Medulla Oblongata Internal structure

At level of olive and cranial nuclie

(2 ,3)

BY
DR.ZAHID
SARFARAZ
KHAN

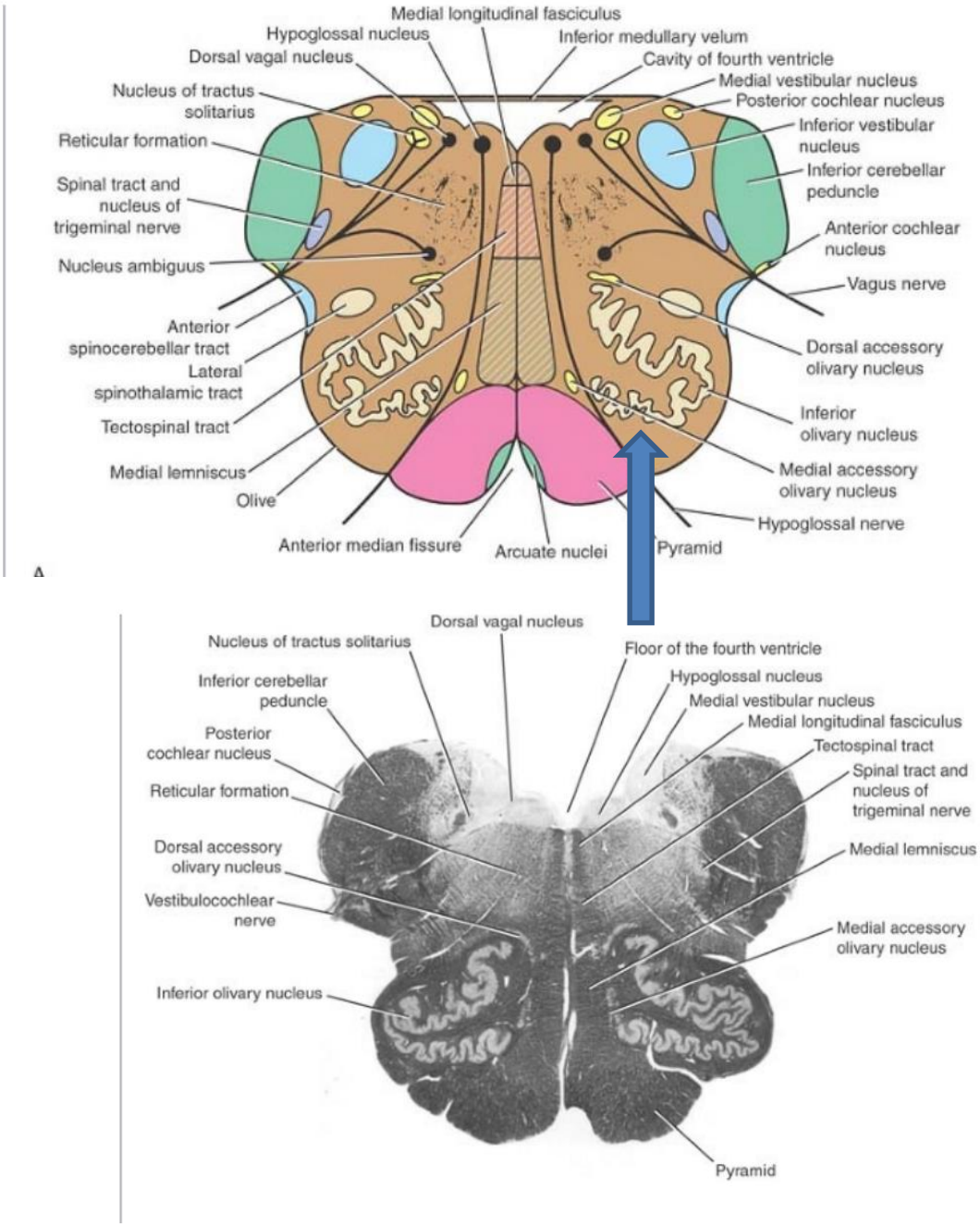
ANATOMY
DEPT
KGMC

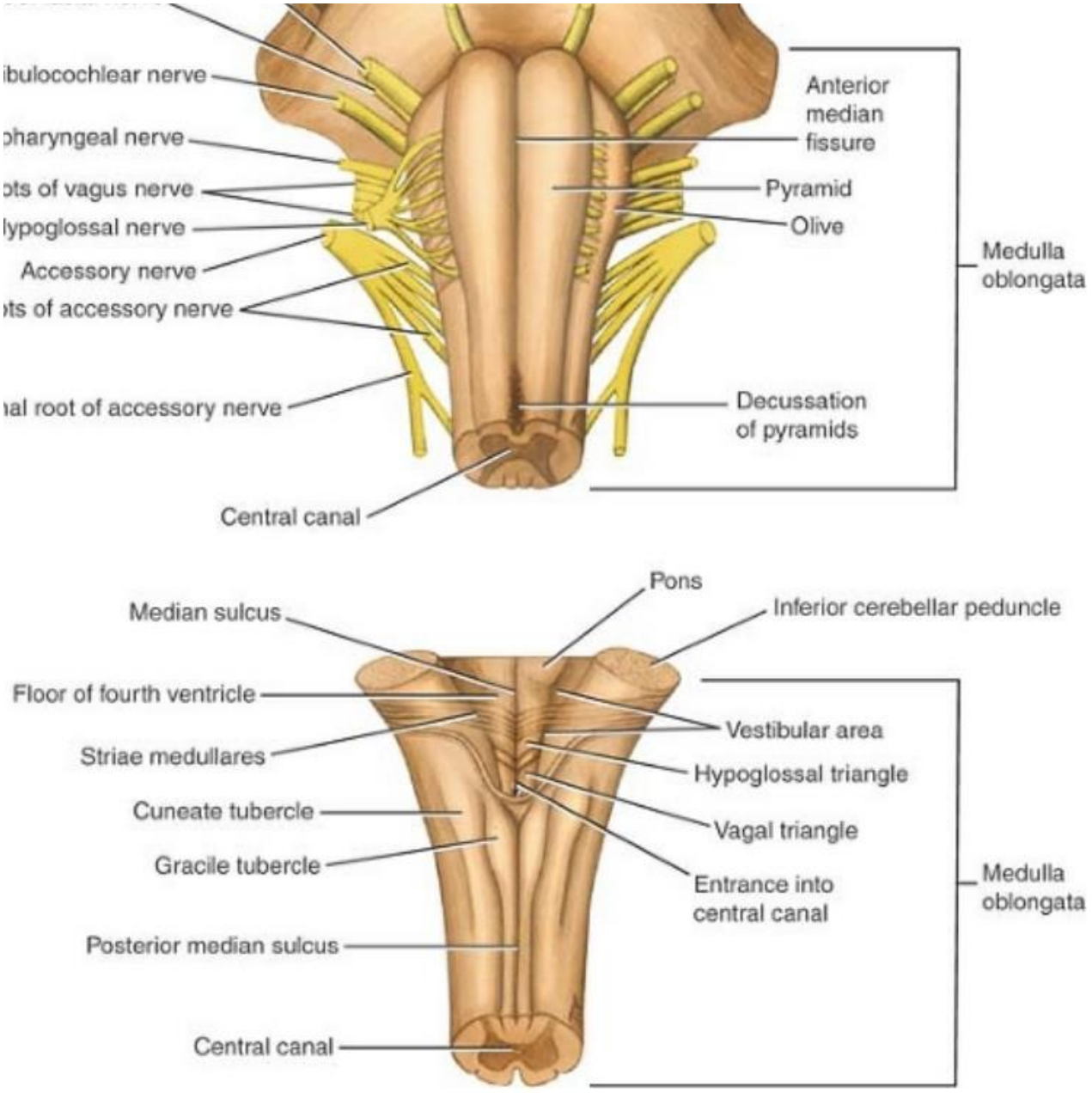
Level of the Olives

Transverse section through the olives passes across the inferior part of the fourth ventricle .

