

MUNI

Brainstem

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Position and parts

https://www.youtube.com/watch?time_continue=2&v=ljbps0ogUbY&feature=emb_title

RHOMBENCEPHALON

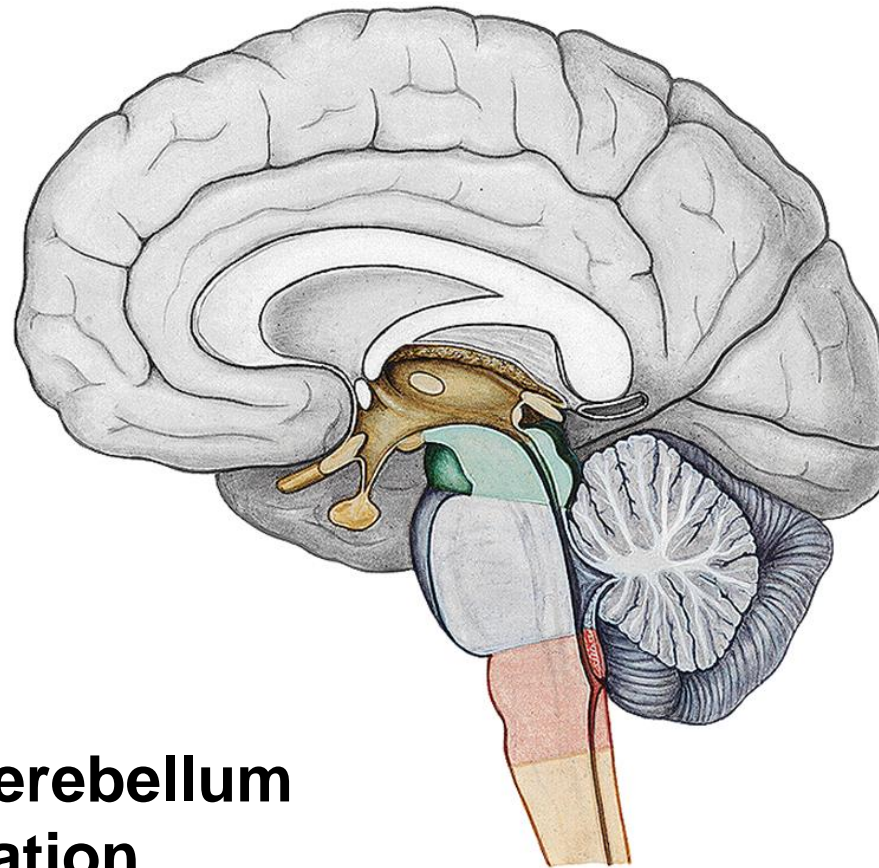
MEDULLA OBLONGATA
PONS VAROLI
CEREBELLUM

MESENCEPHALON

PROSENCEPHALON

DIENCEPHALON
TELENCEPHALON

- nuclei of CN III - XII
- connection to the cerebellum
- large reticular formation

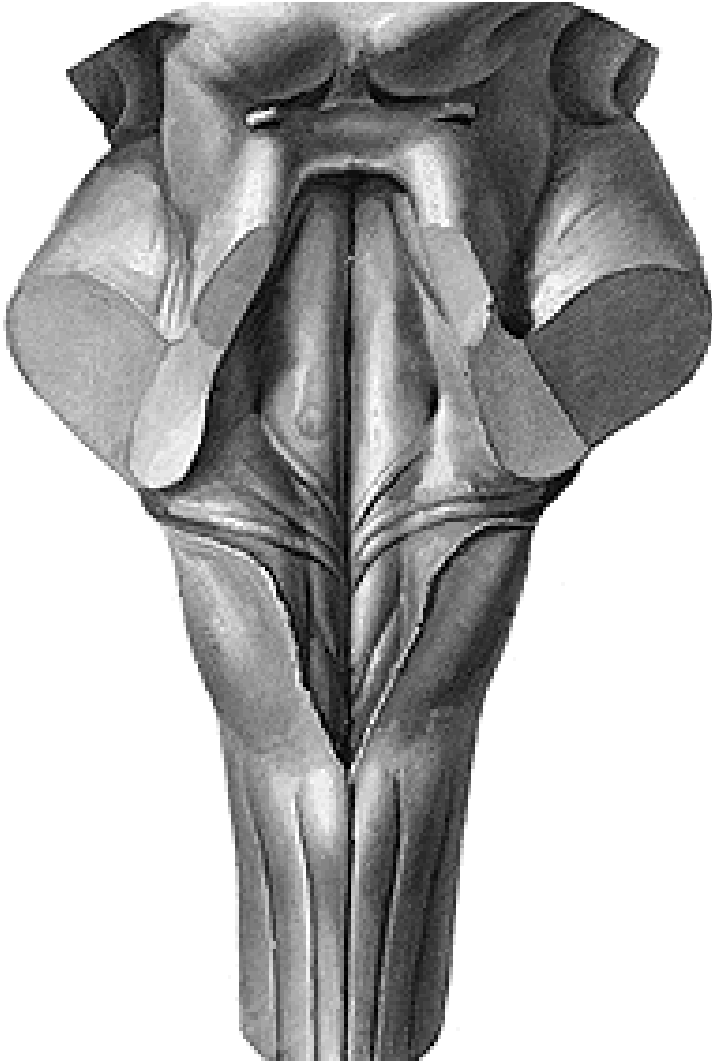


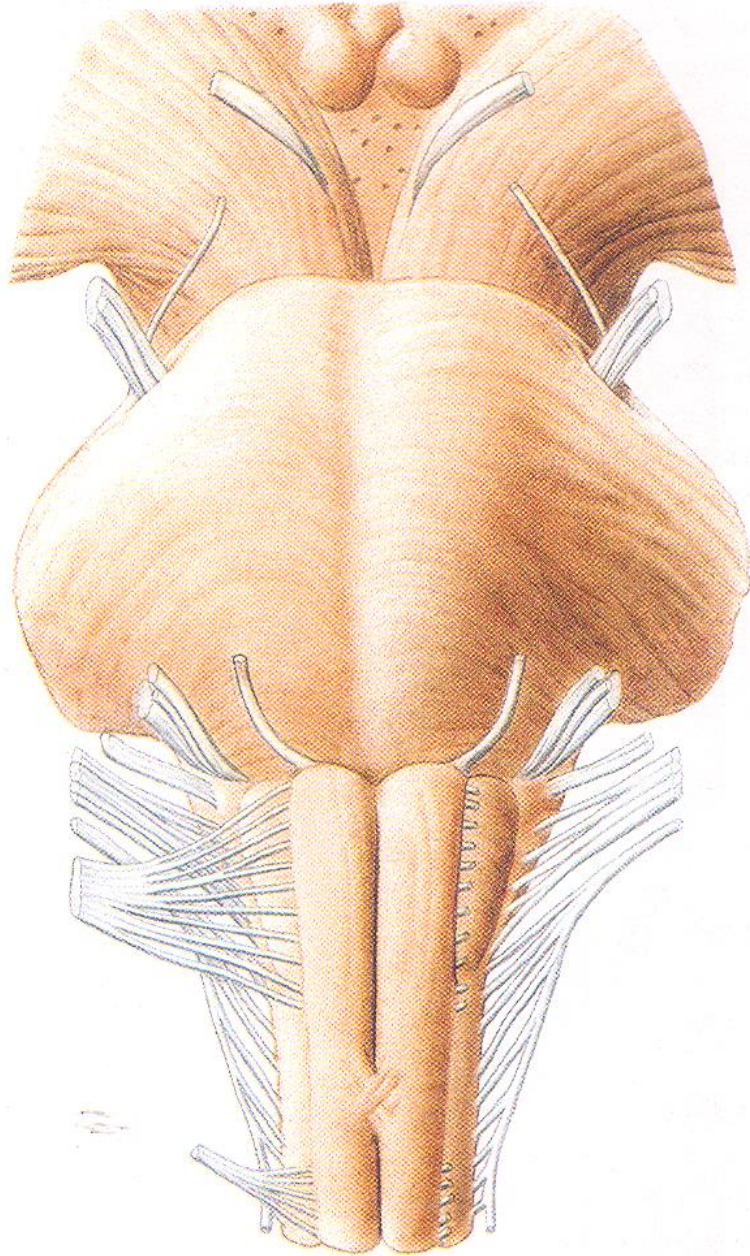
Mesencephalon
Pons
Medulla oblongata

Macroscopic description

Dorsal view

Ventral view





Ventral side of the medulla oblongata

Continuation of medulla spinalis (20–25mm)
(bulbus medullae spinalis)

Output of the first spinal nerve C1
(decussatio pyramidum) to pons Varoli

Fissura mediana ventralis

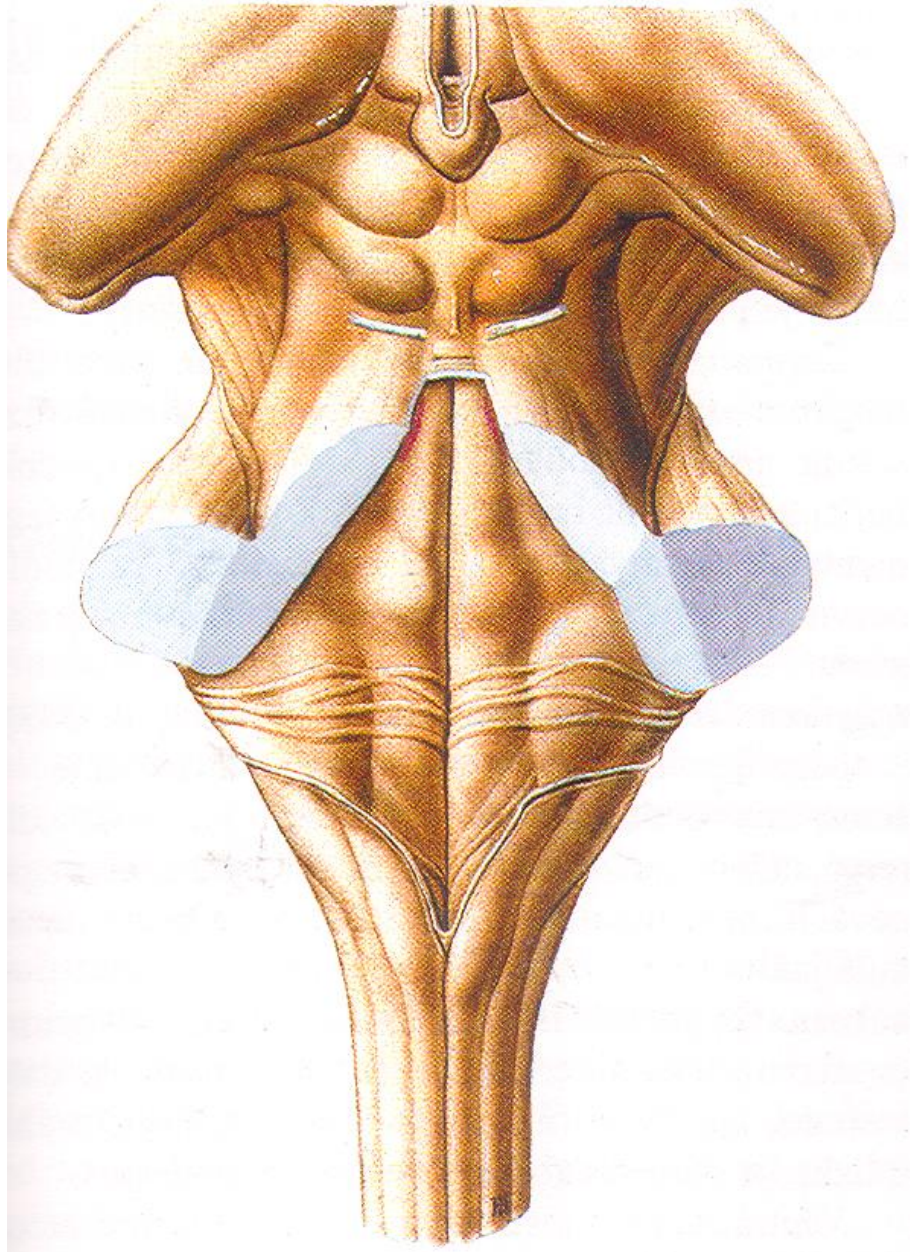
sulcus bulbopontinus (VI., VII., VIII.)

