



NEUROANATOMY BASICS

NEURON - PARTS OF NEURON:

- CELL BODY
- AXON

NUCLEUS - AGGREGATION OF CELL BODIES IN CENTRAL NERVOUS SYSTEM (CNS)

-DERIVED FROM **NEUROECTODERM**

GANGLION - AGGREGATION OF CELL BODIES IN PERIPHERAL NERVOUS SYSTEM (PNS)

-DERIVED FROM **NEURAL CREST CELLS**

*THE NUCLEUS IS ALSO CALLED GREY MATTER.

*THE AXONS ARE ALSO CALLED WHITE MATTER/FASCICULUS/LEMNISCUS.

*THE COLLECTION OF AXONS IN CNS IS CALLED THE TRACT.

*THE COLLECTION OF AXONS IN PNS IS CALLED THE NERVE.



ASCENDING & DESCENDING TRACT

1) ASCENDING TRACTS ARE SENSORY PATHWAYS THAT BEGIN AT THE SPINAL CORD AND STRETCH ALL THE WAY UP TO THE CEREBRAL CORTEX.

2) DESCENDING TRACTS ARE THE PATHWAYS BY WHICH MOTOR SIGNALS ARE SENT FROM THE BRAIN TO THE SPINAL CORD. THEY ARE ALSO CALLED MOTOR TRACTS, DUE TO THEIR INVOLVEMENT IN MOVEMENT COORDINATION.

Ascending tracts

Dorsal white column

Fasciculus gracilis

Fasciculus cuneatus

Dorsal spinocerebellar tract

Ventral spinocerebellar tract

Lateral spinothalamic tract

Ventral spinothalamic tract

Descending tracts

Ventral white commissure

Lateral reticulospinal tract

Lateral corticospinal tract

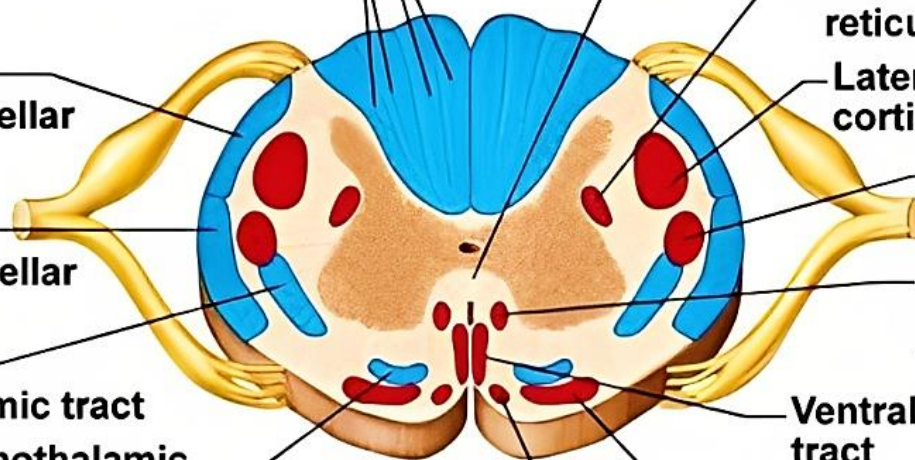
Rubrospinal tract

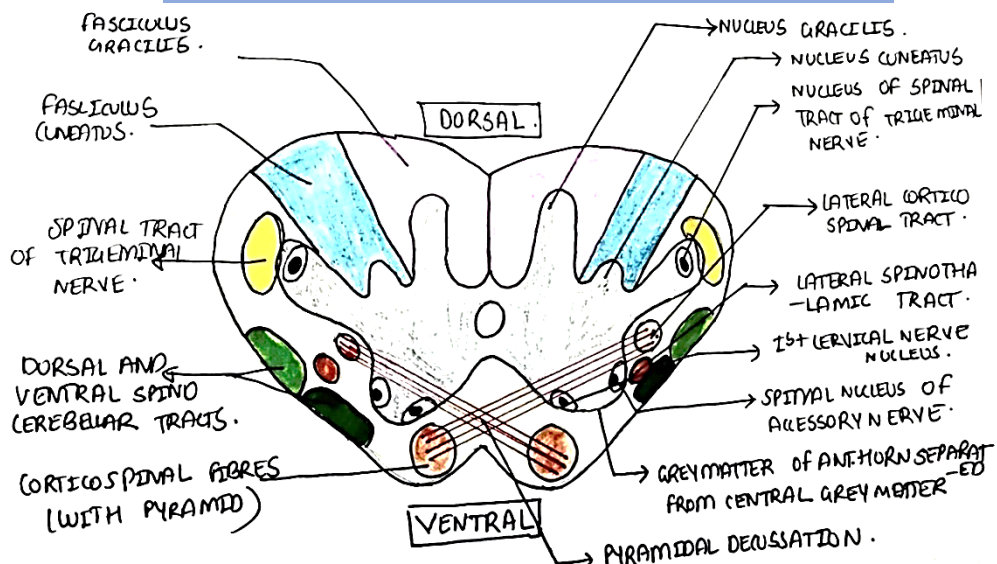
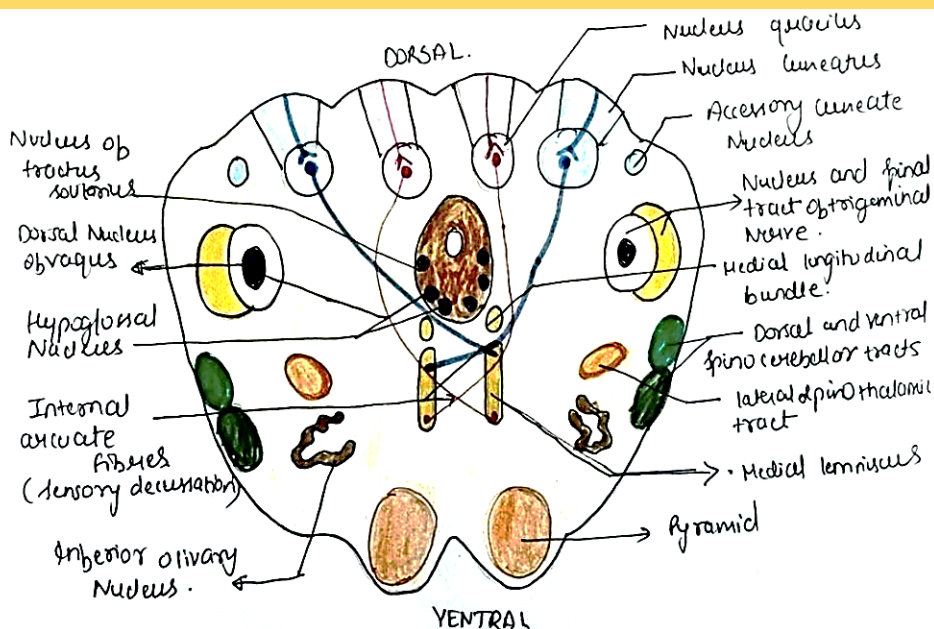
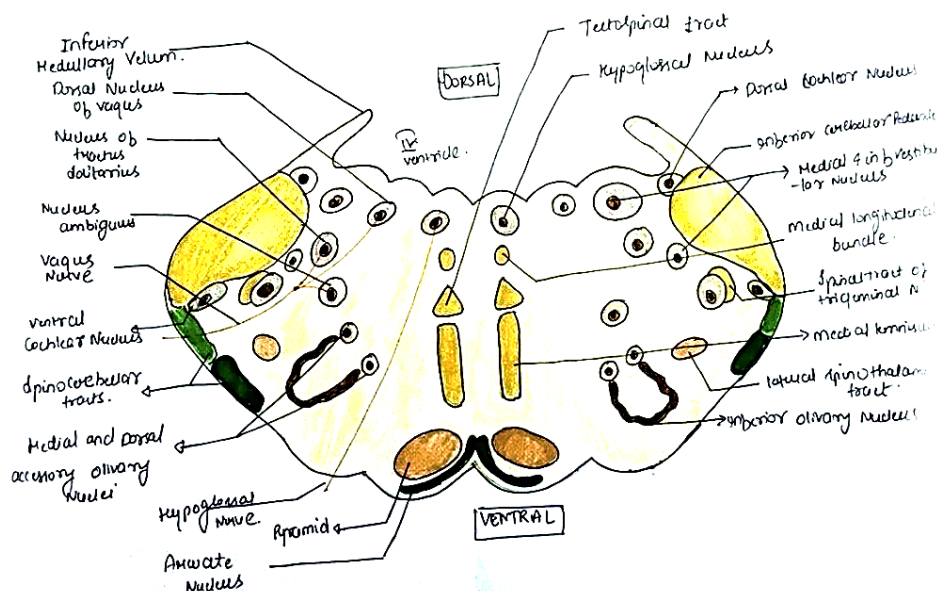
Medial reticulospinal tract

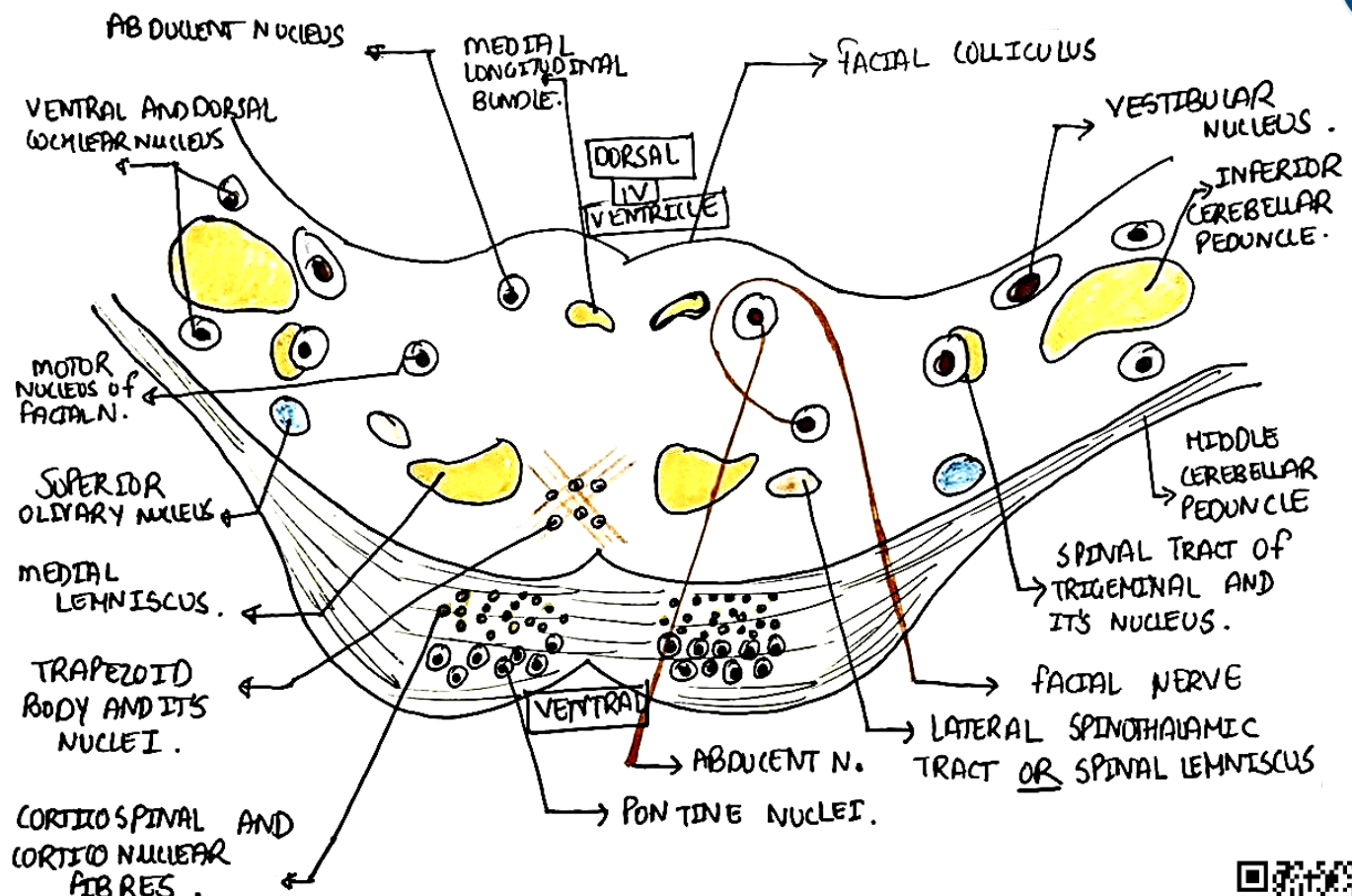
Ventral corticospinal tract

Vestibulospinal tract

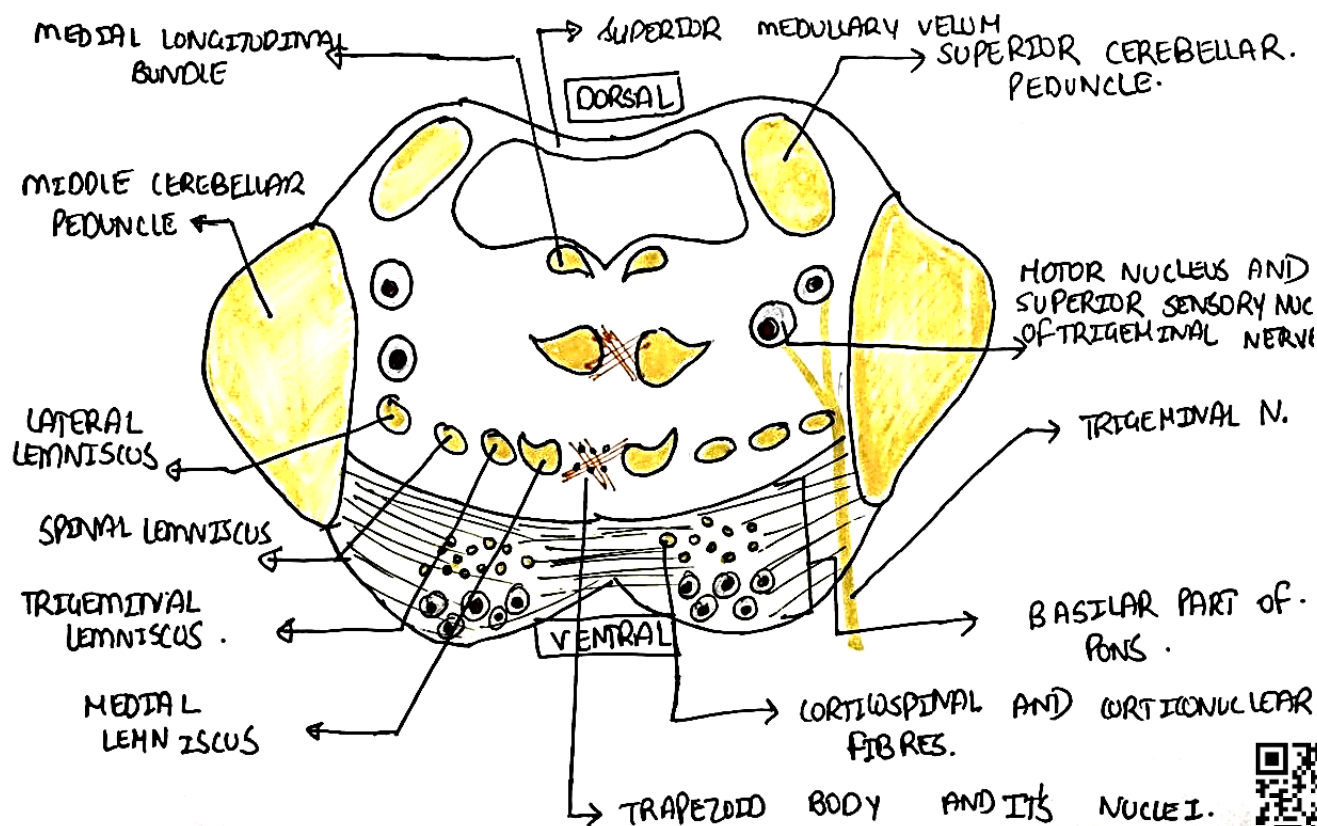
Tectospinal tract



**BRAIN STEM****TS OF MEDULLA AT LEVEL OF PYRAMIDAL DECUSSATION****TS OF MEDULLA AT LEVEL OF SENSORY DECUSSATION****TS OF MEDULLA AT LEVEL OF OLIVARY NUCLEUS**

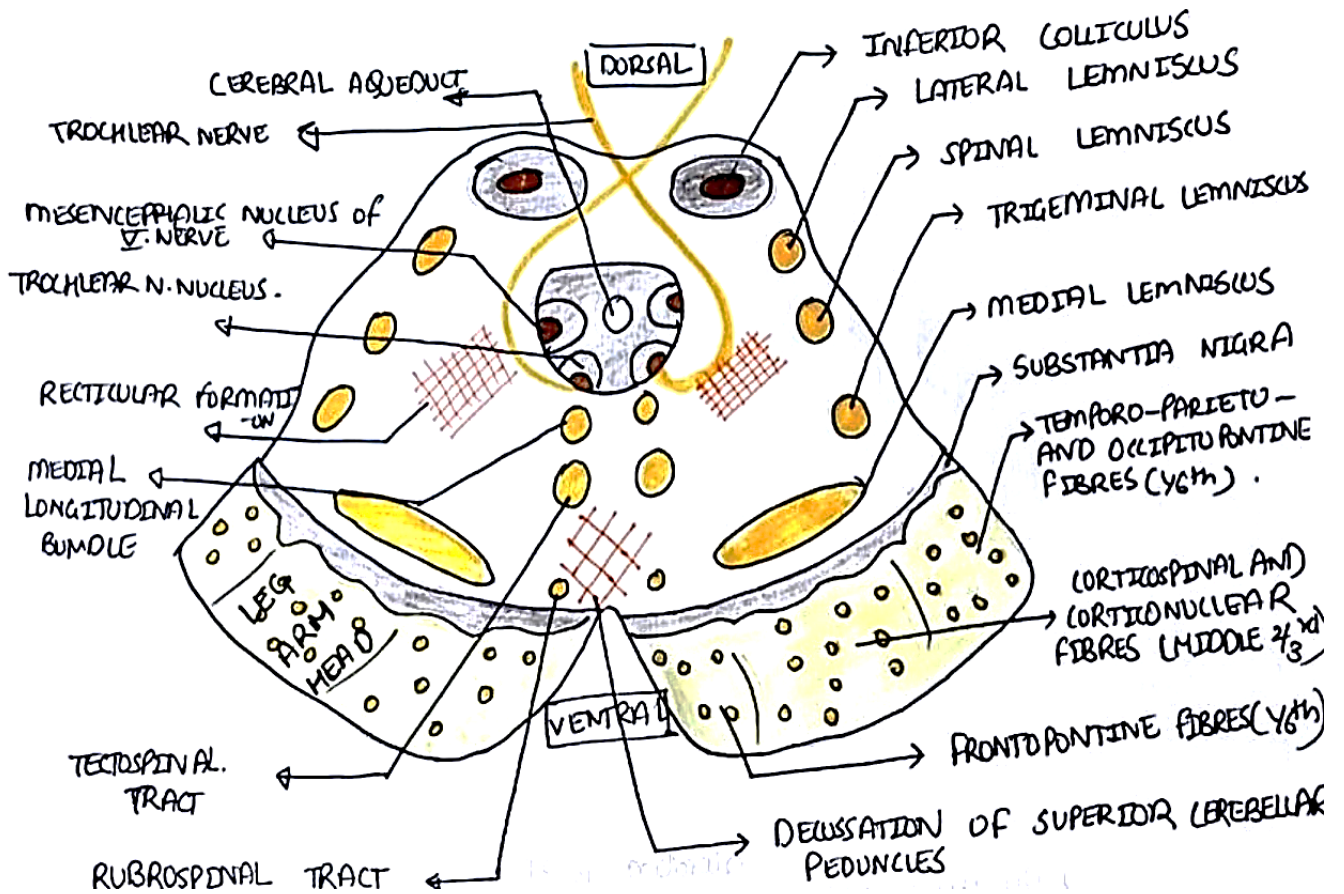


TS OF OF PONS AT FACIAL COLLICULUS

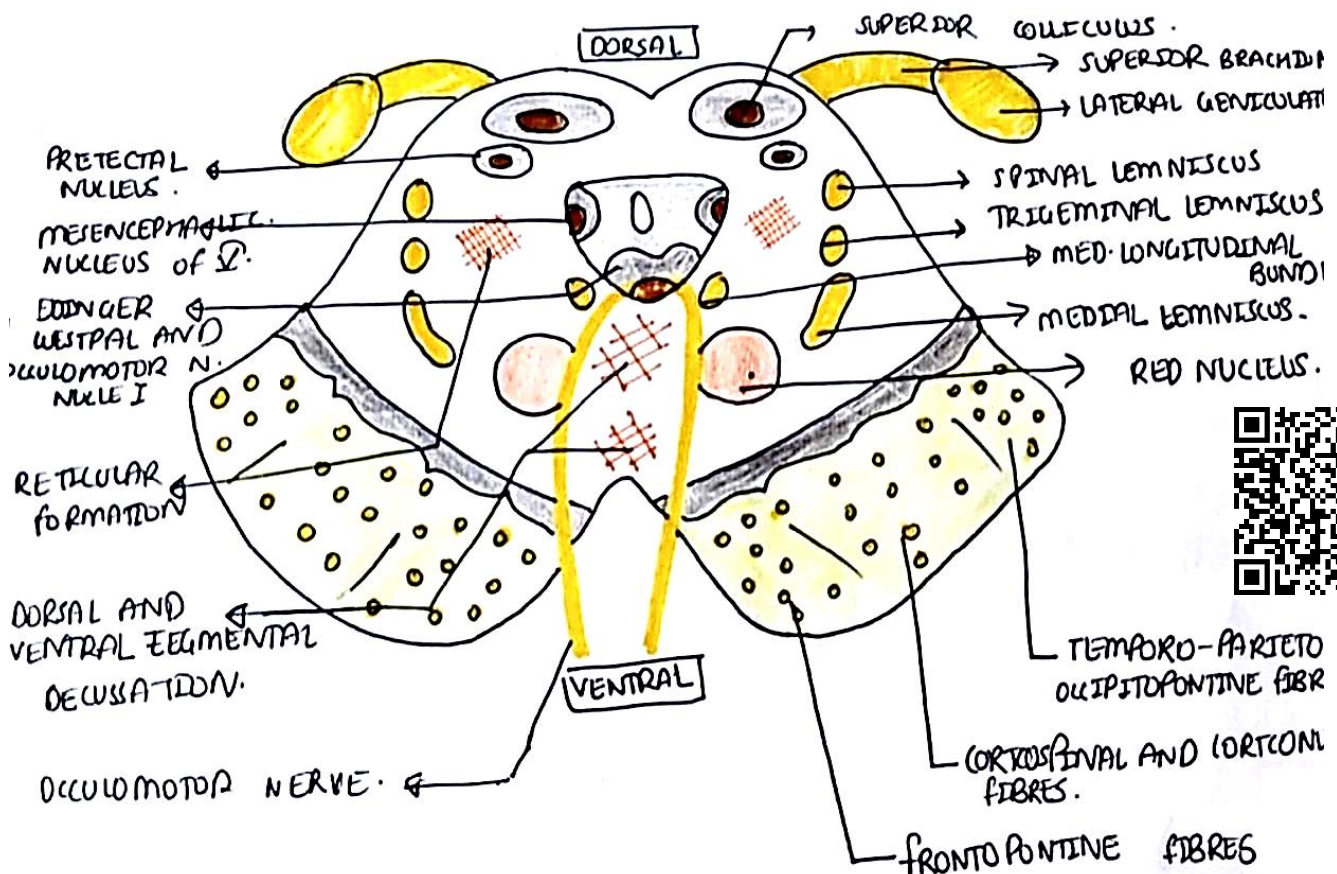


TS OF UPPER PART OF PONS





TS OF MIDBRAIN AT LEVEL OF INFERIOR COLLICULUS



TS OF MIDBRAIN AT LEVEL OF SUPERIOR COLLICULUS



BLOOD SUPPLY OF BRAIN



CIRCLE OF WILLIS

THE BRANCHES OF BASILAR AND INTERNAL CAROTID ARTERIES ANASTOMOSE AT THE BAS OF BRAIN AROUND THE INTERPEDUNCULAR FOSSA FORMING A SIX-SIDED POLYGON OF ARTERIES CALLED CIRCULUS ARTERIOSUS OR CIRCLE OF WILLIS

- THE CIRCLE OF WILLIS LIE IN THE INTERPEDUNCULAR SUBARACHNOID CISTERN AND CONTRIBUTES TO MOST OF ARTERIAL BLOOD SUPPLY TO BRAIN
- 1 HEXAGONAL ARTERIAL CIRCLE
- * SITUATED → BASE OF BRAIN → IN INTERPEDUNCULAR FOSSA
- * FORMED BY
 - ANTERIOR CEREBRAL → BRANCH INTERNAL CAROTID
 - TERMINAL PART OF INTERNAL CAROTID ARTERIES
 - POSTERIOR CEREBRAL → BRANCH BASILAR ARTERY
- TWO ANTERIOR CEREBRAL ARTERIES → CONNECTED BY ANTERIOR COMMUNICATING ARTERY.
- INTERNAL CAROTID & POSTERIOR CEREBRAL ARTERY OF SAME SIDE → UNITED BY POSTERIOR COMMUNICATING ARTERY.

