



External features of brainstem

Dr. Dina Hany

Department of human Anatomy and Embryology
Faculty of Medicine
Mansoura National University, Egypt



Intended Learning Outcomes (ILOs)

1. Identify the external features of the medulla.
2. Recognize the external features of the pons.
3. Identify the the external features of the midbrain.

Agenda

1. What are the cranial nerves of medulla ?
2. What are the cranial nerves of pons ?
3. What are the cranial nerves of midbrain ?



brain

Medial view

1) cerebrum

A) 2 cerebral hemispheres

B) diencephalon

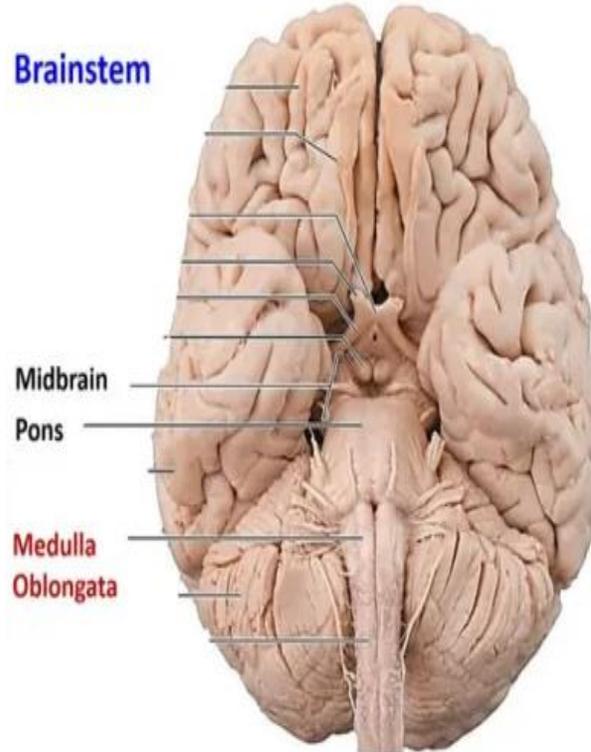
2) Brain stem

A) Mid brain

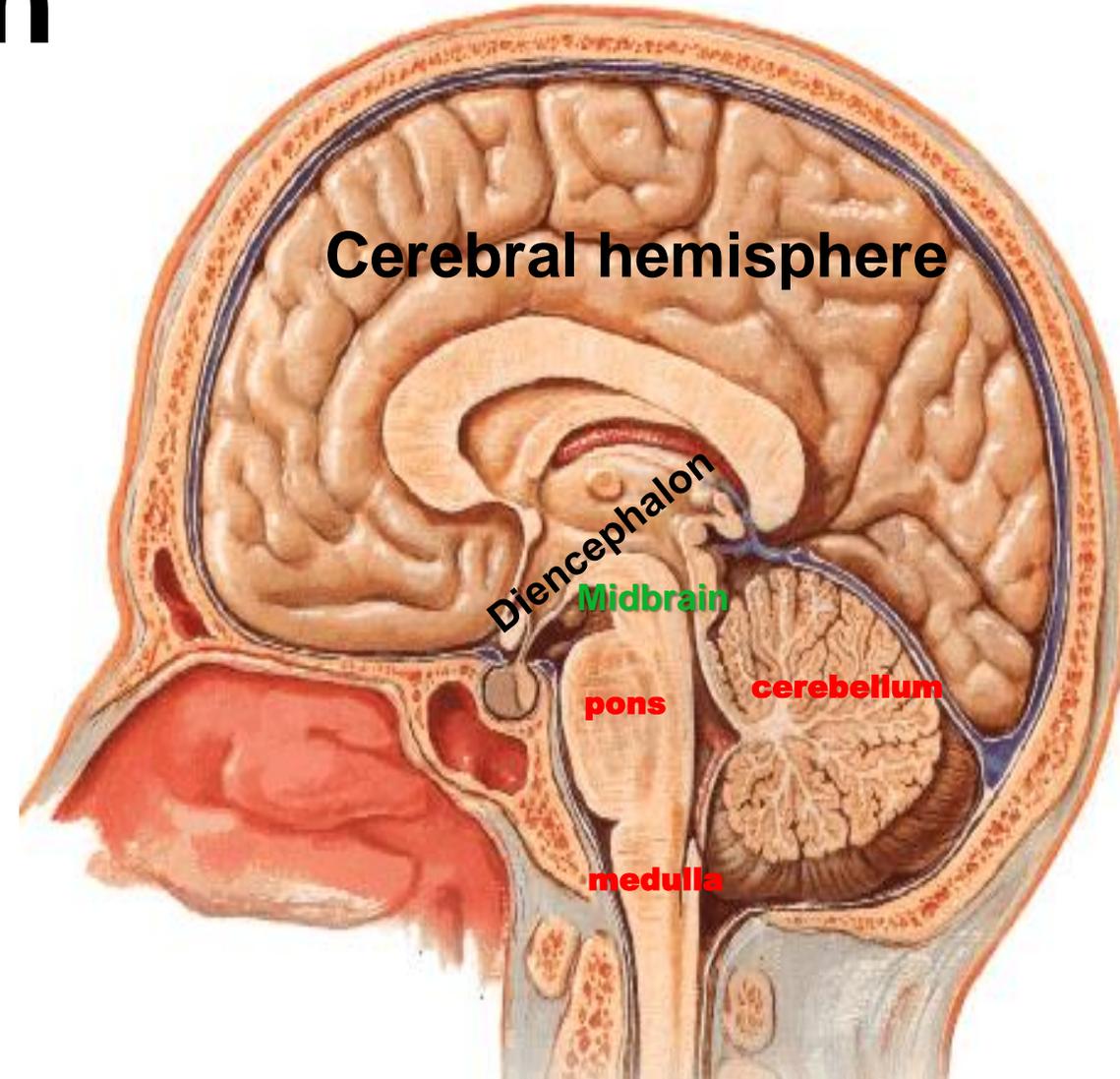
B) pons

C) Medulla

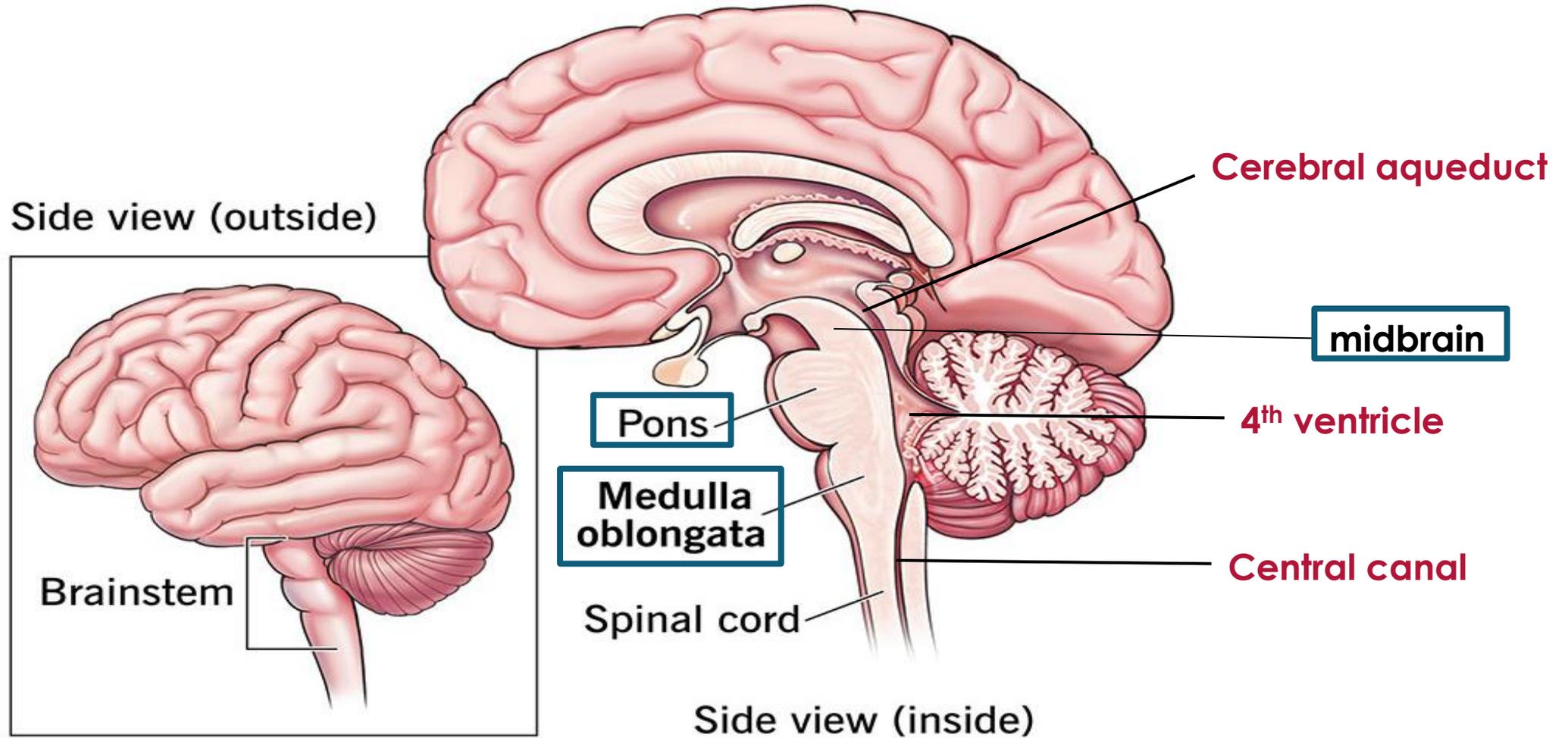
3) cerebellum



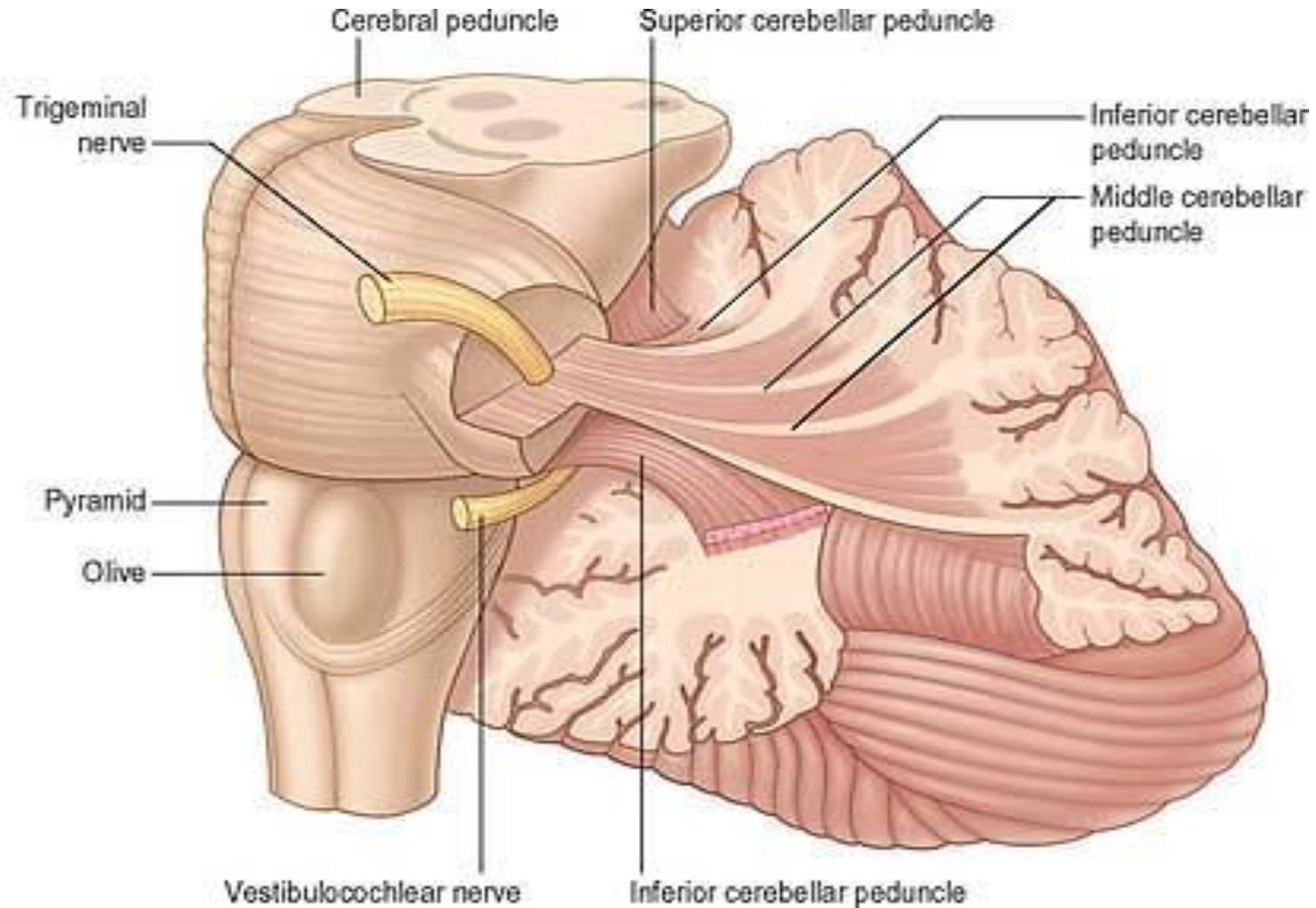
inferior view



brainstem



brainstem



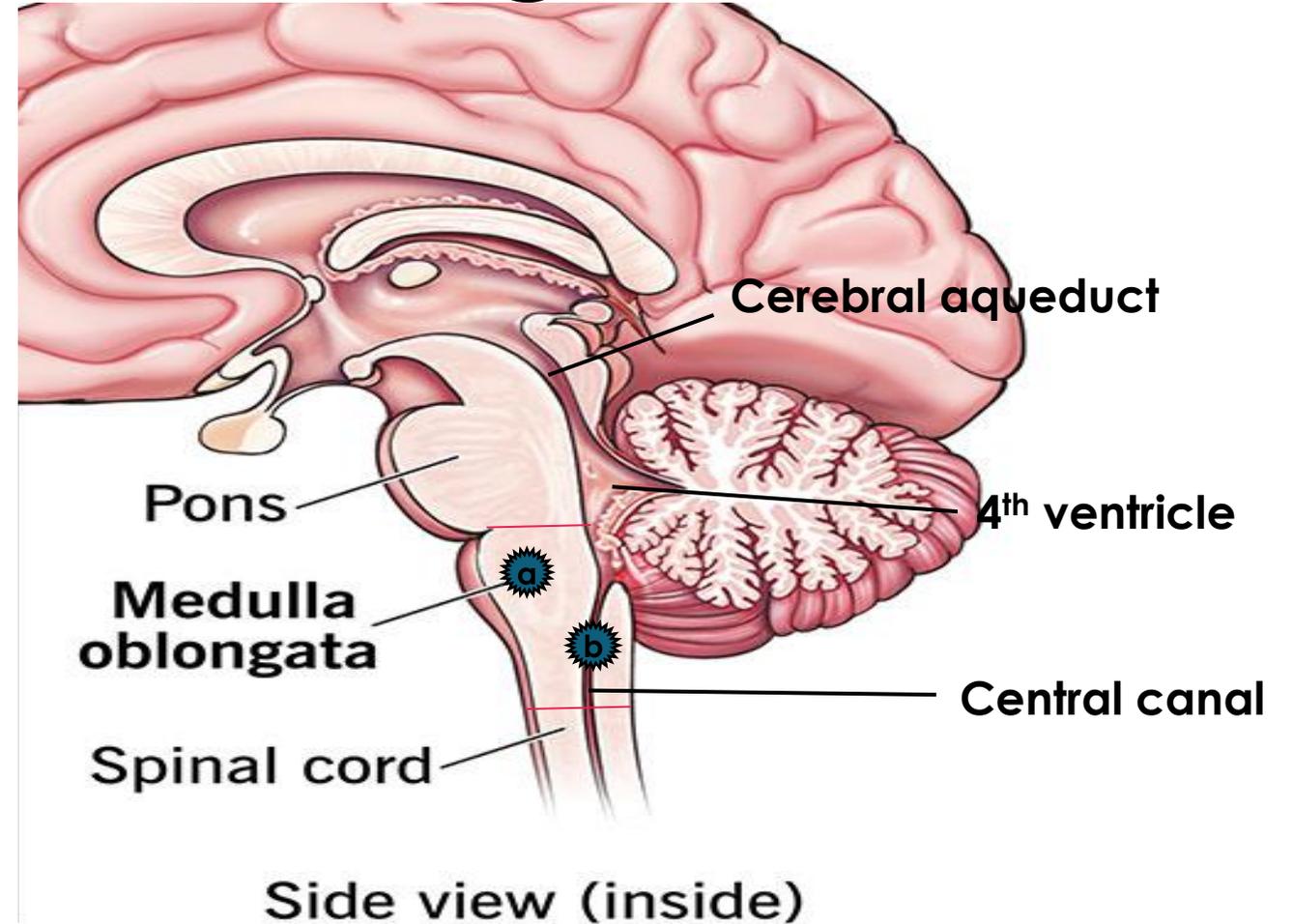
Medulla oblongata