sulcus lateralis anterior (XII.)

oliva

sulcus lateralis posterior (IX., X., XI.)

pyramis medullae oblongatae
(Corticospinal tract)

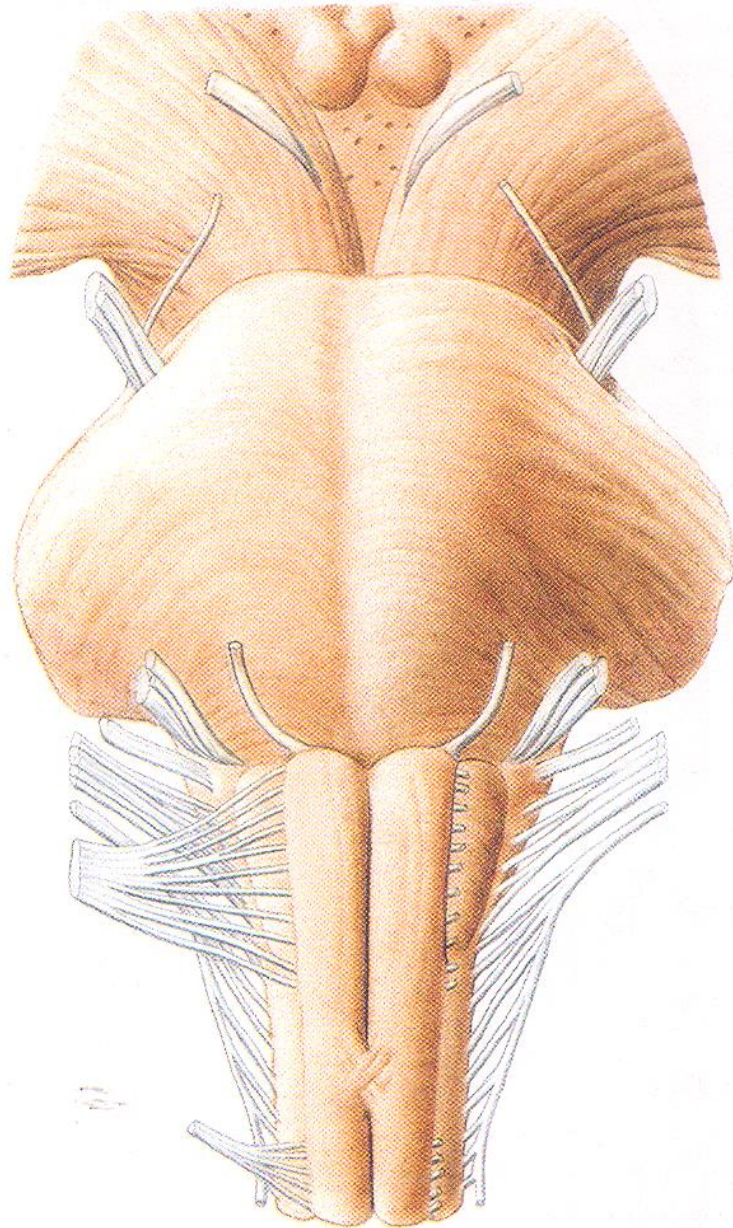


Dorsal side of the medulla oblongata

Inferior part of the fossa rhomboidea

velum medullare inferius

Pedunculi cerebellares inferiores



Ventral side of the pons Varoli

sulcus basilaris (a. basilaris)

sulcus bulbopontinus (pontocerebellar angle)

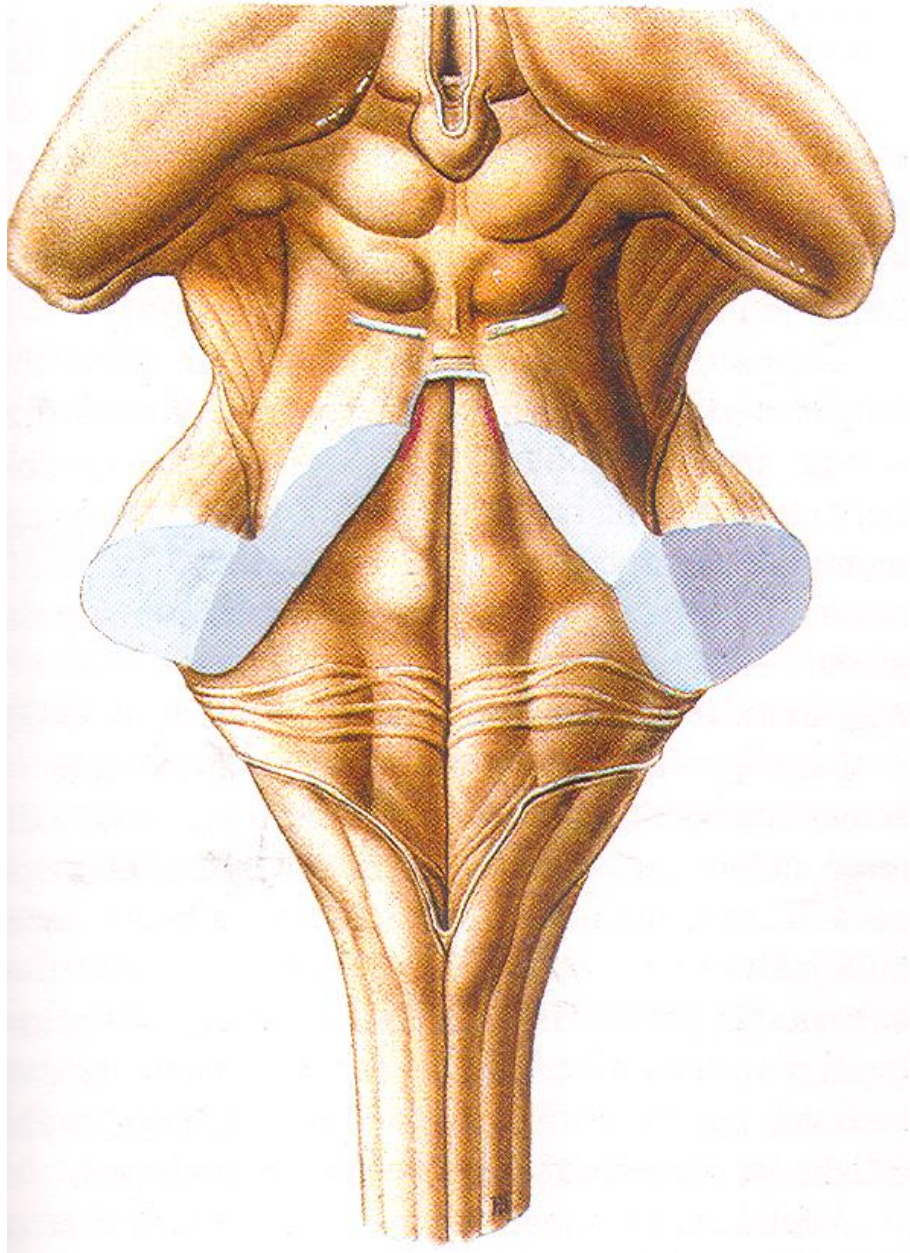
VI. – nervus abducens

VII. – nervus facialis

VIII. – nervus vestibulocochlearis

pedunculi cerebellares medii

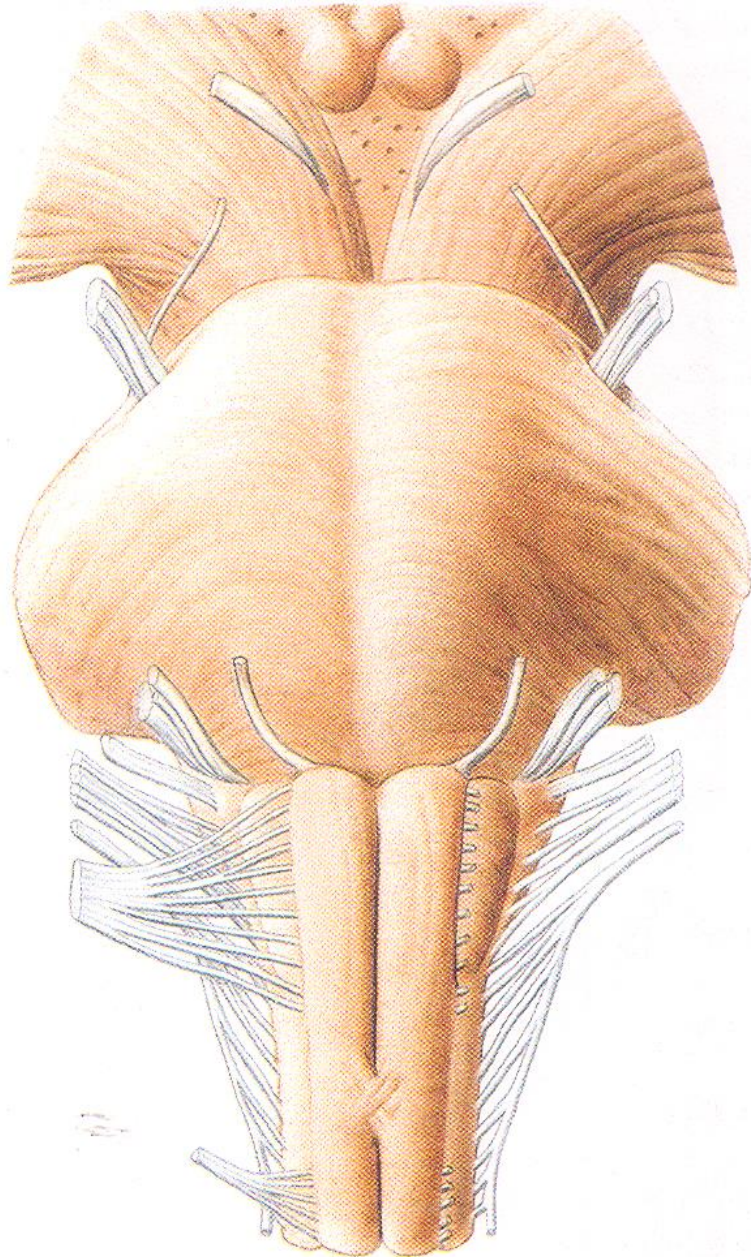
between pons and brachium pontis - V. –
nervus trigeminus