Amount of gray matter has increased at this level
owing to the presence of the olivary nuclear complex

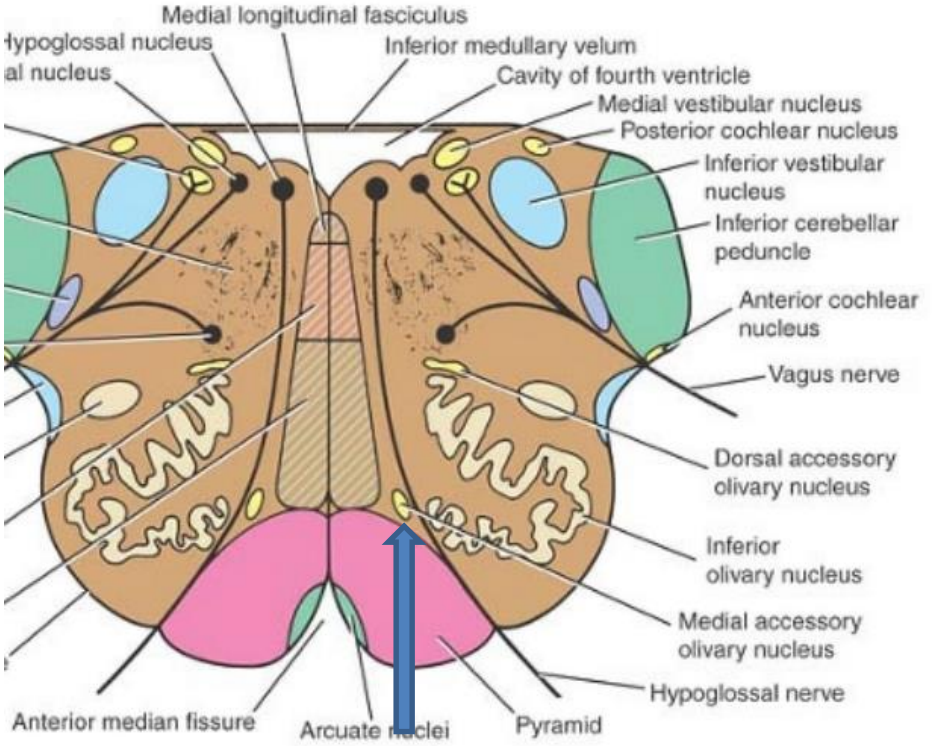
Nuclei of the vestibulocochlear, glossopharyngeal, vagus, accessory, and hypoglossal nerves; and the arcuate nuclei

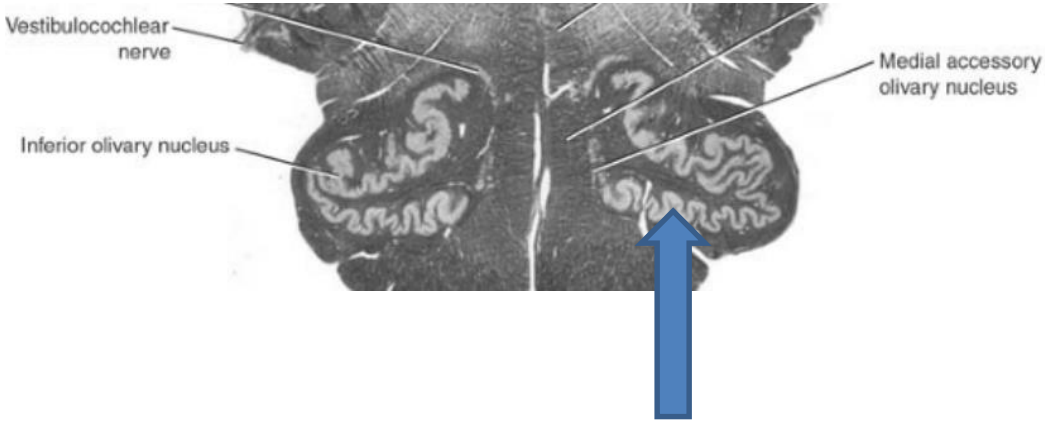



ibulocochlear nerve
pharyngeal nerve
ots of vagus nerve
lypoglossal nerve
Accessory nerve
ots of accessory nerve
nal root of accessory nerve
Central canal
Anterior median fissure
Pyramid
Olive
Medulla oblongata
Decussation of pyramids
Pons
Median sulcus
Inferior cerebellar peduncle
Floor of fourth ventricle
Striae medullares
Cuneate tubercle
Gracile tubercle
Posterior median sulcus
Central canal
Vestibular area
Hypoglossal triangle
Vagal triangle
Entrance into central canal
Medulla oblongata

Olivary Nuclear Complex

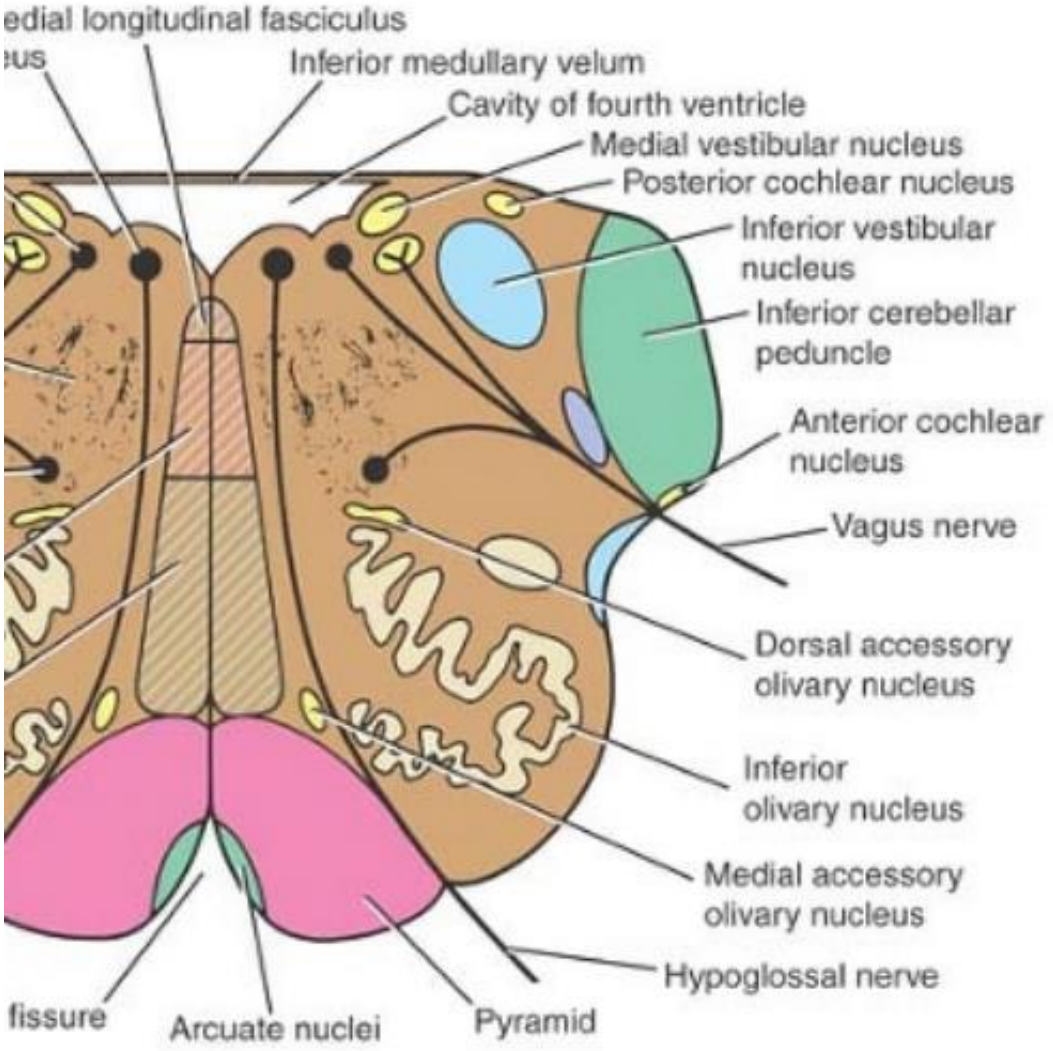
- largest nucleus of this complex is the inferior olivary nucleus .
- The gray matter is shaped like a crumpled bag with its mouth directed medially
- It is responsible for the elevation on the surface of the medulla called the olive.
- Smaller dorsal and medial accessory olivary nuclei also are present.





Olivary Nuclear Complex

- The cells of the inferior olivary nucleus send fibers medially across the midline
- To enter the cerebellum through the inferior cerebellar peduncle.
- Afferent fibers reach the inferior olivary nuclei from the spinal cord (the spino-olivary tracts)and from the cerebellum and cerebral cortex.
- The function of the olivary nuclei is associated with voluntary muscle movement.