- FORMATION**
- ANTERIORLY → ANTERIOR COMMUNICATING ARTERY
 - ANTEROLATERALLY → ANTERIOR CEREBRAL ARTERY
 - LATERALLY → INTERNAL CAROTID ARTERIES
 - POSTEROLATERALLY → POSTERIOR COMMUNICATING ARTERY
 - POSTERIORLY → POSTERIOR CEREBRAL ARTERIES

- BRANCHES
- CORTICAL BRANCHES → SUPPLY CEREBRUM (ANASTOMOSE FREELY)
 - CENTRAL BRANCHES → THALAMUS
 - > CARPUS STRIATUM (DOESN'T ANASTOMOSE)
 - > INTERNAL CAPSULE
 - CHOROIDAL BRANCH → CHOROID PLEXUSES OF VENTRICLE

- 1. CORTICAL BRANCHES** → ARE
- ANTERIOR CEREBRAL ARTERIES
 - MIDDLE CEREBRAL ARTERIES
 - POSTERIOR CEREBRAL ARTERIES

SUPPLY - CEREBRUM --> SUPEROLATERAL SURFACE → MAINLY BY MIDDLE CEREBRAL ARTERY
EXCEPT - OCCIPITAL LOBE - SUPPLY BY PCA
- TEMPORAL LOBE - SUPPLY BY PCA

→ MEDIAL SURFACE → MAINLY BY ANTERIOR CEREBRAL ARTERY
EXCEPT - OCCIPITAL LOBE - SUPPLY BY -> PCA
- TEMPORAL LOBE - SUPPLY BY -> PCA

→ INFERIOR SURFACE → BY POSTERIOR CEREBRAL ARTERY
EXCEPT - MEDIAL 1/3 ORBITAL LOBE - SUPPLY BY -> ACA
- LATERAL 2/3 TEMPORAL LOBE - SUPPLY BY -> MCA

- 2. CENTRAL BRANCHES**
- ANTEROMEDIAL → ARISES ANTERIOR CEREBRAL ARTERY
→ ENTER MEDIAL MOST PART OF ANTERIOR PERFORATED SUBSTANCE
 - > ANTEROLATERAL → ARISES MIDDLE CEREBRAL ARTERY
 - SUPPLY -> MEDIAL STRIATE → CAUDATE NUCLEUS
→ INTERNAL CAPSULE



- LATERAL STRIATE → ENTER INTERNAL CAPSULE
- POSTEROMEDIAL → ARISE POSTERIOR CEREBRAL ARTERY
- POSTEROLATERAL → ARISES POSTERIOR CEREBRAL ARTERIES

3. CHOROIDAL BRANCH - **ANTERIOR CHOROIDAL** → BRANCH INTERNAL CAROTID A.
→ SUPPLIES INFERIOR HORN OF LATERAL VENTRICLE

- **POSTERIOR CHOROIDAL** → BRANCH POSTERIOR CEREBRAL
→ SUPPLIES REST PART OF CHOROID PLEXUS OF LATERAL VENTRICLE

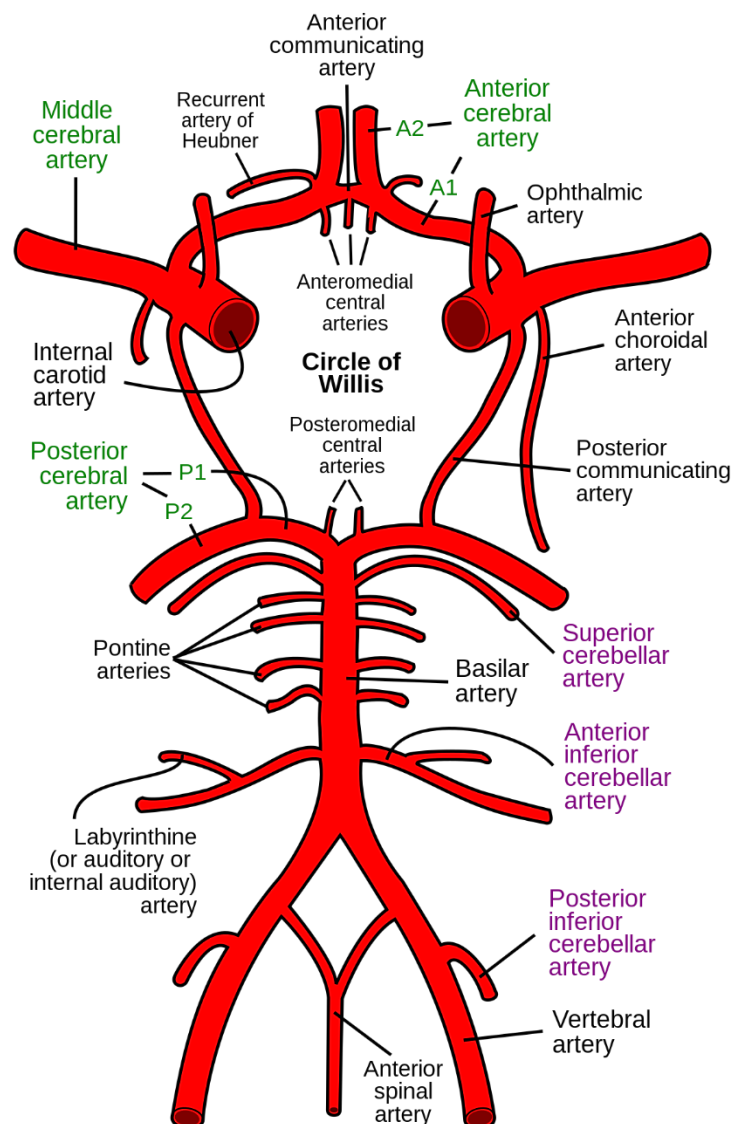
CLINICAL ANATOMY

CEREBRAL THROMBOSIS -

MOST COMMONLY AFFECTS THE MIDDLE CEREBRAL ARTERY OR ITS MAIN BRANCHES IT IS A DIRECT CONTINUATION OF INTERNAL CAROTID ARTERY

OCCLUSION OF MIDDLE CEREBRAL ARTERY

- COMMONLY OCCUR, IT PRODUCE THE FOLLOWING SIGNS AND SYMPTOMS
- CONTRALATERAL HEMIPLEGIA AND HEMIANAESTHESIA -> INVOLVING MAINLY THE FACE AND ARM DUE TO INVOLVEMENT OF MOST OF THE PRIMARY MOTOR AND SENSORY AREA
- APHASIA, IF THE LEFT DOMINANT HEMISPHERE IS INVOLVED - DUE TO INVOLVEMENT OF MOTOR AND SENSORY SPEECH AREA
- CONTRALATERAL HOMONYMOUS HEMIANOPIA DUE TO INVOLVEMENT OF OPTIC RADIATION





CRANIAL NERVES

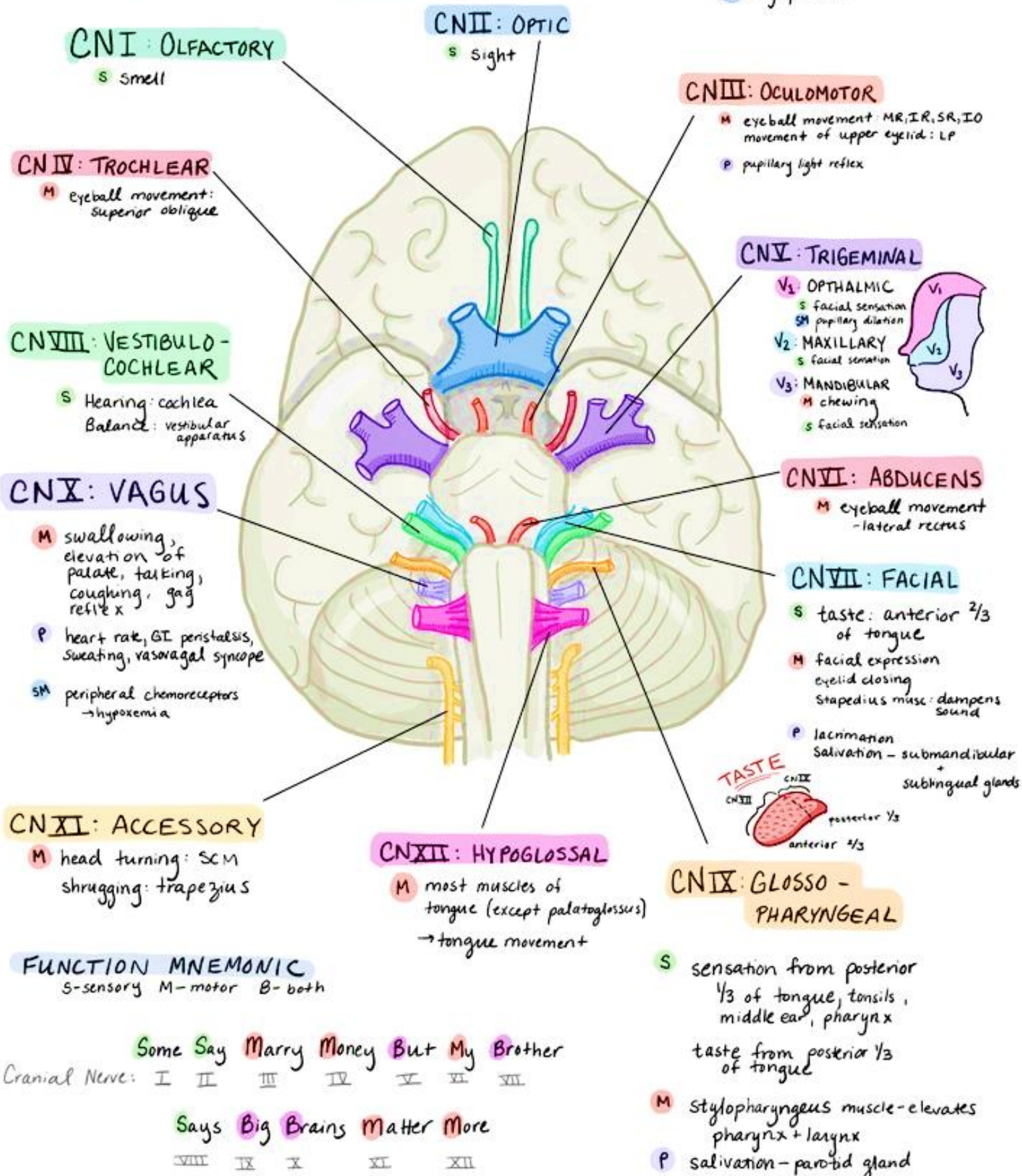
MAI STEWART

ANATOMY & FUNCTIONS

FUNCTIONS

— Legend —

- S** Sensory
- M** Motor
- P** Parasympathetic
- SM** Sympathetic





OLFACTORY NERVE

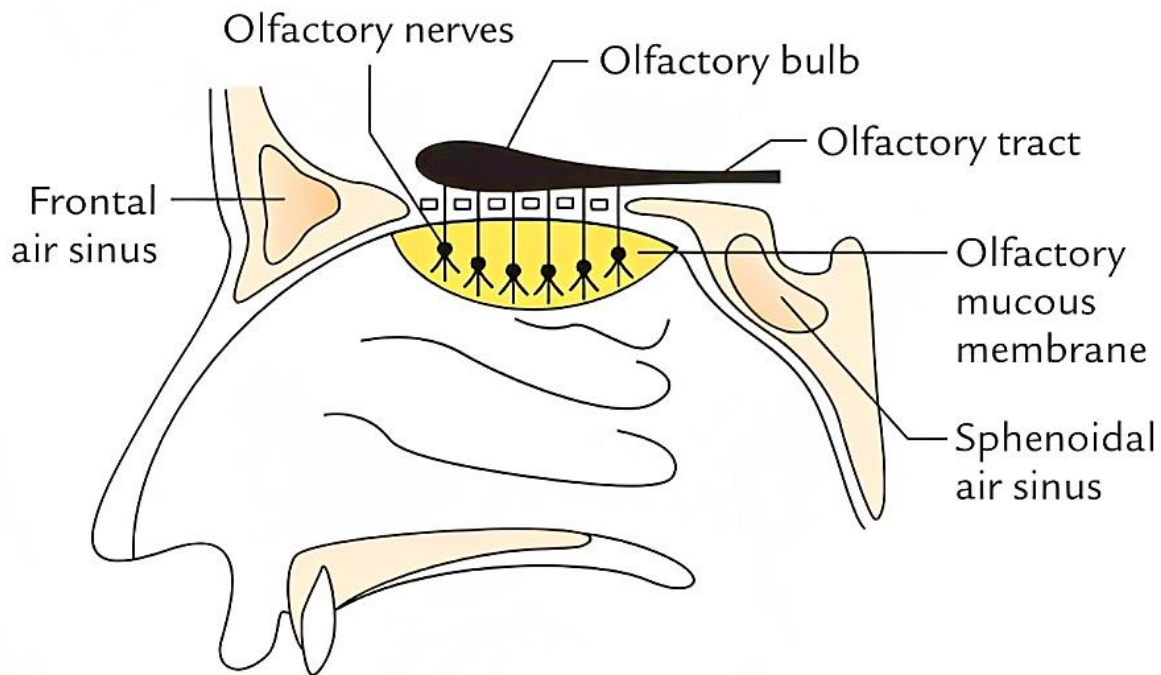
1ST CRANIAL NERVE

NEURONA

- RECEPTORS & 1ST NEURON -> OLFATORY CELLS (IN OLFATORY PAR OF NASAL MUCOSA)
-> OLFATORY NEURONS (CENTRAL PROCESSES OF OLFATORY CELLS)
- 2ND NEURON - LOCATED IN PRIMARY OLFATORY CORTEX
- 3RD NEURON - LOCATED IN PRIMARY OLFATORY CORTEX
- 4TH NEURON - FIBERS GOES TO SECONDARY OLFATORY CORTEX

COURSE

- FIBERS FROM PRIMARY RECEPTOR NEURON PASS FORAMINA IN CRIBRIFORM PLATE OF ETHMOID
- NERVES DISTRIBUTE -> OLFATORY REGION OF NASAL CAVITY



OPTIC NERVE

2ND CRANIAL NERVE -> "NERVE OF SIGHT"

COURSE

- FIBERS ARISE FROM -> GANGLIONIC CELL OF RETINA OF EYEBALL -> CONVERGE TOWARD -> OPTIC DISC -> PIERCE -> OUTER LAYER OF RETINA, CHOROID, SCLERA -> LEAVE EYEBALL
- FIBERS UNITE & FORM OPTIC NERVE -> RUN -> POSTEROMEDIANALLY -> THROUGH POSTERIOR HALF OF ORBIT -> ENTERS MIDDLE CRANIAL FOSSA, THROUGH OPTIC CANAL -> UNITES TO FORM OPTIC CHIASMA



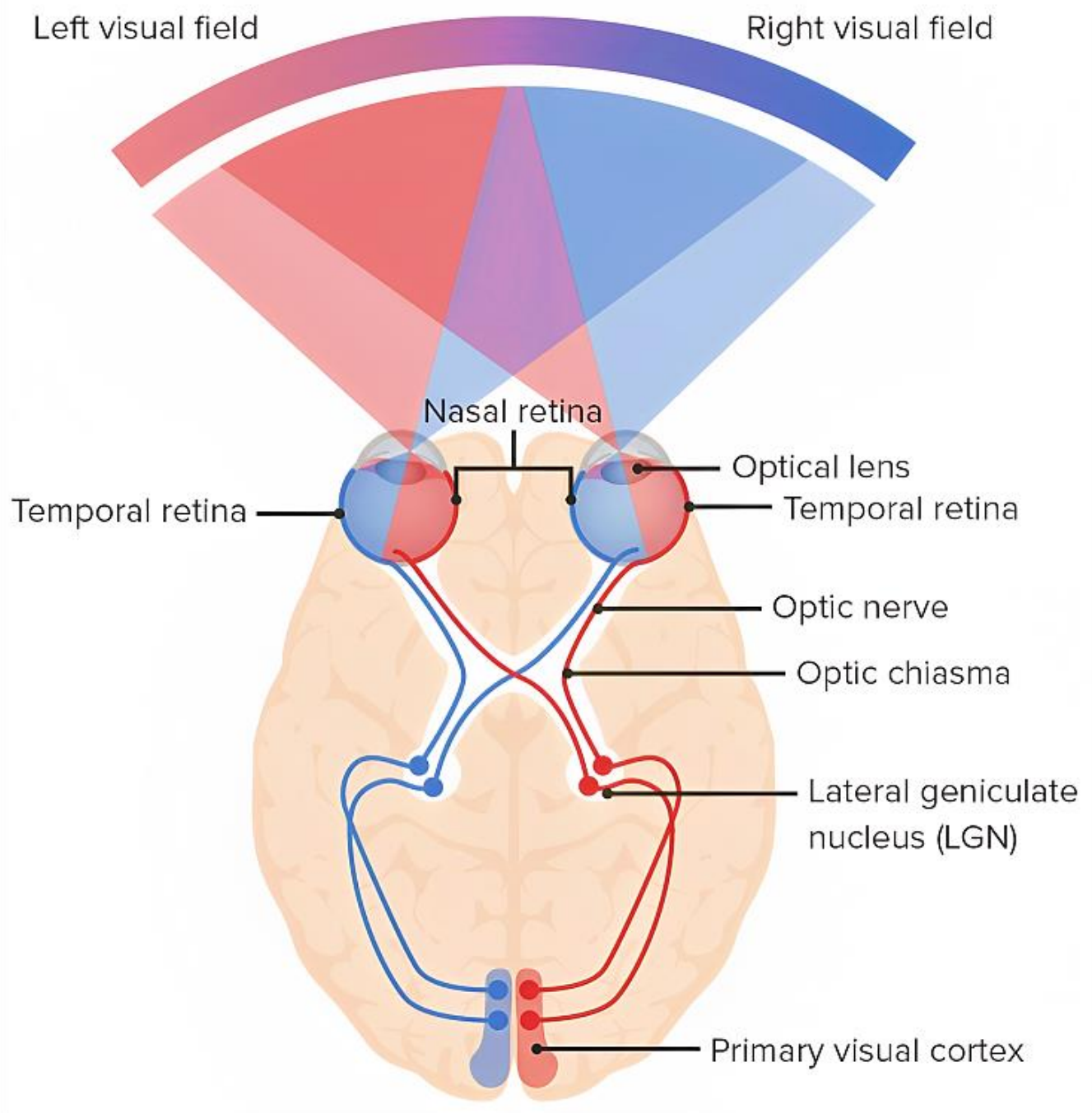
- OPTIC NERVE DIVIDED INTO -> INTRA ORBITAL PART
 - > CANALICULAR PART
 - > INTRA CRANIAL PART
- ENCLOSED BY 3 MENINGES OF BRAIN