Dorsal side of the pons Varoli

Middle part of the fossa rhomboidea

pedunculi cerebellares medii



between pons Varoli and diencephalon

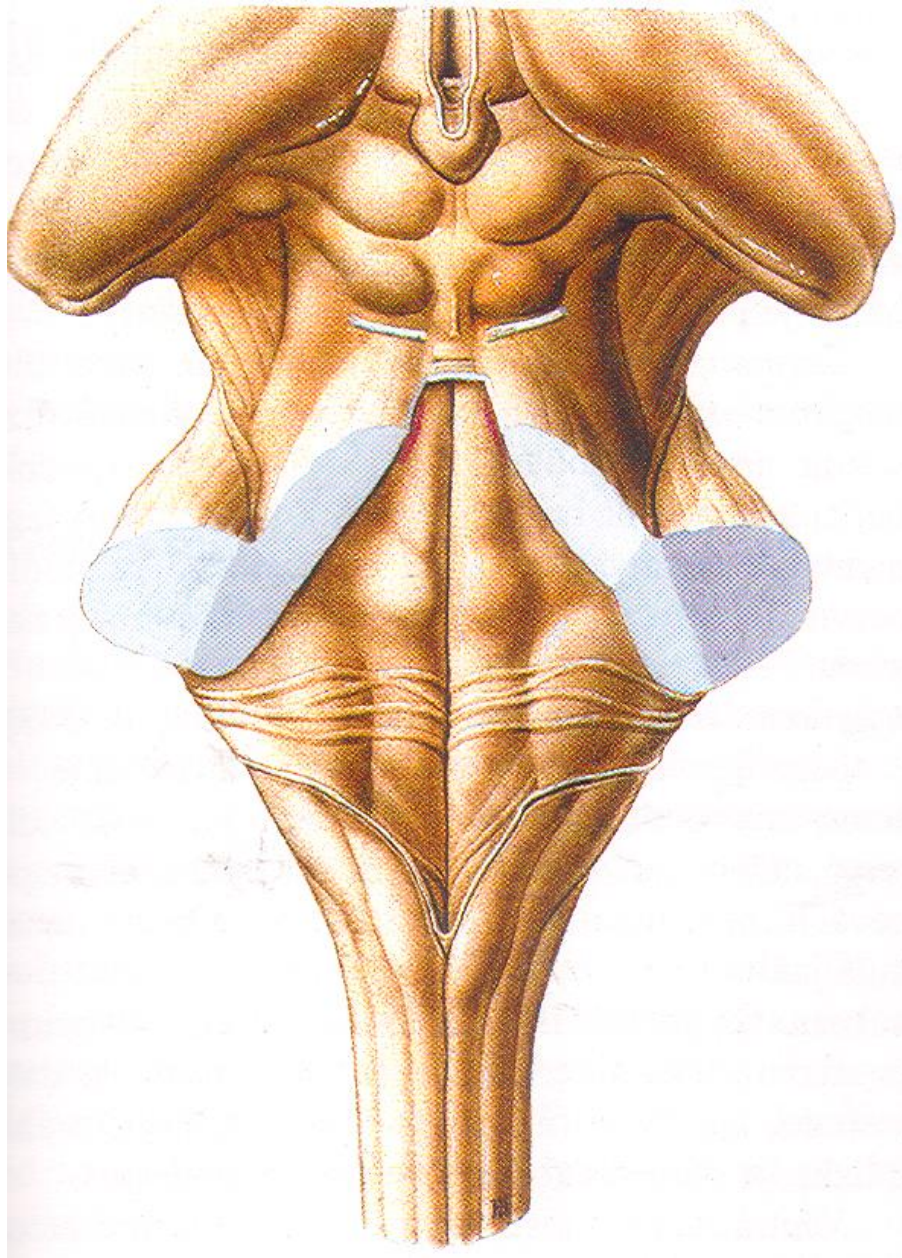
Ventral side of the mesencephalon

crura (pedunculi) cerebri

fossa interpeduncularis

sulcus nervi oculomotorii

n. III. (nervus oculomotorius)



Dorsal side of the mesencephalon
(lamina tecti)

corpora quadrigemina
colliculi superiores
(optic-motor reflexes)

colliculi inferiores
(acoustic-motor reflexes)

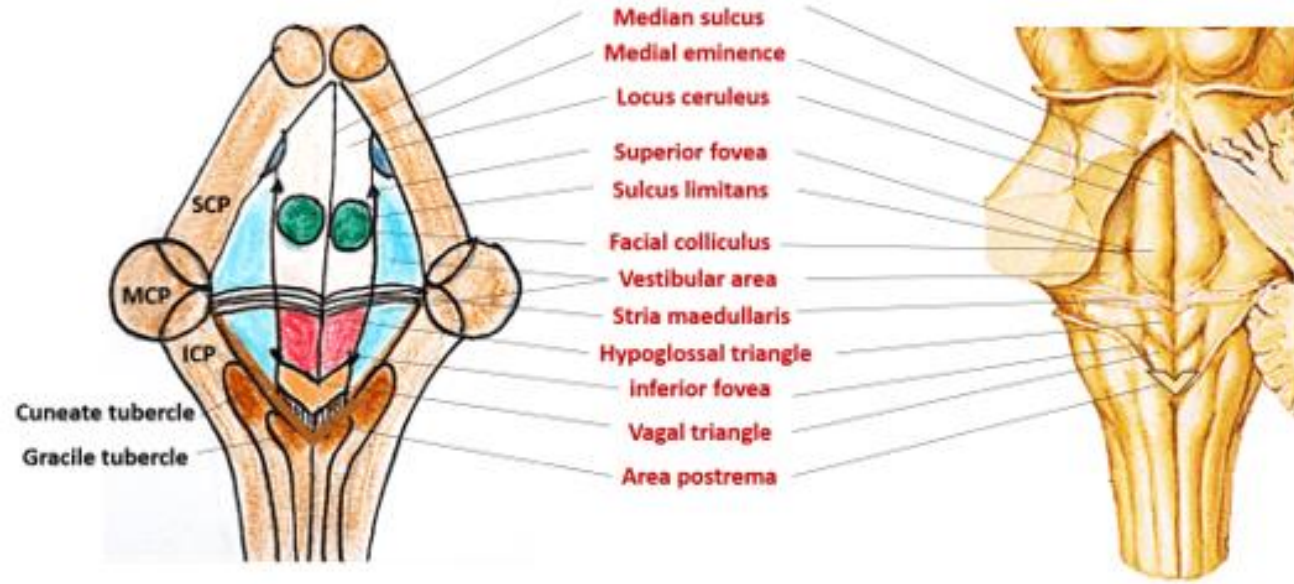
pedunculi cerebellares superiores

velum medullare superius

frenulum veli medullaris superioris

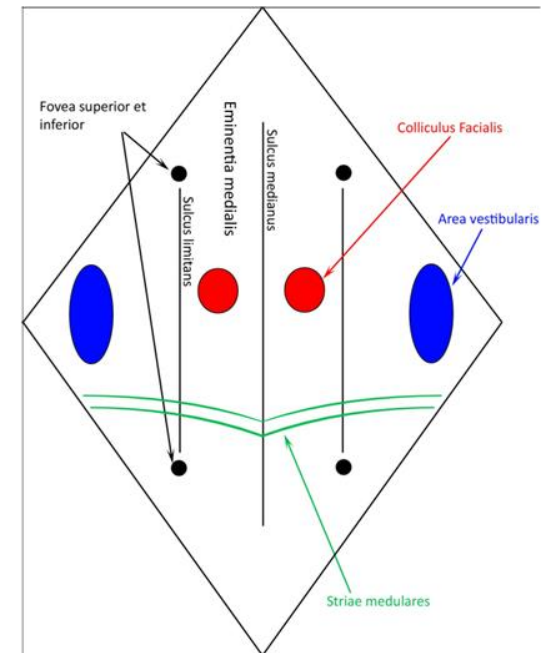
n. IV. – nervus trochlearis

Structures in the floor of the fourth ventricle

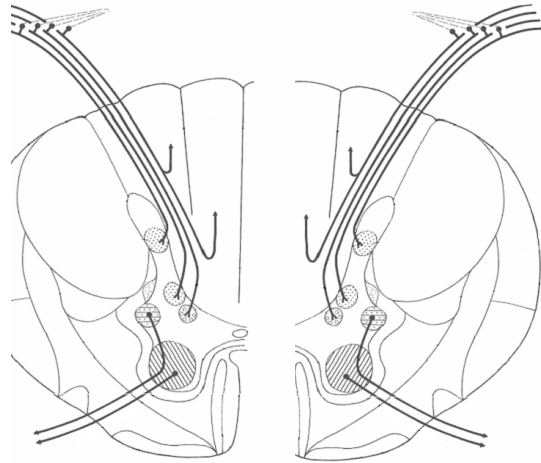


SCP, MCP and ICP – Superior , middle and inferior cerebellar peduncles

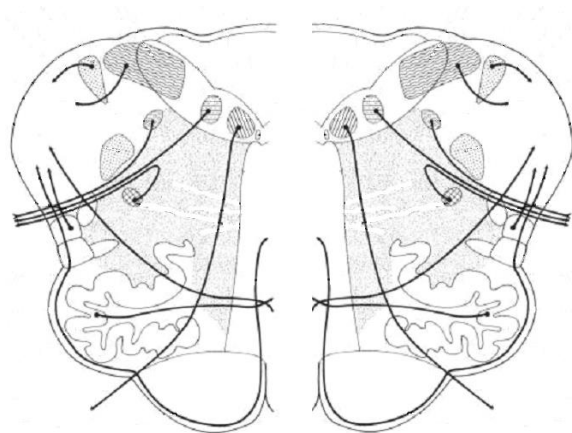
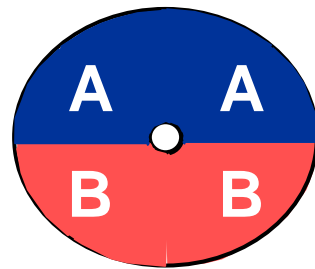
- Dorsal side of the brainstem
- sulcus medianus
 - sulci limitantes
 - (eminentia medialis, vestibular area)
 - 1. pars superior (mesencephalon)
 - 2. pars intermedia (pons Varoli)
 - striae medullares
 - colliculus facialis
 - 3. pars inferior (medulla oblongata)
 - trigonum nervi hypogloossi
 - trigonum nervi vagi



