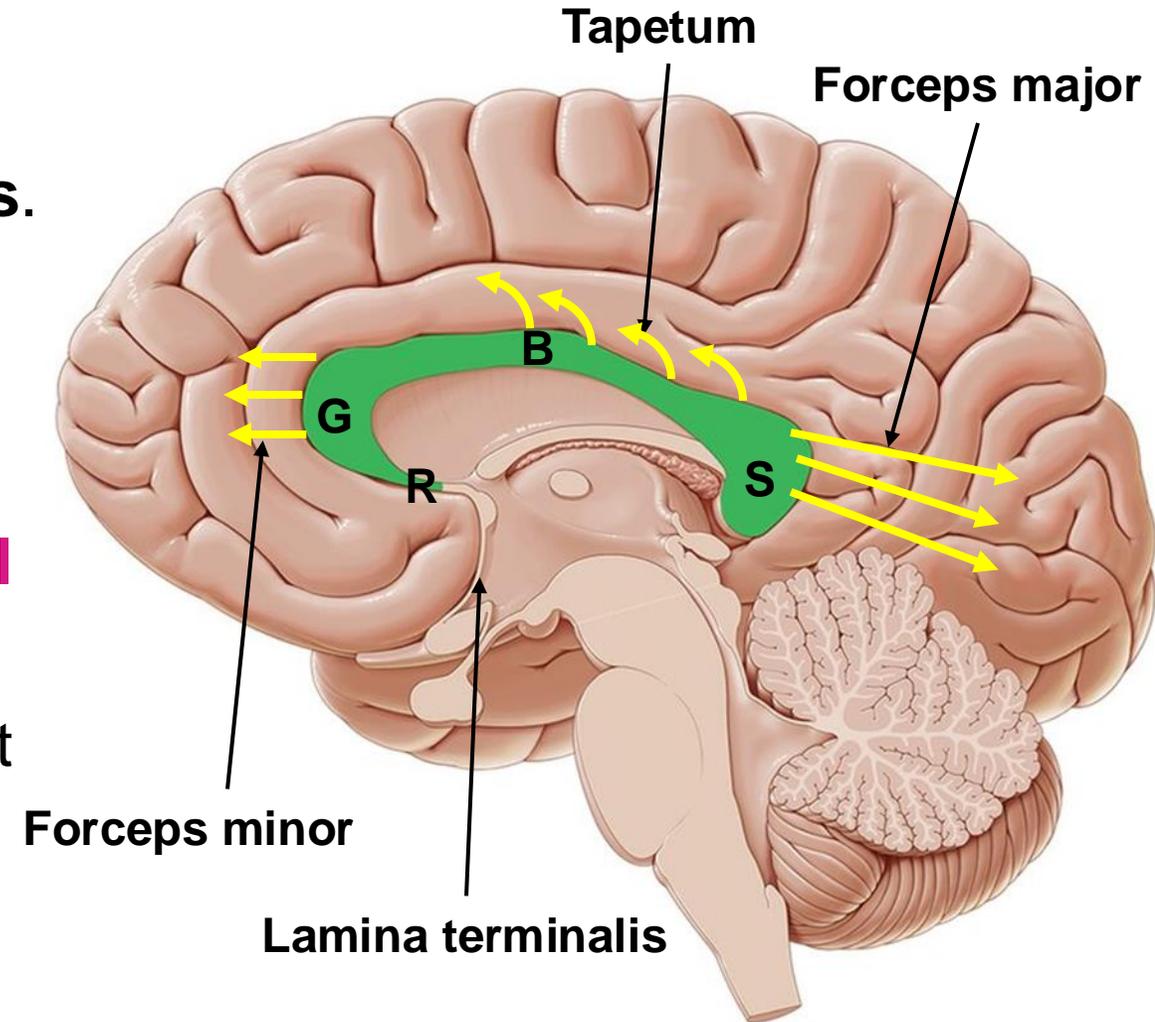
1. **Corpus Callosum**: the largest & main commissure.
2. **Anterior Commissure**: connects the two temporal lobes.
3. **Posterior Commissure**: connects:
 - a) The two superior colliculi.
 - b) The pretectal and Edinger Westphal nuclei for bilateral light reflex.
 - c) The two oculomotor nuclei for upward gaze.
4. **Hippocampal Commissure**: connect the 2 fornices and the 2 hippocampi.
5. **Habenular Commissure**: connects the 2 habenular nuclei.