RELATIONS

AT APEX -> RECTI MUSCLES, CILIARY GANGLION

SUPERIOR -> OPHTHALMIC ARTERY, NASCILIARY NERVE, SUPERIOR OPHTHALMIC VEIN

INFERIOR -> NERVE TO MEDICAL RECTUS





OCCULOMOTOR NERVE

3RD CRANIAL NERVE, DISTRIBUTED TO EXTRAOCULAR & INTRAOCULAR NERVE

NUCLEUS -> OCCULOMOTOR NUCLEUS

COURSE

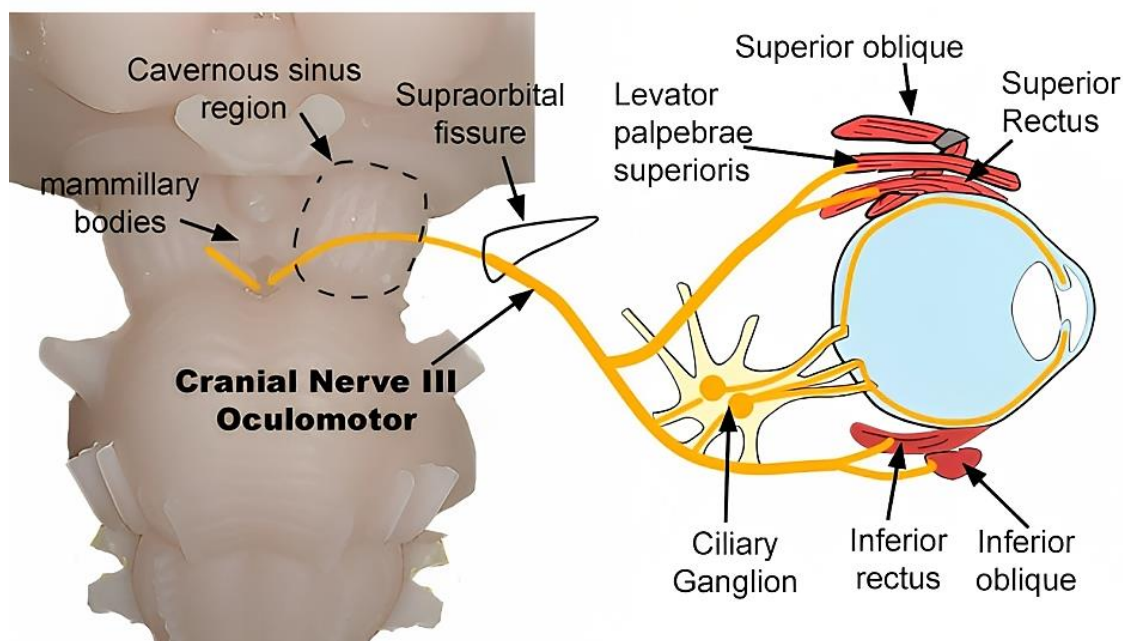
INTRANEURAL COURSE

- NERVE -> PASS -> VENTRALLY -> THROUGH TEGMENTUM, RED NUCLEUS & SUBSTANTIA NIGRA
- NERVE -> ATTACHED -> OCCULOMOTOR SULCUS ON MEDIAL SIDE OF CRUS CEREBRI
- NERVE PASS BETWEEN SUPERIOR CEREBELLAR & POSTERIOR CEREBELLAR ARTERIES -> RUNS -> FORWARD IN -> INTERPEDUNCULAR CISTERN, LATERAL SIDE TO POSTERIOR COMMUNICATING ARTERY -> RACH -> CAVERNOUS SINUS -> DESCENDS -> LATERAL WALL OF NOSE -> ABOVE TROCHLEAR NERVE -> NERVE DIVIDES INTO UPPER & LOWER DIVISION

IN ORBIT

SMALLER UPPER DIVISION -> SUPPLIES -> SUPERIOR RECTUS
-> LEVATOR PALPEBRAE SUPERIOR

LARGER LOWER DIVISION -> DIVIDES INTO -> MEDIAL RECTUS
-> INFERIOR RECTUS
-> INFERIOR OBLIQUE
-> SUPPLIES -> INFERIOR OBLIQUE MUSCLE



TROCHLEAR NERVE

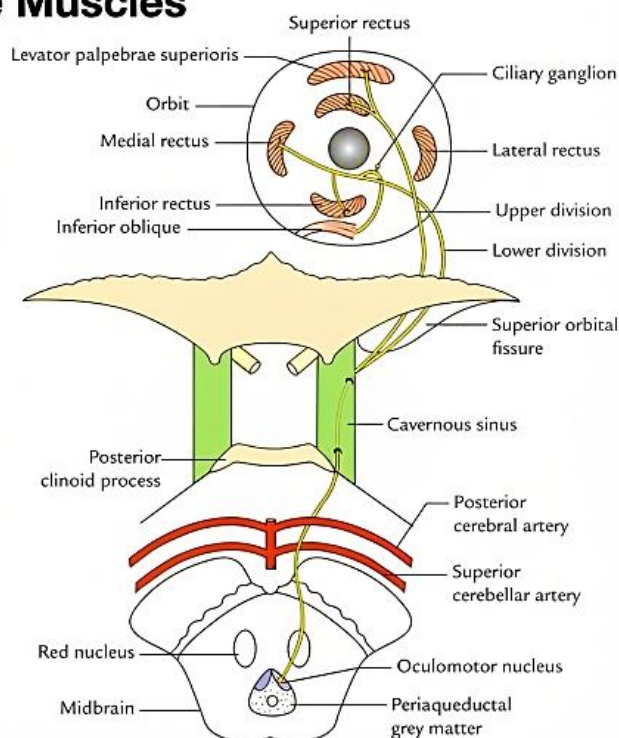
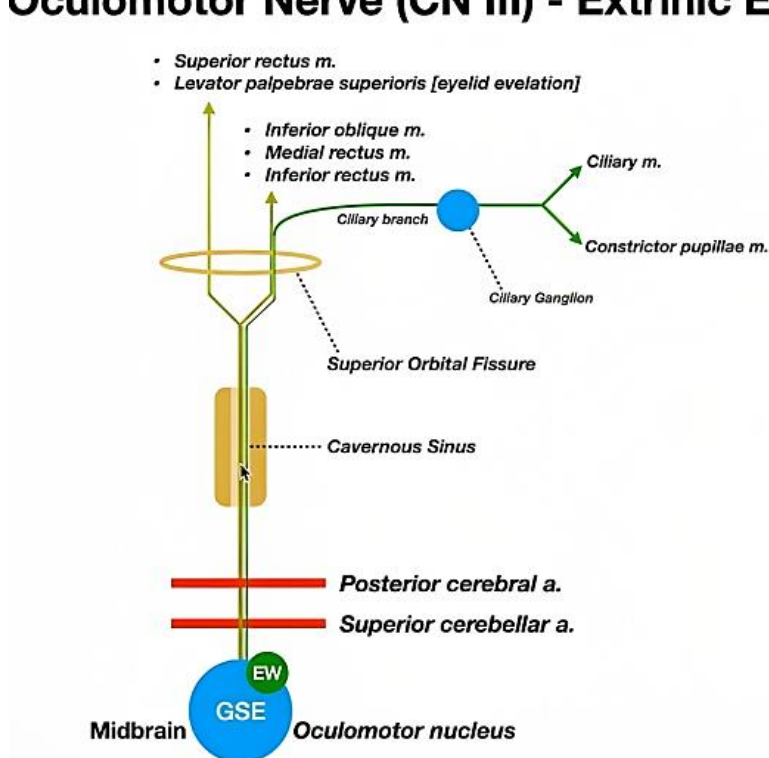
4TH CRANIAL NERVE -> SUPPLIES ONLY SUPERIOR OBLIQUE MUSCLE OF EYEBALL

NUCLEUS -> TROCHLEAR NUCLEUS

COURSE

**INTRANEURAL COURSE**

- NERVE RUNS -> DORSALY ROUND CENTRAL GREY MATER -. REACH UPPER PART OF SUPERIOR & ANTERIOR MEDULLARY VELUM
- NERVE ATTACHED TO -> EACH SIDE -> SUPERIOR MEDULLARY VELUM
- ONLY NERVE TO EMERGE ON DORSAL ASPECT OF BRAINSTEM
- NERVE -> ENTERS -> CAVERNOUS SINUS -> PIERCING -> POSTERIOR CORNER OF ROOF -> RUN FORWARD IN LATERAL WALL OF CAVERNOUS SINUS, BETWEEN OCCULOMOTOR & OPHTHALMIC NERVE
- NERVE -> ENTER -> ORBIT -> THROUGH -> LATERAL PART OF SUPERIOR ORBITAL FISSURE
- IN ORBIT -> RUNS -> MEDIANLY, ABOVE ORIGIN OF LEVATOR PALPEBRAE SUPERIOR -> SUPPLY SUPERIORIS -> SUPPLY SUPERIOR OBLIQUE MUSCLE ON ITS ORBITAL SURFACE

Oculomotor Nerve (CN III) - Extrinsic Eye Muscles**TRIGEMINAL NERVE****5TH CRANIAL NERVE, LARGEST NERVE OF 1ST BRACHIAL ARCH**

CONSIST OF -> OPHTHALMIC, MAXILLARY AND MANDIBULAR NERVE

NUCLEUS - 1) GENERAL SOMATIC AFFERENT COLUMN

- SPINAL NUCLEUS OF 5TH NERVE
- PRINCIPAL SENSORY NUCLEUS OF 5TH NERVE
- MESENCEPHAIC NUCLEUS

2) BRANCBIAL EFFERENT COLUMN

**COURSE**

TRIGEMINAL NERVE ->

SMALLER MEDIAL MOTOR ROOT -> RUNS -> FORWARD & LATERALLY ENTERS - . INFRATEMPORAL FOSSA, THROUGH FORAMEN OVALE -> JOINS MANDIBULAR NERVE

LARGER LATERAL SENSORY ROOT -> RUN -> FORWARD & LATERAL -> ENTER -> MIDDLE CRANIAL FOSSA -> TRIGEMINAL GANGLION -> DIVIDE INTO OPHTHALMIC NERVE, MAXILLARY NERVE AND MANDIBULAR NERVE

OPHTHALMIC NERVE -> ENTER -> LATERAL WALL OF CAVERNOUS SINUS, BELOW TROCHLEAR NERVE GIVE BRANCHES -> NASOCILIARY, LACRIMAL AND FRONTAL NERVE
-> THEN ENTER -> ORBIT -> THROUGH -> SUPERIOR ORBITAL FISSURE

MAXILLARY NERVE -> ENTER -> LATERAL WALL OF CAVERNOUS SINUS, LOWEST POSITION -> ENTER -> PTERYGOPALATINE FOSSA -> THROUGH FORAMEN ROTUNDUM

MANDIBULAR NERVE -> ENTER -> INFRATEMPORAL FOSSA -> THROUGH -> FORAMEN OVALE

BRANCHES**OPHTHALMIC NERVE (SENSORY)**

FRONTAL -> SUPRATROCHLEAR -> SUPPLY -> UPPER EYELID, CONJUNCTIVA, LOWER PART OF FOREHEAD

SUPRAORBITAL -> SUPPLY -> UPPER EYELID, FRONTAL AIR SINUS, FOREHEAD, SCALP

NASOCILIARY -> LONG CILIARY -> EYEBALL
-> CILIARY GANGLION
-> ETHMOID -> ANTERIOR AND POSTERIOR
-> INFRATROCHLEAR -> BOTH EYELID, LACRIMAL SAC

LACRIMAL -> LACRIMAL GLAND

MAXILLARY NERVE (SENSORY)

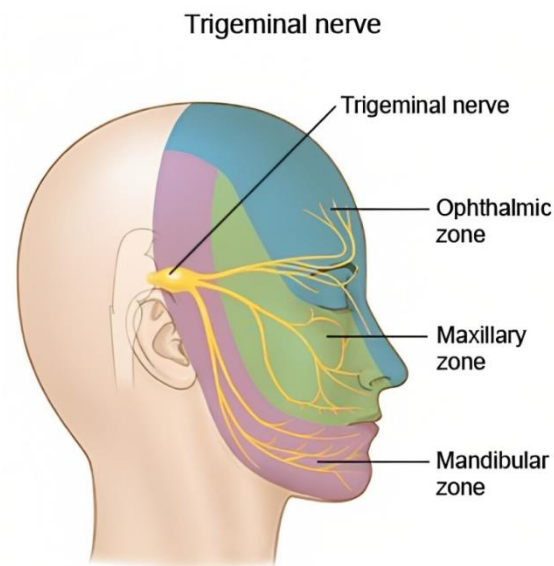
PTERYGOPALATINE FOSSA -> GANGLIONIC BRANCH
-> ZYGOMATIC BRANCH
-> POSTERIOR SUPERIOR ALVEOLAR

INFRAORBITAL CANAL -> MIDDLE SUPERIOR ALVEOLAR
-> ANTERIOR SUPERIOR ALVEOLAR

FACE -> INFRAORBITAL

MANDIBULAR NERVE (SENSORY + MOTOR)

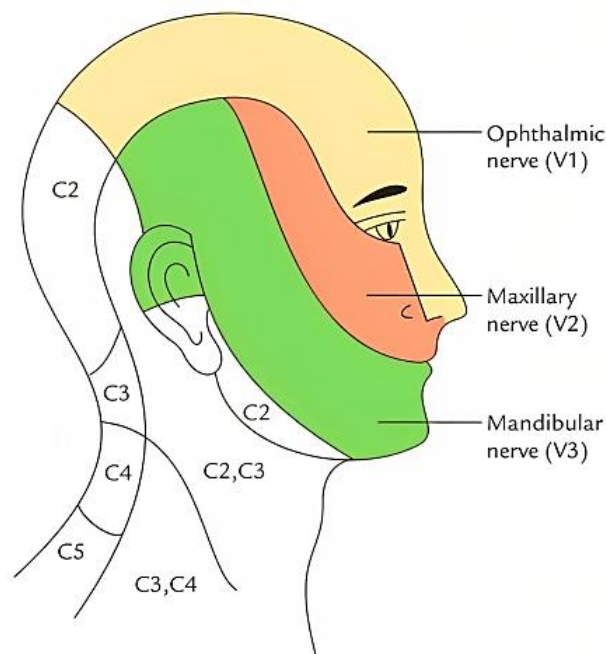
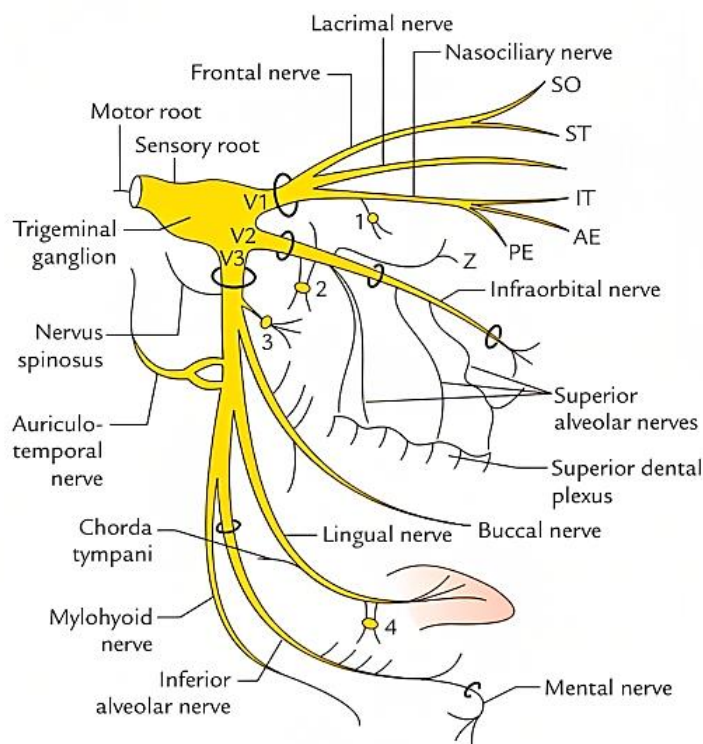
TRUNK -> MENINGEAL
-> MEDIAL PTERYGOID





ANTERIOR DIVISION -> DEEP TEMPORAL
-> LATERAL PTERYGOID
-> MASSETERIC
-> BUCCAL

POSTERIOR DIVISION -> AURICULOTEMPORAL
-> LINGUAL



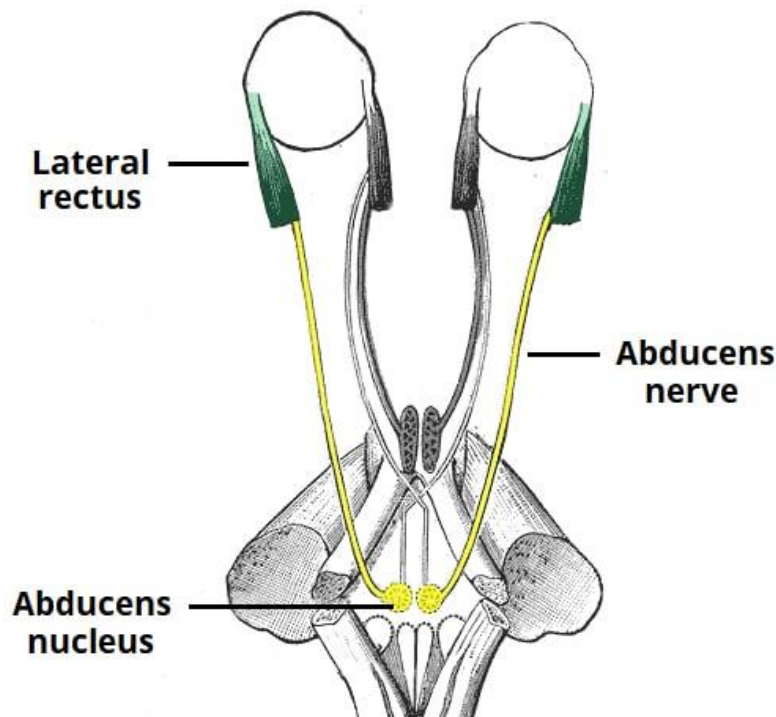
ABDUCENT NERVE

IT IS THE 6TH CRANIAL NERVE AND SUPPLIES LATERAL RECTUS MUSCLE OF EYEBALL
NUCLEUS -> ABDUCENT NUCLEUS

COURSE

INTRANEURAL COURSE

- FIBERS RUN VENTRALLY & DOWNWARD -> THROUGH -> TRAPEZOID BODY, MEDIAL LEMNISCUS & BASILAR PART OF PONS TO -> REACH -> LOWER BORDER OF PONS
- NERVES ATTACHED TO LOWER END OF PONS, OPPOSITE UPPER END OF PYRAMID OF MEDULLA
- NERVE -> ENTER -> CAVERNOUS SINUS -> PIERCING -> POSTERIOR WALL OF PETROUS TEMPORAL BONE -> PASSING -> BENEATH PETROSPHENOIDAL LIGAMENT & BENDS SHARPLY FORWARDS
- IT HAS LONG INTRACRANIAL COURSE
- ENTERS ORBIT -> THROUGH MIDDLE PART OF SUPERIOR ORBITAL FISSURE
- IN ORBIT, NERVE ENDS BY SUPPLYING ONLY LATERAL RECTUS MUSCLE



FACIAL NERVE

- FACIAL NERVE IS NERVE OF SECOND BRANCHIAL ARCH

NUCLEI :

- FIBERS OF NERVE ARE CONNECTED TO 4 NUCLEI → SITUATED IN LOWER PONS
 - MOTOR NUCLEUS
 - SUPERIOR SALIVATORY NUCLEUS OR PARASYMPATHETIC
 - LACRIMATORY NUCLEI - PARA SYMPATHETIC
 - NUCLEUS OF TRACTUS SOLITARIUS

COURSE

- ATTACHED TO BRAINSTEM BY 2 ROOTS, MOTOR AND SENSORY
- TWO ROOTS OF FACIAL NERVE ARE ATTACHED TO LATERAL PART OF PONS
- TWO ROOTS RUN Laterally AND FORWARD WITH, 8TH CRANIAL NERVE TO REACH → INTERNAL ACOUSTIC MEATUS

IN MEATUS → 2X ROOTS, SENSORY AND MOTOR FUSE

- 1ST PART → DIRECTLY Laterally ABOVE VESTIBULE
- 2RD PART → RELATED TO MEDIAL WALL ABOVE - PROMONTORY.
- 3RD PART → DIRECTLY VERTICALLY DOWNWARD BEHIND PROMONTORY
- FACIAL NERVE LEAVE SKULL BY PASSING THROUGH - STYLOMASTOID FORAMEN

EXTRACRANIAL COURSE -

- FACIAL NERVE CROSSES THE -> LATERAL SIDE OF BASE OF STYLOID PROCESS
- IT ENTERS - POSTEROMEDIAL SURFACE OF PAROTID GLAND
- RUNS FORWARD THROUGH THE GLAND CROSSING -> RETROMANDIBULAR VEIN & ECA
- BEHIND THE NECK OF MANDIBLE - IT DIVIDE INTO 5X TERMINAL BRANCHES EMERGE ALONG ANTERIOR BORDER OF PAROTID GLAND

**BRANCHES AND DISTRIBUTION -**

- 1 WITHIN THE FACIAL CANAL: A. GREATER PETROSAL NERVE
B. THE NERVE TO THE STAPEDIUS
C. THE CHORDATYMPANI
- 2 AT ITS EXIT FROM THE STYLOMASTOID FORAMEN: A. POSTERIOR AURICULAR
B. DIGASTRIC
C. STYLOHYOID.
- 3 TERMINAL BRANCHES WITHIN THE PAROTID GLAND: A. TEMPORAL
B. ZYGOMATIC
C. BUCCAL
D. MARGINAL MANDIBULAR
E. CERVICAL.