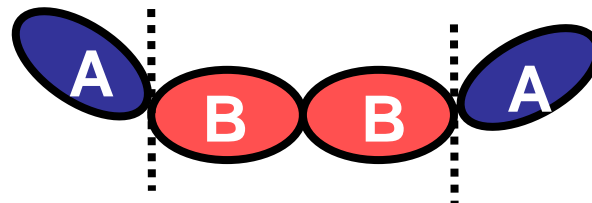
Structure of the brainstem



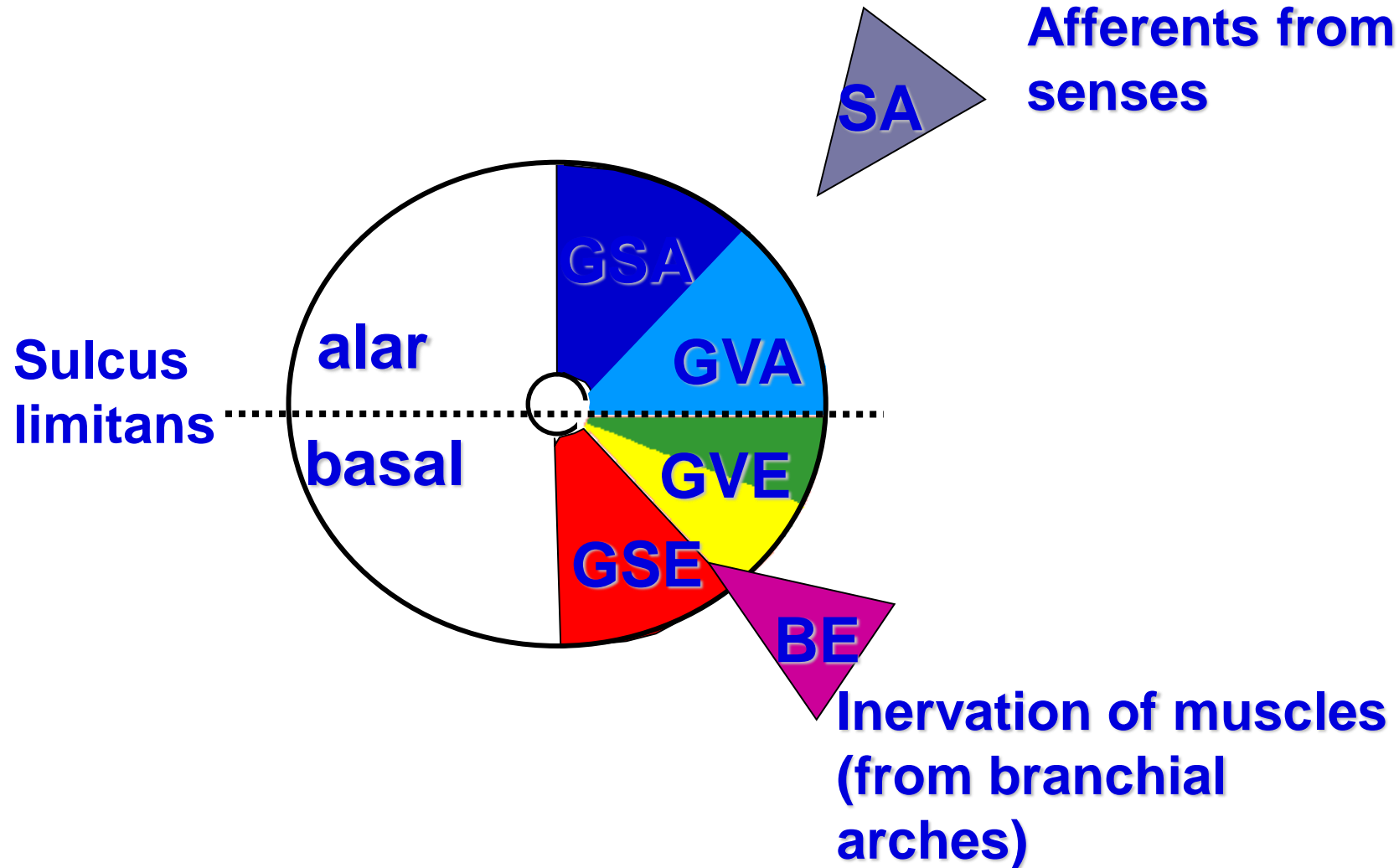
Spinal cord



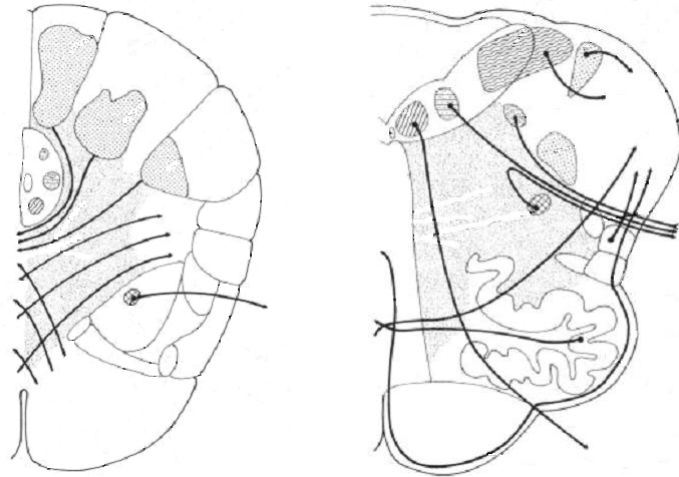
Pons



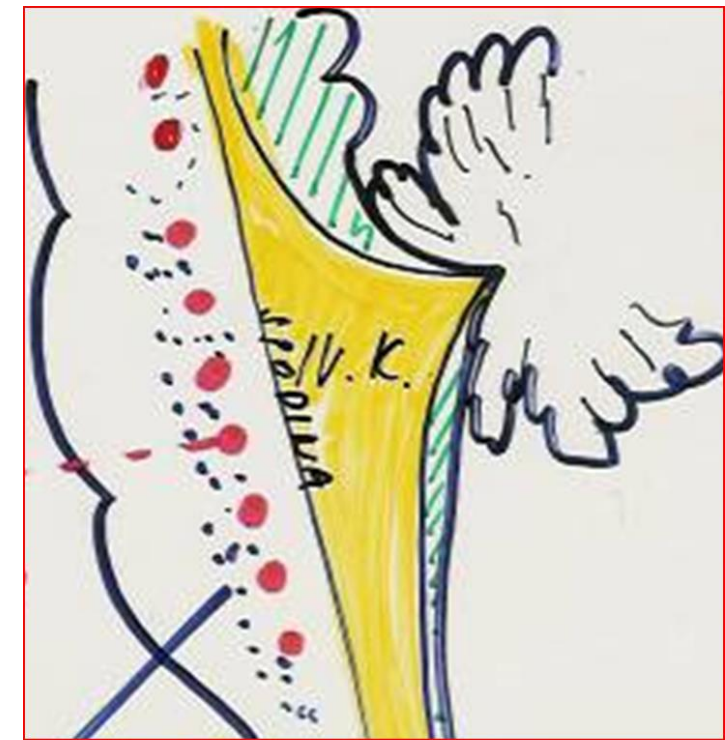
Functional zones of the brainstem



Gray matter of the brainstem

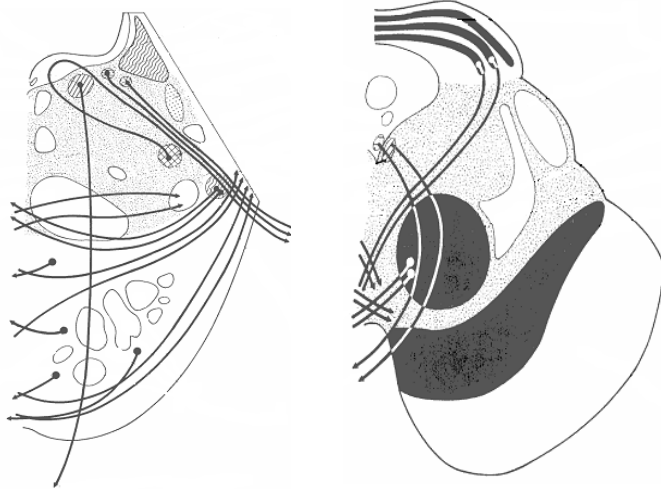


- nuclei of dorsal columns
- nuclei of cranial nerves
- nuclei of RF
- nuclei connected to the cerebellum
- motor nuclei of the brainstem