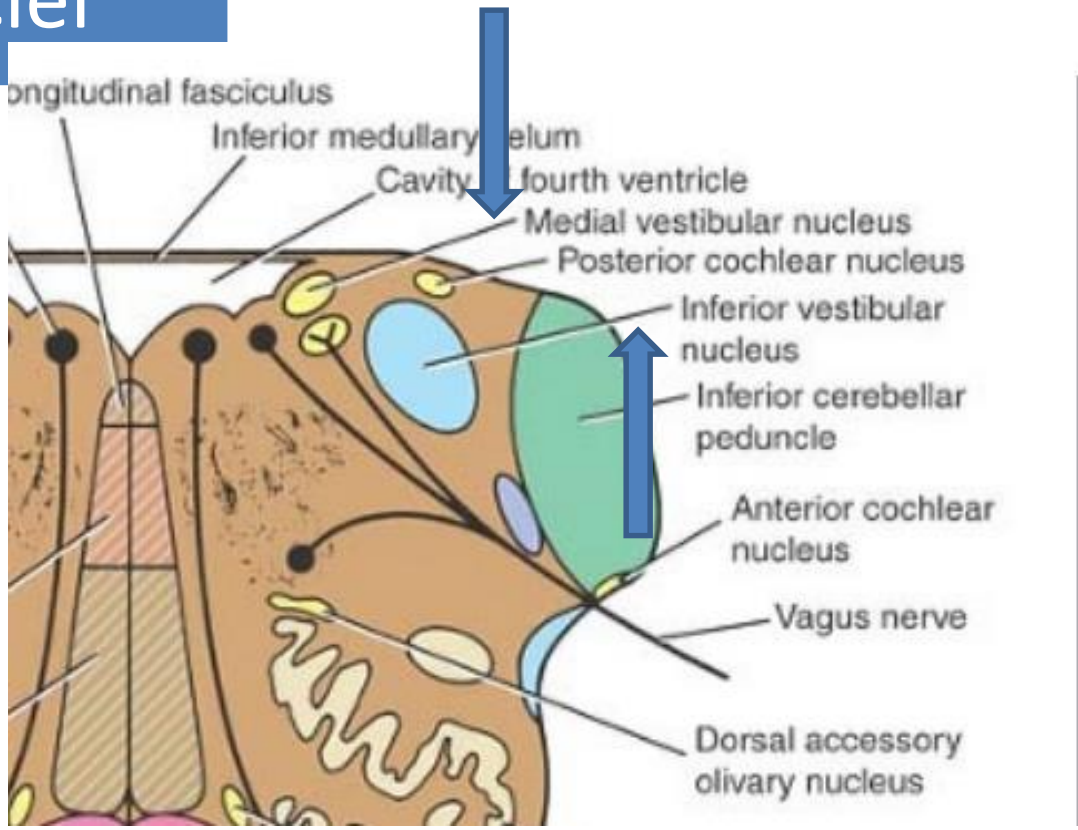


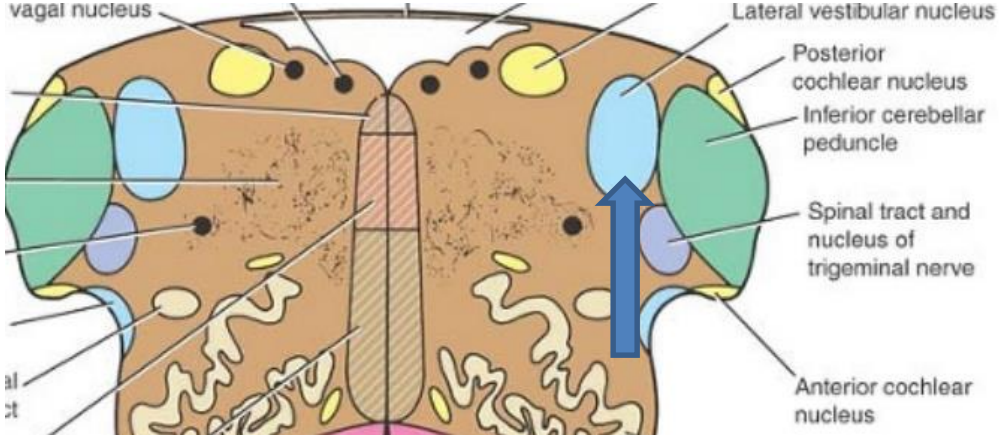
Vestibulocochlear Nuclei

- The vestibular nuclear complex is made up of the following nuclei:
- (1) medial vestibular nucleus
- (2) inferior vestibular nucleus
- (3) lateral vestibular nucleus

And

- (4) superior vestibular nucleus.





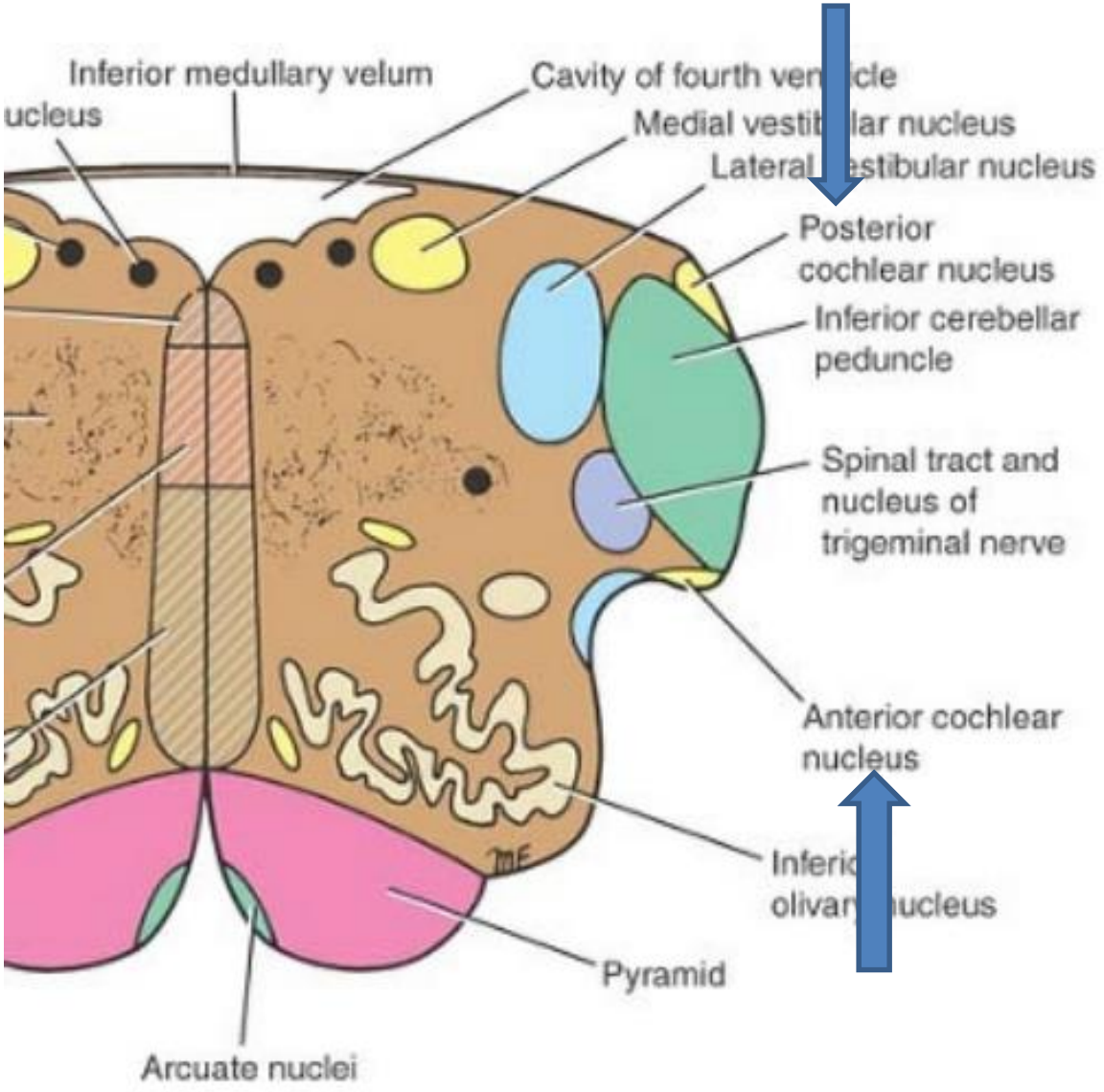
Two cochlear nuclei.