- It forms the lower part of the brain stem
- Continues as the spinal cord

❖ **It is divided into:**

a) Upper part: open medulla

b) Lower part: closed medulla



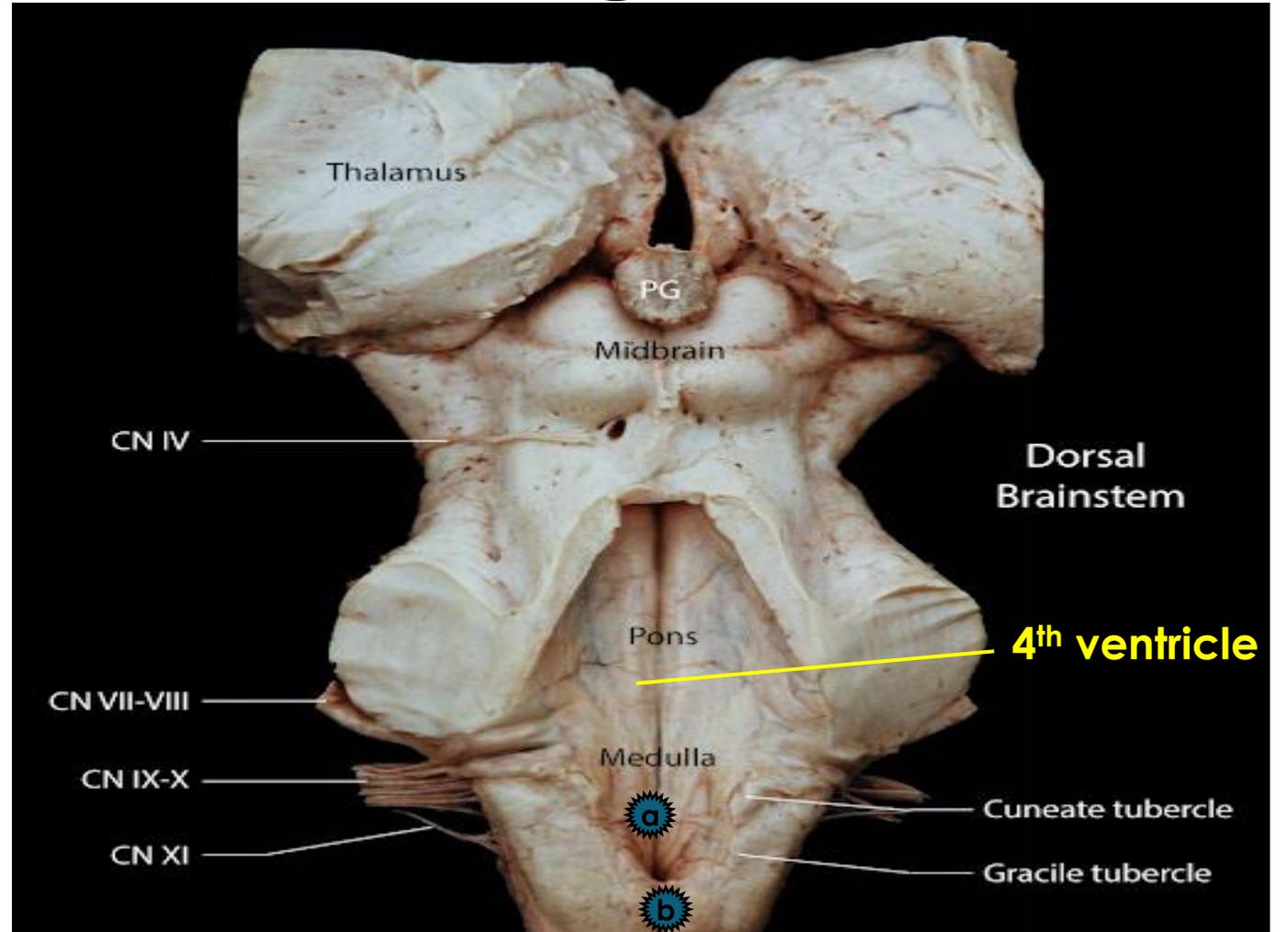
Medulla oblongata

- It forms the lower part of the brain stem
- Continues as the spinal cord

❖ **It is divided into:**

a) Upper part: open medulla

b) Lower part: closed medulla



Medulla oblongata

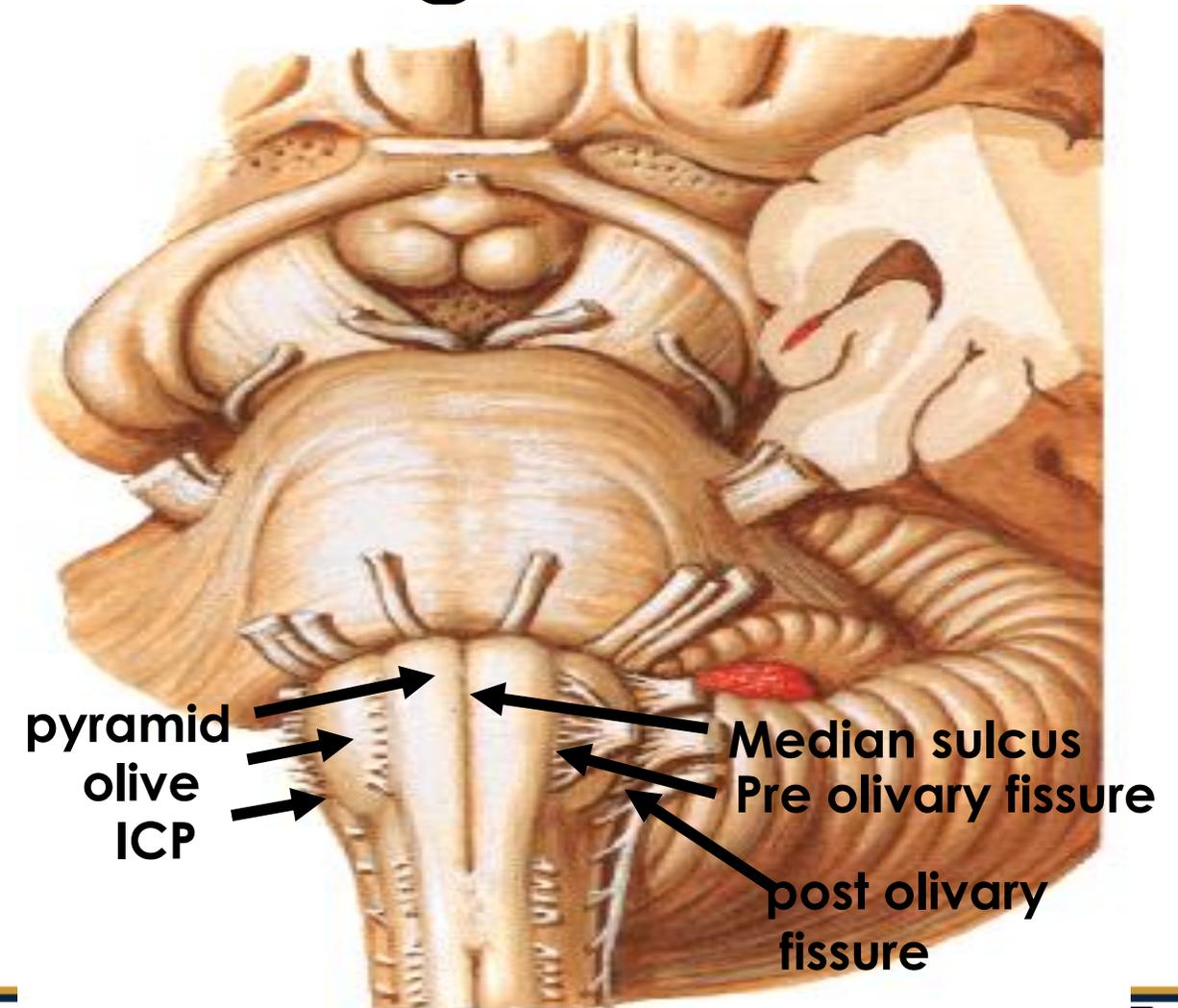
❖ Ventral Surface:

➤ 3 Elevations:

1. Pyramid.
2. Olive.
3. Inferior Cerebellar Peduncle.

➤ 3 Fissures:

1. Anterior median sulcus.
2. Pre olivary fissure.
3. Post olivary fissure.



Medulla oblongata

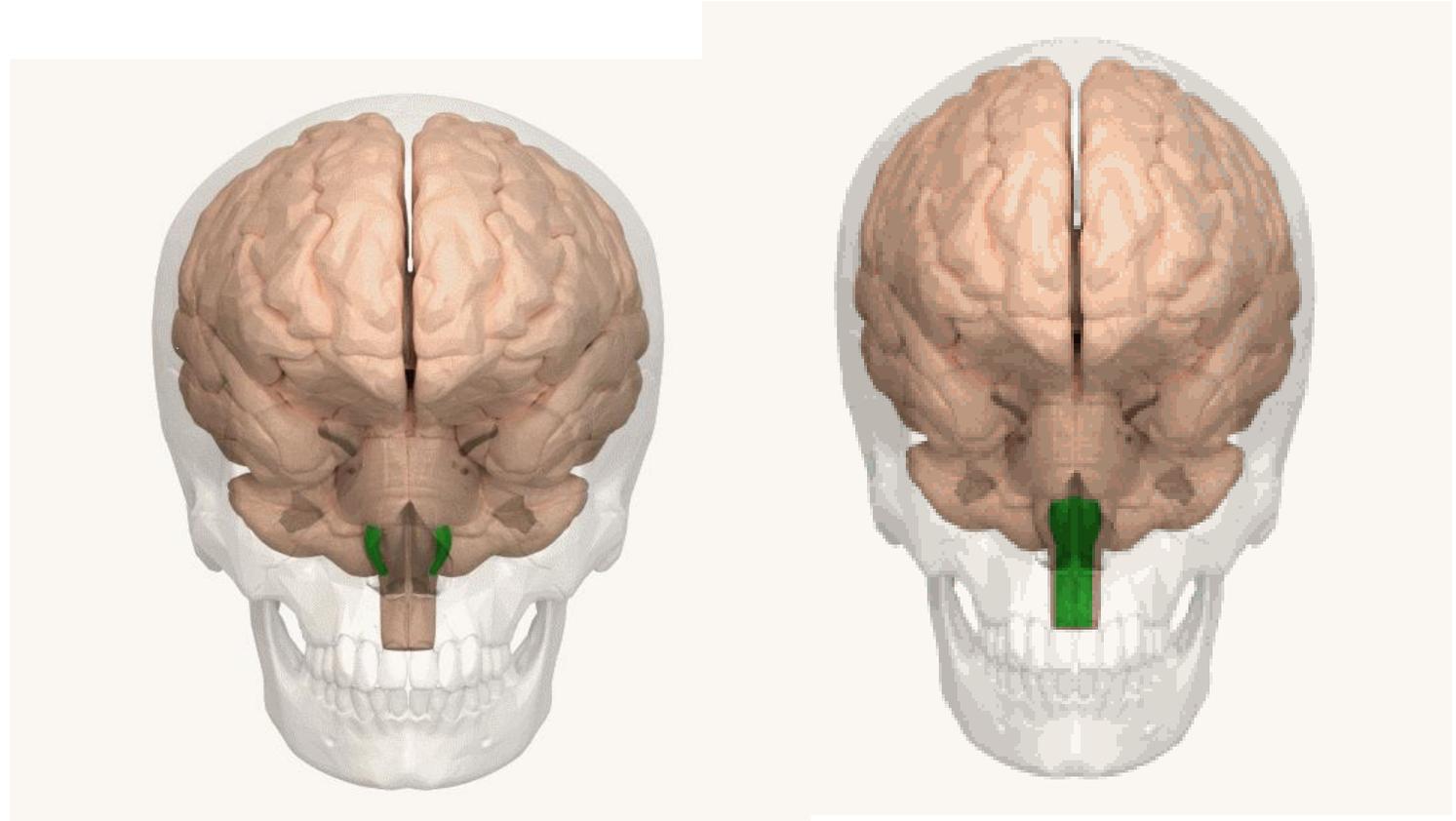
❖ Ventral Surface:

➤ 3 Elevations:

1. Pyramid.
2. Olive.
3. Inferior Cerebellar Peduncle.

➤ 3 Fissures:

1. Anterior median sulcus.
2. Pre olivary fissure.
3. Post olivary fissure.



Medulla oblongata

❖ Ventral Surface:

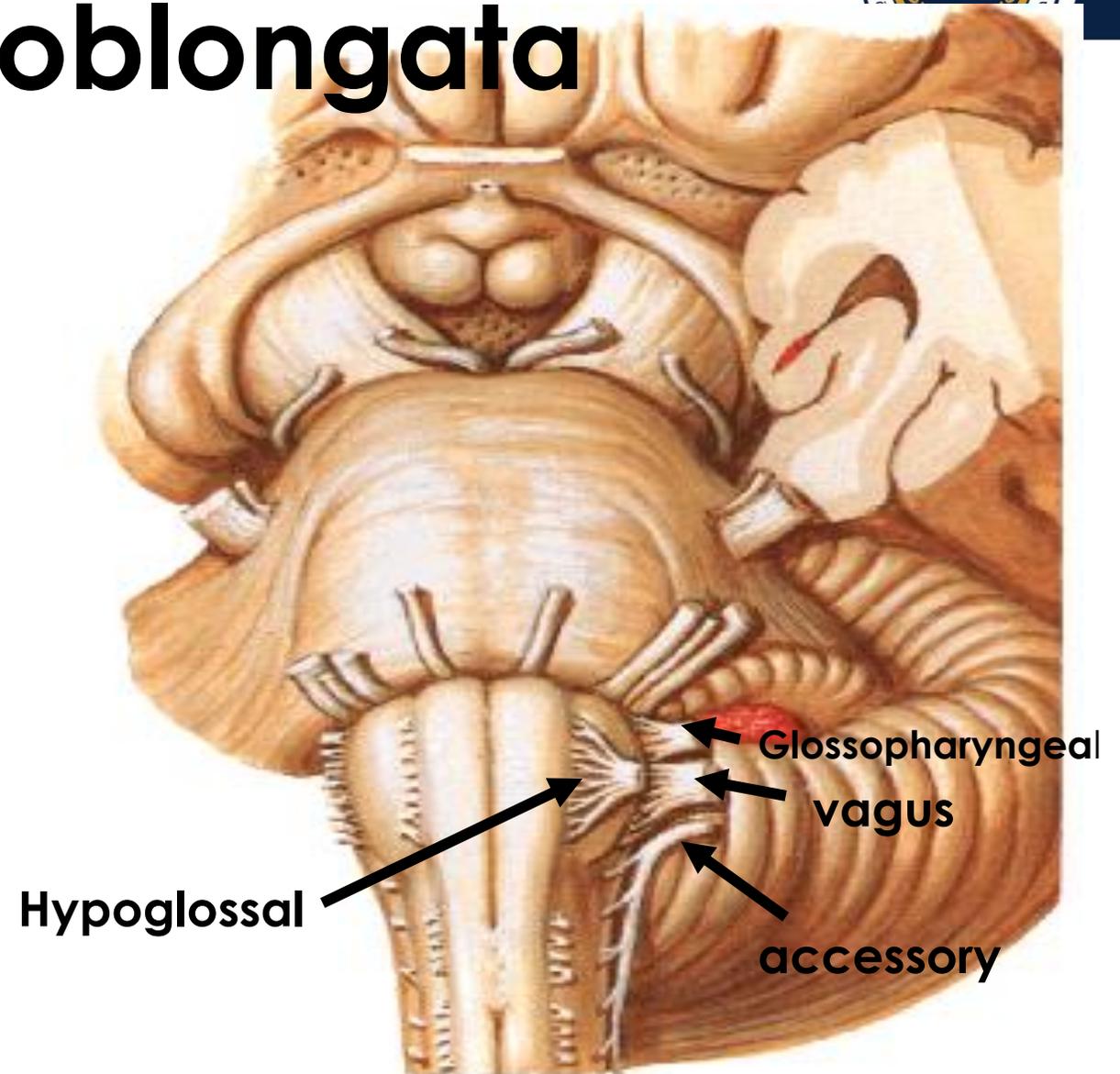
➤ Exit of the lower 4 cranial nerves:

A. Post olivary fissure: from above downward

- 1-Glossopharngal nerve 9
- 2-Vagus nerve 10
- 3-Crainal accessory nerve 11

B. Pre olivary fissure:

- 1- hypoglossal nerve 12



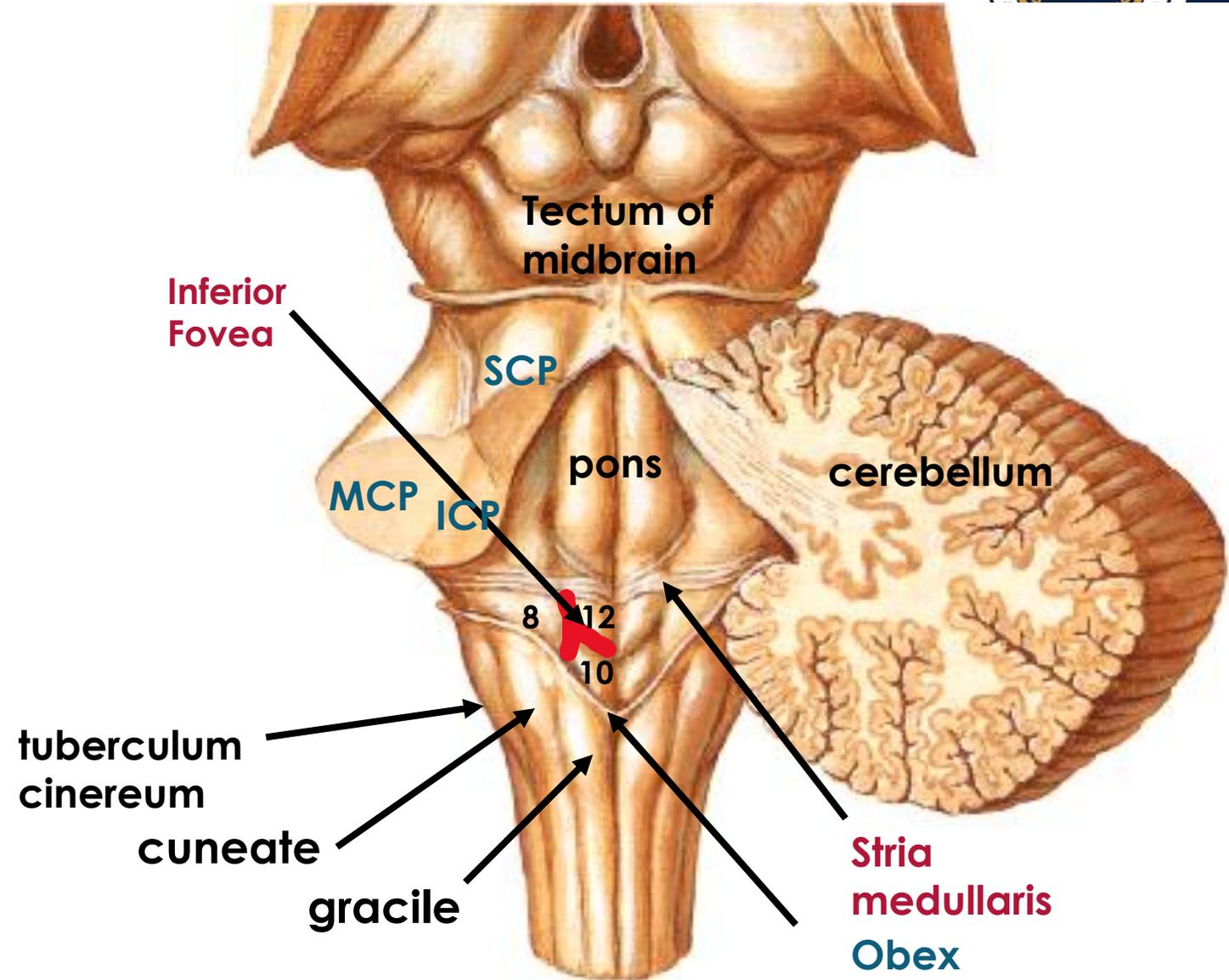
❖ Dorsal Surface:

➤ Closed medulla:

- Gracile.
- Cuneate.
- Tuberculum cinereum.

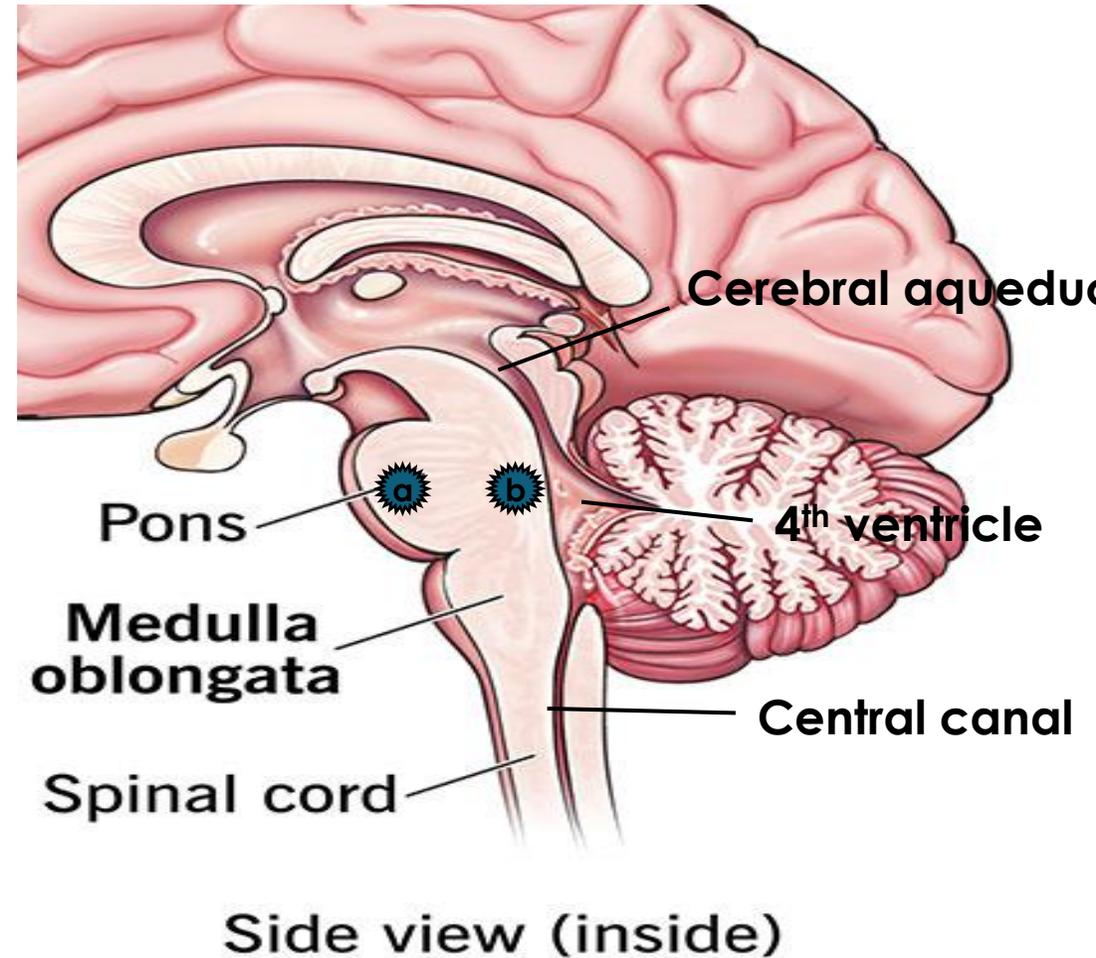
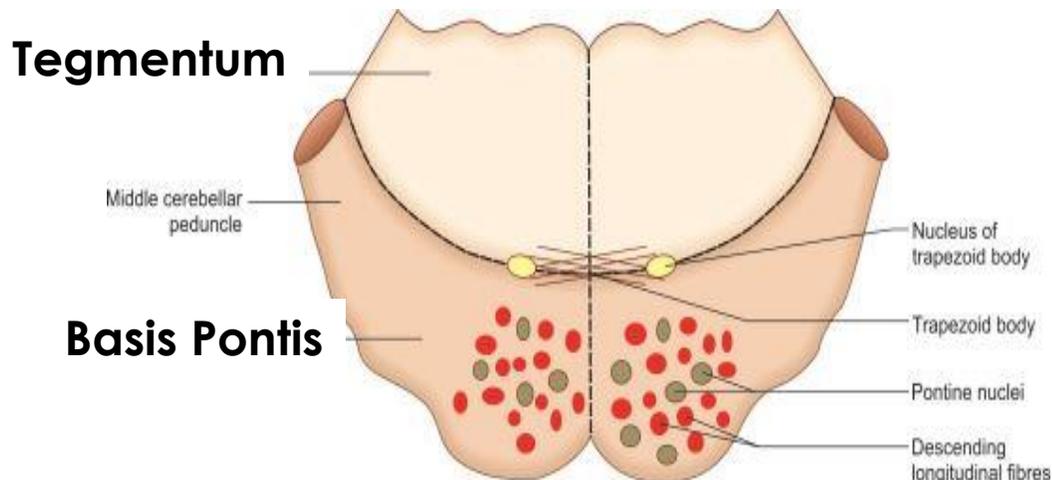
➤ Open medulla:

- Inferior Fovea.
 - Hypoglossal trigone (12)
 - Vagal trigone (10)
 - Vestibular trigone (8).
- Area postrema (Obex).
- Stria medullaris of 4th ventricle



Pons

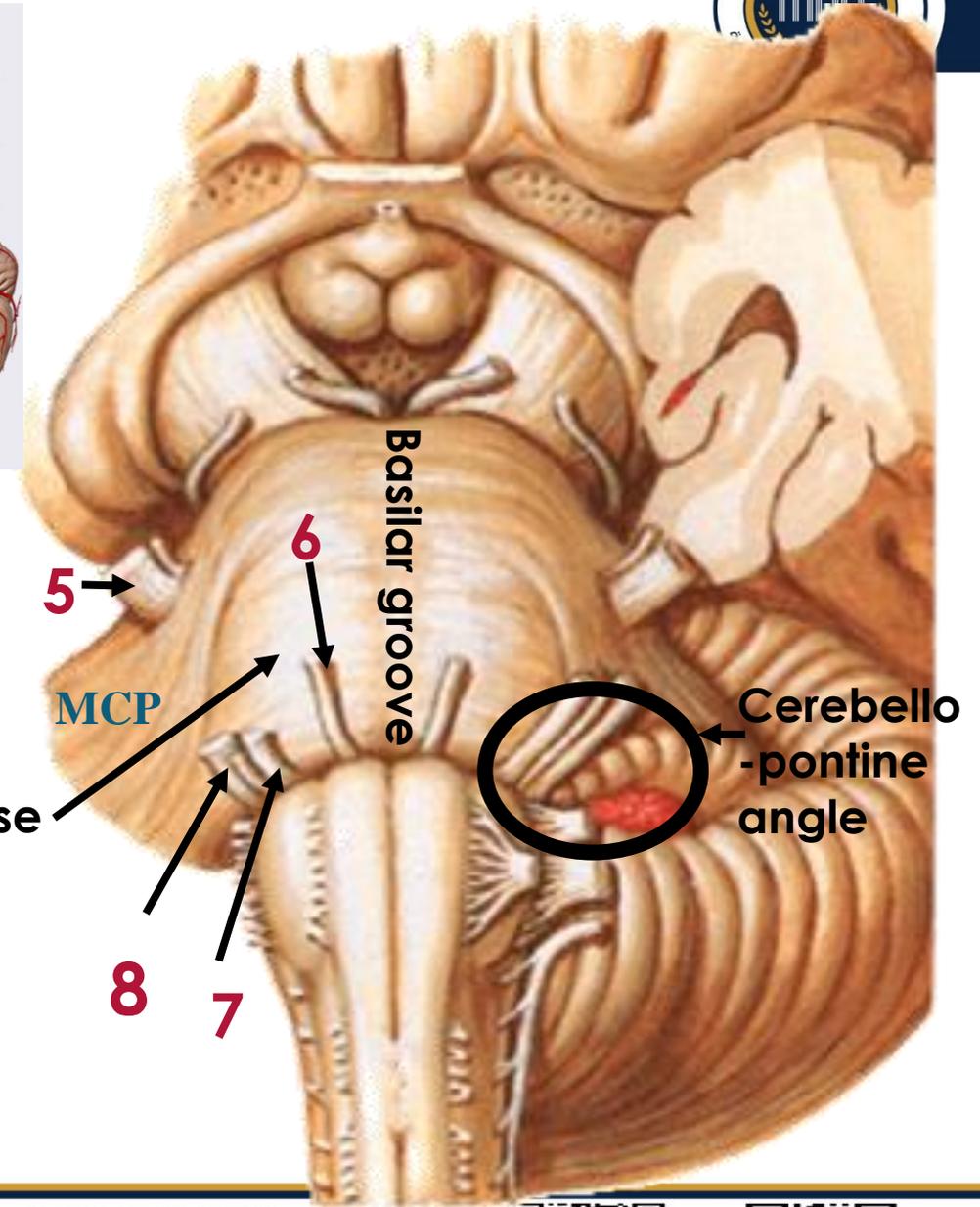
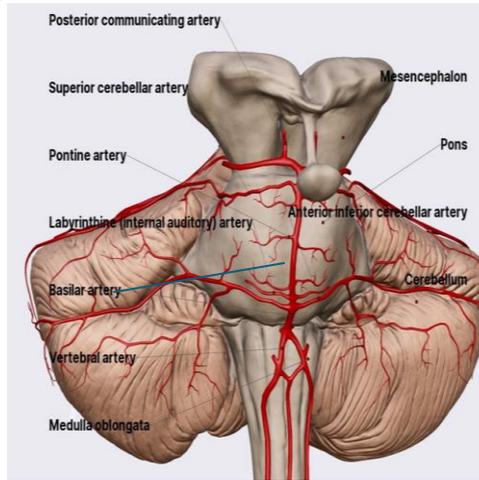
- Extent :Between midbrain and medulla.
- Divided into:
 - a) Ventral part: **Basis Pontis**
 - b) Dorsal part: **Tegmentum**



Pons

❖ Ventral Surface:

- Basilar groove.
- Transverse pontine fibers forming MCP.
- Exit of the middle 4 cranial nerves (V & VI & VII & VIII).