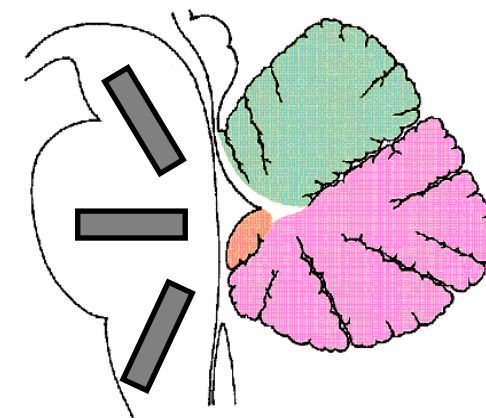


Ncll. of the cranial nerves
FR

White matter of the brainstem

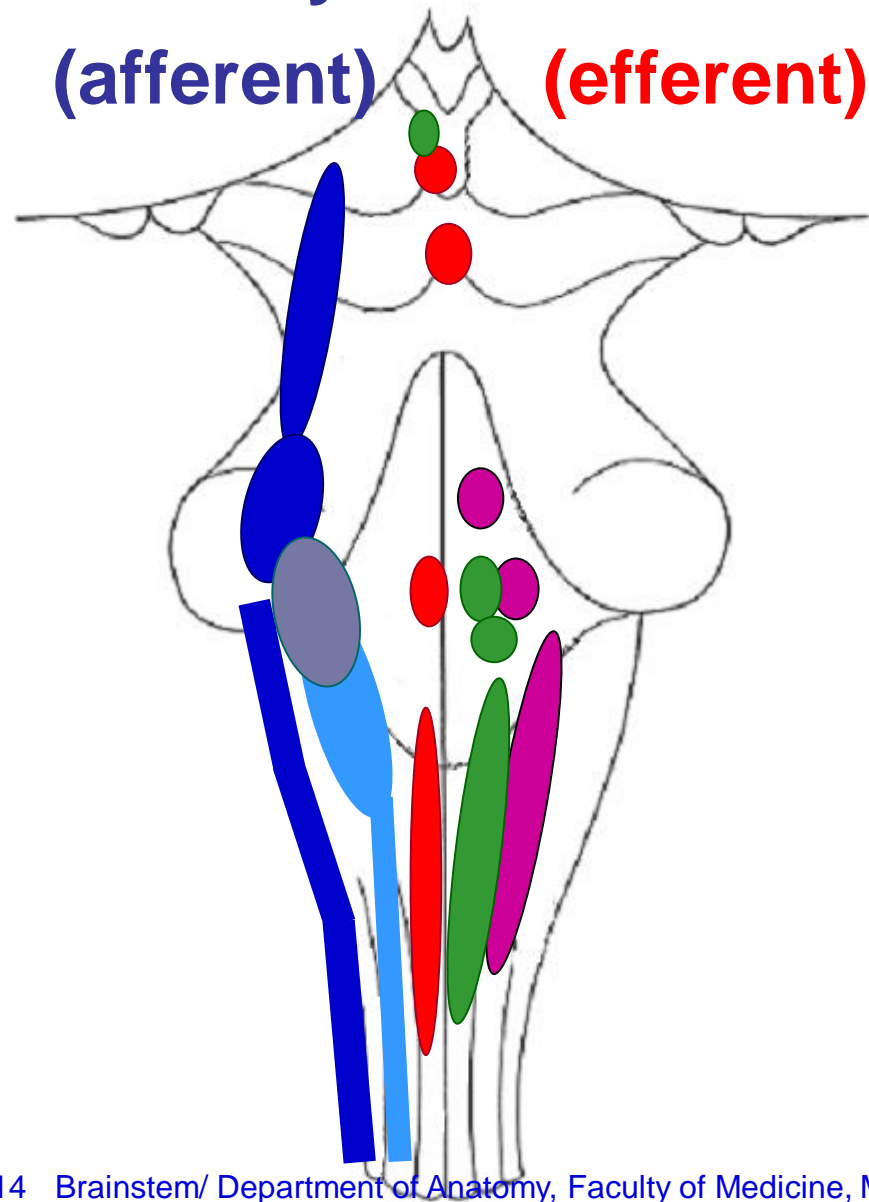


- ascending tracts
- descending tracts from the cortex and brainstem



**Sensory
(afferent)**

**Motor
(efferent)**



GSE CN III, IV, VI, XII

BE CN V, VII, IX, X, XI

Ncl. ambiguus

GVE CN III, VII, IX, X

GVA CN IX, X

Ncl. solitarius

GSA CN V

SA CN VII, IX, X + VIII

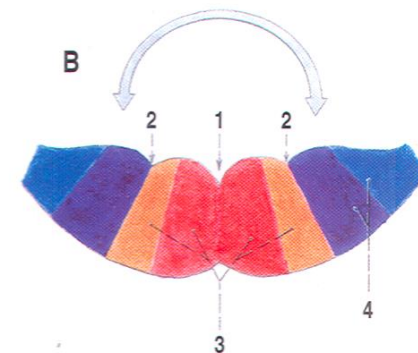
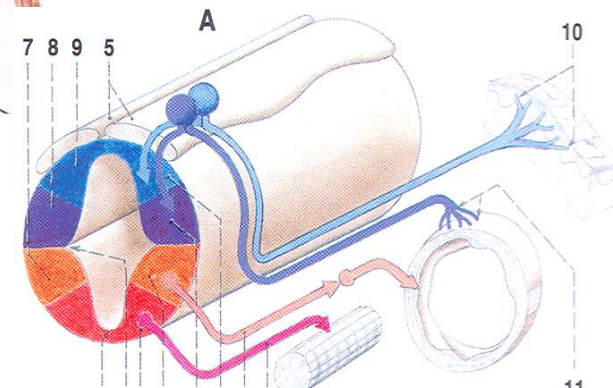
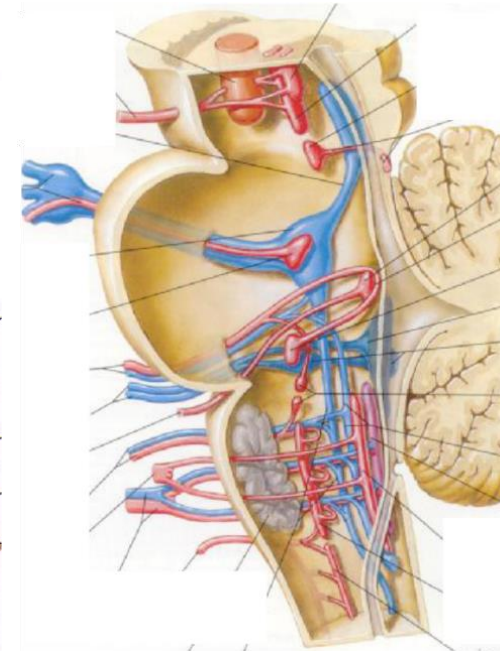
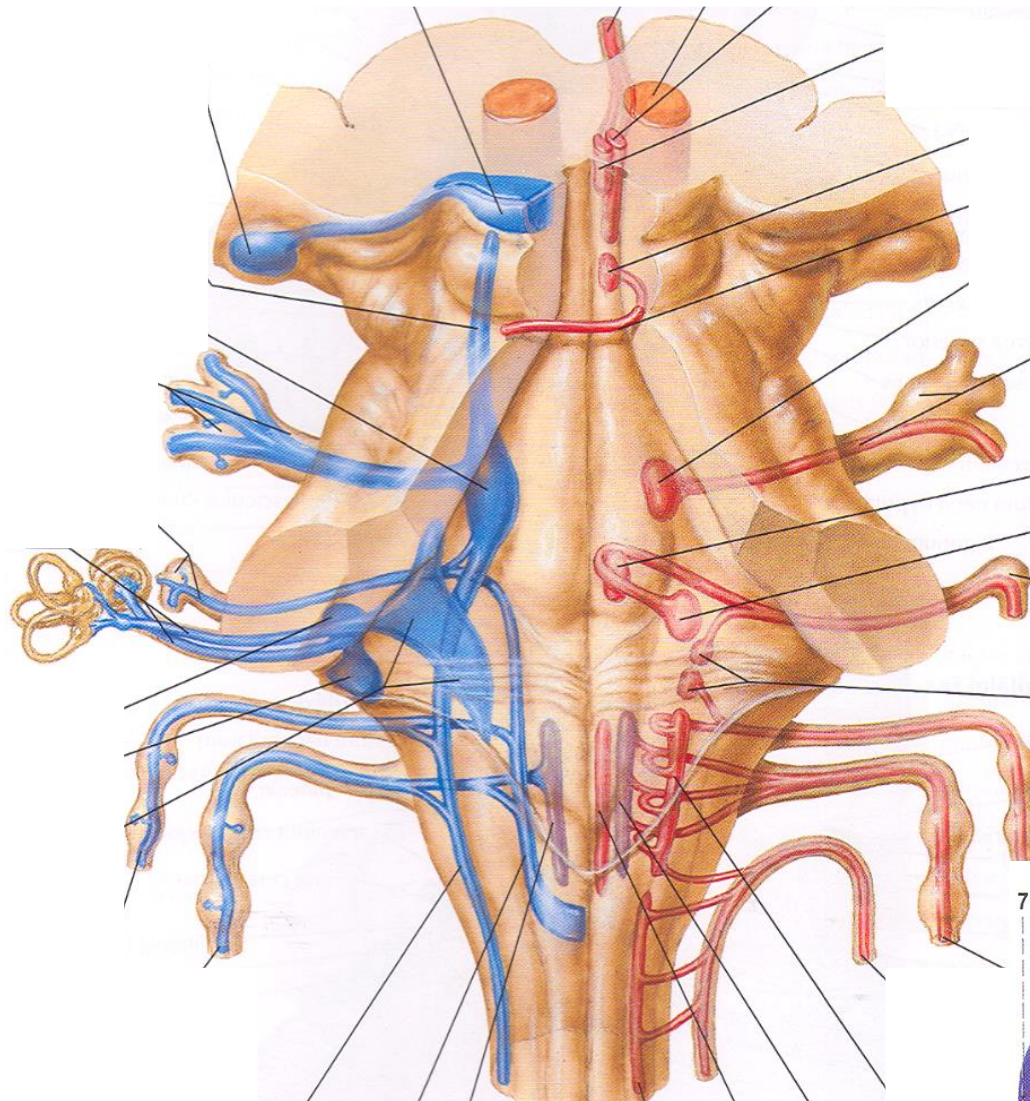
Ncl. gustatorius

Nuclei of cranial nerves

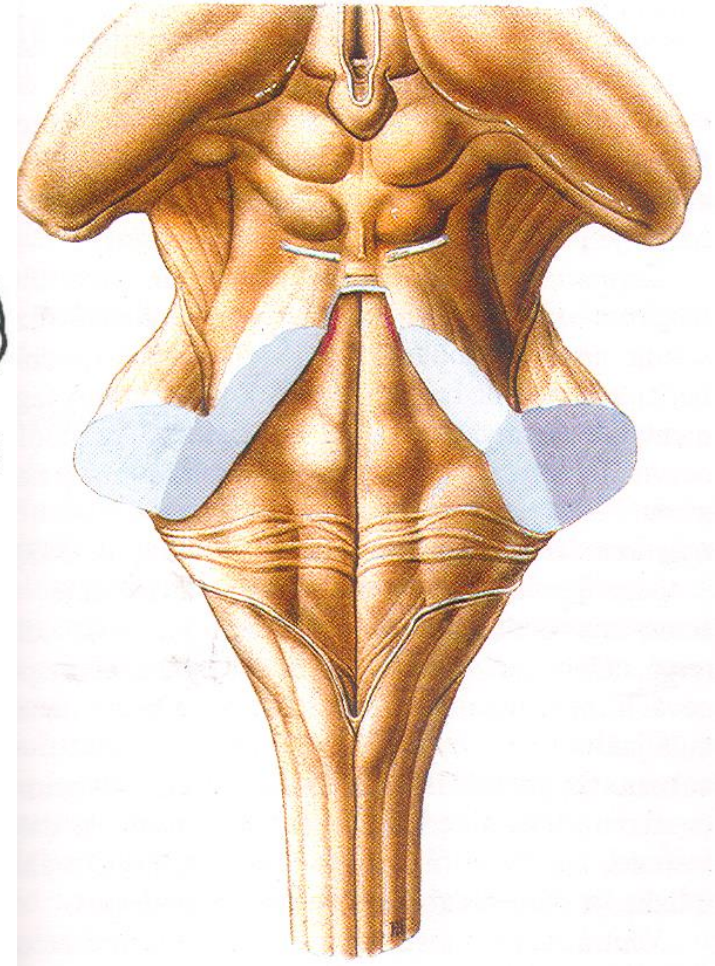
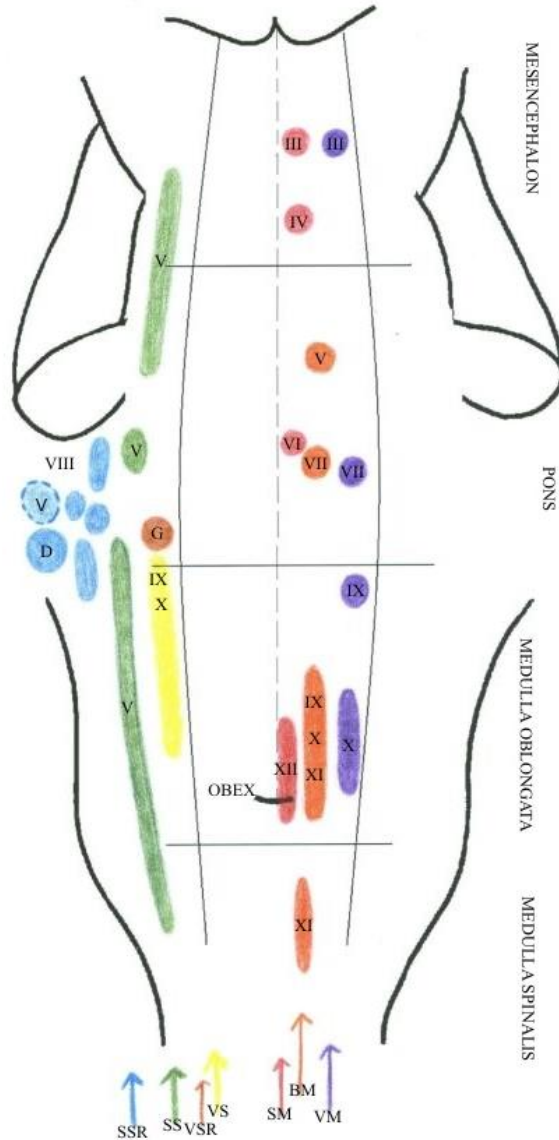
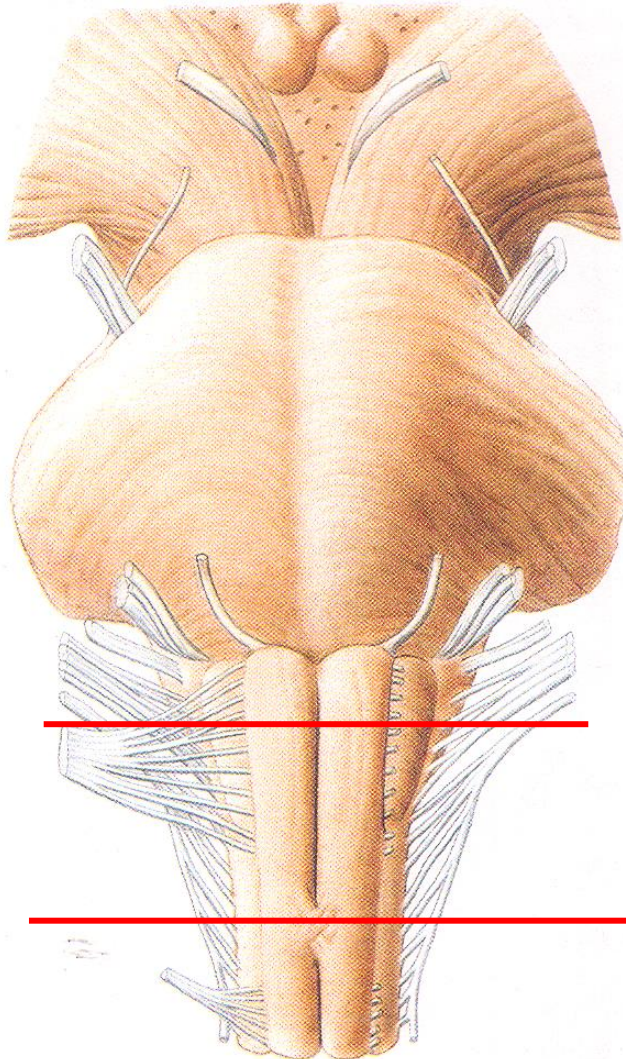
Forms the rows:
sensory and special sensory nuclei are located **laterally** in the 3 rows