Commissural Fibers: Corpus Callosum

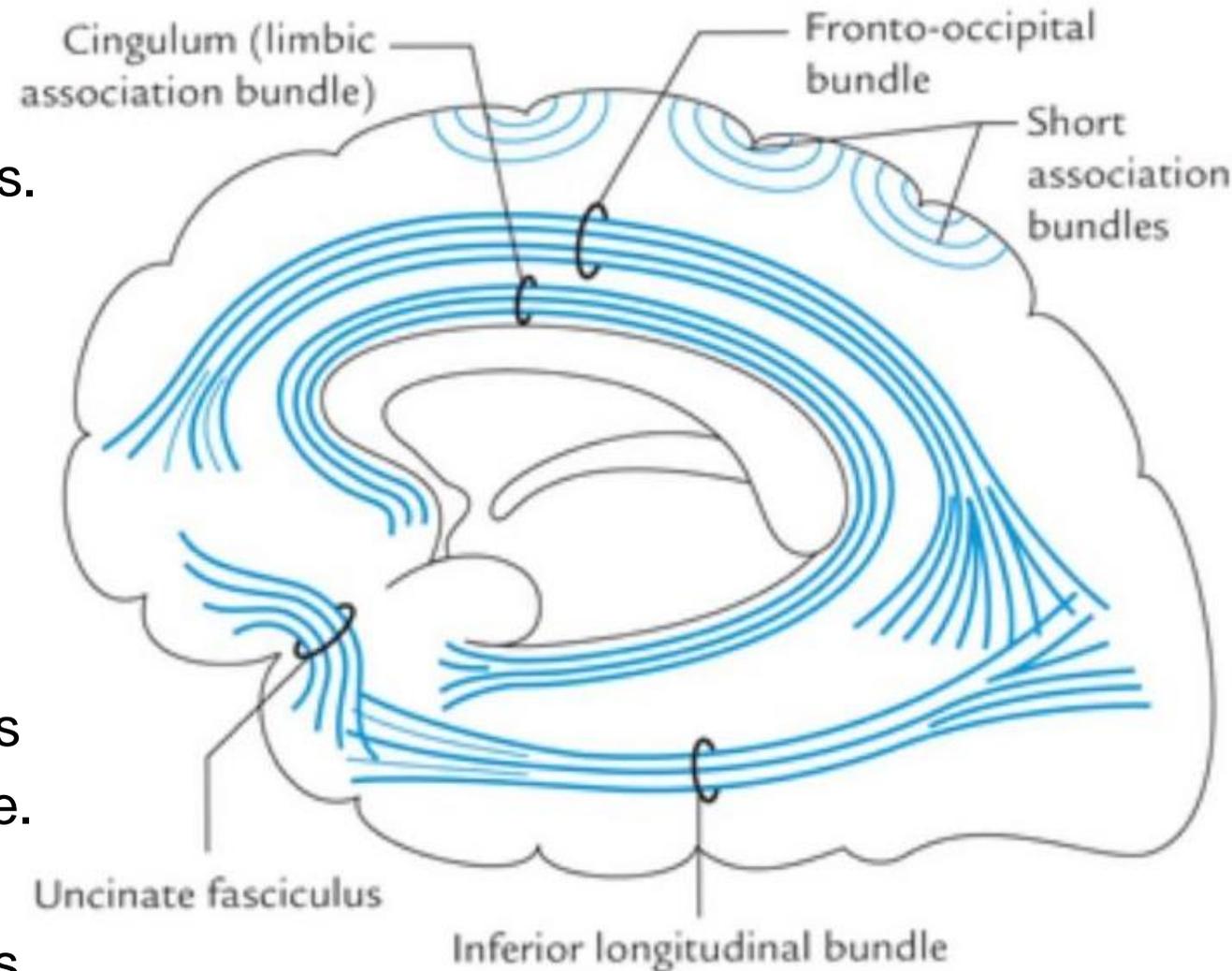
Parts:

- 1. Rostrum:** continuous with **lamina terminalis**.
- 2. Genu:** fibers form **forceps minor** that connect the two **frontal** lobes.
- 3. Body:** form a radiation of posterior fibers called **tapetum** connecting the two **temporal** lobes.
- 4. Splenium:** its fibers form **forceps major** that connect the two **occipital** lobes.



Association Fibers

- ❑ **Short association fibers:**
Connect adjacent areas (arcuate fibers).
- ❑ **Long fibers:** Connect distant cortical areas.
 1. **Cingulum:** connects the limbic lobe.
Cingulate gyrus →
Parahippocampal gyrus → Uncus.
 2. **Superior longitudinal bundle (arcuate fasciculus):**
connects the 4 lobes together.
 3. **Inferior longitudinal bundle:** connects the temporal lobe with the occipital lobe.
 4. **Uncinate fasciculus:**
connects the frontal and temporal lobes.



Projection Fibers

❑ Form a bundle called **internal capsule**.

❑ Parts of internal capsule:

1. Anterior limb:

between the lentiform nucleus and the head of the caudate nucleus.

2. **Genu**: opposite the apex of the lentiform nucleus.

3. Posterior limb:

I. Lenticulothalamic part:

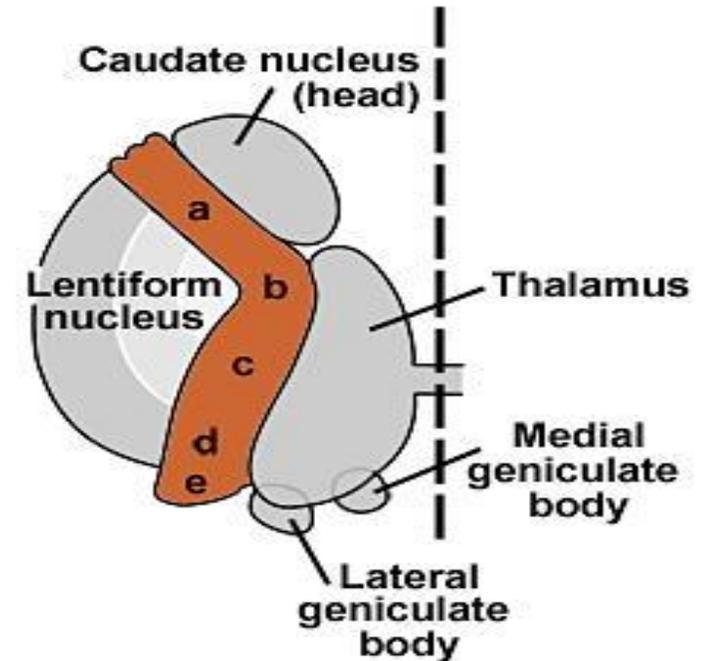
between the lentiform nucleus and the thalamus.

II. Retrolenticular part:

behind the lentiform nucleus.