Pons

❖ Dorsal Surface:

1. Medial eminence & facial colliculus:

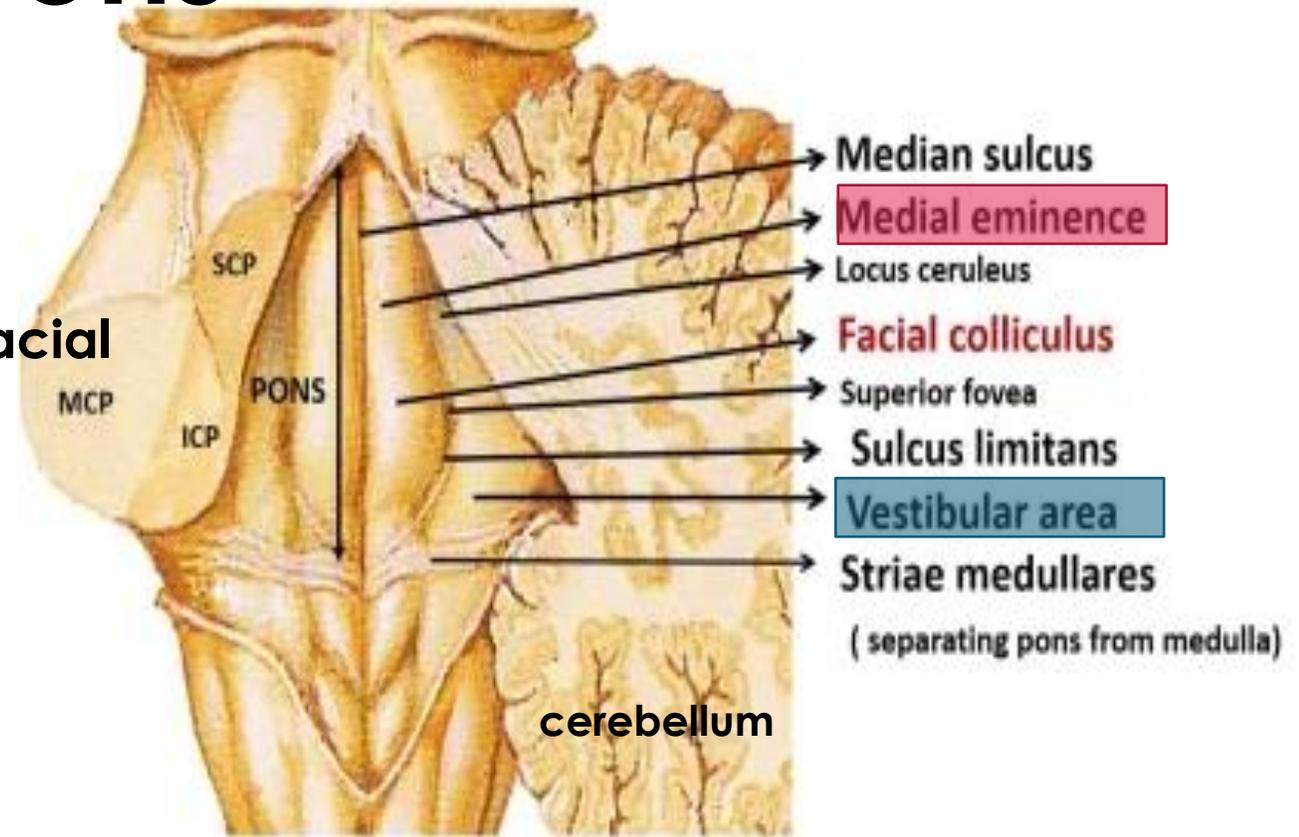
it overlies abducent nucleus surrounded by facial fibers.

2. Vestibular area:

It overlies vestibular nuclei.

3. Sulcus limitans (superior foveae):

It contains in the upper part pigmented area (Locus ceruleus).



SCP, MCP, ICP – Superior, middle and inferior cerebellar peduncles

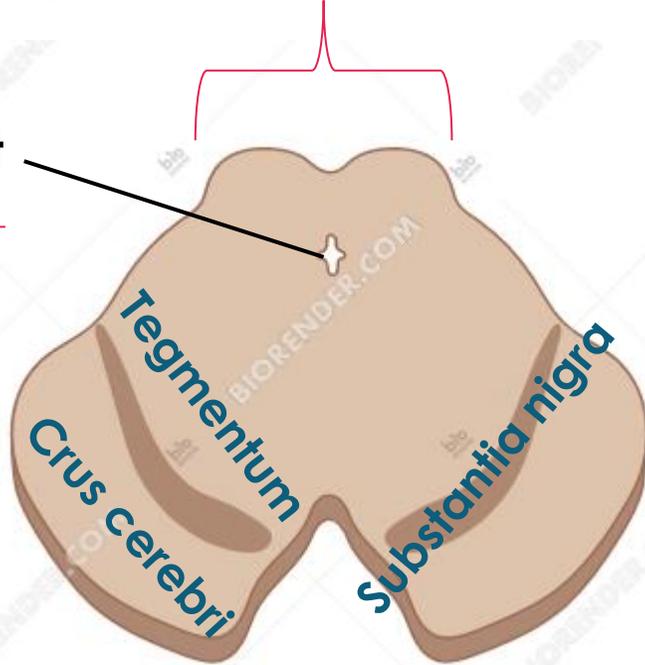
The midbrain

dorsal surface

(tectum formed of 4 colliculi)

Cerebral aqueduct

ventral surface
(2 Cerebral Peduncles)

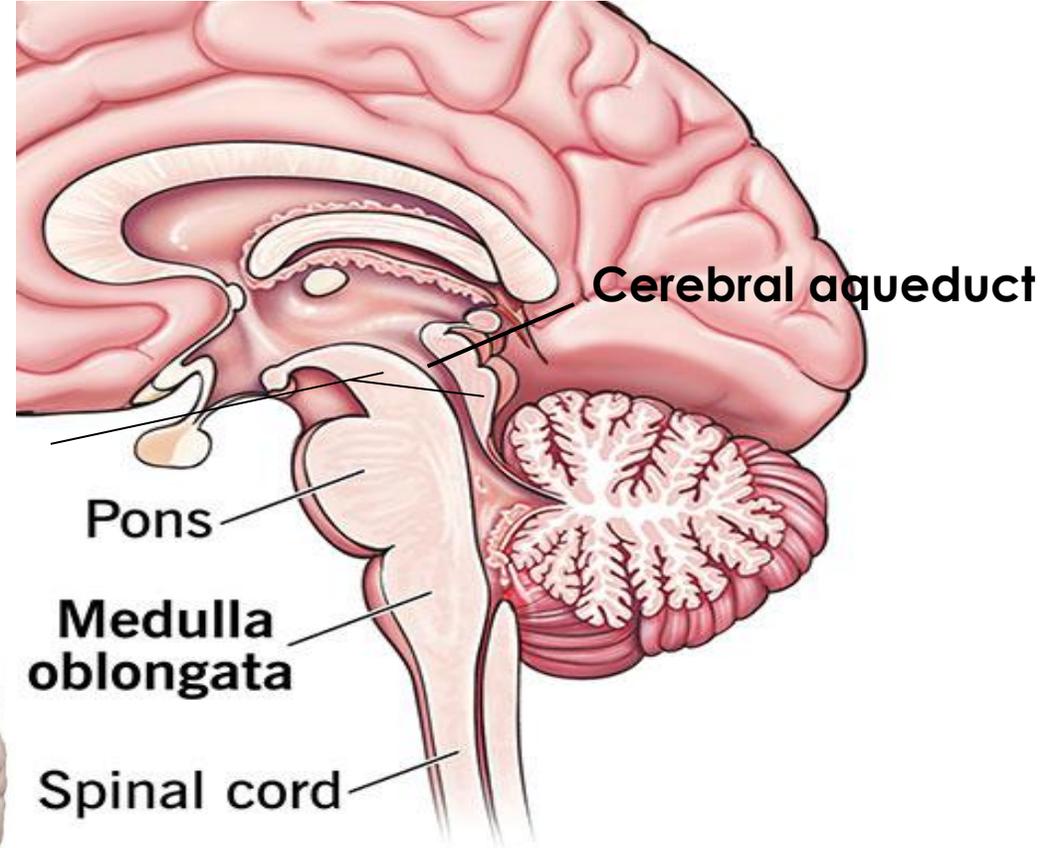
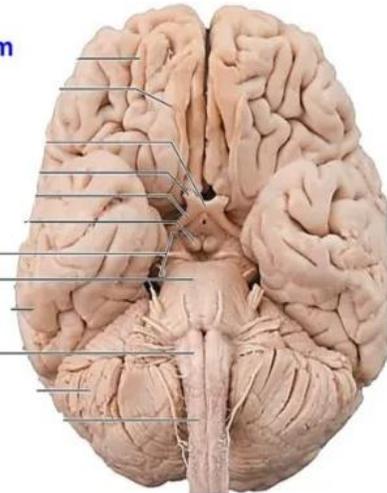