Motor nuclei are located **medially** in the 2 rows

Parasympathetic nuclei are located between both motor nuclei

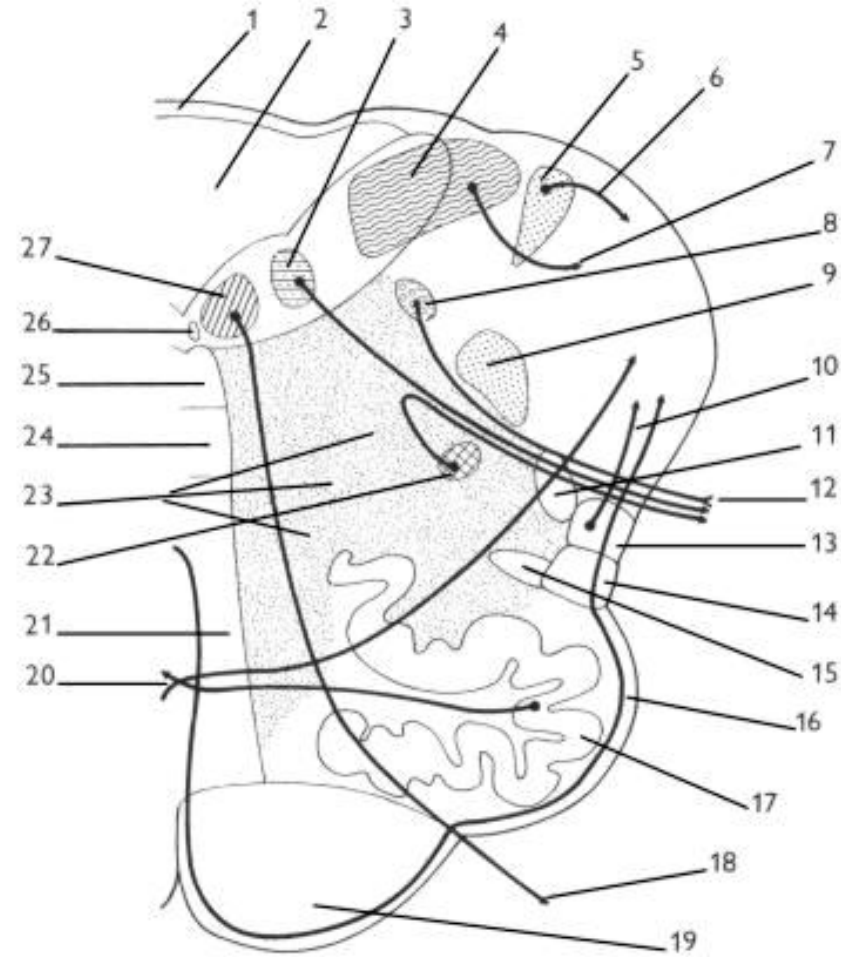
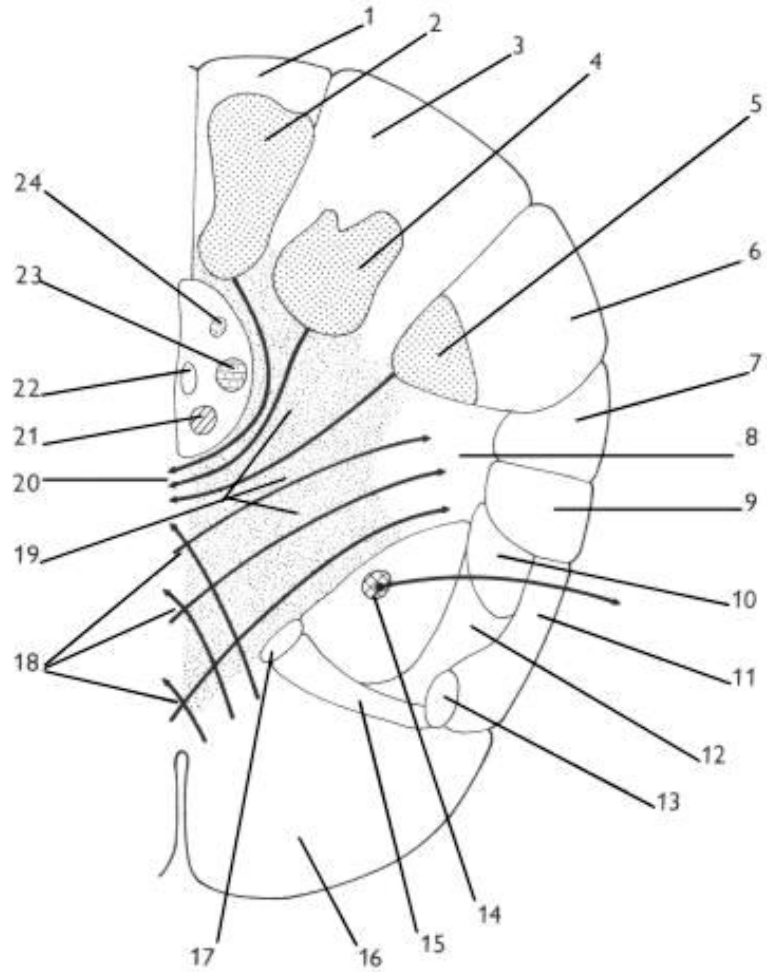


Medulla oblongata



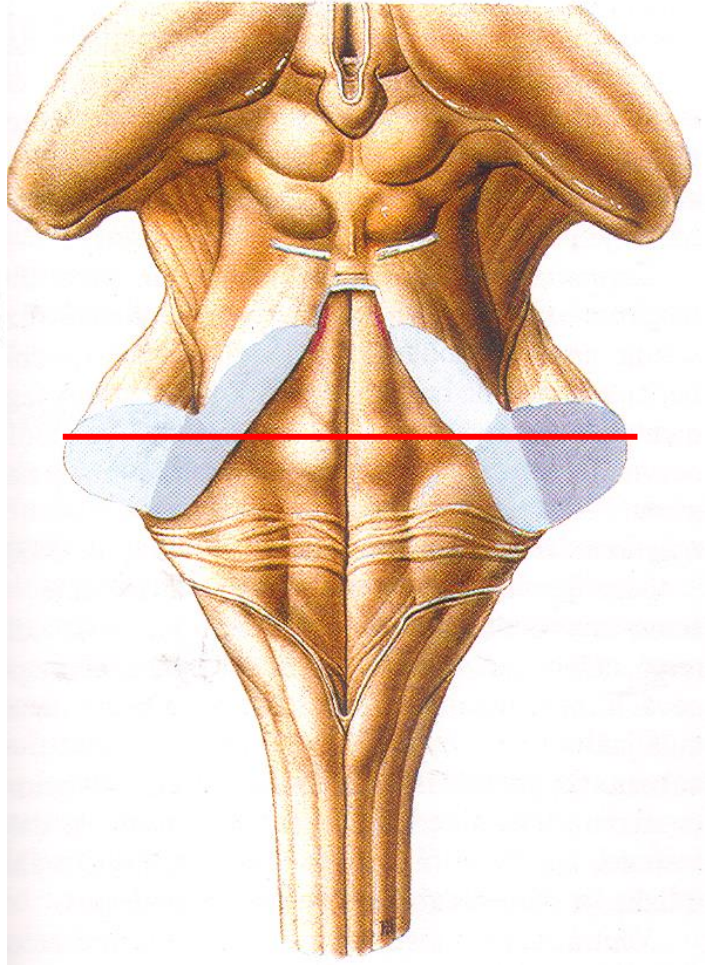
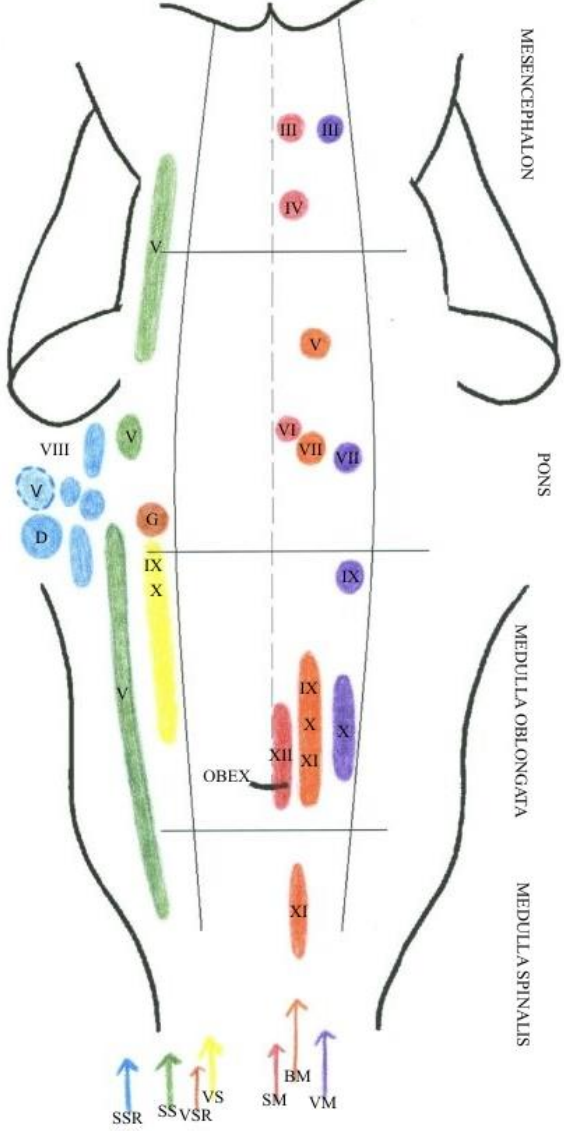
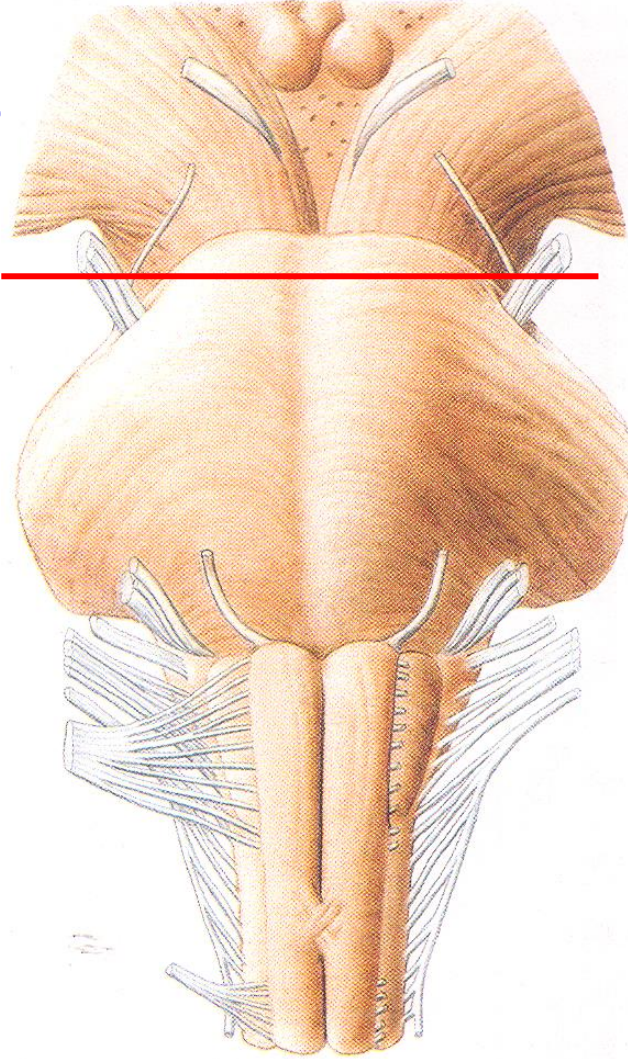
Medulla oblongata