Anterior cochlear nucleus

Present on th anterolateral aspect of the inferior cerebellar peduncle

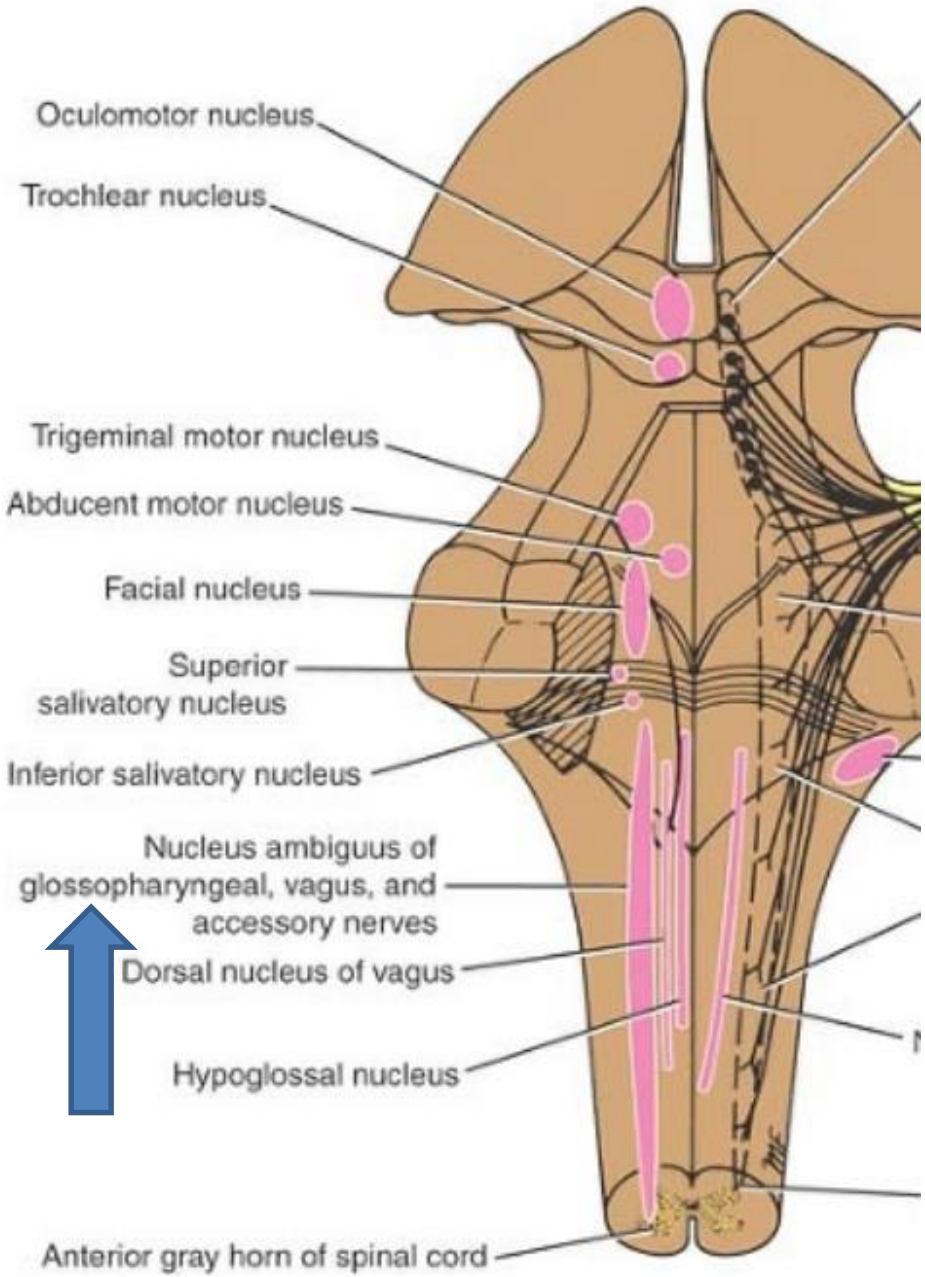
Posterior cochlear nucleus

is situated on the posterior aspect of the peduncle lateral to the floor of the fourth ventricle.



Nucleus Ambiguus

- Consists of large motor neurons
- Is situated deep within the reticular formation
- Nerve fibers join the glossopharyngeal, vagus and Cranial part of the accessory nerve
- Distributed to voluntary skeletal muscle



Central Gray Matter

- Lies beneath the floor of the fourth ventricle at this level .
- Passing from medial to lateral , the following important structures may be recognized:

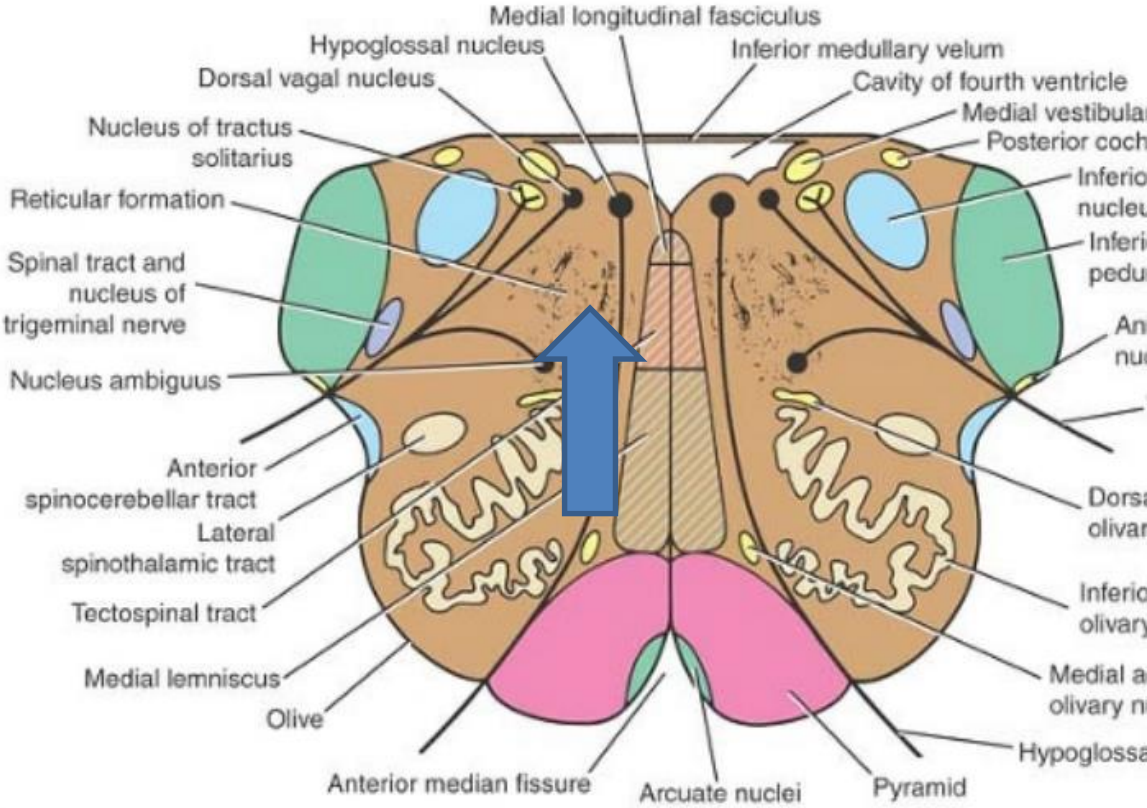
(1) the hypoglossal nucleus,

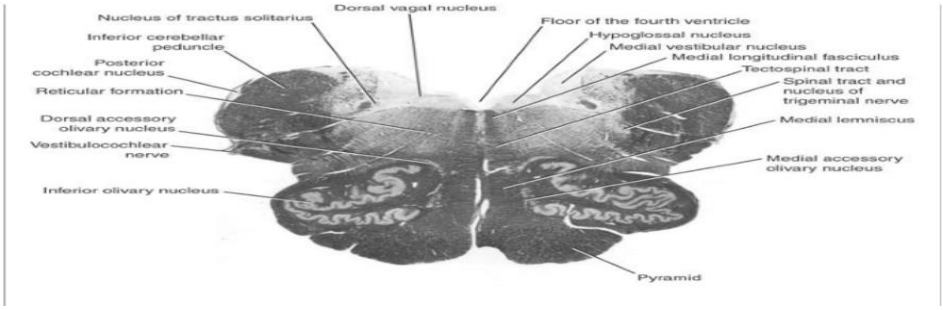
(2) the dorsal nucleus of the vagus,

(3) the nucleus of the tractus solitarius,

And

(4) the medial and inferior vestibular nuclei .