VESTIBULO-COCHLEAR NERVE

IT IS THE 8TH CRANIAL NERVE

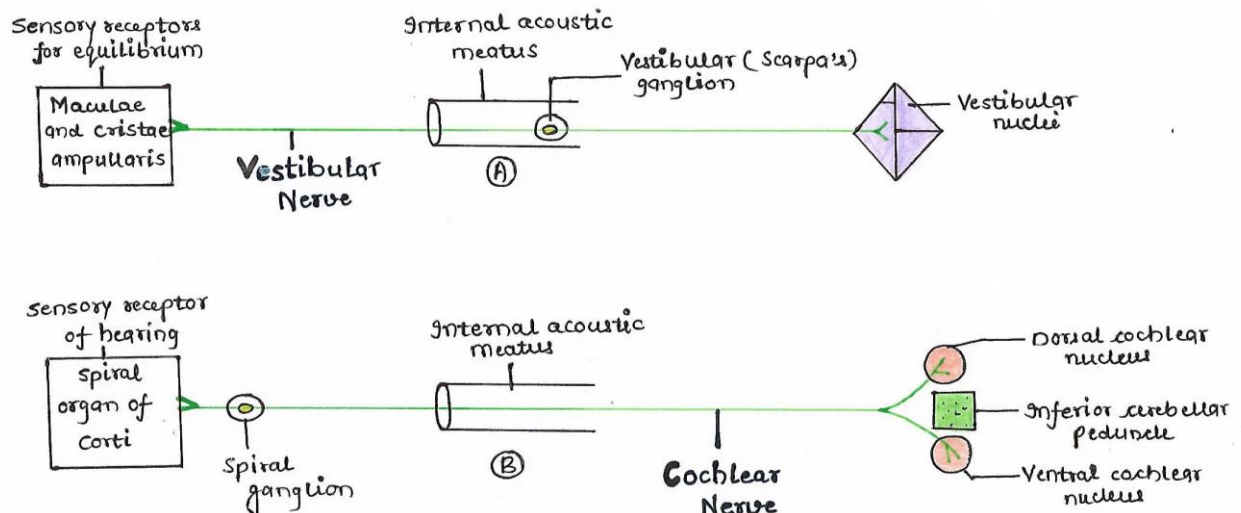
IT COMPRISES OF -> HEARING & VESIBULAR PARTS

PATHWAY OF HEARING

- 1ST NEURON -> SPIRAL GANGLION, BIPOLAR
-> PERIPHERAL CENTRAL -> ORGAN OF CORTI
-> TERMINATES IN DORSAL & VENTRAL COCHLEAR NUCLEI
- 2ND NEURON -> IN DORSAL & VENTRAL COCHLEAR NUCLEI
- 3RD NEURON -> IN SUPERIOR OLIVARY NUCLEUS
-> AXONS FORM LATERAL LEMNISCUS TERMINATES INFERIOR COLICULUS
- 4TH NEURON -> IN INFERIOR COLICULUS
-> AXON PASS THROUGH INFERIOR BRACHIUM -> REACH MEDIAL GENICULATE BODY
- 5TH NEURON -> IN MEDIAL GENICULATE BODY
-> AXON FORM AUDITORY RADIATION, PASSES THROUGH SUBLENTIFORM PART OF INTERNAL CAPSULE, TO REACH AUDITORY AREA IN TEMPORAL LOBE

VESTIBULAR PATHWAY

- RECEPTORS ARE MACULAE OF SACCULE & UTRICLE (STATIC BALANCE) & CRISTA OD AMPULLARIS OF SEMICIRCULAR DUCTS (KINETIC BALANCE)
- FIBRES OF CRISTA OF POSTERIOR SEMICIRCULAR CANAL LIE -> FORAMEN SINGULARE
- MOST OF FIBRES FROM MACULAE OF UTRICLE & SACCULE -> LIE IN INFERIOR VESTIBULAR AREA
- IMPULSES CAN INFLUENCE MOVEMENTS OF EYES, HEAD, NECK AND TRUNK





GLOSSOPHARYNGEAL NERVE

IT IS THE 9TH CRANIAL NERVE AND NERVE OF THIRD BRCHIAL ARCH

NUCLEI - THE 3 NUCLEI IN UPPER PART OF MEDULLA ARE -

1) NUCLEUS AMBIGUS 2) INFERIOR SALIVATORY NUCLEUS 3) NUCLEUS OF TRACTUS SALITARIUS

COURSE

INTRANEURAL COURSE

- FIBERS PASS FORWARD & Laterally, BETWEEN OLIVARY NUCLEUS & INFERIOR CEREBELLAR PEDUNCLE THROUGH RETINACULAR FORAMTION OF MEDULLA
- AT THE BASE OF BRAIN -> JUST ABOVE ROOT LETS OF VAGUS NERVE, NERVE IS ATTACHED BY 3 TO 4 FILAMENTS

INTRACRANIAL COURSE

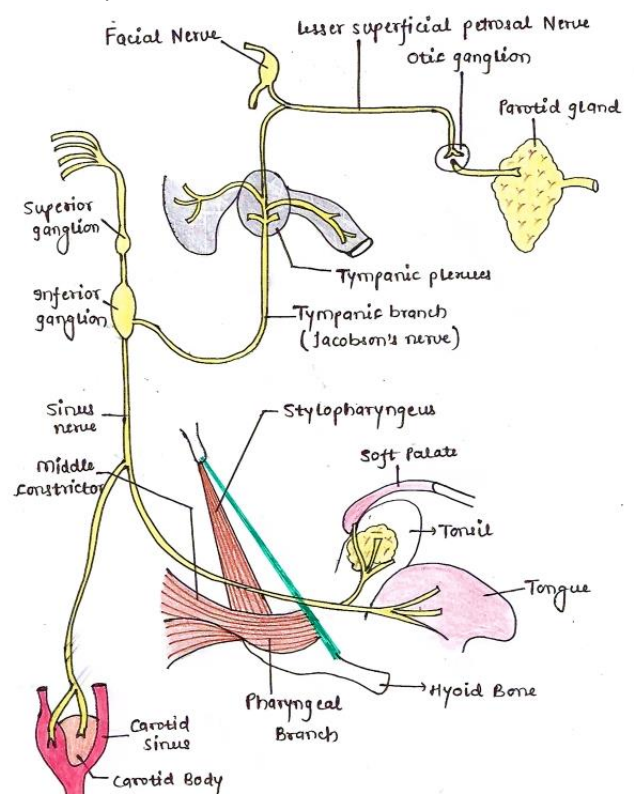
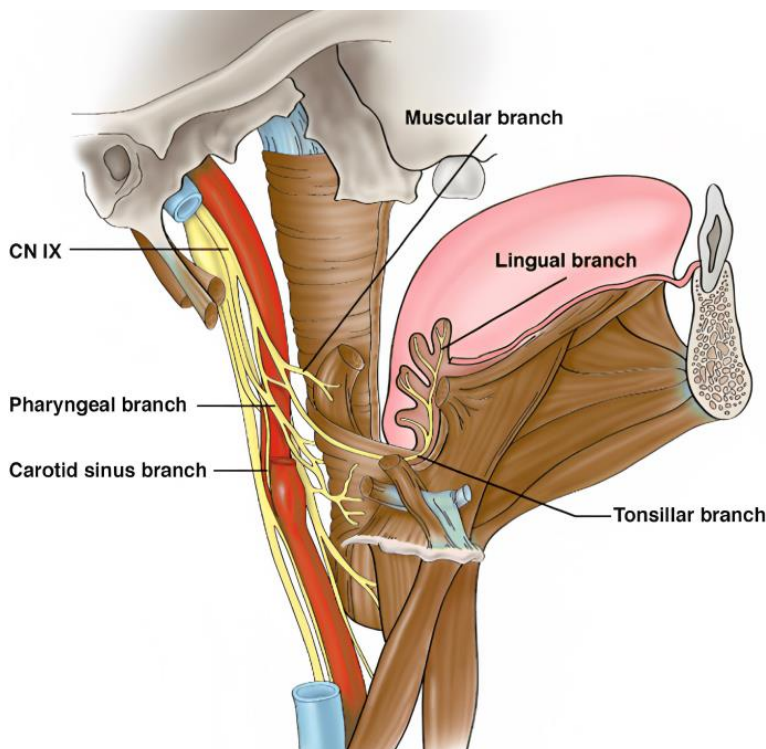
- FILAMENTS UNIT FORM -> SINGLE TRUNK -> PASSES FORWARD & Laterally -> JUGULAR FORAMEN -> NERVE IS LODGED IN DEEP GROOVE -> LEAD TO -> COCHLEAR CANALICULUS
- NERVE IS SEPARATED FROM VAGUS & ACESSORY NERVE, BY INFERIOR PETROSAL SINUS

EXTRACRANIAL COURSE

- BETWEEN INTERNAL JUGULAR VEIN & INTERNAL CAROTID ARTERY DEEP TO STYLOID PROCESS & MUSCL ATTACHED TO IT
- THEN TURN FORWARDS -> WINDING STYLOPHARYNGEAL BRANCHES
- ENTERS SUBMANDIBULAR REGION -> BY PASSING DEEP TO HYOGLOSSUS -> BREAK INTO TONSILLAR BRANCH AND LINGULAR BRANCH

BRANCHES

- 1) TYMPANIC BRANCH -> GIVE OFF LESSER PETROSAL NERVE
- 2) CAROTID NERVE -> SUPPLIES -> CAROTID SINUS & CAROTID BODY
- 3) PHARYNGEAL BRANCHES
- 4) MUSCULAR BRANCHES -> SUPPLY -> STYLOPHARYNGEAUS
- 5) TONSILLAR BRANCHES -> SUPPLY -> TONSIL, FACE & PALATINE
- 6) LINGUAL BRANCHEAS -> SUPPLY POSTERIOR 1/3 TONGUE, VALLATE PAPILLAE





VAGUS NERVE

10TH CRANIAL NERVE

- NUCLEI** - 1) NUCLEUS AMBIGUS
2) DORSAL NUCLEUS OF VAGUS
3) NUCLEUS OF TRACTUS SOLITARIUS
4) NUCLEUS OF SPINAL TRACT OF TRIGEMINAL NERVE

COURSE

IN INTRACRANIAL COURSE

- FIBERS RUN FORWARD & Laterally, BETWEEN OLIVARY NUCLEUS & INFERIOR CEREBELLAR PEDUNCLE, THROUGH RETICULAR FORMATION OF MEDULLA
- NERVE ATTACHED BY ABOUT 10 ROOTLETS TO POSTEROLATERAL SULCUS OF MEDULLA
- ROOTLET -> UNITS TO FORM -> LARGE TRUNK -> PASSES Laterally ACROSS -> JUGULAR TUBERCLE WITH GLOSSOPHARYNGEAL & ACCESSORY NERVE -> REACHES JUGULAR FORAMEN

EXTRACRANIAL COURSE

- NERVE DESCENDS WITHIN CAROTID SHEATH BETWEEN LATERAL -> INTERNAL JUGULAR VEIN & MEDIAL -> COMMON CAROTID ARTERIES

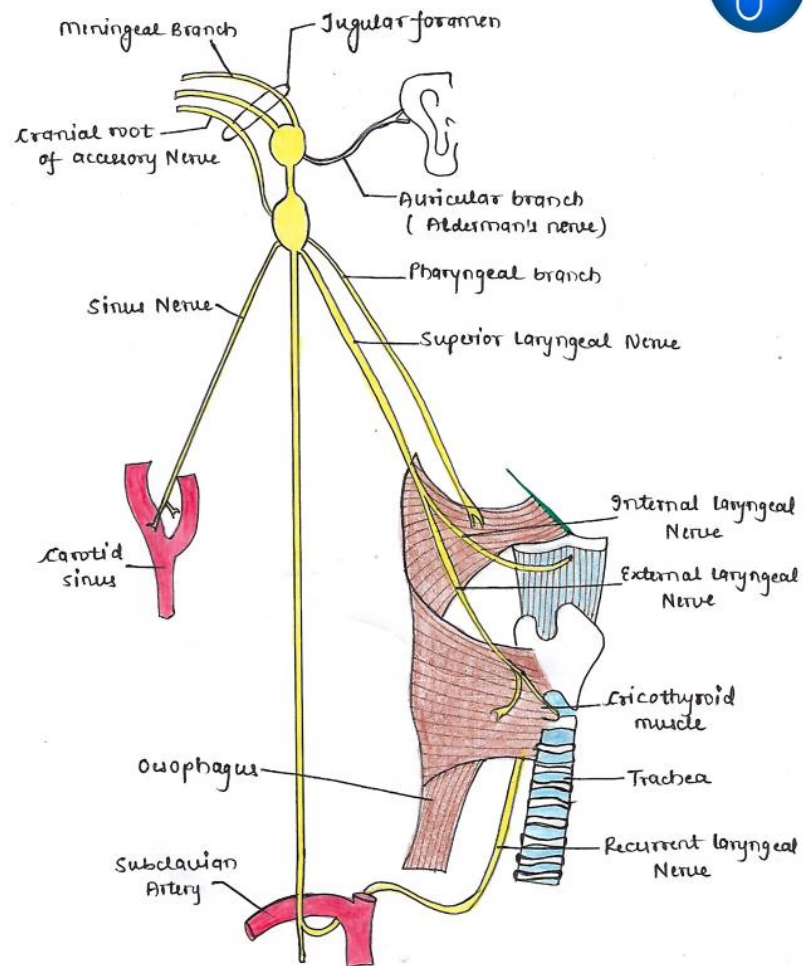
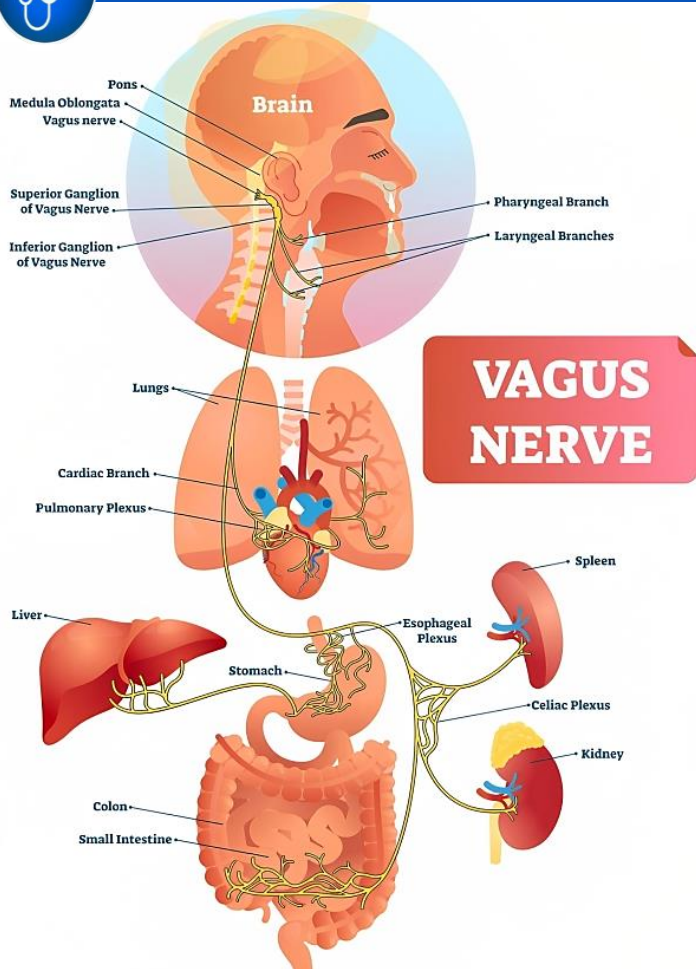
AT ROOT OF NECK

RIGHT VAGUS -> CROSSES 1ST PART OF SUBCLAVIAN ARTERY -> THEN INCLINING MEDIALY, BEHIND BRACHIOCEPHALIC VESSELS -> REACH -> RIGHT SIDE OF TRACHEA -> THORAX

LEFT VAGUS -> PASSING BETWEEN -> LEFT COMMON CAROTID & LEFT SUBCLAVIAN ARTERIES BEHIND INTERNAL JUGULAR & BRACHIOCEPHALIC VEIN -> THORAX

BRANCHES

- 1) MENINGEAL BRANCH -> SUPPLY -> DURA MATER OF POSTERIOR CRANIAL FOSSA
- 2) AURICULAR BRANCH -> SUPPLY FLOOR OF MEATUS & TYMPANIC MEMBRANE
- 3) PHARYNGEAL BRANCH SUPPLIES
 - > ALL MUSCLE OF PHARYNX EXCEPT -> STYLOPHARYNGEUS MUSCLE
 - > ALL MUSCLE OF SOFT PALATE, EXCEPT -> TENSOR PALATE
- 4) BRANCHES TO CAROTID BODY
- 5) SUPERIOR LARYNGEAL NERVE
- 6) SUPERIOR & INFERIOR CERVICAL CARDIAC BRANCHES
- 7) RECURRENT LARYNGEAL NERVE



IT IS THE 11TH CRANIAL NERVE & HAS 2 ROOT -> CRANIAL AND SPINAL NUCLEI

CRANIAL ROOT -> NUCLEUS AMBIGUS

SPINAL ROOT -> LONG SPINAL NUCLEUS

COURSE

CRANIAL ROOT -> EMERGE IN FORM OF 4 TO 5 ROOTLETS -> ATTACHED TO POSTEROLATERAL SULCUS OF MEDULLA -> JOINS TO FORM -> SINGLE TRUNK

-> RUNS LATEROALLY WITH GLOSSOPHARYNGEAL, VAGUS & SPINAL ACCESSORY
CROSSES JUGULAR TUBERCLE REACHES -> JUGULAR FORAMEN

-> FINALLY FUSES WITH VAGUS -> AT INFERIOR GANGLION AND DISTRIBUTES TO MUSCLES OF PALATE, PHARYNX, LARYNX & HEART

SPINAL ROOT ->

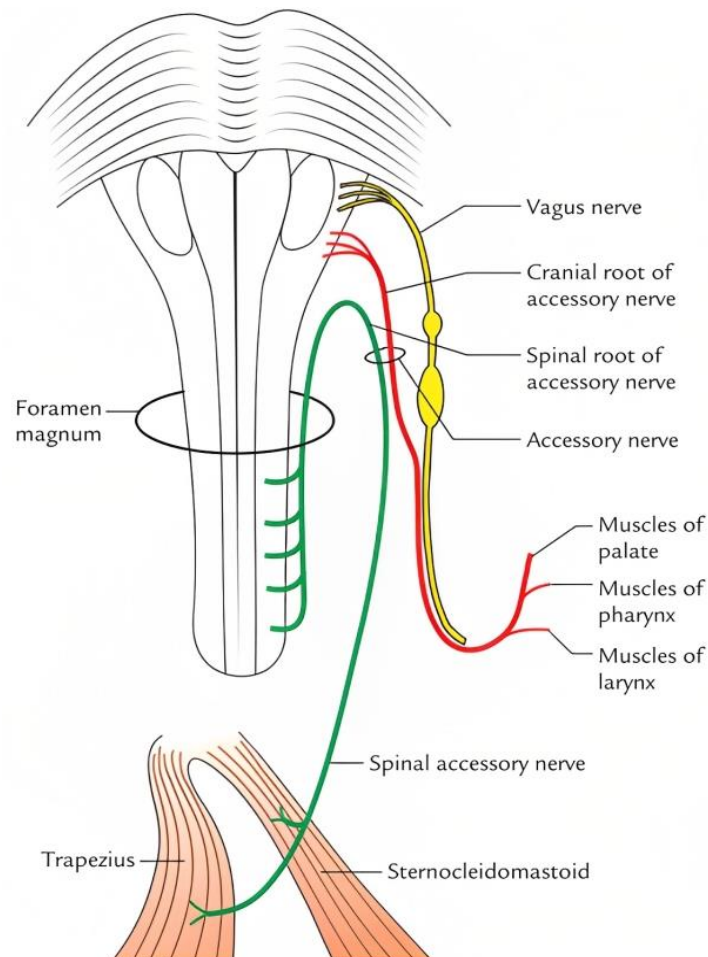
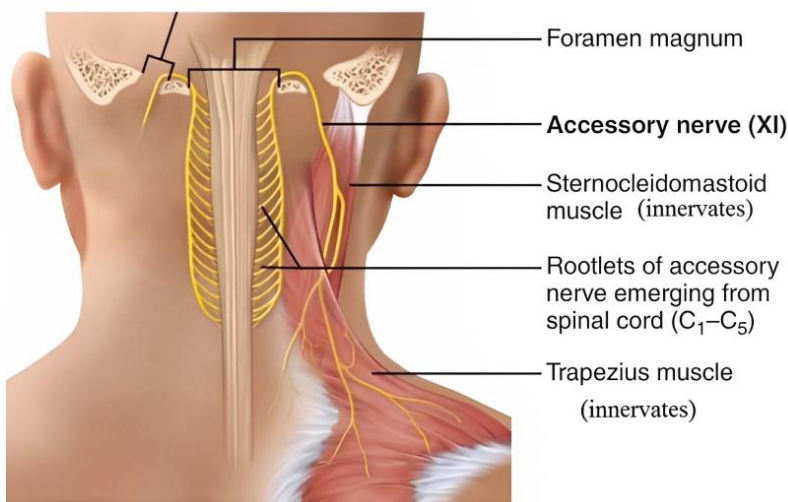
IN VERTEBRAL CANAL -> FILAMENTS UNITE -> FORM SINGLE TRUNK -> ASCENDS IN FRONT OF DORSAL NERVE ROOT, BEHIND LIGAMENTUM DENTICULATUM

-> NERVE -> ENTER CRANIUM -> THROUGH FORAMEN MAGNUM, LYING BEHIND VERTEBRAL ARTERY

→ NERVE LEAVES SKULL -> THROUGH MIDDLE PART OF JUGULAR FORAMEN

**IN EXTRACRANIAL COURSE**

- NERVE -> DESCENDS VERTICALLY, BETWEEN INTERNAL JUGULAR VEIN & INTERNAL CAROTID ARTERY -> REACHES BETWEEN -> ANGLE OF MANDIBLE & MASTOID PROCESS -> RUNS -> DOWNWARD & BACKWARD -> SUPERFICIAL TO INTERNAL JUGULAR VEIN SURROUNDED BY LYMPH NODES
- NERVE THEN DISTRIBUTED TO -> STERNOCLEIDOMASTOID & TRAPEZIUS

**HYPOGLOSSAL NERVE**

IT IS THE 12TH NERVE AND SUPPLIES MUSCLE OF TONGUE NUCLEUS -> HYOGLOSSAL NUCLEUS

COURSE**INTRANEURAL COURSE**

- FIBERS RUNS FORWARD -> LATERAL -> MEDIAL LONGITUDINAL BUNDLE, MEDIAL LEMNISCUS, PYRAMIDAL TRACT
- MEDIAL -> RETICULAR FORMATION AND OLIVARY NUCLEUS
- NERVE ATTACHED TO ANTEROLATERAL SULCUS OF MEDULLA, BETWEEN PYRAMID AND OLIVE BY 10 TO 15 ROOT LETS
- ROOT LETS RUN Laterally BEHIND VERTEBRAL ARTERY JOIN TO FORM 2 BUNDLES -> PIERCE DURA MATER
- NERVE LEAVES SKULL THROUGH HYPOGLOSSAL CANAL

**EXTRACRANIAL COURSE**

- NERVE LIES DEEP TO INTERNAL JUGULAR VEIN -> INCLINES BETWEEN INTERNAL JUGULAR VEIN & INTERNAL CAROTID ARTERY -> CROSSES -> VAGUS -> DEEP TO PAROTID GLAND AND POSTERIOR BELLY OF DIGASTRIC
- AT LOWER BORDER OF POSTERIOR BELLY OF DIGASTRIC -> CURVES FORWARD -> CROSSES INTERNAL AND EXTERNAL CAROTID ARTERY -> PASSES DEEP TO POSTERIOR BELLY OF DIGASTRIC -> ENTERS SUBMANDIBULAR REGION
- > NERVE RUNS FORWARDS ON GENIOGLOSSUS & HYPOGLOSSUS, DEEP TO SUBMANDIBULAR GLAND & MYLOHYOID -> ENTERS -> TONGUE TO SUPPLY -> ALL INTRINSIC MUSCLE & MOST EXTRINSIC MUSCLES