Rostral section

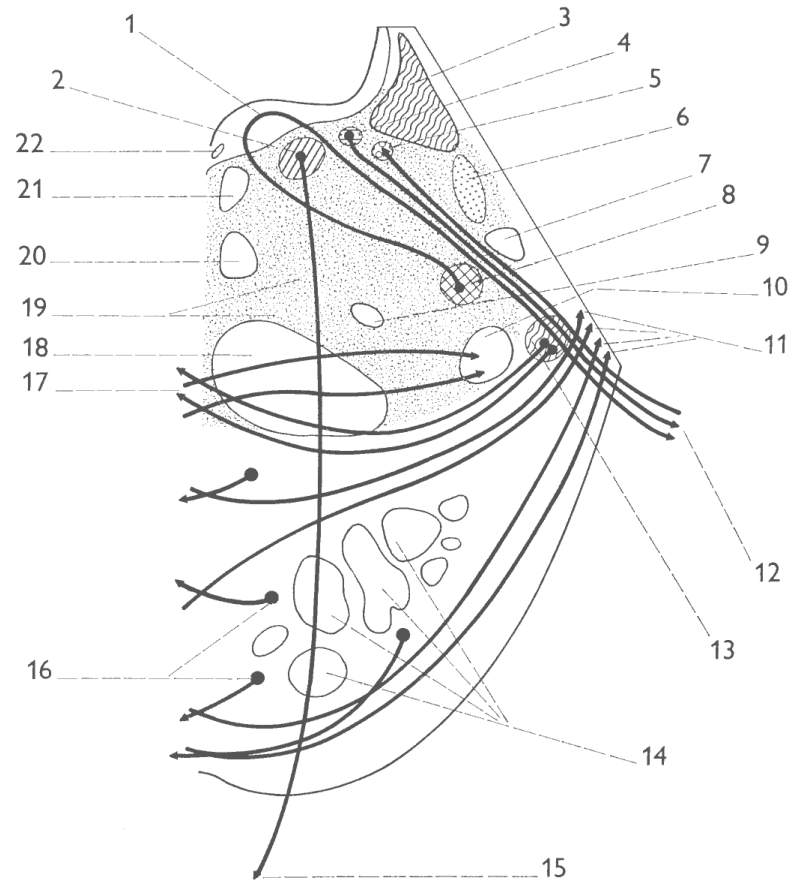


Caudal section

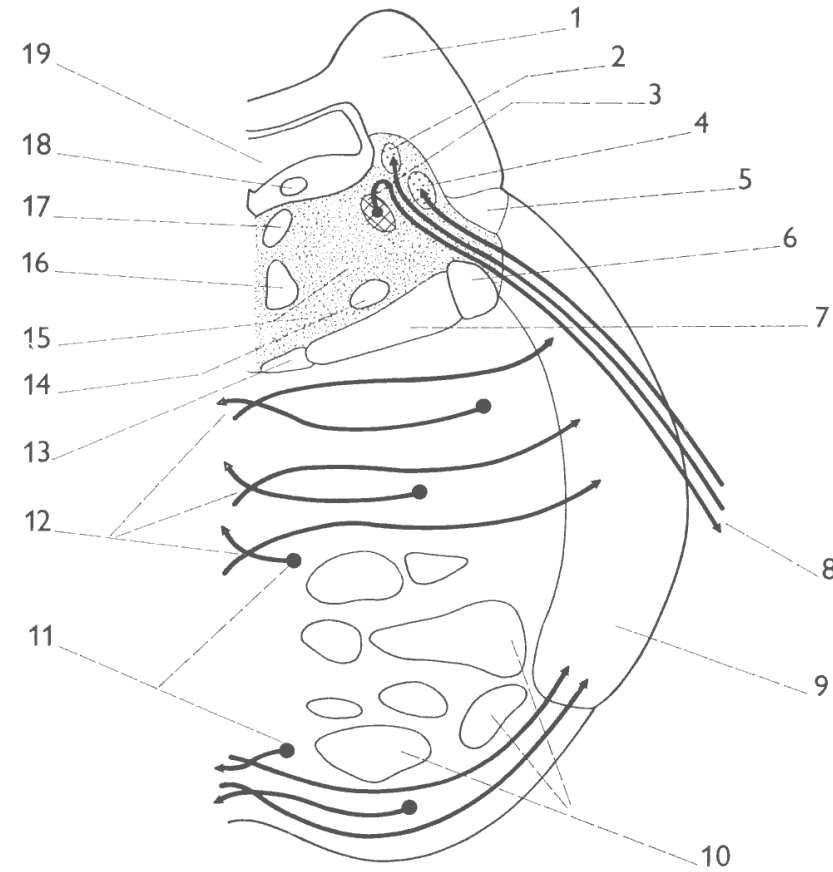
Pons



Pons

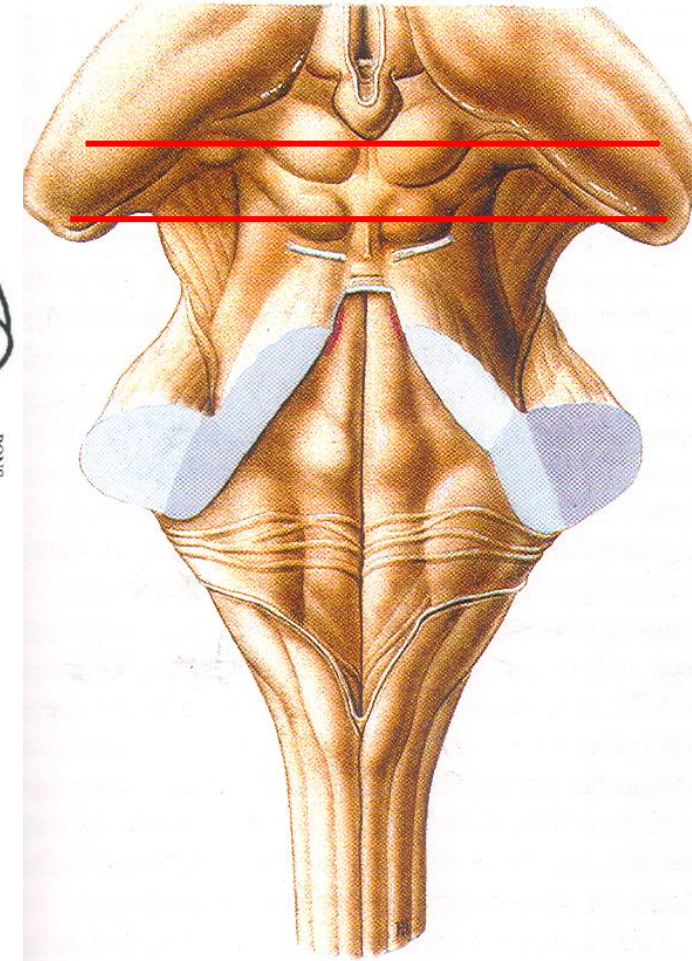
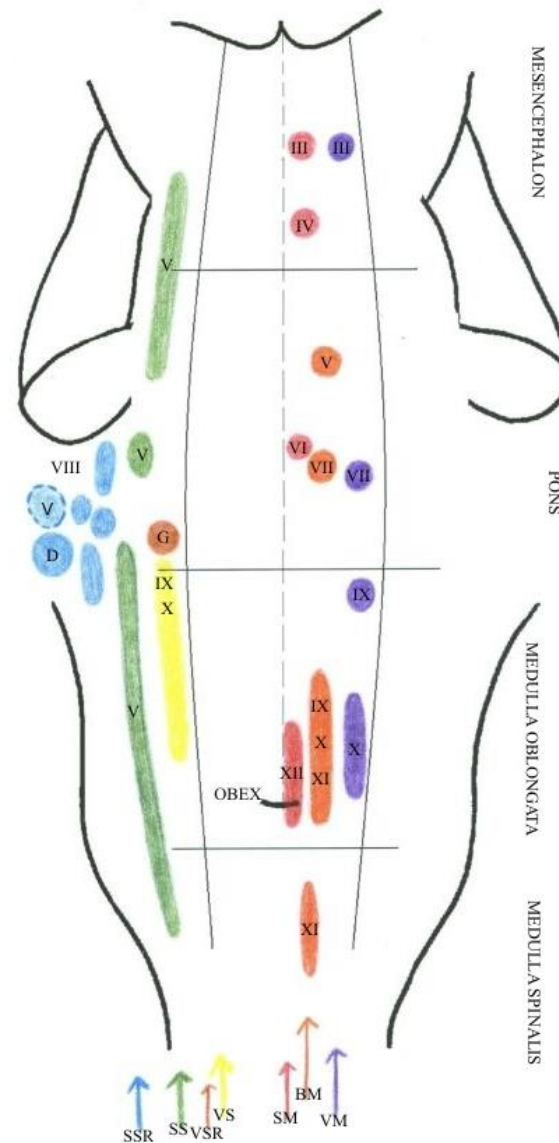
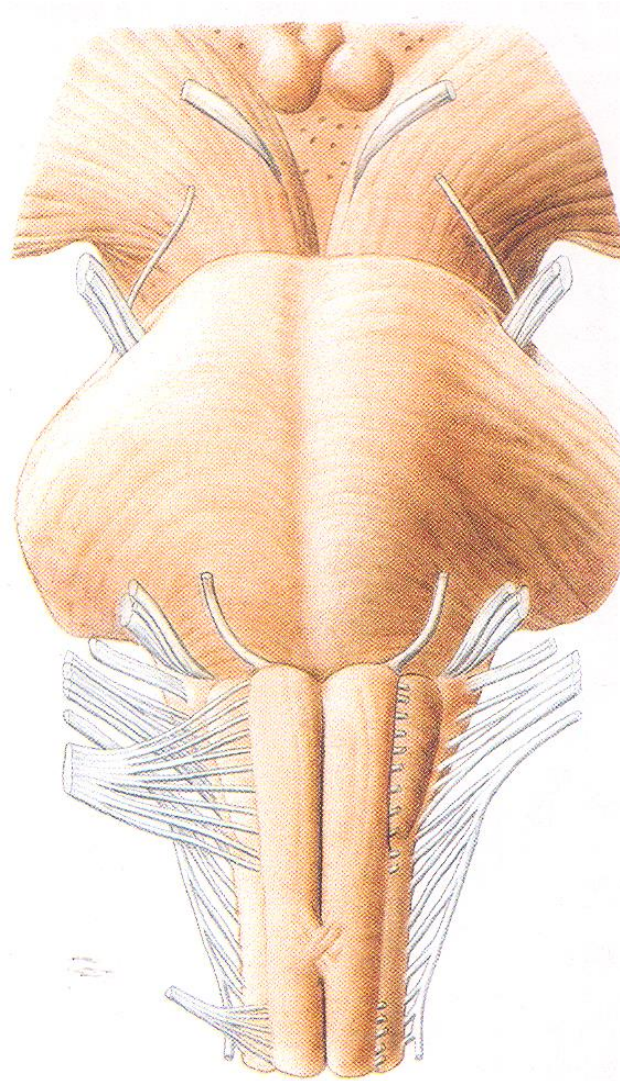


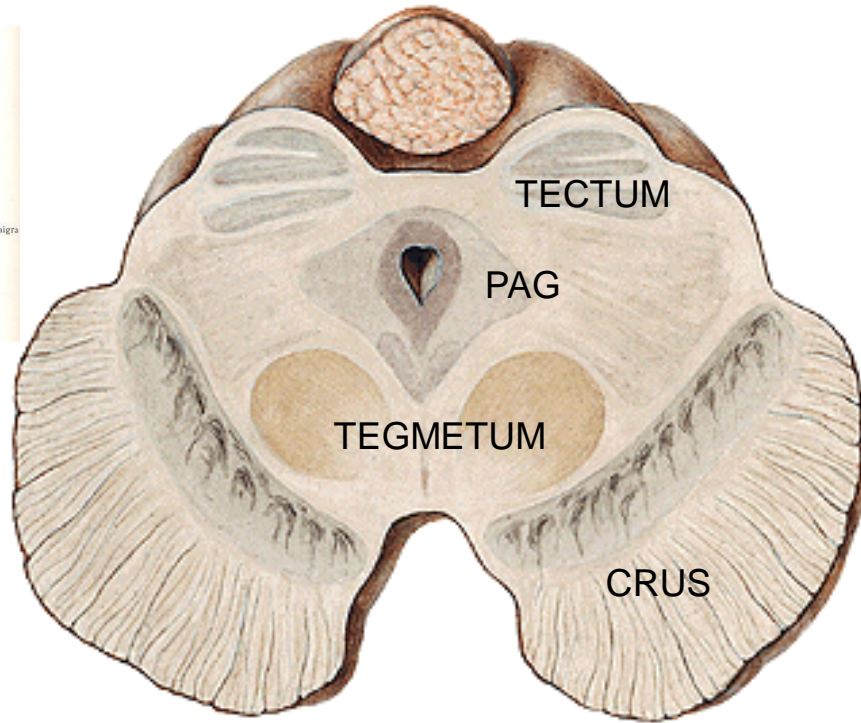
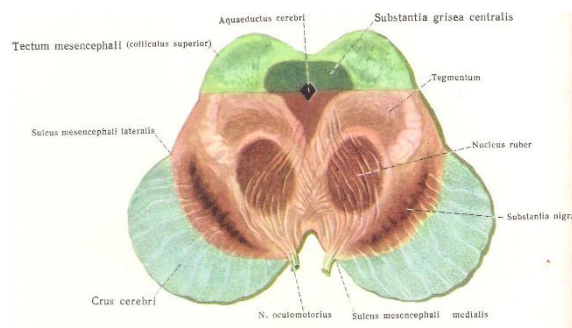
Caudal section