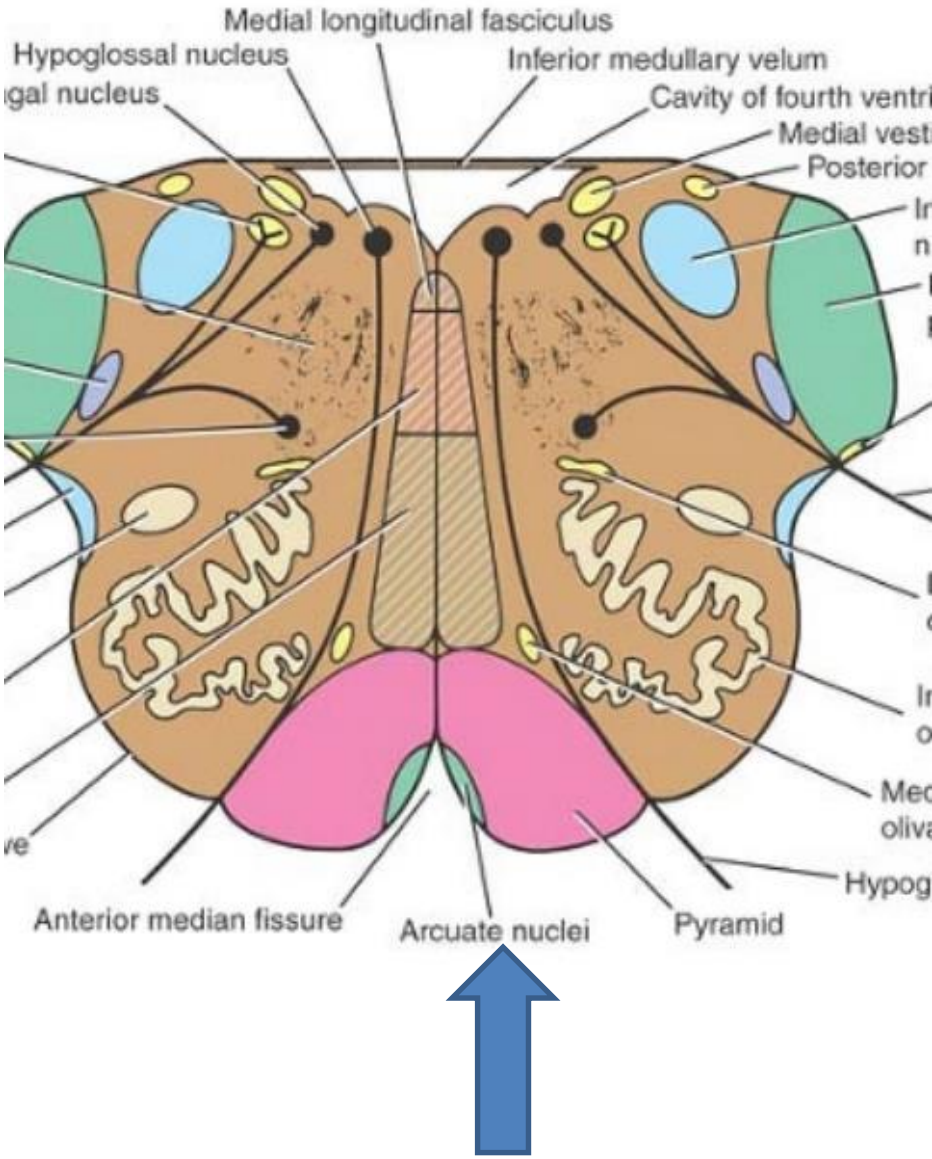
Arcuate nuclei

Are thought to be inferiorly displaced pontine nuclei

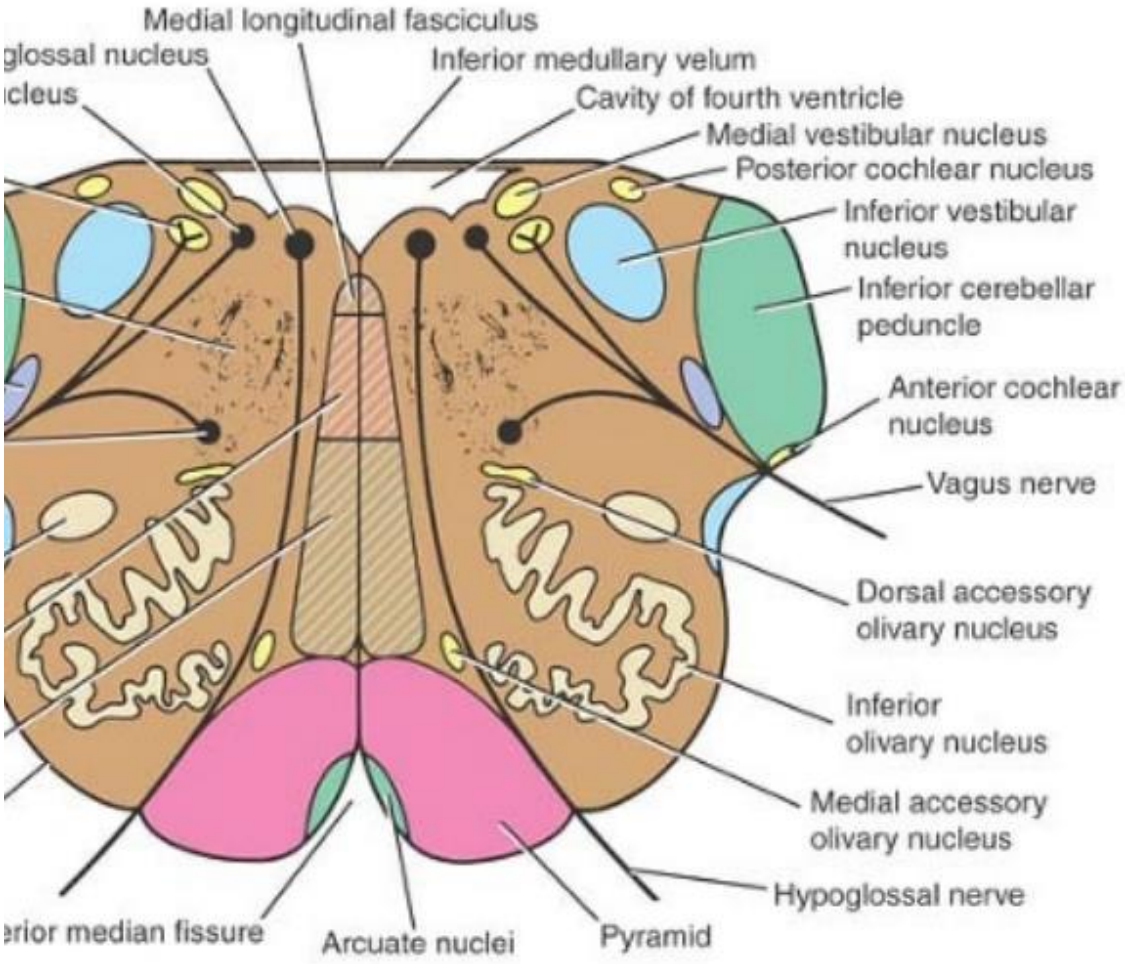
And are situated on the anterior surface of the pyramids .

They receive nerve
fibers from the cerebral cortex

And send efferent fibers to the cerebellum through the
anterior external arcuate fibers.