BRANCHES & DISTRIBUTION**BRANCHES CONTAINING FIBRES OF HYPOGLOSSAL NERVE PROPER**

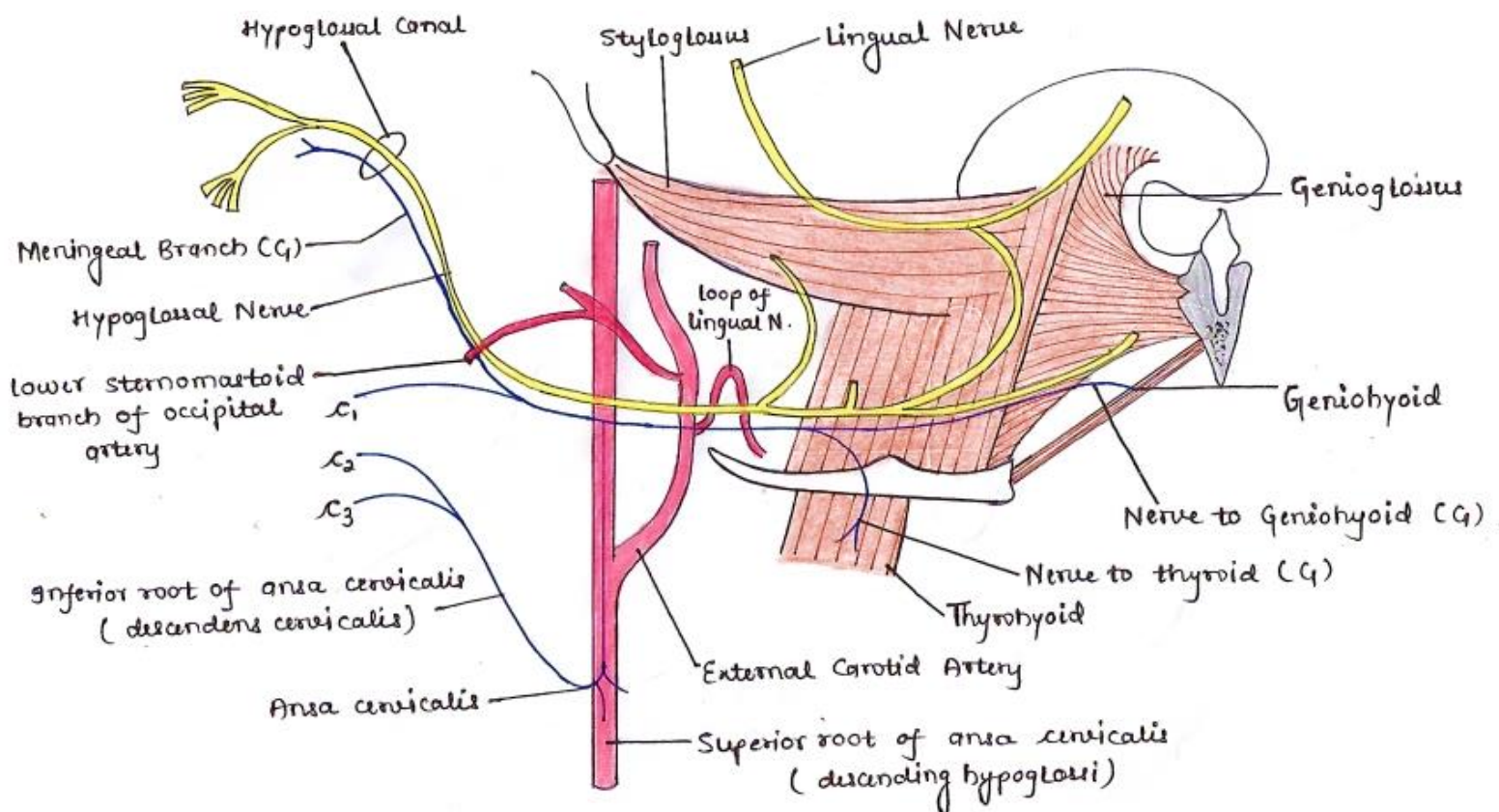
- SUPPLIES ALL INTRINSIC MUSCLES -> SUPERIOR LONGITUDINAL
- > INFERIOR LONGITUDINAL
- > TRANSVERSE & VERTICAL MUSCLE

- SUPPLIES EXTRINSIC MUSCLE -> STYLOGLOSSUS
- > GENIOGLOSSUS
- > HYOGLOSSUS

EXCEPTION -> PALATOGLOSSUS -> SUPPLIED BY CRANIAL ACCESSORY NERVE

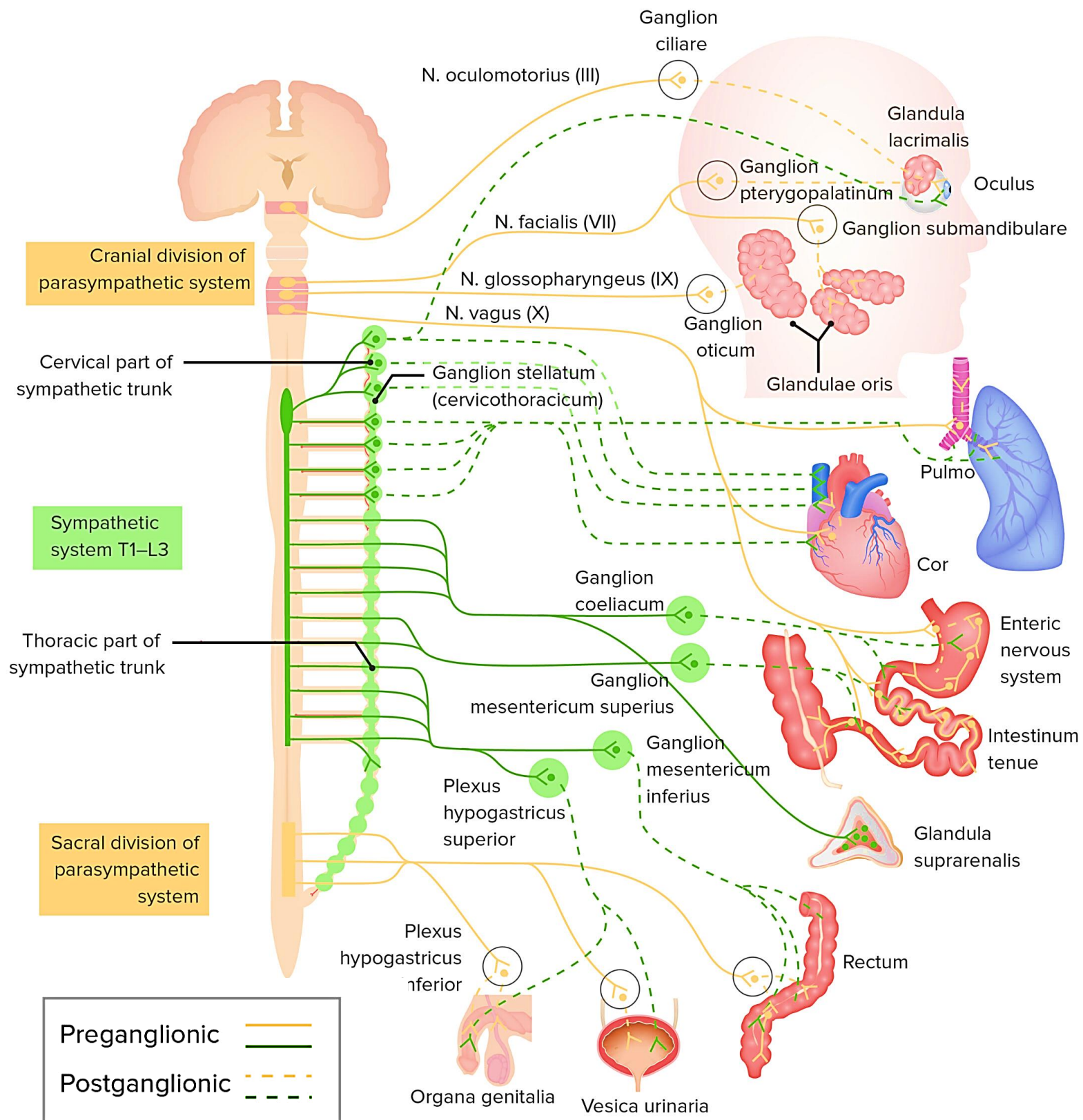
BRANCHES OF HYPOGLOSSAL NERVE CONTAINING FIBERS OF NERVE

- 1) MENINGEAL BRANCH -> SUPPLIES BONES & MENINGES IN ANTERIOR PART OF POSTERIOR CRANIAL FOSSA
- 2) BRANCH SUPPLY -> THYROID MUSCLE, GENIOHYOID MUSCLE





PARASYMPATHETIC & SYMPATHETIC GANGLIONS





SUBMANDIBULAR GANGLIA

- IT IS A PARASYMPATHETIC GANGLION, WHICH SERVES AS A RELAY STATION FOR SECRETOMOTOR FIBERS SUPPLYING SUBMANDIBULAR AND SUB-LINGUAL SALIVARY GLANDS
- TOPOGRAPHICALLY CONNECTED TO -> TRIGEMINAL NERVE
- FUNCTIONALLY CONNECTED TO -> FACIAL NERVE

LOCATION - SIZE -> PIN HEAD

SITUATION -> ON OUTER SURFACE OF HYOGLOSSAL MUSCLE

RELATION - ABOVE -> LINGUAL NERVE

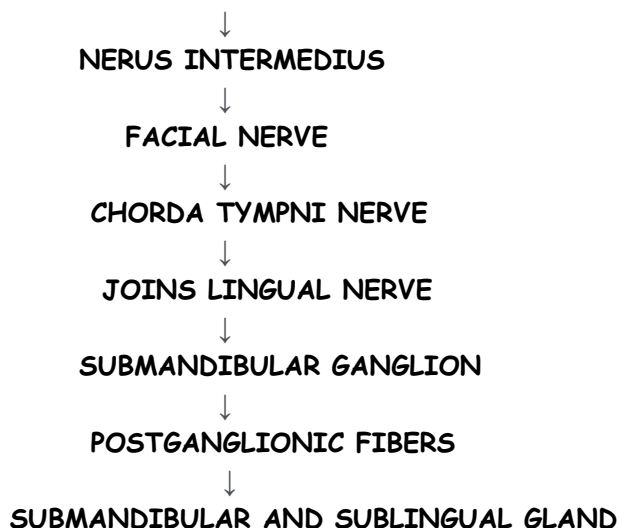
BELOW -> DEEP PART OF SUBMANDIBULAR GLANDS

MEDIAL -> HYOGLOSSUS MUSCLE

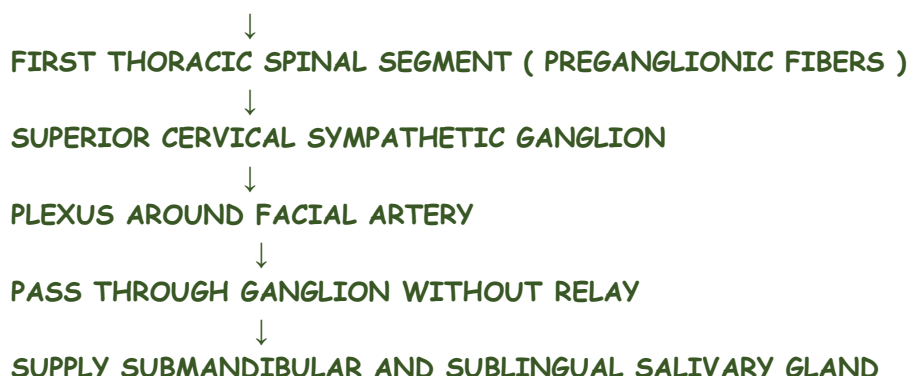
LATERAL -> SUBMANDIBULAR GLAND

ROOT -> HAS 3 ROOT

1) **PARASYMPATHETIC ROOT** -> SUPERIOR SALIVARY NUCLEUS



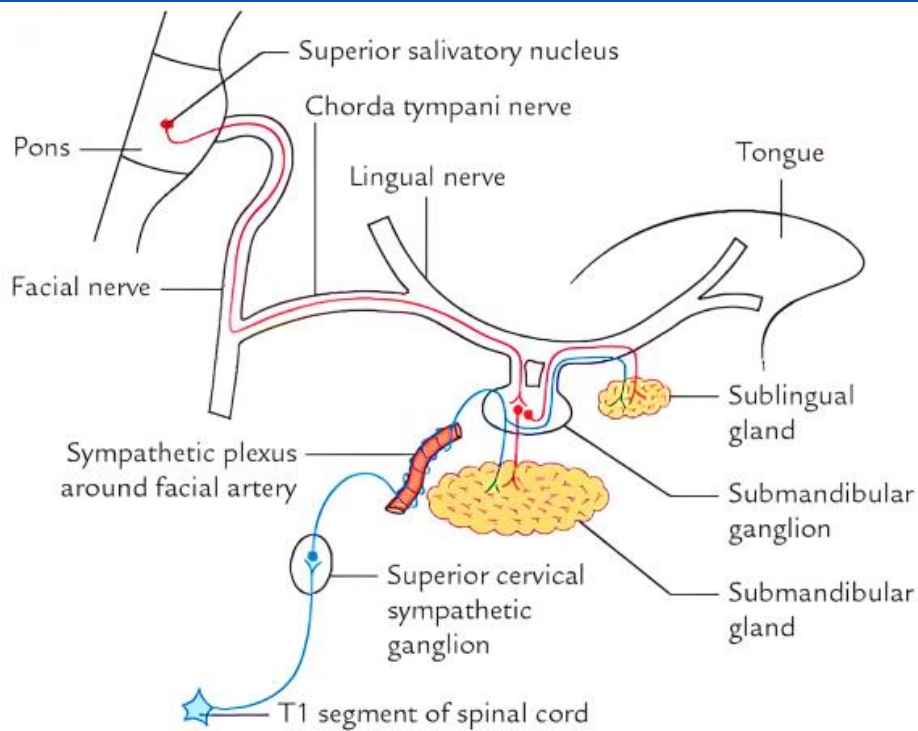
2) **SYMPATHETIC ROOT** -> SYMPATHETIC PLEXUSES AROUND FACIAL ARTERY



3) **SENSORY ROOT** -> DERIVED FROM LINGUAL NERVE

BRANCHES

- 5 TO 6 -> TO SUPPLY SUBMANDIBULAR GLAND
- OTHERS - JOIN SUBLINGUAL NERVE TO SUPPLY SUBLINGUAL & ANTERIOR LINGUAL GLAND



OTIC GANGLIA

SMALL PARASYMPATHETIC GANGLION CONNECTED TO MANDIBULAR DIVISION OF TRIGEMINAL NERVE, PROVIDE RELAY STATION TO SECRETOMOTOR FIBERS TO PAROTID GLAND

-TOPOGRAPHICALLY CONNECTED TO -> MANDIBULAR NERVE

FUNCTIONALLY CONNECTED TO -> GLOSSOPHARYNGEAL NERVE

LOCATION - SIZE -> PIN HEAD

SITUATION -> INFRATEMPORAL FOSSA

RELATION - ANTERIOR -> MEDIAL PTERYGOID MUSCLE

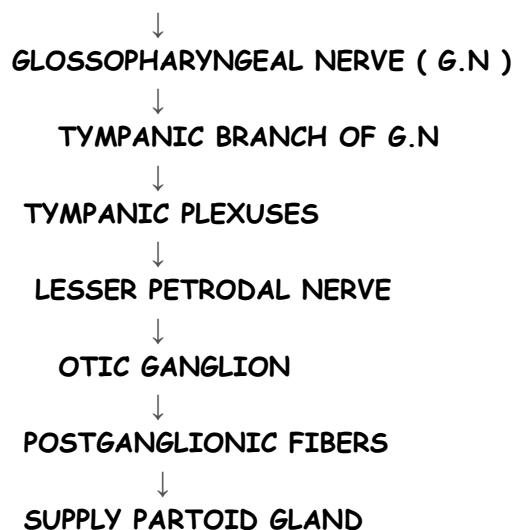
POSTERIOR -> MIDDLE MENINGEAL ARTERY

MEDIAL -> TENSOR PALATI MUSCLE

LATERAL -> MANDIBULAR NERVE

ROOT ->

1) PARASYMPATHETIC ROOT -> INFERIOR SALIVATORY NUCLEUS





2) **SYMPATHETIC ROOT** -> SYMPATHETIC PLEXUSES AROUND MIDDLE MENINGEAL ARTERY

T1 & T2 SPINAL SEGMENTS (PREGANGLIONIC FIBERS)

SUPERIOR CERVICAL SYMPATHETIC GANGLION

PLEXUS AROUND MIDDLE MENINGEAL ARTERY

PASS THROUGH GANGLION WITHOUT RELAY

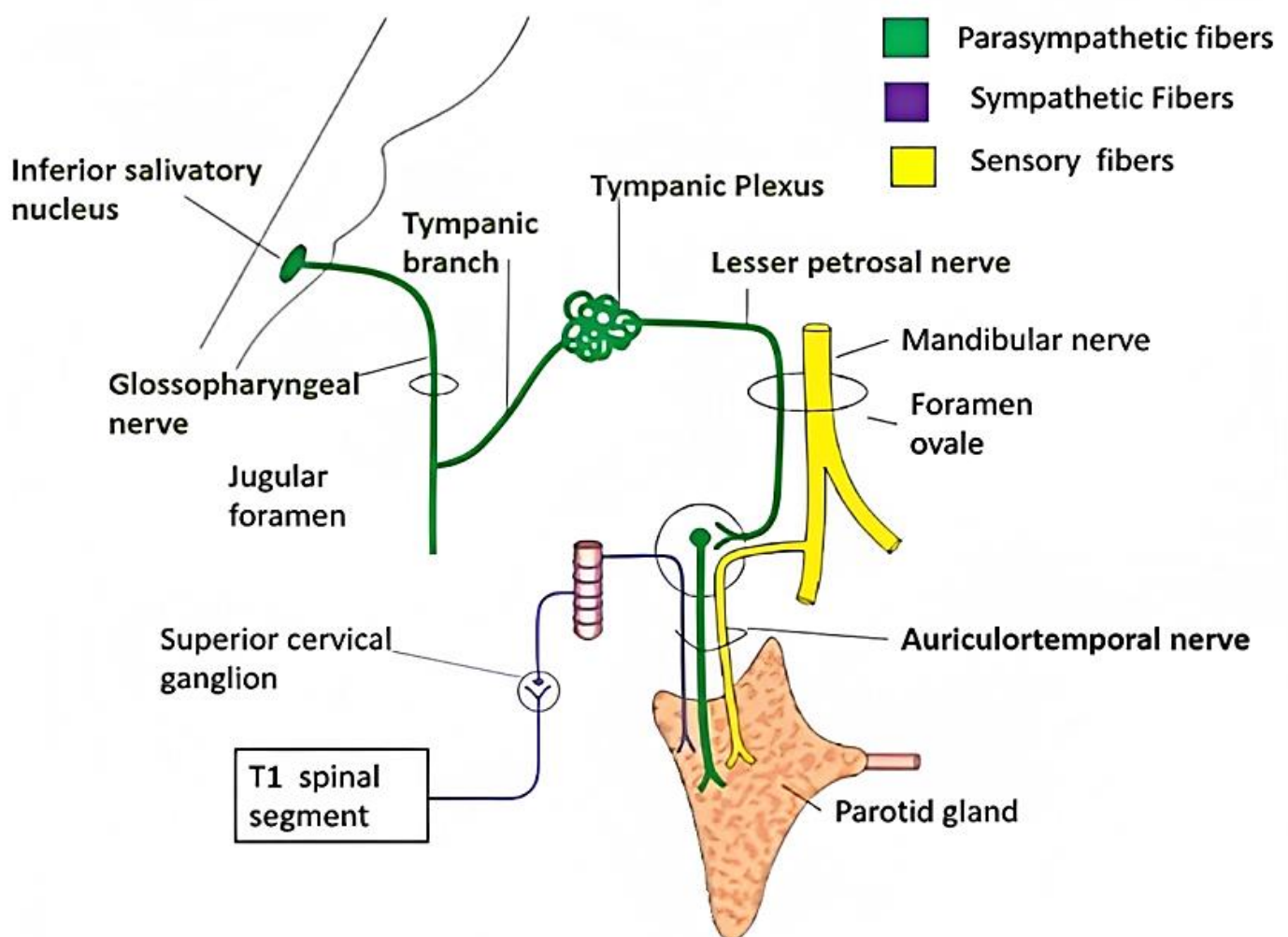
SUPPLY PAROTID GLAND

1) **SENSORY ROOT** -> FROM AURICULOTEMPORAL NERVE

4) **SOMATIC NERVE** -> NERVE TO MEDIAL PTERYGOID

BRANCHES

- POST GANGLIONIC & PARASYMPATHETIC AND POST GANGLIONIC SYMPATHETIC & SENSORY, ALL SUPPLY PAROTID GLAND THROUGH AURICULOTEMPORAL NERVE





CILIARY GANGLIA

- PERIPHERAL PARASYMPATHETIC GANGLION -> CONNECTED WITH NASOCILIARY NERVE

- TOPOGRAPHICALLY CONNECTED TO -> NASOCILIARY NERVE

FUNCTIONALLY CONNECTED TO -> FACIAL NERVE

LOCATION -> MINUTE BODY LYING NEAR APEX OF ORBIT BETWEEN OPTIC AND LATERAL RECTUS MUSCLE

ROOT ->

1) **PARASYMPATHETIC ROOT** -> EDINGER WESTPHAL NUCLEUS

↓
3RD CRANIAL NERVE

↓
NERVE TO INFERIOR OBLIQUE

↓
BRANCH TO CILIARY GANGLION

↓
SHORT CILIARY NERVE SUPPLIES CILIARIS & CONSTRICTOR PAPILLAE MUSCLE

2) **SYMPATHETIC ROOT** -> SYMPATHETIC PLEXUSES AROUND FACIAL ARTERY

↓
FIRST THORACIC SPINAL SEGMENT (PREGANGLIONIC FIBERS)