midbrain

Brainstem

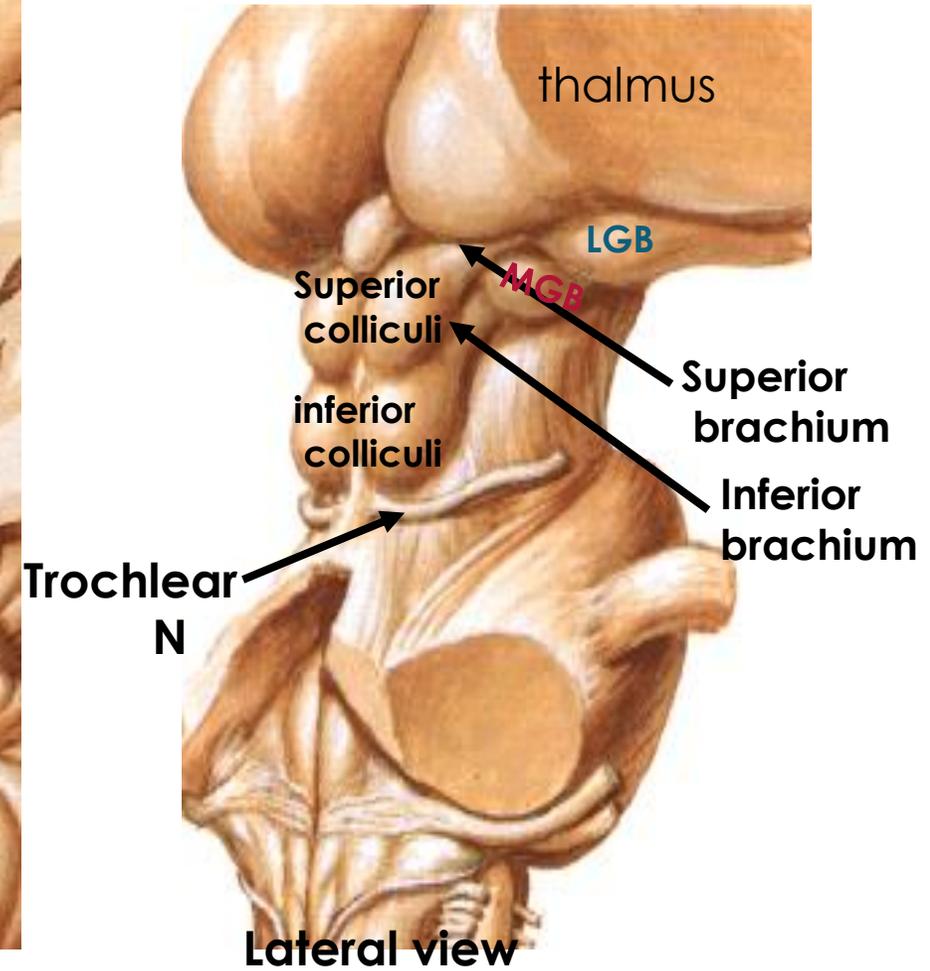
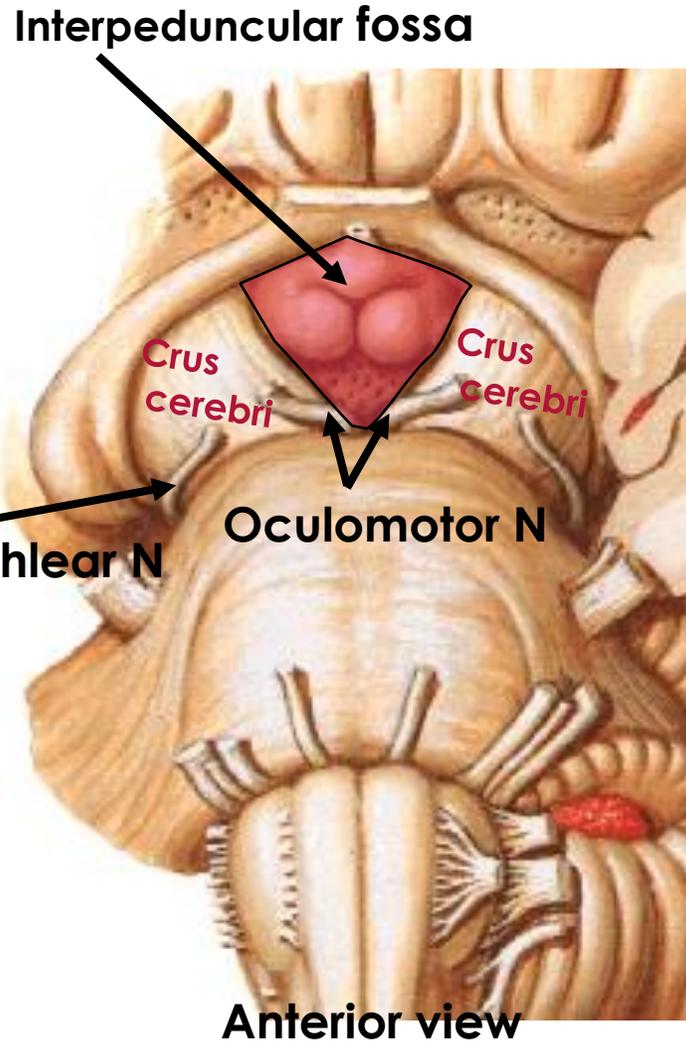
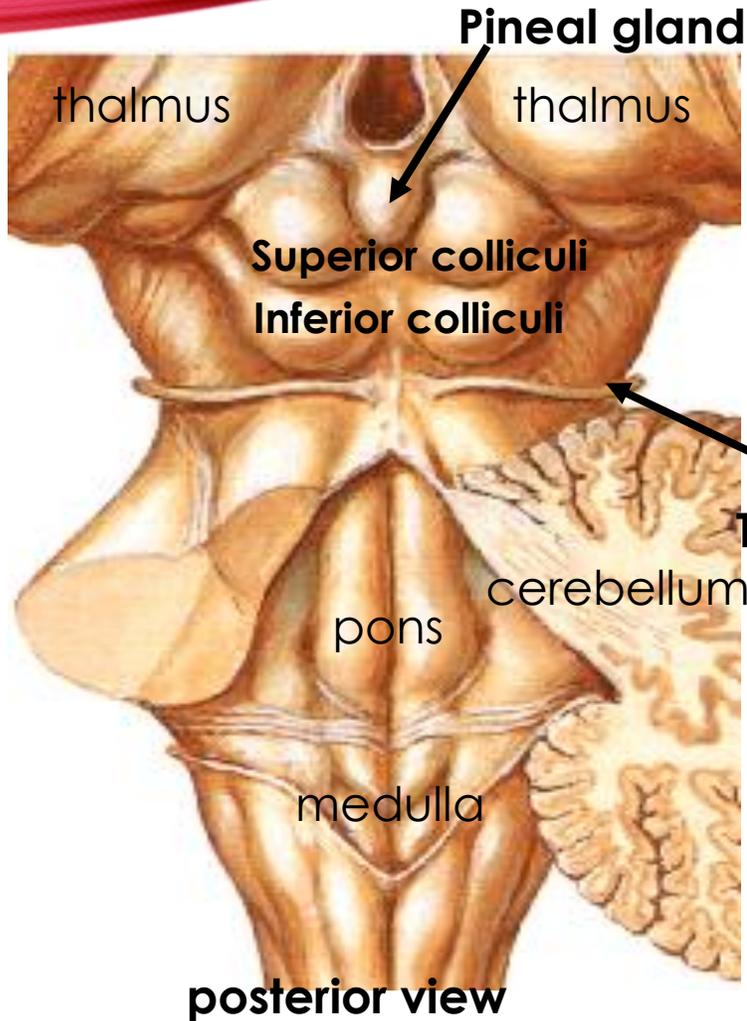
Midbrain
Pons

Medulla
Oblongata



Side view (inside)

The midbrain



Thank You!