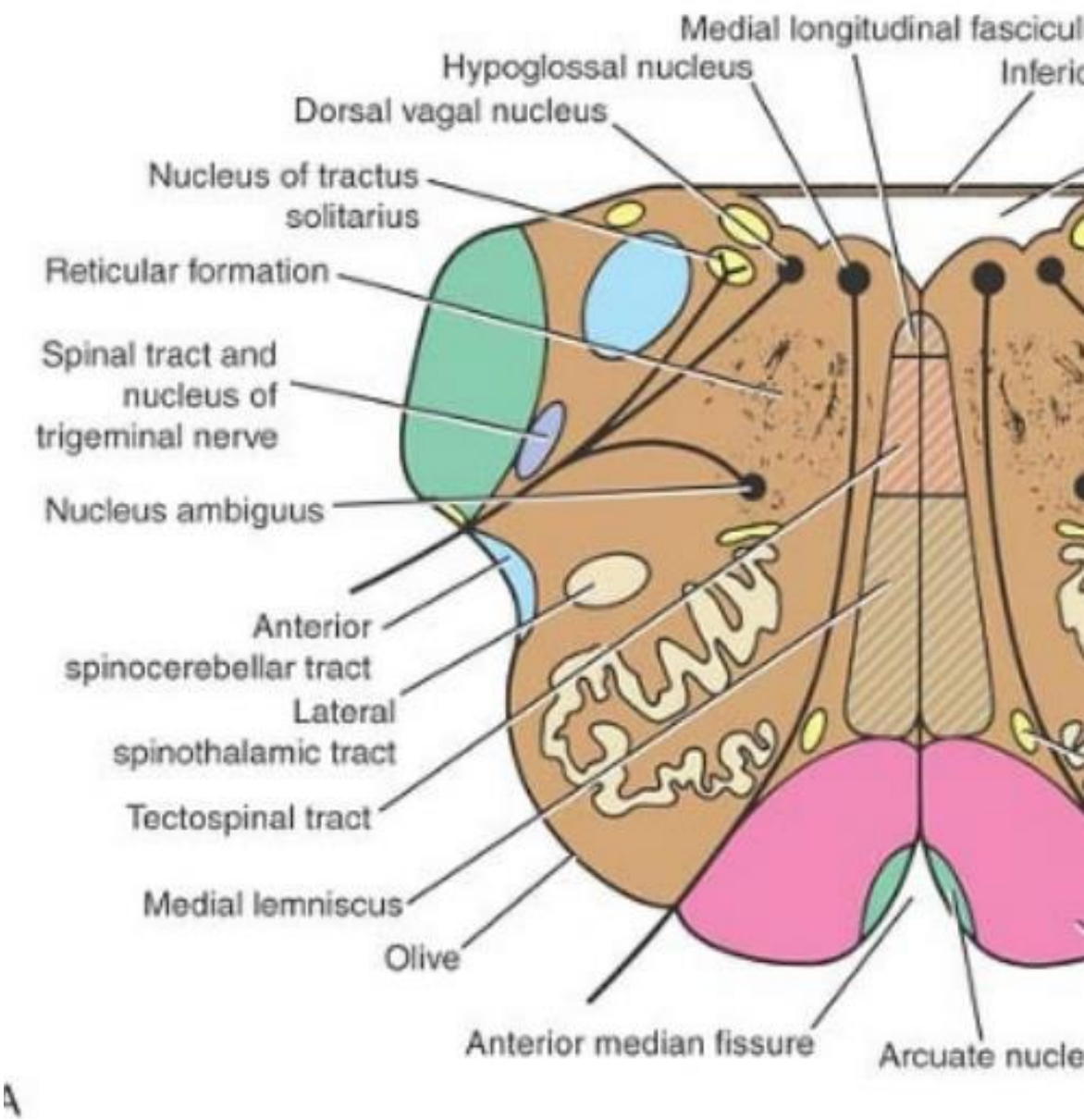


- Pyramids containing the corticospinal
- And some corticonuclear fibers are situated in the anterior part of the medulla separated by the anterior median fissure
- Corticospinal fibers descend to the spinal cord
- Corticonuclear fibers are distributed to the motor nuclei of the cranial nerves situated within the medulla.



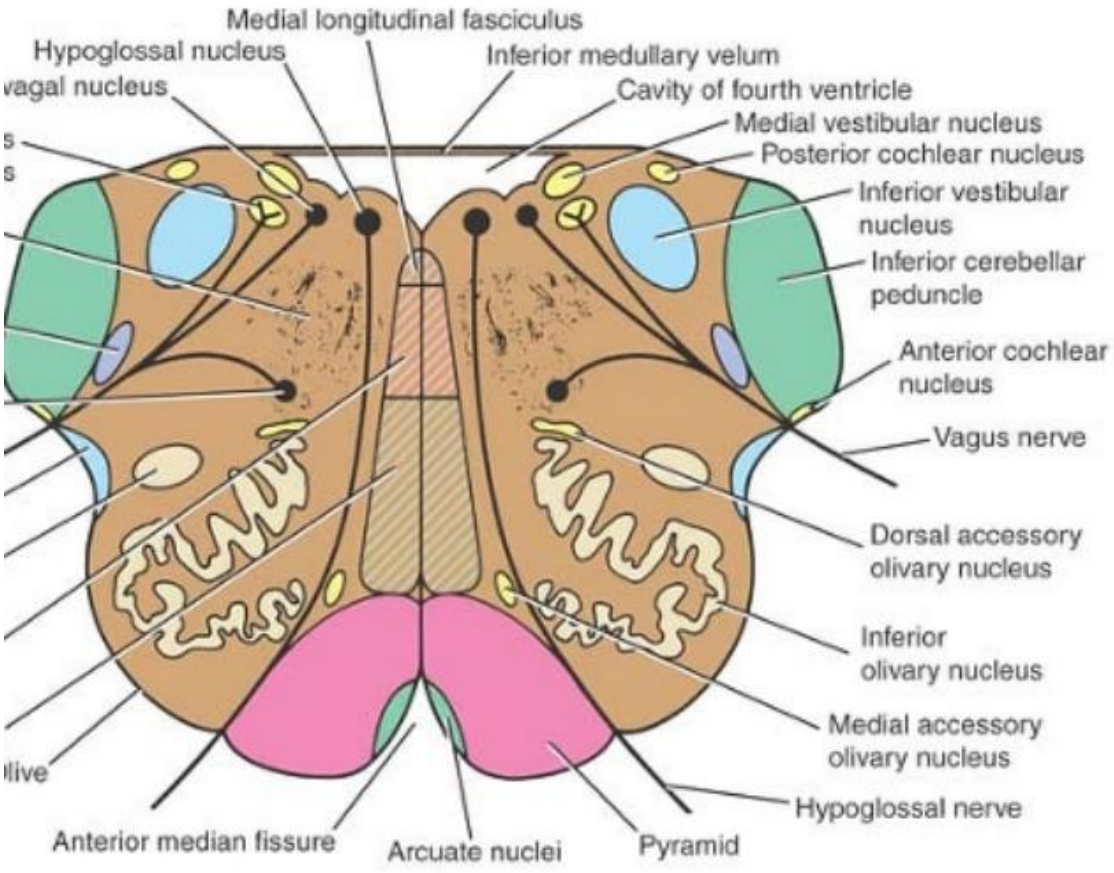
Medial lemniscus forms a flattened tract on each side of the midline posterior to the pyramid.

These fibers emerge from the decussation of the lemnisci and convey sensory information to the thalamus.



Medial longitudinal Fasciculus

- Forms a small tract of nerve fibers situated on each side of the midline posterior to the medial lemniscus
- And anterior to the hypoglossal nucleus .
- It consists of ascending and descending fibers, the connections

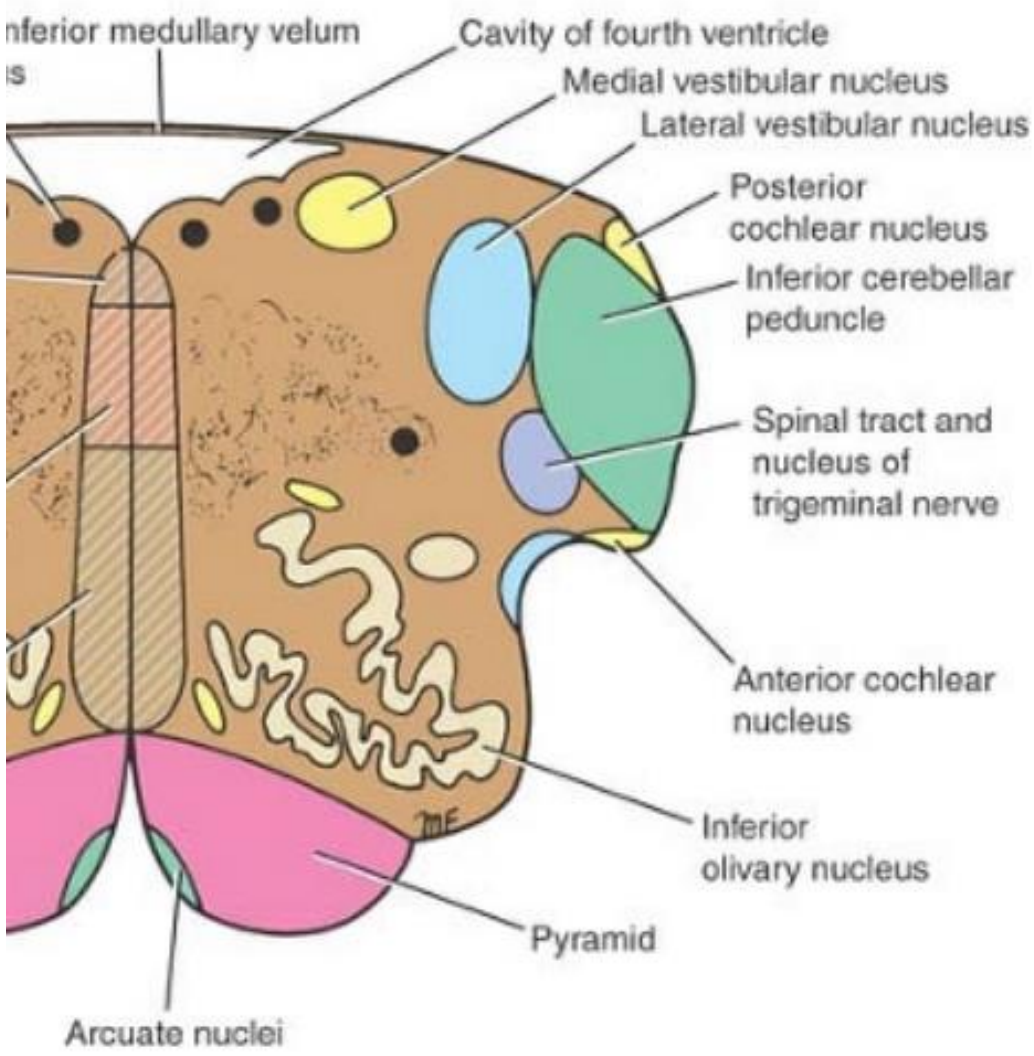


Inferior cerebellar peduncle

- Is situated in the posterolateral corner of the section on the lateral side of the fourth ventricle