↓
SUPERIOR CERVICAL SYMPATHETIC GANGLION

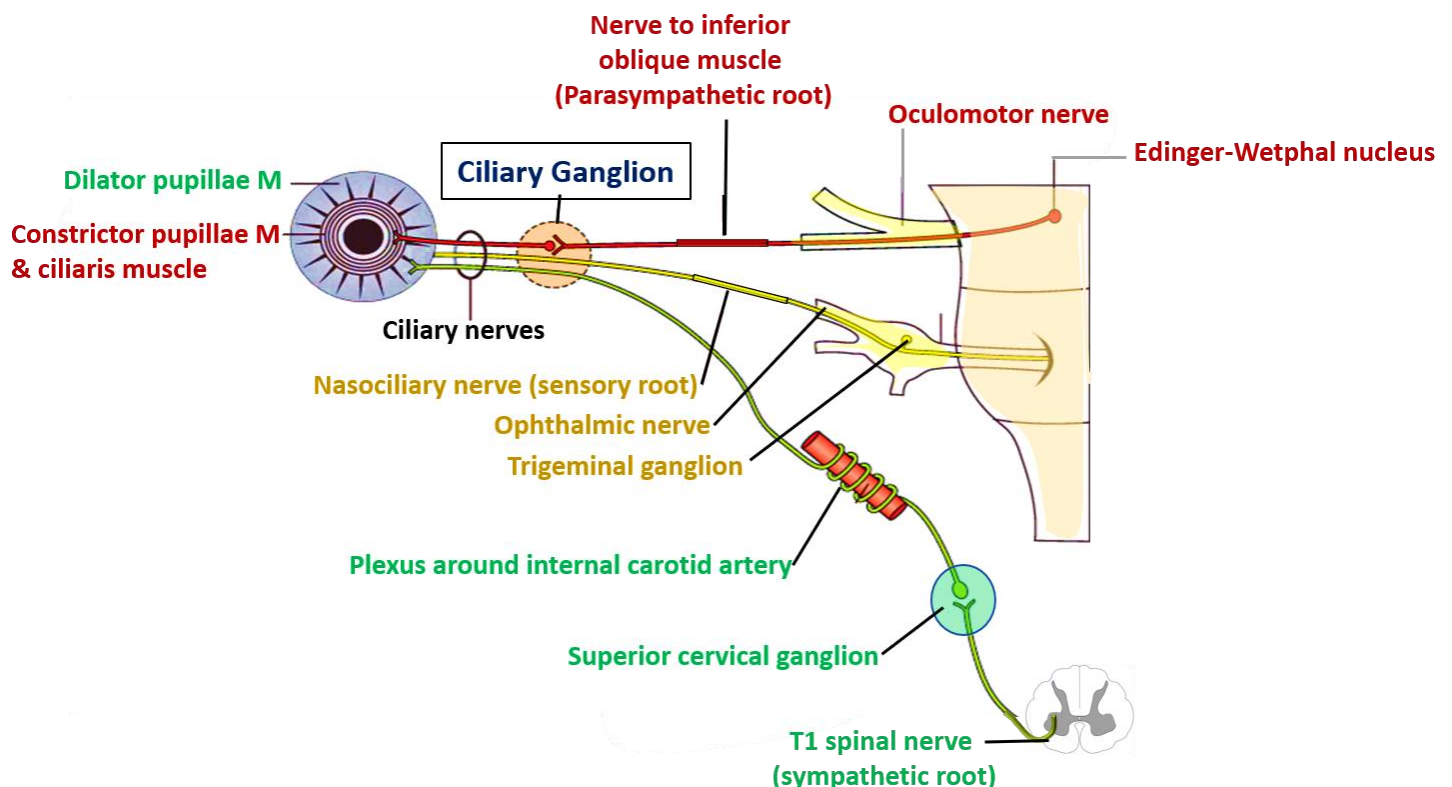
↓
PLEXUS AROUND FACIAL ARTERY

↓
PASS THROUGH GANGLION WITHOUT RELAY

↓
SUPPLY SUBMANDIBULAR AND SUBLINGUAL SALIVARY GLAND

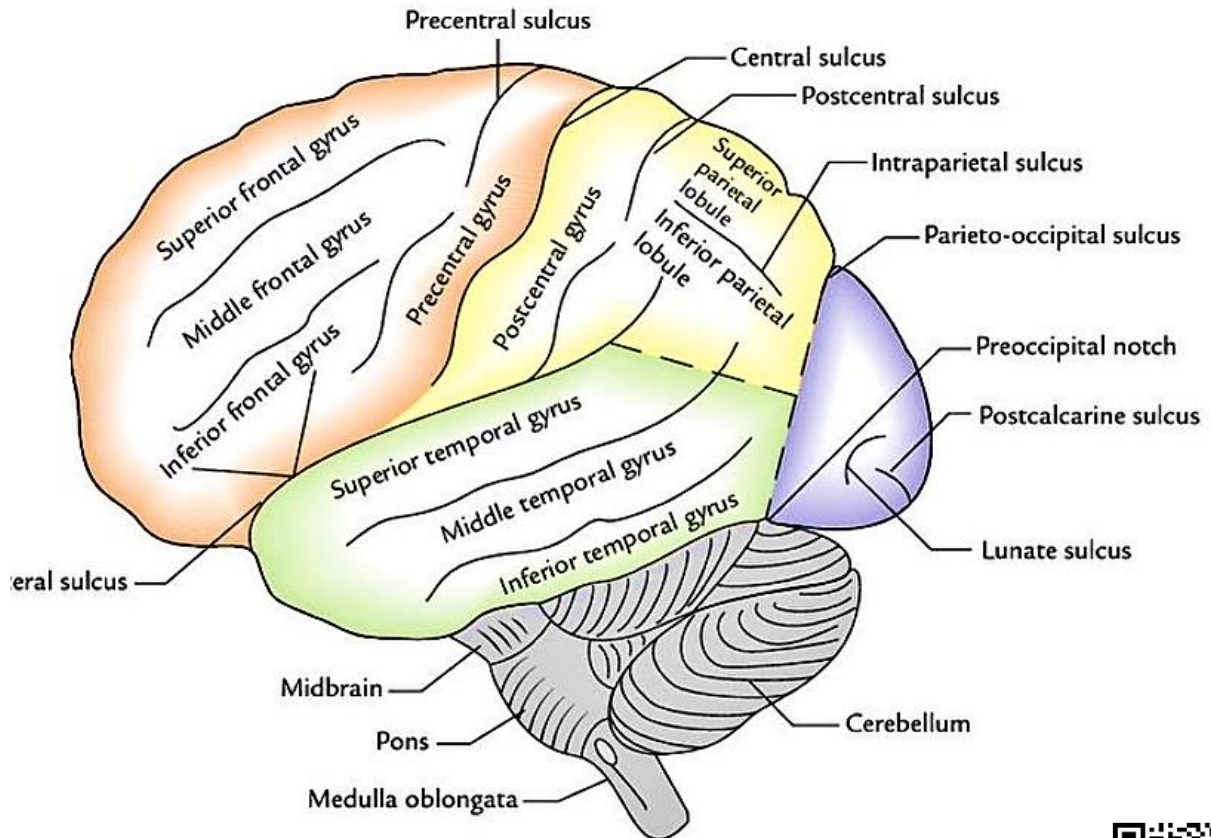
3) **SENSORY ROOT** -> DERIVED FROM NASOCILIARY NERVE

BRANCHES -> SHORT CILIARY NERVE (8-10)

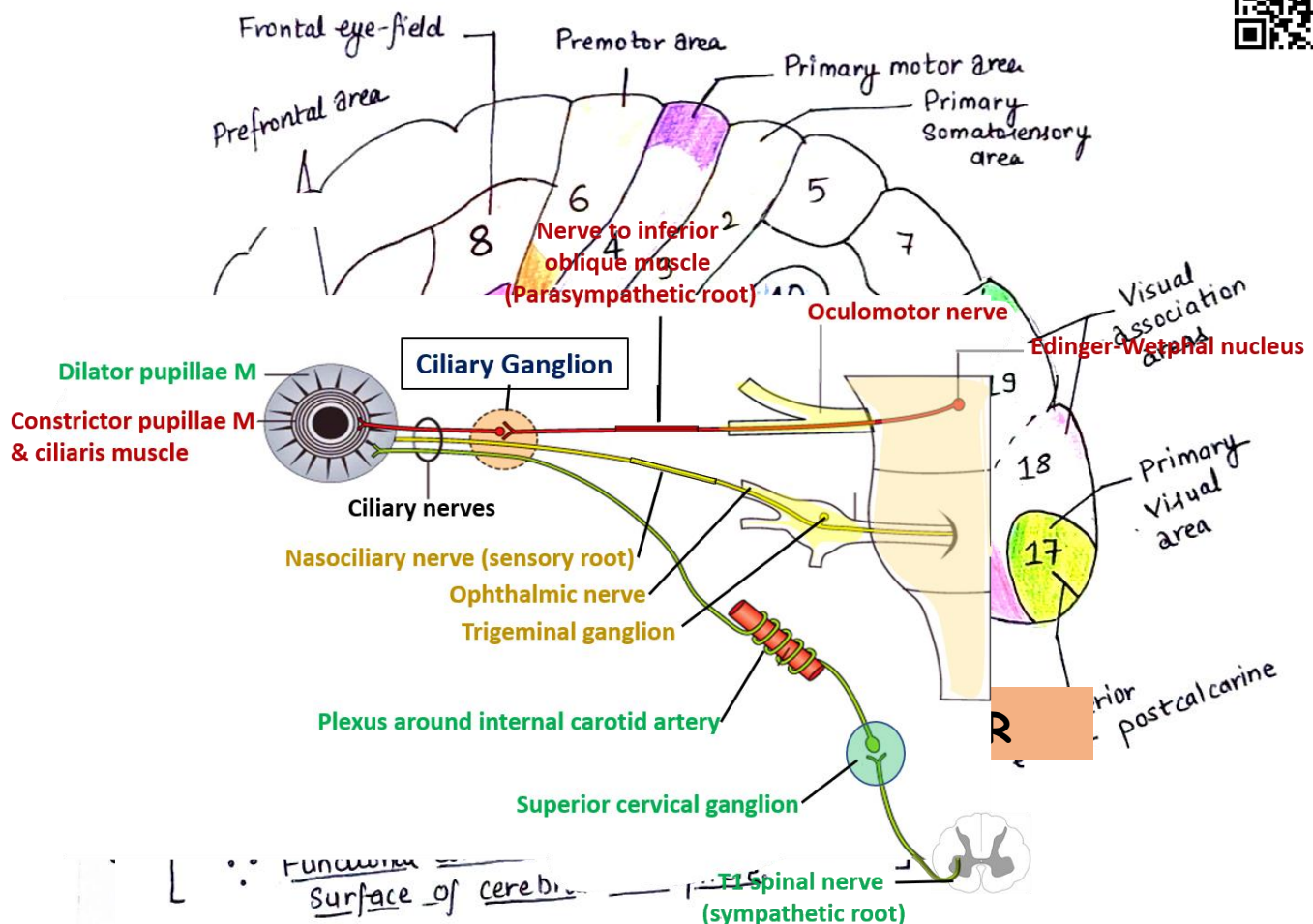




SUPEROLATERAL SURFACE OF SURFACE



ROOTS & DISTRIBUTION OF CILIARY GANGLION





CEREBELLUM ANATOMY

- CEREBELLUM IS LARGEST PART OF HIND BRAIN

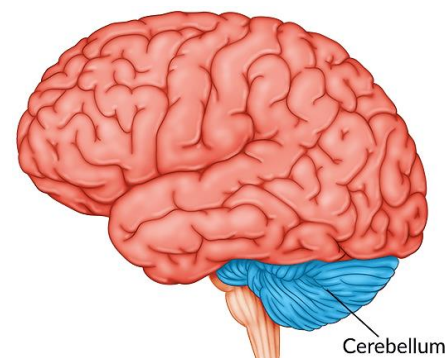
- LOCATED IN **POSTERIOR CRANIAL FOSSA** BEHIND PONS AND MEDULLA
- EACH HEMISPHERE OF CEREBELLUM CONNECTED TO BRAINSTEM BY 3 PAIR OF 19 LARGE FIBRE TRACT CALLED CEREBELLAR PEDUNCLES

FUNCTION

- > MAINTENANCE OF EQUILIBRIUM
- > REGULATION OF MUSCLE TONE
- > COORDINATION OF SOMATIC MOTOR ACTIVITIES

EXTERNAL FEATURES

- PARTS - 3 PART -> 2X LATERAL HEMISPHERICAL LOBES
 - > 2X CEREBELLAR HEMISPHERE
 - > NARROW MEDIAN V-LIKE PARTITION - VERMIS
- SURFACE -> SUPERIOR SURFACE
 - > INFERIOR



NOTCHES

- ANTERIOR ASPECT OF CEREBELLUM MARKED BY WIDE SHALLOW **ANTERIOR CEREBELLAR NOTCH**
- **POSTERIOR CEREBELLAR NOTCH** IS, DEEP AND NARROW

FISSURE - **HORIZONTAL FISSURE** → ALONG LATERAL AND POSTERIOR MARGIN OF CEREBELLUM MARKS JUNCTION B/W → SUPERIOR AND INFERIOR SURFACE OF CEREBELLUM.

- POSTEROLATERAL SURFACE → INFERIOR SURFACE OF CEREBELLUM
 - SEPARATE - FLOCCULONODULAR LOBE FROM REST OF CEREBELLUM
- **V-SHAPED FISSURE PRIMA** - DIVIDE CEREBELLUM INTO ANTERIOR AND POSTERIOR LOBES

SUB-DIVISION OF CEREBELLUM:

- ANATOMICAL SUB-DIVISIONS - INTO 3X LOBES - ANTERIOR
- POSTERIOR
 - FLOCCULONODULAR

- 1) ANTERIOR LOBE - LIE ON SUPERIOR SURFACE ANTERIOR TO FISSURE PRIMA
- 2) POSTERIOR/MIDDLE LOBE - BETWEEN FISSURE PRIMA AND POSTEROLATERAL
- 3) FLOCCULONODULAR LOBE - SMALLEST OF ALL
 - LIES ON INFERIOR SURFACE

MORPHOLOGICAL SUB-DIVISIONS

BASED ON PHYLOGENETIC AND FUNCTIONAL CRITERIA

1) ARCHICEREBELLUM (VESTIBULAR CEREBELLUM)

- OLDEST PART OF CEREBELLUM
- CONSIST OF FLOCCULO NODULAR AND LINGULA
- FUNCTION- MAINTENANCE OF EQUILIBRIUM, TONE

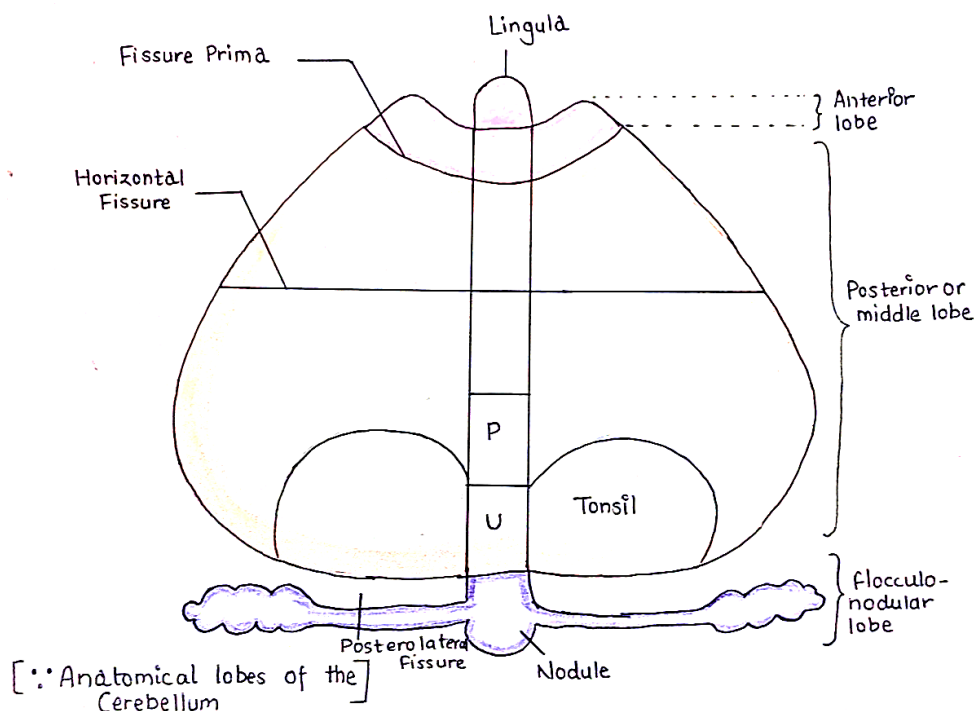
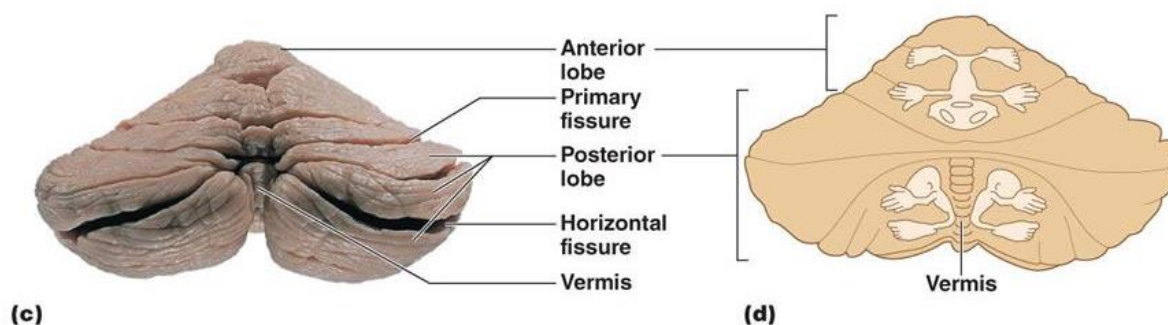
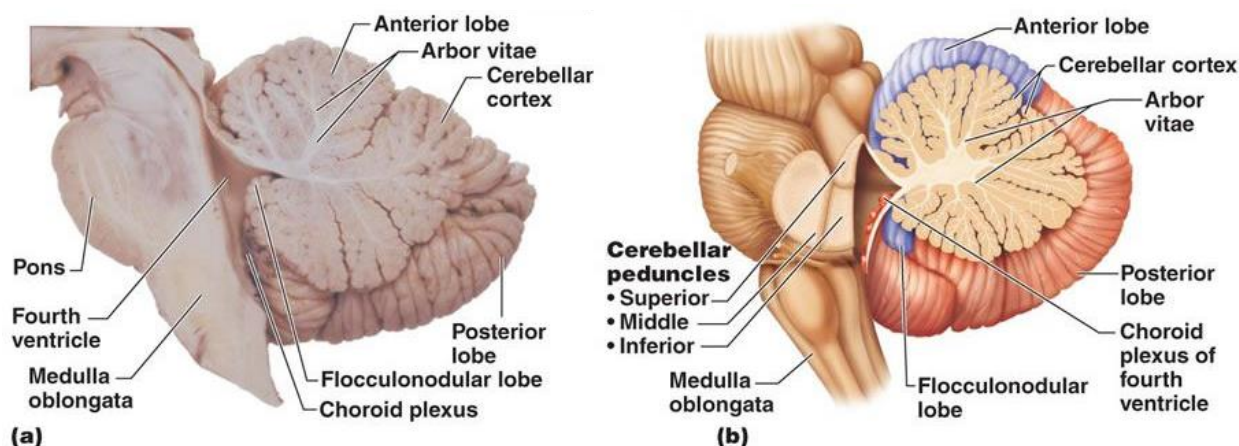


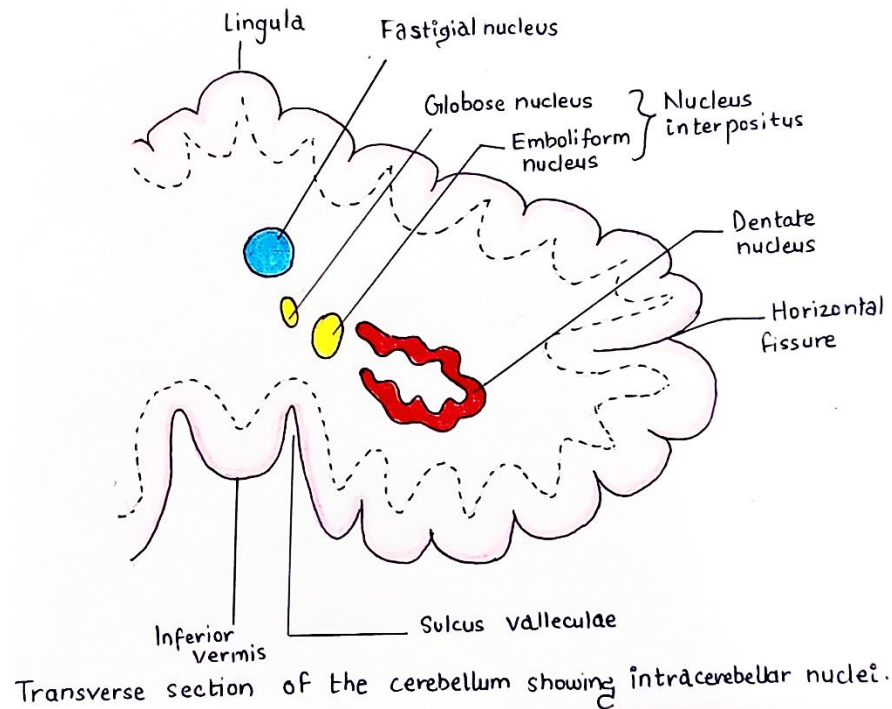
2) PALEO CEREBELLUM (SPINAL CEREBELLUM) -

- PHYLOGENETICALLY, IT IS NEXT PART OF CEREBELLUM TO APPEAR
- CONSIST OF ANTERIOR LOBE (EXCEPT LINGULA) AND PYRAMID AND UVALA OF INFERIOR VERMIS
- FUNCTION -> CONCERNED WITH TONE, POSTURE AND CRUDE MOVEMENT OF LIMB

3) NEOCEREBELLUM (CEREBRAL CEREBELLUM) -

- > PHYLOGENETICALLY-MOST RECENT PART OF CEREBELLUM TO DEVELOP
- > MADE UP OF- MIDDLE LOBE, LARGE PART OF CEREBELLUM
- > CHIEFLY CORTICO PONTOCEREBELLAR IN CONNECTION
- > CONCERNED WITH SMOOTH PERFORMANCE OF SILENT VOLUNTARY MOVEMENT





THIRD VENTRICLE



- TWO IRREGULAR CAVITIES IN CEREBRAL HEMISPHERE
- COMMUNICATION THIRD VENTRICLE THROUGH - **INTERVENTRICULAR FORAMEN** (FORAMEN OF MONRO)
- DIVIDE - CENTRAL PART AND 3 HORNS - ANT, POST, INF. HORN