III. Sublenticular part:

below the lentiform nucleus



Parts of internal capsule:

a. Anterior limb

b. Genu

c. Posterior limb

d. Sublenticular part

e. Retrolenticular part

Horizontal section of the Brain

Lateral

Medial

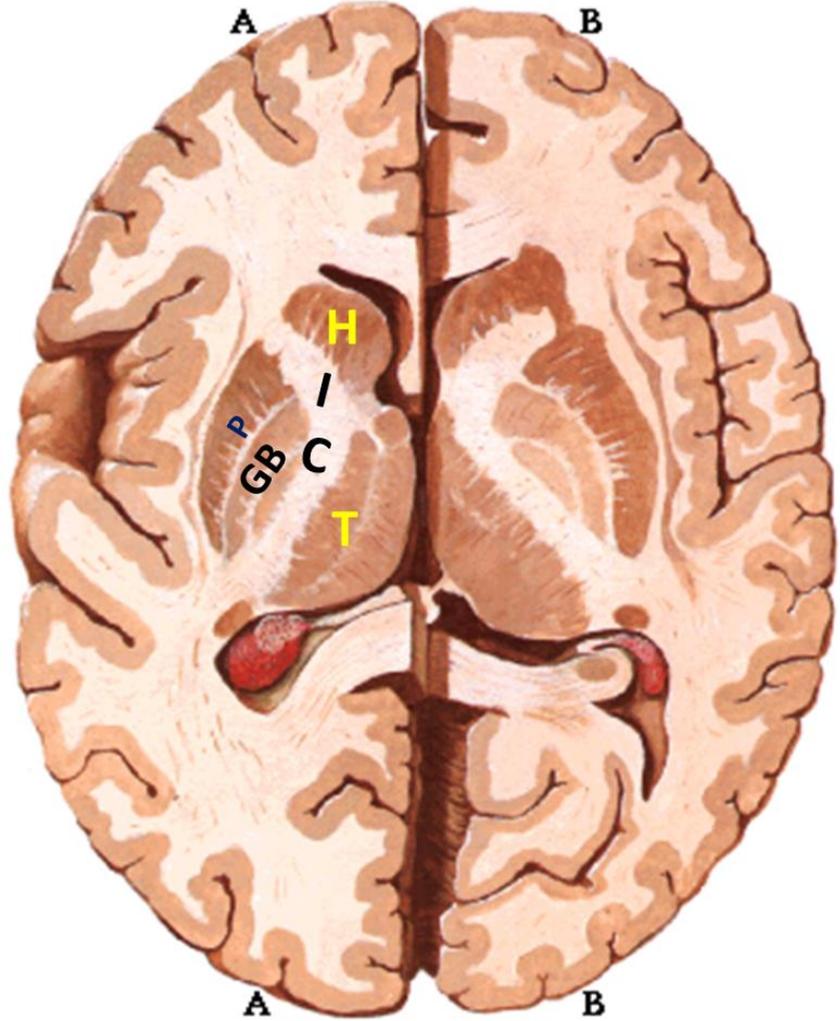
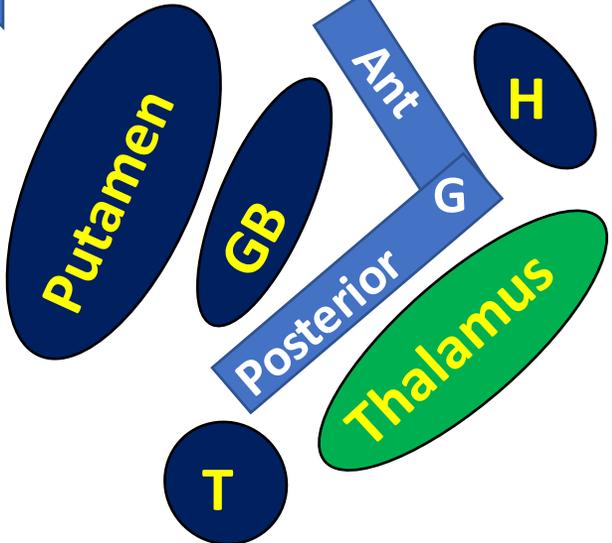