- Spinal tract of the trigeminal nerve

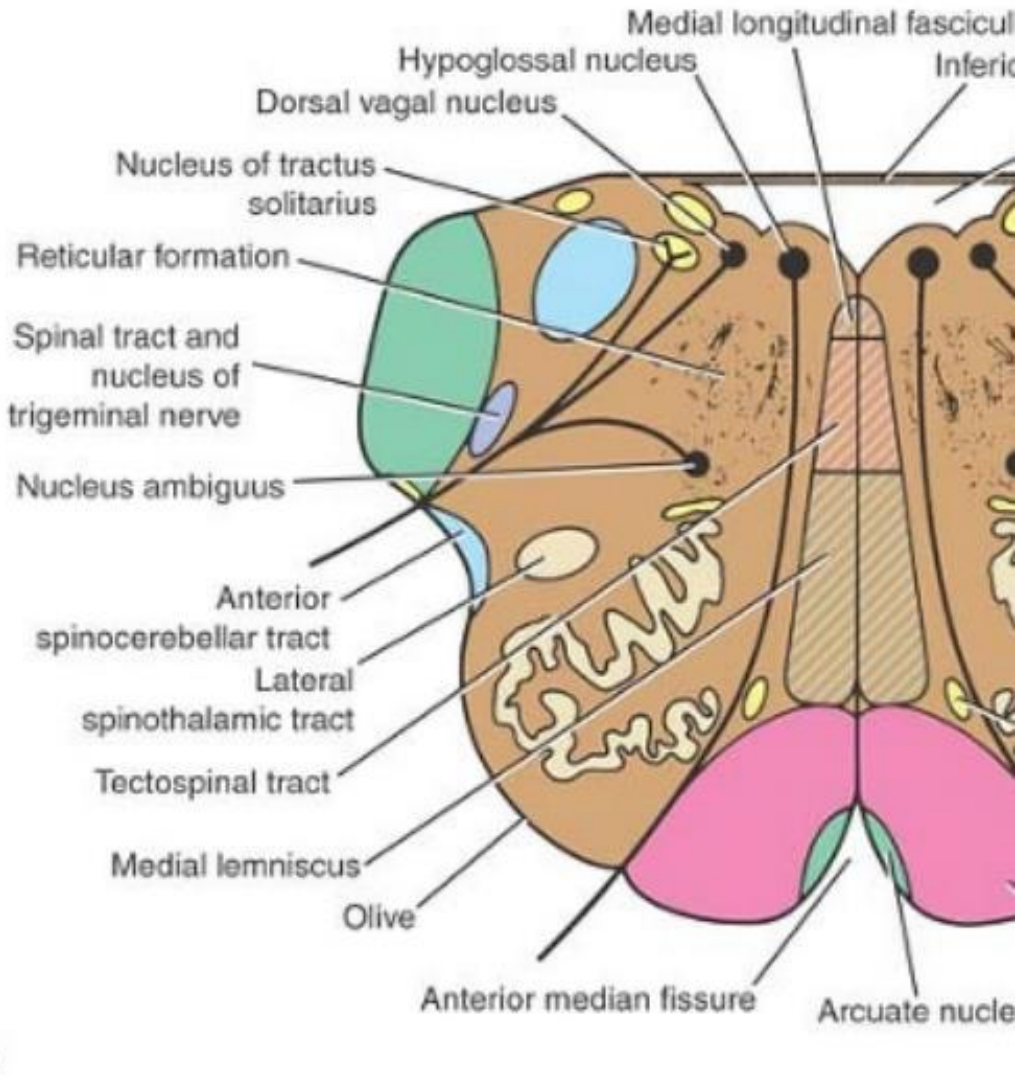
And Its nucleus are situated on the anteromedial aspect of the inferior cerebellar peduncle



Anterior spinocerebellar tract

Is situated near the surface in the interval between the inferior olivary nucleus and the nucleus of the spinal tract of the trigeminal nerve.

The spinal lemniscus, consisting of the anterior spinothalamic, the lateral spinothalamic, and spinotectal tracts, is deeply placed.



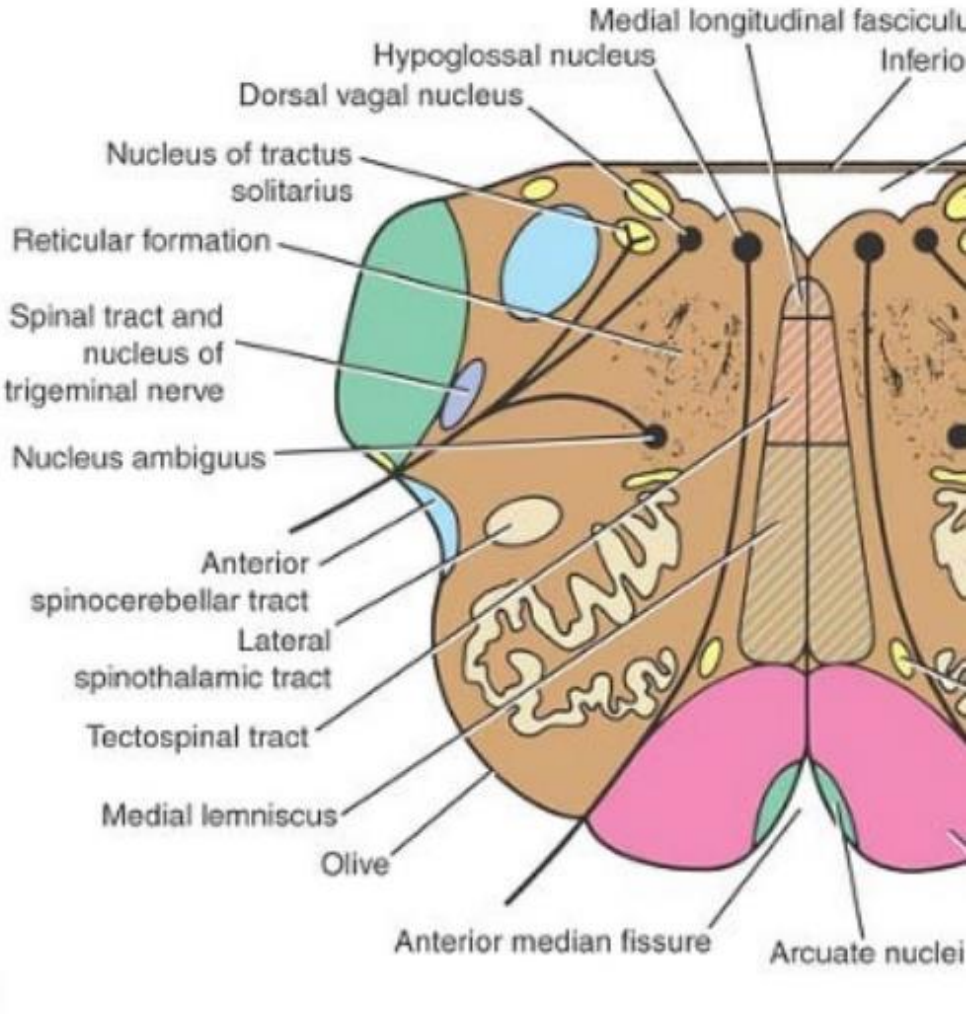
Reticular formation

A diffuse mixture of nerve fibers and small groups of nerve cells

Is deeply placed posterior to the olivary nucleus

Reticular formation represents, at this level, only a small part of this system

Its is also present in the pons and midbrain.