CENTRAL PART

- **EXTEND INTERVENTRICULAR FORAMEN TO SPLENIUM OF CORPUS CALLOSUM**
- **BOUNDARIES** - **ROOF** -> **CORPUS CALLOSUM**
FLOOR -> **BODY OF CAUDATE NUCLEUS**
-> **THALAMOSTRIATE VEIN & THALAMUS**
MEDIAL WALL -> **SEPTUM PELLUCIDUM**
-> **BODY OF FORNIX**

1) ANTERIOR HORN :-

- **EXTEND** - FRONT OF INTER VENTRICULAR FORAMEN EXTEND INTO FRONTAL LOBE
- BOUNDARIES** - **ANTERIOR** -> **POSTERIOR SURFACE OF GENU OF CORPUS CALLOSUM**
-> **ROSTRUM OF CORPUS CALLOSUM**
- **ROOF** -> **CORPUS CALLOSUM**
- **FLOOR** -> **CAUDATE NUCLEUS**
- **MEDIAL** -> **SEPTUM PELLUCIDUM, COLUMN OF FORNIX**

2) POSTERIOR HORN

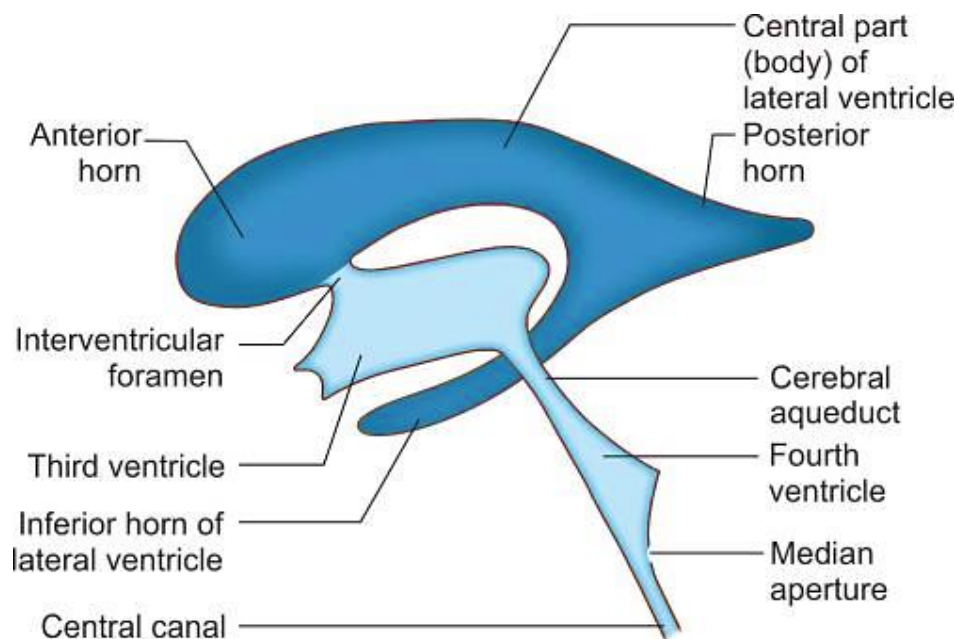
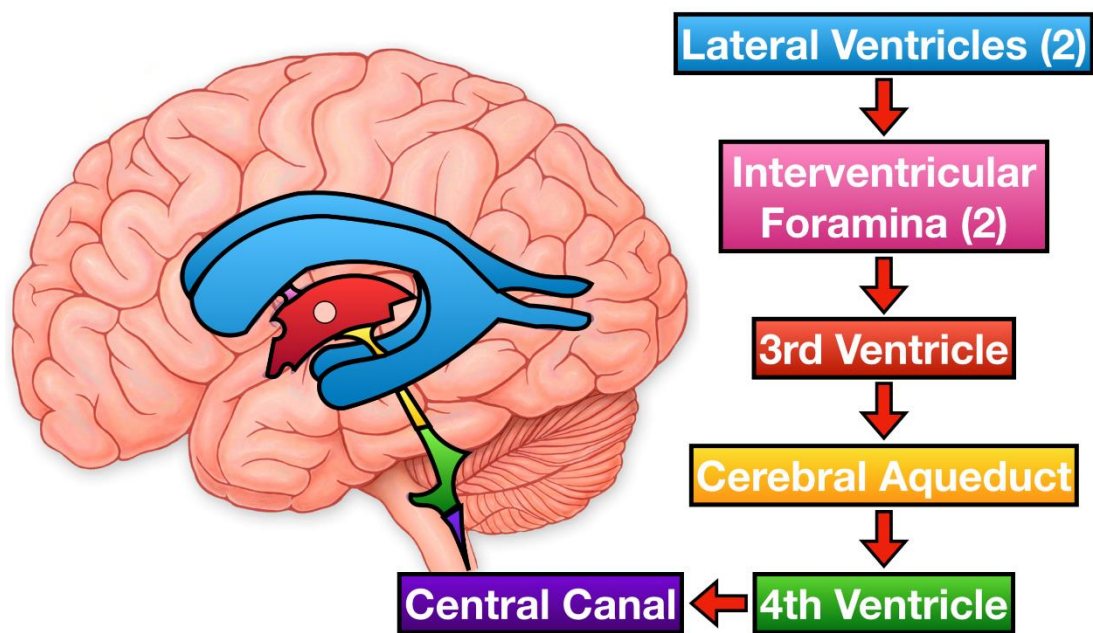
- **LIE BEHIND SPLENIUM OF CORPUS CALLOSUM AND EXTEND INTO OCCIPITAL LOBES**
- BOUNDARIES** -> **FLOOR AND MEDIAL WALL** -> **FORCEP MAJOR**
-> **ROOF AND LATERAL WALL** -> **TAPETUM OF OPTIC RADIATION**

3) INFERIOR HORNS

- **BEGINS AT JUNCTION OF CENTRAL PART WITH POSTERIOR HORN INTO TEMPORAL LOBE**



BOUNDARIES -> ROOF AND LATERAL WALL -> TAIL OF CAUDATE NUCLEUS, AMYGDALOID
FLOOR -> HIPPOCAMPUS



THIRD VENTRICLE

DIENCEPHALON CAVITY IS A → MEDIAN CLEFT B/W TWO THALAMI
THIRD AND LATERAL VENTRICLE SECRETE CEREBRO-SPINAL FLUID

COMMUNICATIONS -

ANTEROSUPERIORLY -> LATERAL VENTRICLE THROUGH, FORAMEN OF MONRO.
POSTEROINFERIORLY -> FOURTH VENTRICLE THROUGH, CEREBRAL AQUEDUCT

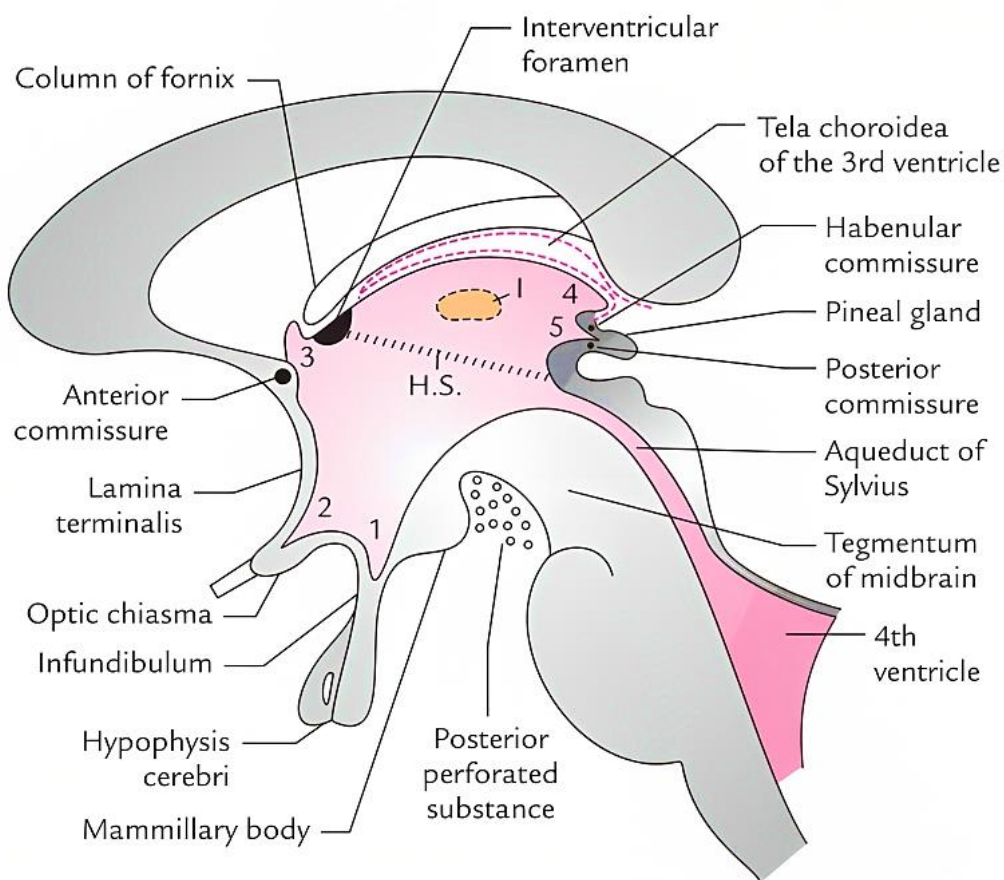
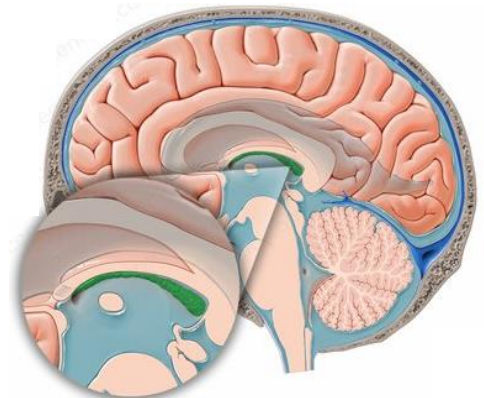


**BOUNDARIES**

- ANTERIOR WALL - LAMINA TERMINALIS**
 - **ANTERIOR COMMISSURE**
- POSTERIOR WALL - PINEAL BODY**
 - **POSTERIOR COMMISSURE**
 - **CEREBRAL AQUEDUCT**
- ROOF - BODY OF FORNIX**
 - **TELA CHOROIDEA**
- FLOOR - MAMMILLARY BODIES**
 - **INFUNDIBULUM (PITUITARY STALK)**
 - **OPTIC CHIASMA**
 - **TEGMENTUM OF MIDBRAIN**
- LATERAL WALL - MEDIAL SURFACE OF THALAMUS**
 - **HYPOTHALAMUS**

RECESSES - RECESSES ARE EXTENSIONS OF CAVITY

- **SUPRAPINEAL**
- **PINEAL**
- **INFUNDIBULAR**
- **OPTIC**





FOURTH VENTRICLE

- CAVITY OF HIND BRAIN

- TENT -> SHAPED SPACE BETWEEN PONS AND UPPER PART OF MEDULLA OBLONGATA
- STRUCTURAL LAYERS: FLOOR IS LINED BY - EPENDYMA
 - THIN LAYER OF NEUROGLIA
 - LAYER OF GREY MATTER

BOUNDARIES

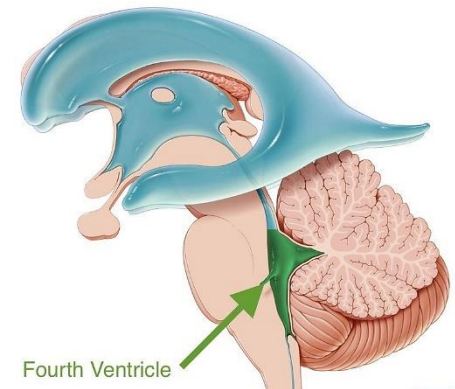
1) SUPEROLATERALLY -> SUPERIOR CEREBELLAR PEDUNCLE

2) INFEROLATERALLY -> INFERIOR CEREBELLAR PEDUNCLE

- GRACILE TUBERCLES
- CUNEATE TUBERCLE

3) FLOOR -> ALSO CALLED RHOMBOID FOSSA

- > FORMED BY - DORSAL SURFACE OF LOWER PONS
- DORSAL UPPER OF MEDULLA OBLONGATA



Fourth Ventricle

-PART -> IT IS DIVISIBLE INTO

- > UPPER TRIANGULAR PART FORMED BY ->DORSAL SURFACE OF PONS
- > LOWER TRIANGULAR PART FORMED BY -> DORSAL SURFACE OF MEDULLA
- > INTERMEDIATE PART ->JUNCTION OF PONS AND MEDULLA
 - > PART IS MARKED BY TRANSVERSELY RUNNING FIBRE -> STRIA MEDULLARIS

FEATURE OF FLOOR

- DORSAL MEDIAN SULCUS - DIVIDE FLOOR -> INTO 2 SYMMETRICAL HALVES
- SULCUS LIMITANS - DIVIDE EACH HALF - MEDIAN & LATERAL EMINENCE
- SULCUS LIMITANS PRESENTS DEPRESSION- AT CRANIAL END CALLED - SUPERIOR FOVEA
 - AT CAUDAL END CALLED - INFERIOR FOVEA
- MEDIAL EMINENCE -> FACIAL COLLICULUS - DEEP TO F.C IS GENU OF FACIAL NERVE
- UPPERMOST PART OF SULCUS LIMITANS -> BLUISH IN COLOUR -> CALLED LOCUS COERULEUS
- DESCENDING FROM INFERIOR FOVEA SULCUS RUN OBLIQUE - TOWARD ->MIDLINE DIVIDES MEDIAL EMINENCE INTO 2 TRIANGLE - HYPOGLOSSAL & VAGAL TRIANGLE

4) ROOF -> DIAMOND SHAPE & DIVIDE INTO SUPERIOR, INFERIOR PART

SUPERIOR/CRANIAL PART - FORM BY -> SUPERIOR CEREBELLAR PEDUNCLES

- > SUPERIOR MEDULLARY VELUM

- SCP EMERGING -> WHITE MATTER OF CEREBELLUM REACH, INFERIOR COLLICULI
- SMU MADE UP OF -> NERVOUS TISSUE B/W SCP

INFERIOR / CAUDAL PART FORM BY - VENTRICULAR EPENDYMA AND

- DOUBLE FLOD OF PIA MATTER

COMMUNICATION: SUPERIORLY -> CEREBRAL AQUEDUCT

INFERIORLY -> CENTRAL CANAL



OPENINGS IN ROOF - 3 OPENING - 2 LATERAL - FORAMEN OF MAGENDIE
- 1 MEDIAN - FORAMINA OF LUSCHKA

RECESSES OF FOURTH VENTRICLE

- 2X LATERAL RECESSES
- 1X MEDIAN DORSAL RECESSES
- 2X LATERAL DORSAL RECESSES

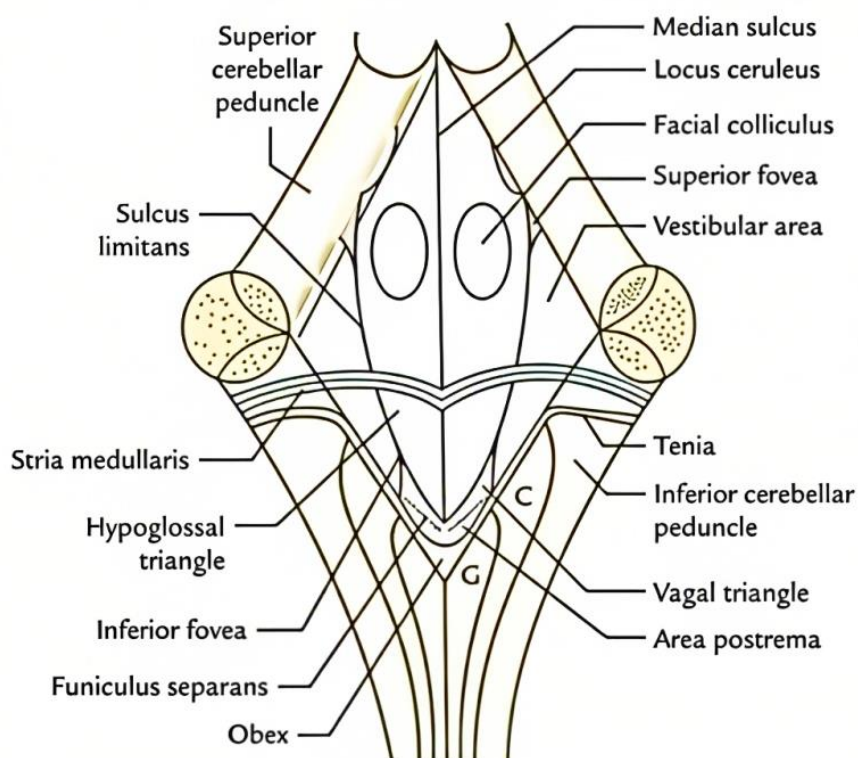
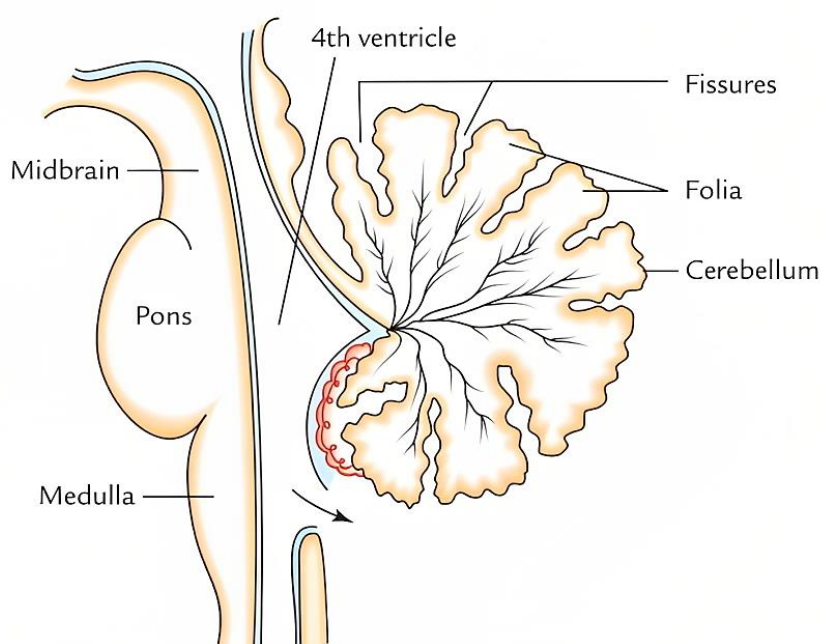
CLINICAL ANATOMY

TUMOURS OF FOURTH VENTRICLE

TUMOURS IN THE REGION OF 4TH VENTRICLE ARE NOT UNCOMMON

TUMOURS OF FOURTH VENTRICLE ARE EPENDYMOMA AND MEDULLO BLASTOMA

THE MOST COMMON TUMOUR IN THIS REGION IS MEDULLO BLASTOMA





THALAMUS



THALAMUS → LARGE MASS OF GREY MATTER

4CM IN EACH - TRANSVERSE

- VERTICAL
- ANTERO-POSTERIOR DIAMETER

SITUATED → IN LATERAL WALL OF 3RD VENTRICLE & FLOOR OF CENTRAL PART OF → LATERAL VENTRICLE

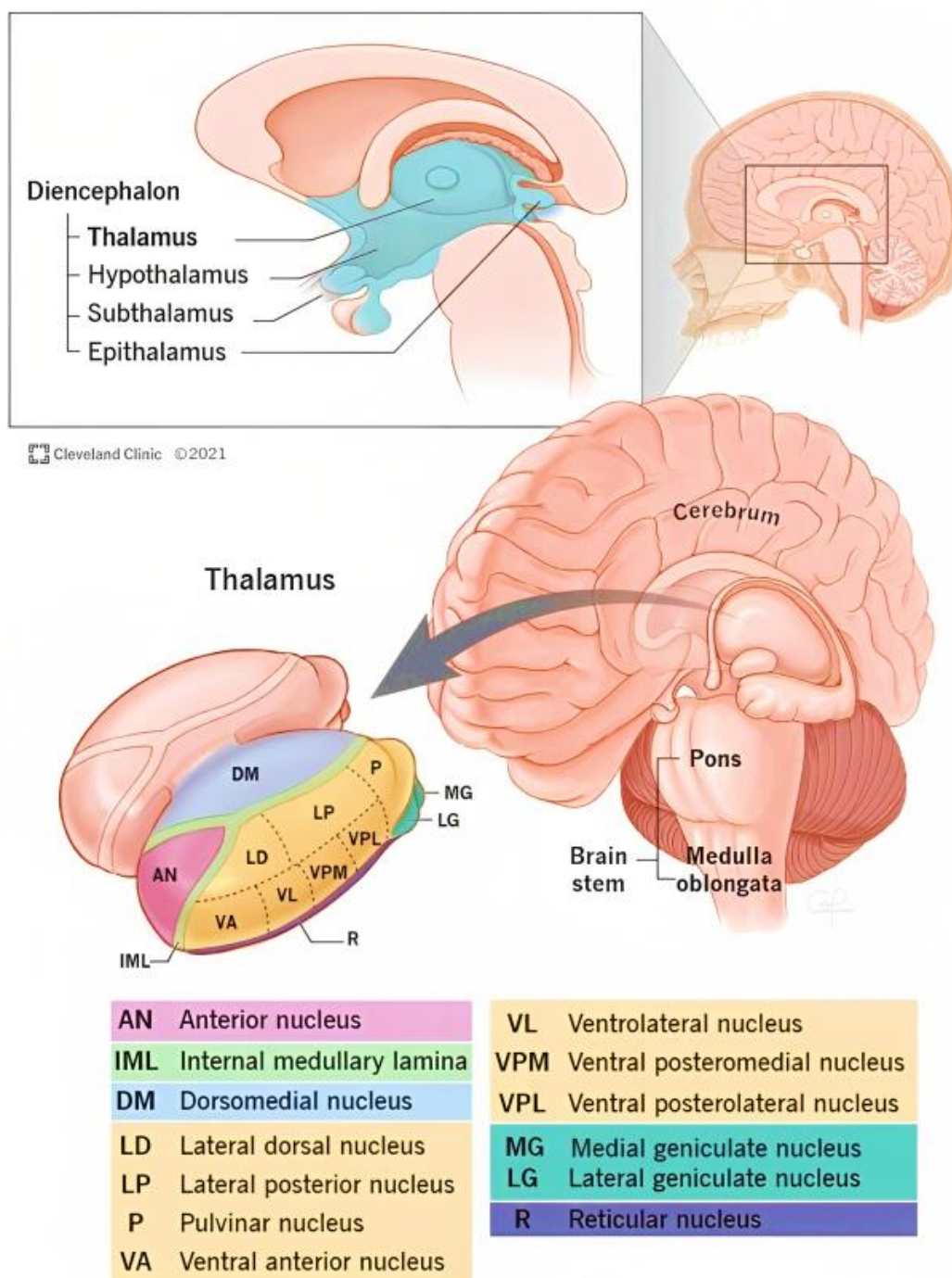
STRUCTURE & NUCLEI OF THALAMUS

1. WHITE MATTER → EXTERNAL MEDULLARY LAMINA → COVER LATERAL SURFACE

-> INTERNAL MEDULLARY LAMINA → DIVIDE THALAMUS → IN 3 PARTS

- > ANTERIOR
- > MEDIAL
- > LATERAL

2. GREY MATTER - DIVIDED INTO 7 NUCLEI





WHITE MATTER OF CEREBRUM



- WHITE MATTER OF CEREBRUM CONSIST OF MYELINATED FIBERS
- WHICH CONNECT VARIOUS PART OF CORTEX TO ONE ANOTHER

- FIBERS ARE CLASSIFIED INTO 3X - ASSOCIATION FIBERS (ARCUATE)
 - COMMISSURAL FIBERS
 - PROJECTION FIBERS
- CONNECT DIFFERENT CORTICAL AREA OF SAME HEMISPHERE TO ONE ANOTHER
- SUBDIVIDED INTO 2 GROUP
 - 1) SHORT ASSOCIATION FIBERS - CONNECT, ADJACENT GYRI
 - 2) LONG ASSOCIATION FIBERS - CONNECT, MORE WIDELY SEPARATED GYRI