Insula

Clastrum

Extreme capsule

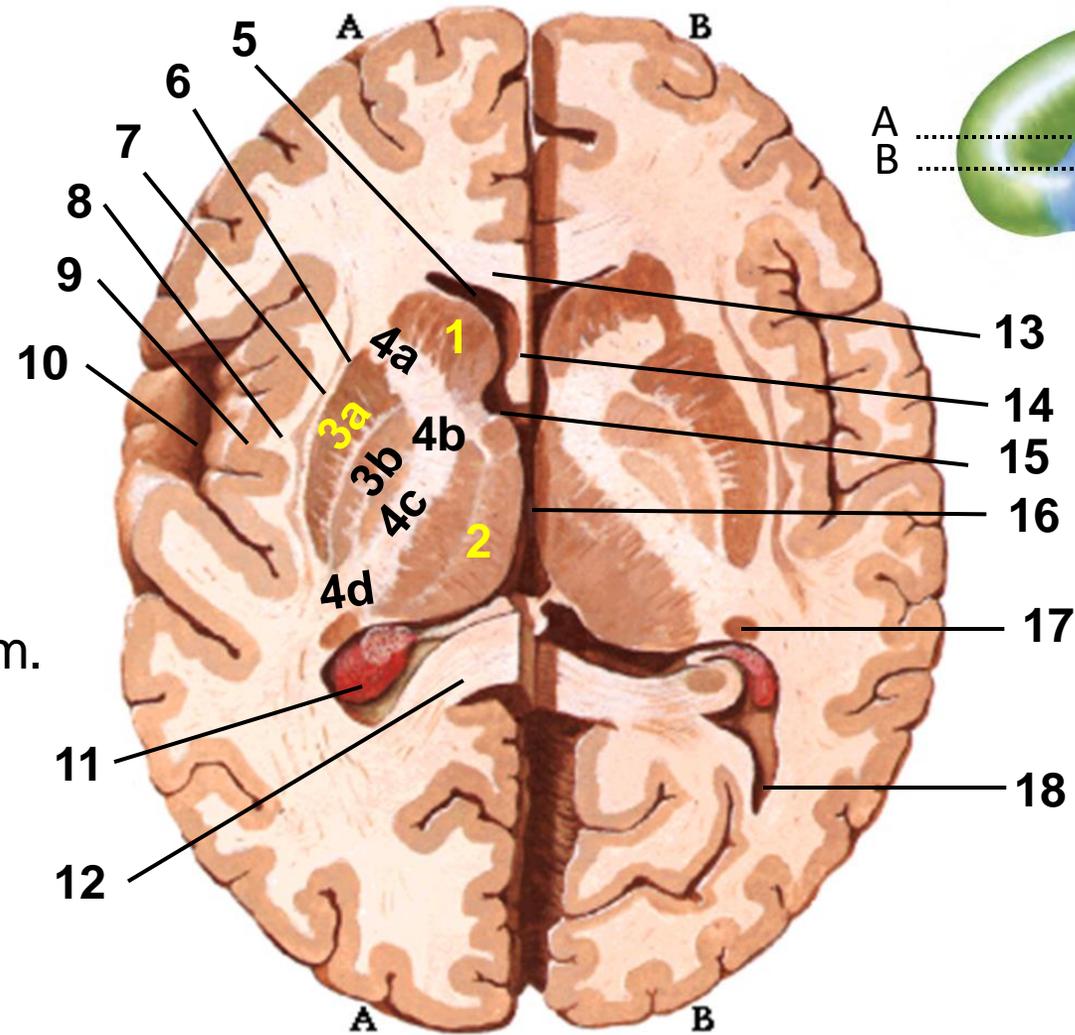
External capsule



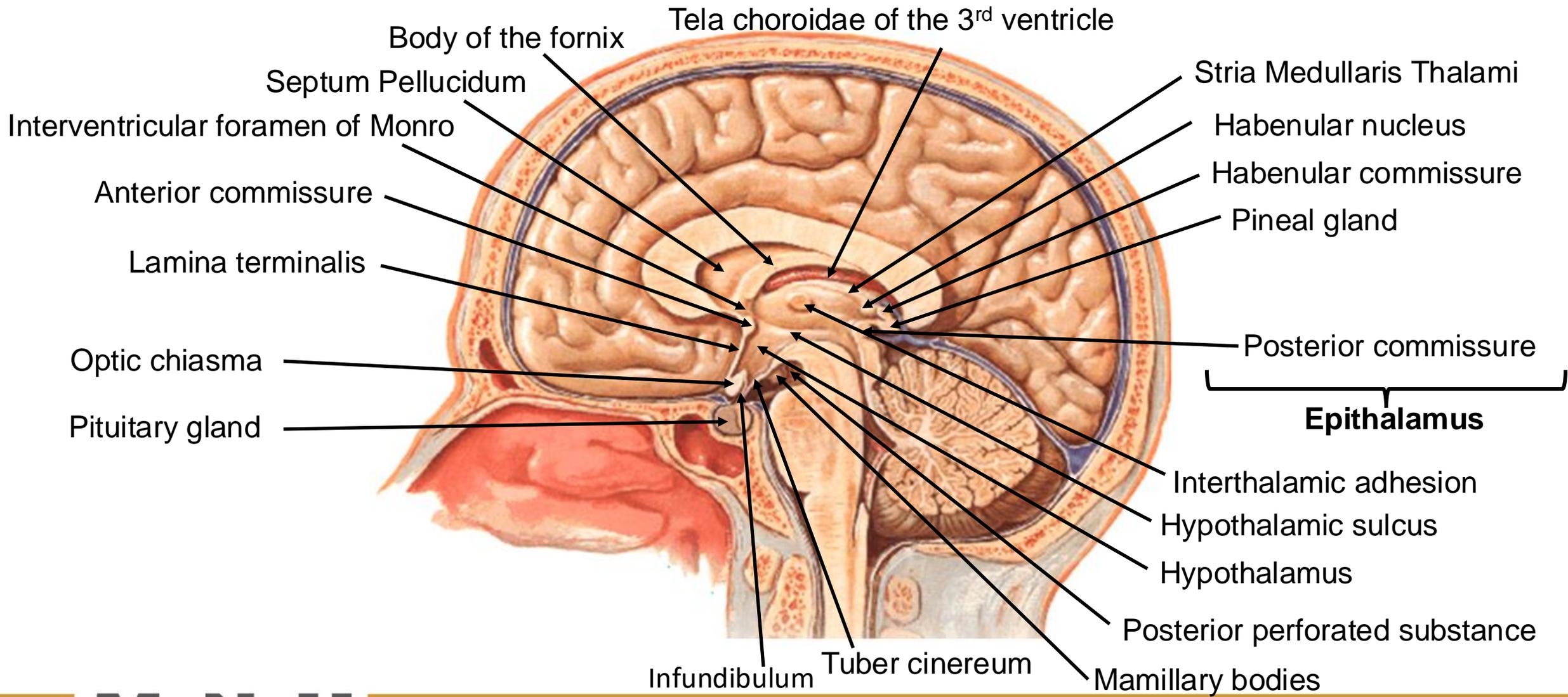
Horizontal section of the Brain

1. Head of Caudate.
2. Thalamus.
3. Lentiform nucleus.
- 3a. Putamen.
- 3b. Globus Pallidus.
4. Internal capsule:
- 4a. Anterior limb.
- 4b. Genu.
- 4c. Lenticulothalamic part of posterior limb.
- 4d. Retrolenticular part of posterior limb.
5. Anterior horn of lateral ventricle.
6. External capsule.
7. Claustrum

8. Extreme capsule.
9. Insula.
10. Lateral sulcus.
11. Choroid plexus of inferior horn.
12. Splenium of corpus callosum.
13. Genu of corpus callosum.
14. Septum pellucidum.
15. Interventricular foramen of Monro.
16. Third ventricle.
17. Tail of caudate.
18. Posterior horn of lateral ventricle.



Sagittal section of the Brain





THANK YOU