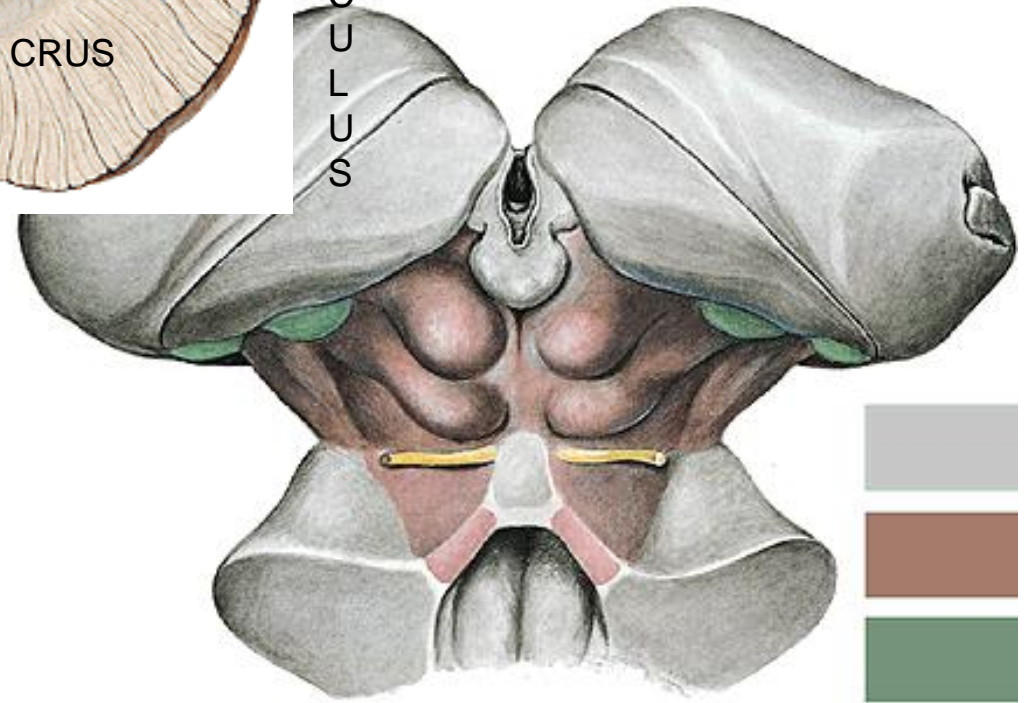
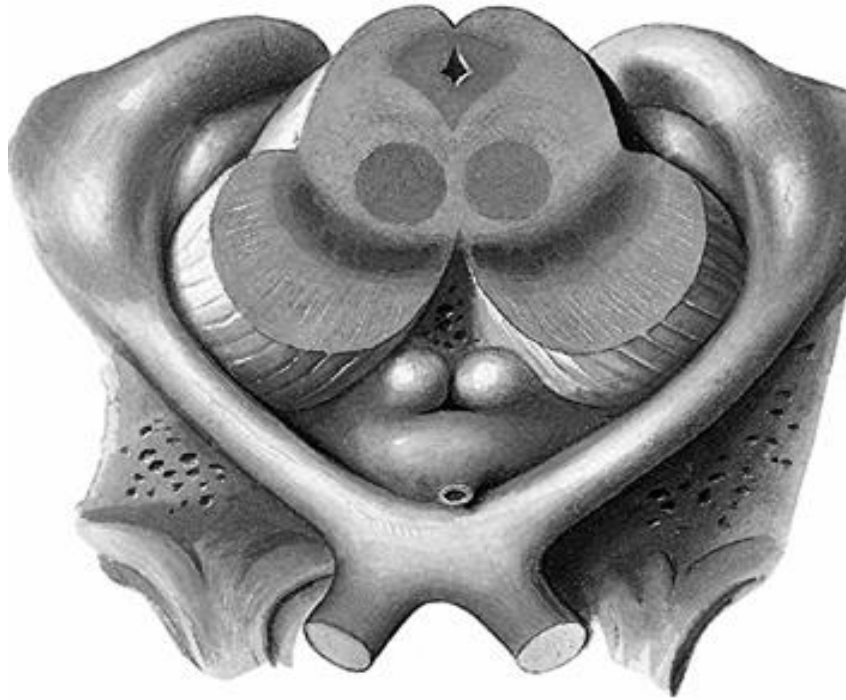
Rostral section

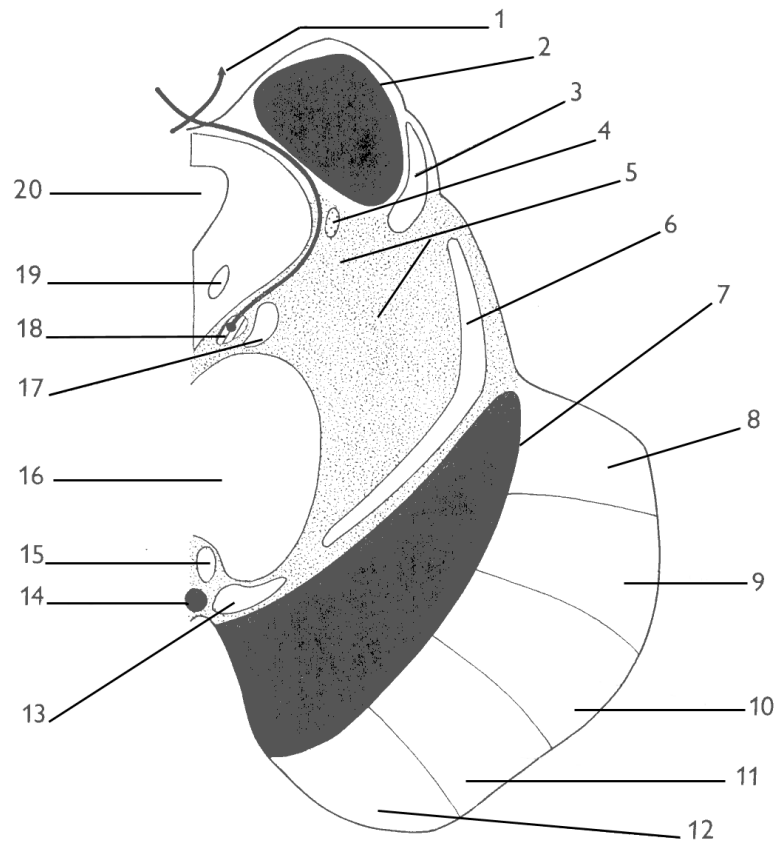
Mesencephalon



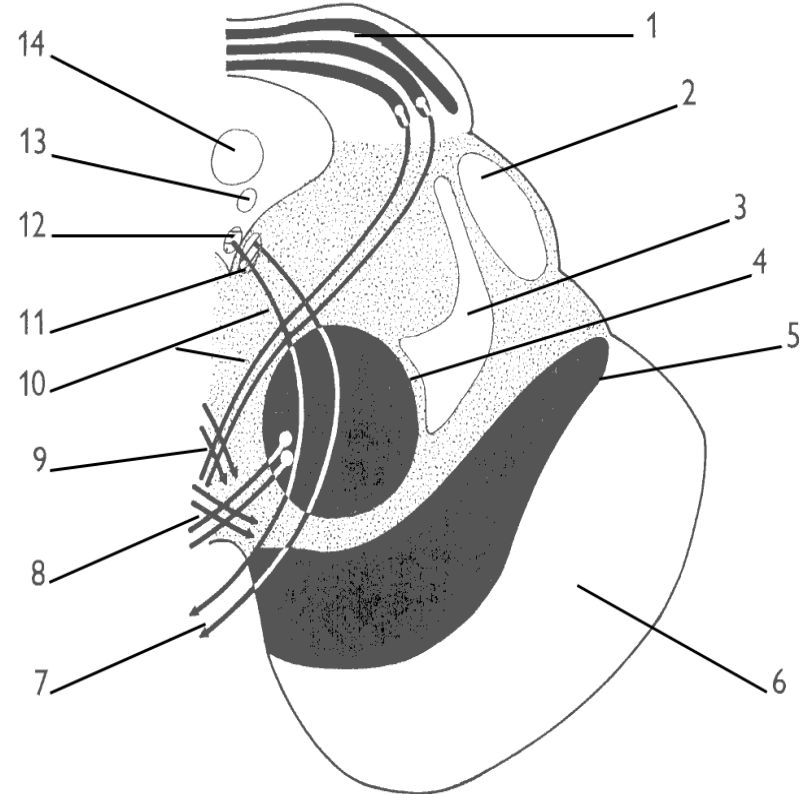


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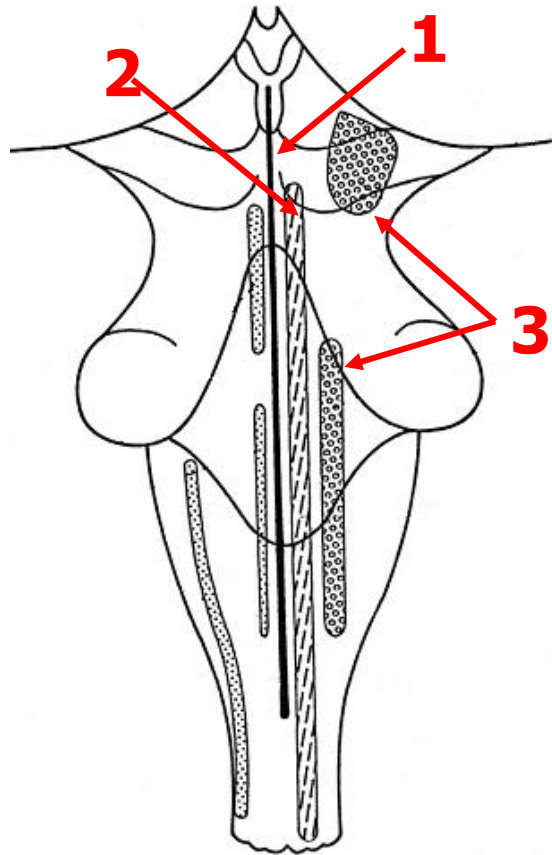
Caudal section



Rostral section

Reticular formation

- between afferent and motor systems
- spinal cord – diencephalon



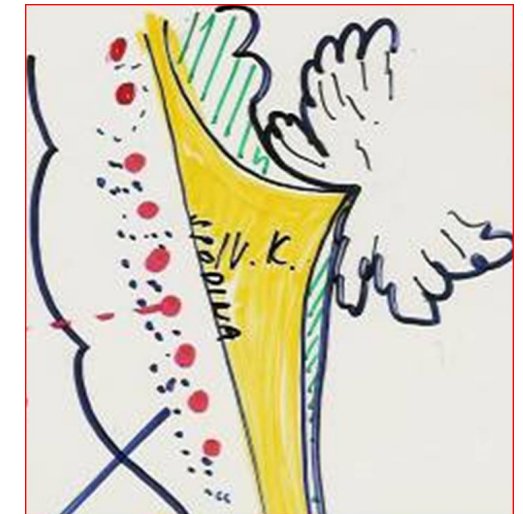
Nuclei of RF

- 1 median, single (raphe system)
- 2 medial, paired
- 3 lateral, paired

Ncl. olivaris inf.
Ncl. ruber
Substantia nigra

Function

- Somatic motor control
- Pattern generation
- Posture, locomotion
- Vital centers (circulation, respiration)
- Blood pressure control
- Respiratory rhythm
- Bladder control
- Conveys somatic and visceral information to the cerebellum
- Sleeping and waking (Ascending Reticular Activating System)
- Pain modulation



Ncll. of the cranial nerves
FR

- Illustrations were copied from:
- **Atlas der Anatomie des Menschen/ Sobotta. Putz,R., und Pabst,R. 20. Auflage. München: Urban & Schwarzenberg, 1993**
- **Netter: Interactive Atlas of Human Anatomy. Windows Version 2.0**