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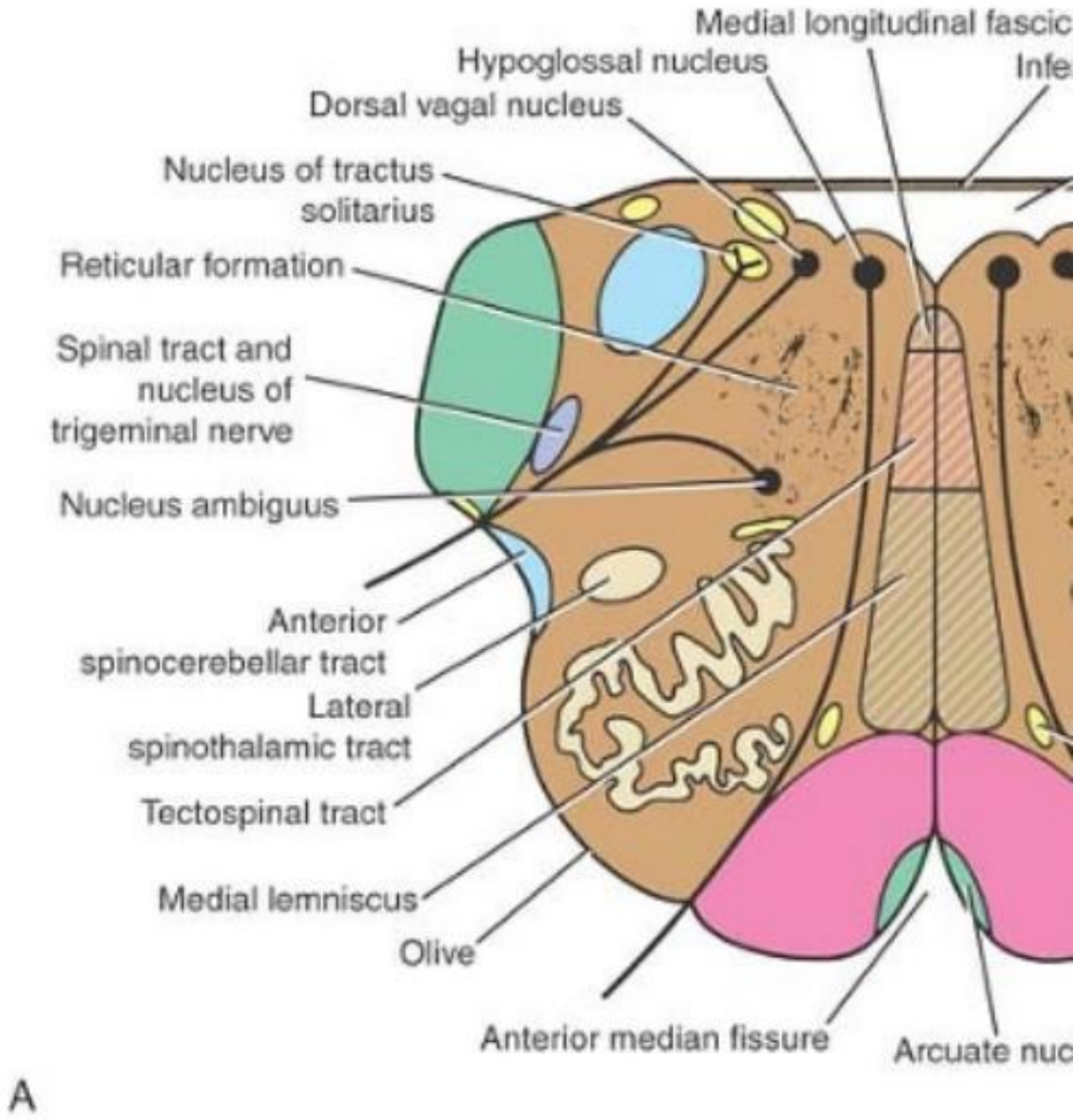
Glossopharyngeal, vagus, and cranial part of the accessory nerves can be seen running forward and laterally through the reticular formation .

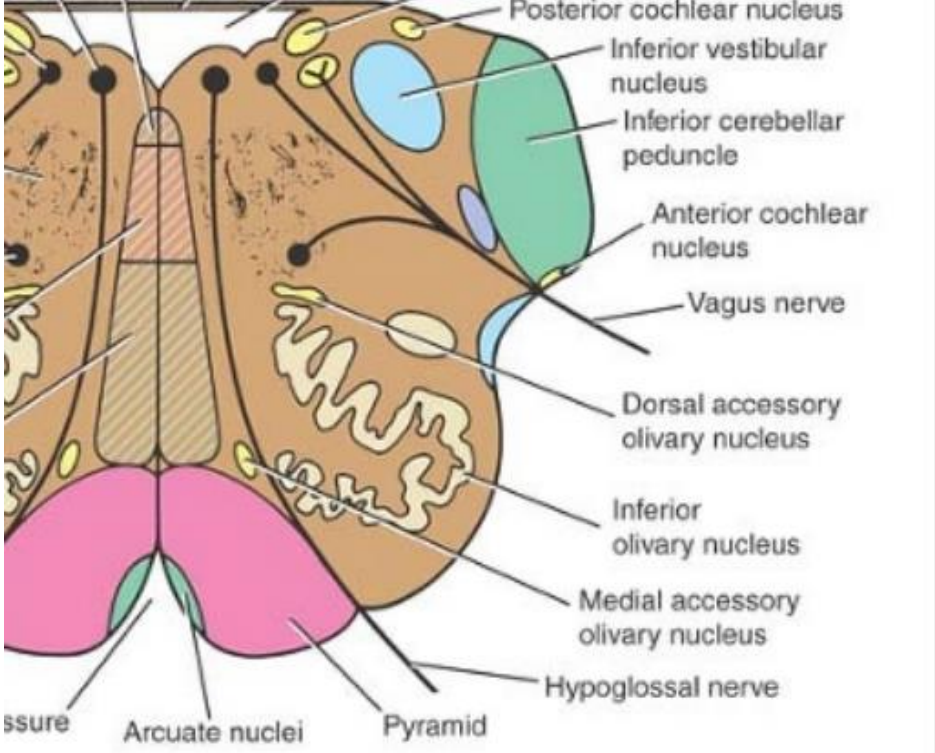
The nerve fibers emerge between the olives and the inferior cerebellar peduncles.

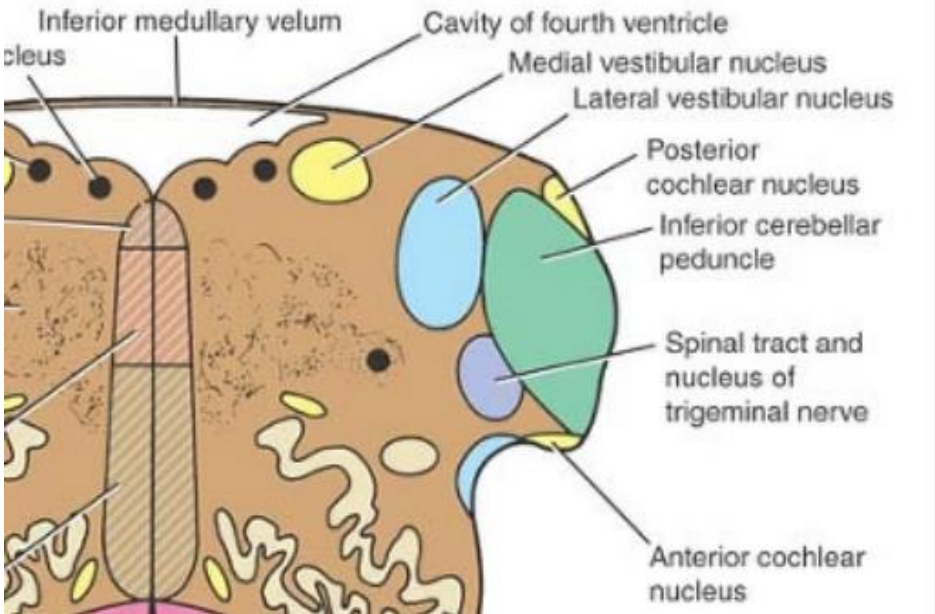
The hypoglossal nerves also run anteriorly and laterally through the reticular formation and emerge between the pyramids and the olives



Level Just Inferior to the Pons

- There are no major changes, in comparison to the previous level, in the distribution of the gray and white matter .
- lateral vestibular nucleus has replaced the inferior vestibular nucleus
- And the cochlear nuclei now are visible on the anterior and posterior surfaces of the inferior cerebellar peduncle.





thank you!