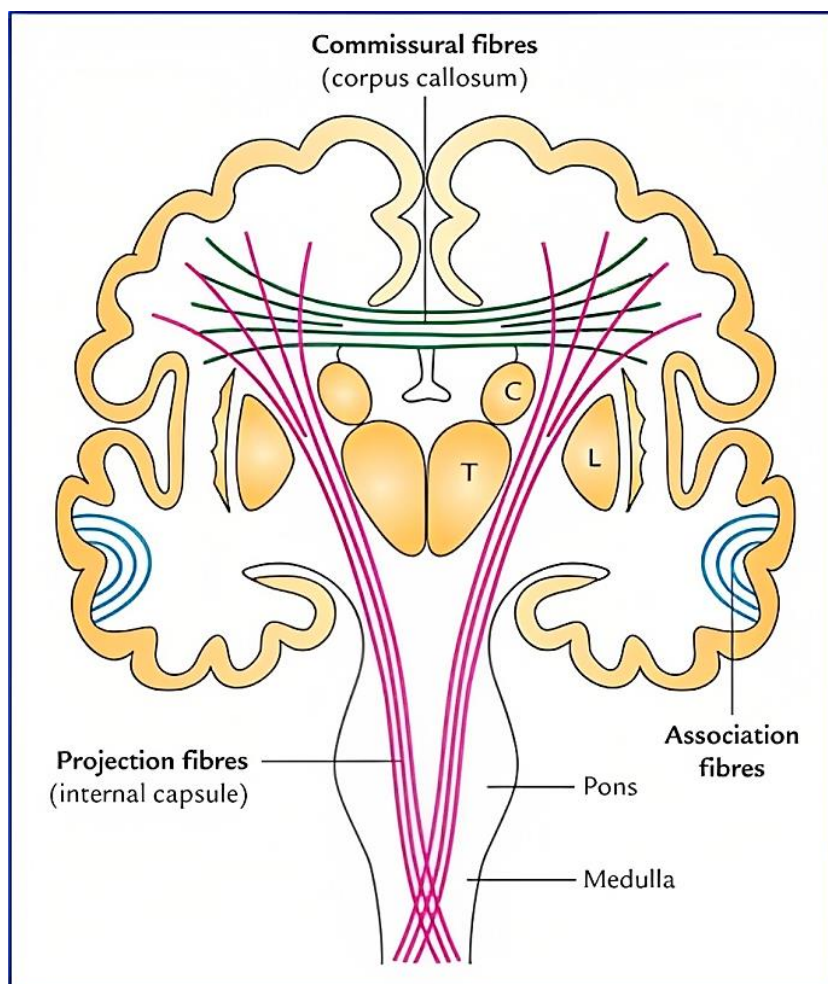
UNCINATE FASCICULUS -> CONNECT TEMPORAL LOBES TO MOTOR SPEECH AREA AND ORBITAL CORTEX

CINGULUM -> CONNECT CINGULATE GYRUS TO PARAHIPPOCAMPAL GYRUS

SUPERIOR LONGITUDINAL FASCICULUS - CONNECT -> FRONTAL LOBES TO OCCIPITAL AND TEMPORAL LOBES

INFERIOR LONGITUDINAL FASCICULUS CONNECT -> OCCIPITAL LOBE TO TEMPORAL LOBES

- 3) COMMISSURE FIBERS - CONNECT - CORRESPONDING PARTS 2 HEMISPHERES
- 4) CORPUS CALLOSUM - CONNECTING CEREBRAL CORTEX OF TWO SIDES
- 5) ANTERIOR COMMISSURE - ARCHIPALLIA OF BOTH SIDES
- 6) POSTERIOR COMMISSURE - SUPERIOR COLLICULI
- 7) COMMISSURE OF FORNIX -> CONNECTING THE CRURA OF FORNIX





CORPUS CALLOSUM

- LARGEST COMMISSURE OF THE BRAIN.
- IT CONSIST OF ABOUT 100 MILLION FIBRES, CONNECT 2 CEREBRAL HEMISPHERE.

PART OF BRAIN CONNECTED

- CONNECTS ALL PART OF CEREBRAL CORTEX OF 2 SIDE EXCEPT, LOWER AND ANTERIOR PART OF TEMPORAL LOBES -> WHICH CONNECT BY ANTERIOR COMMISSURE

PART OF CARPUS CALLOSUM

1) GENU - 4CM BEHIND THE FRONTAL POLE

- RELATION - ANTERIORLY - ANTERIOR CEREBRAL ARTERIES
- POSTERIORLY - ANTERIOR HORN OF LATERAL VENTRICLE

2) ROSTRUM - DIRECTED - DOWNWARD AND BACKWARD FROM GENU

- END BY JOINING → LAMINA TERMINALIS IN FRONT ANTERIOR COMMISSURE
- RELATION - SUPERIOR TO ANTERIOR HORN

3) TRUNK - MIDDLE PART, BETWEEN GENU AND SPLENIUM OVERLAPPED BY → CINGULATE GYRUS.

4)SPLENIUM -6CM FRONT OF OCCIPITAL POLE

- RELATION - INFERIOR SURFACE - TELA CHOROIDEA
- SUPERIOR SURFACE- INFERIOR SAGITTAL SINUS



FIBERS OF CORPUS CALLOSUM

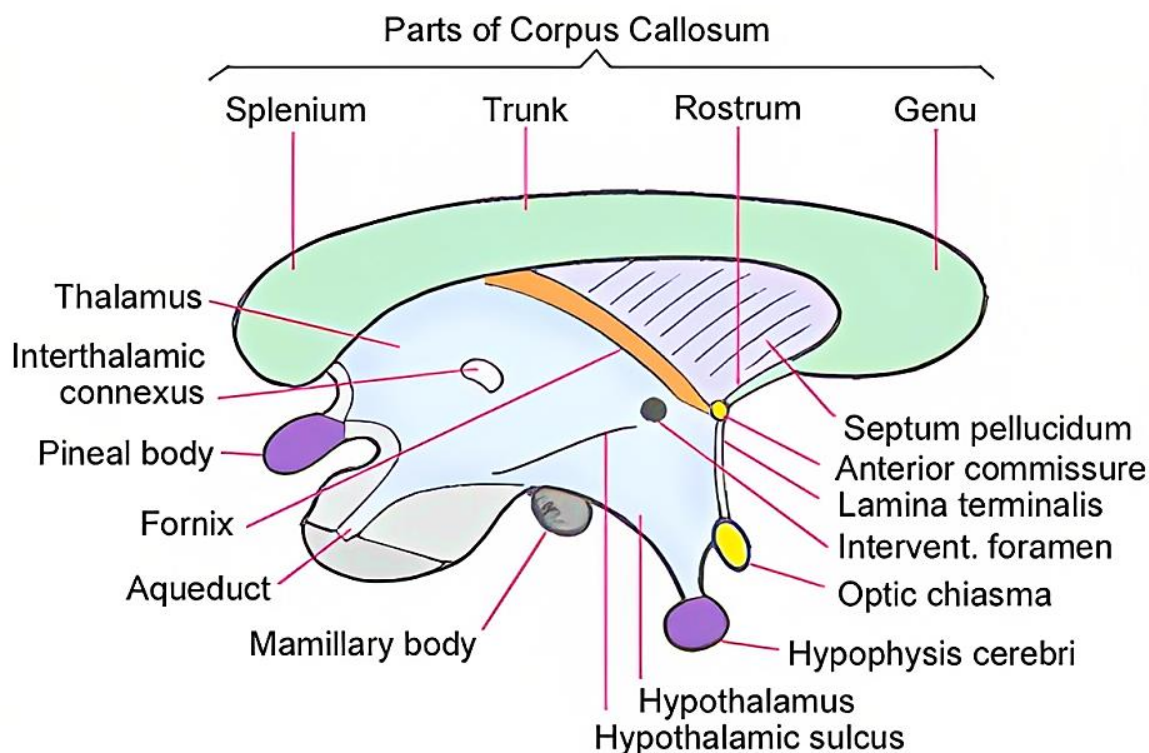
ROSTRUM CONNECT - ORBITAL SURFACE OF 2X FRONTAL LOBES

FORCEPS MINOR CONNECT - 2 FRONTAL LOBES (MADE UP OF FIBERS OF GENU)

FORCEPS MAJOR CONNECT - 2 OCCIPITAL LOBES (MADE UP OF FIBERS OF SPLENIUM)

TAPETUM -> FORMED BY SOME FIBERS FROM TRUNK & SPLENIUM OF CORPUS

- IT'S FORM - ROOF AND LATERAL WALL OF POSTERIOR HORN
- > LATERAL WALL OF INFERIOR HORN





INTERNAL CAPSULE

- LARGE BAND OF FIBERS IN - INFEROMEDIAL PART OF EACH CEREBRAL HEMISPHER
- CONTAINS FIBERS GOING TO AND COMING FROM CEREBRAL CORTEX
- WHEN TRACED UPWARD, FIBERS OF CAPSULE DIVERGE AND CONTINUOUS WITH CORONA RADIATA
- WHEN TRACED DOWNWARD, ITS FIBERS CONVERGE AND CONTINUE- WITH - CRUS CEREBRI OF MIDBRAIN

INTERNAL CAPSULE DIVIDED INTO

- 1) ANTERIOR LIMB LIE - BETWEEN HEAD OF CAUDATE NUCLEUS AND LENTIFORM NUCLEUS
- 2) GENU BEND - BETWEEN ANTERIOR AND POSTERIOR LIMB
- 3) POSTERIOR LIMB → BETWEEN THALAMUS AND LENTIFORM NUDEI
- 4) SUB LENIFARM PART - LIE BELOW LENTI FARM NUDEUS
- 5) RETROLENTIFORM PART - LIE BEHIND LENTIFORM NUCLEUS

RELATION

- MEDIANLY - HEAD OF CAUDATE NUCLEUS & THALAMUS
- LATERALLY - LENTIFORM NUCLEUS

FIBERS OF INTERNAL CAPSULE

- 1) MOTOR FIBERS - CORTICOPONTINE
FRONTOPONTINE
PARIETOPONTINE
TEMPOROPONTINE

- 2)-PYRAMIDAL FIBERS → CORTICONUCLEAR
→ CORTICOSPINAL

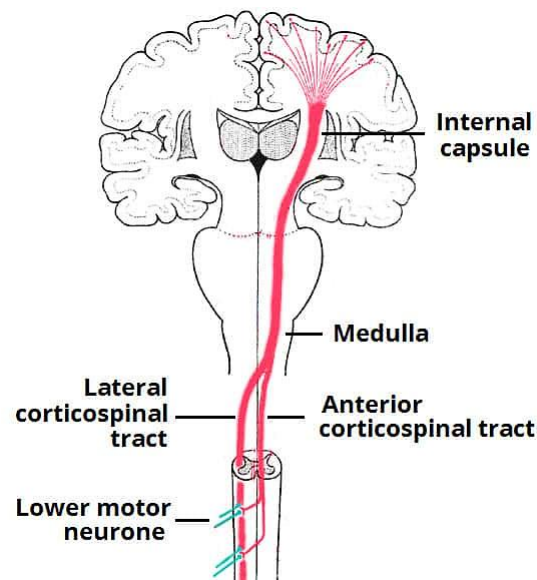
- 3) EXTRAPYRAMIDAL FIBERS - CORTICORUBRAL FIBRE & CORTICOSTRIATE

- 4) SENSORY FIBERS - THALAMOCORTICAL FIBERS FROM THALAMIC RADIATION
 - ANTERIOR THALAMIC RADIATION
 - SUPERIOR THALAMIC RADIATION
 - INFERIOR THALAMIC RADIATION
 - POSTERIOR THALAMIC RADIATION

BLOOD SUPPLY - ANTERIOR LIMB → BRANCH OF ANTERIOR CEREBRAL
→ ARTERY FROM RECCURENT BRANCH

GENU → BRANCH OF INTERNAL CAROTID
→ BRANCH OF POSTERIOR COMMUNICATING

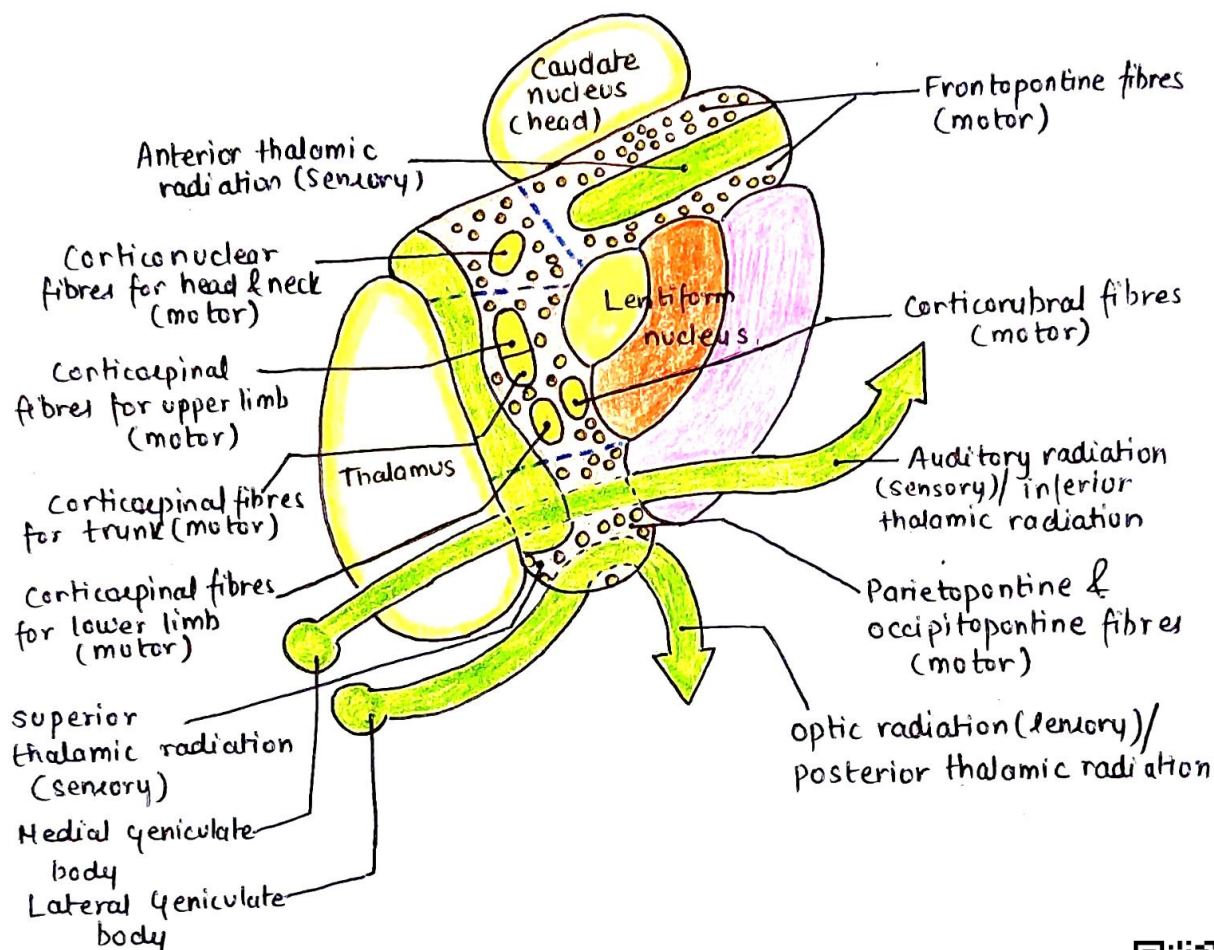
POSTERIOR LIMB → BRANCH OF ANTERIOR CHOROIDAL
→ BRANCH OF POSTERIOR COMMUNICATING
→ BRANCH OF LATERAL AND MEDIAL STRIATE ARTERIES





SUBLENTIFORM → BRANCH OF ANTERIOR CHOROIDAL
→ BRANCH OF POSTERIOR CEREBRAL

RETROLENTIFORM → BRANCH OF POSTERIOR CEREBRAL



BASAL NUCLEI

- BASAL NUCLEI ARE SUBCORTICAL, INTRACEREBRAL MASSES OF GREY MATTER

- INCLUDES 1) CORPUS STRIATUM -

CAUDATE NUCLEUS
PUTAMEN

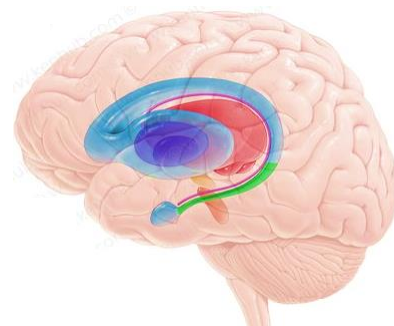
- GLOBUS
- PALLIDUS

2) AMYGDALOID BODY
3) CLAUSTRUM

1) CORPUS STRIATUM

CAUDATE NUCLEUS - C-SHAPED NUCLEUS - SURROUNDED - LATERAL VENTRICLE
- HEAD, BODY AND TAIL

- RELATION - HEAD - FORM FLOOR - ANTERIOR HORN OF LATERAL VENTRICLE
- MEDIAL WALL OF ANT. LIMB OF INTERNAL CAPSULE





- BODY - FORM FLOOR -> CENTRAL PART OF LATERAL VENTRICLE
 - > POSTERIOR LIMB OF INTERNAL CAPSULE
- TAIL - FORM ROOF -> INTERIOR HORN OF LATERAL VENTRICLE
 - > END BY JOINING - AMYGDALOID AT TEMPORAL POLE

LENTIFORM NUCLEUS - LARGE LENS SHAPED NUCLEUS

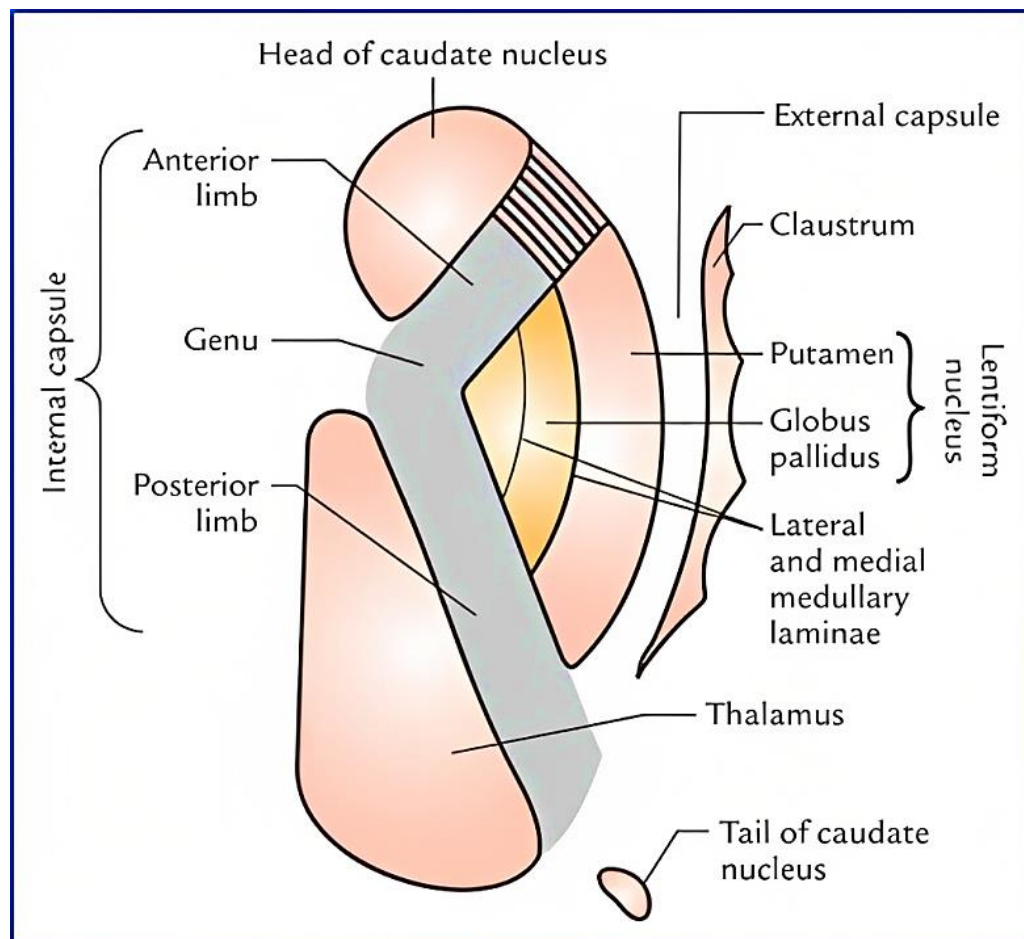
- FORM LATERAL BOUNDARY OF INTERNAL CAPSULE
- 3 SURFACE - LATERAL SURFACE -> EXTERNAL CAPSULE
 - > CLAUSTRUM
 - > INSULA
- MEDIAL SURFACE -> INTERNAL CAPSULE
 - > CAUDATE NUCLEUS
- INFERIOR SURFACE -> SUBLENTIFORM
 - > SEPARATE - OPTIC TRACT
 - > TAIL OF CAUDATE OF NUCLEUS
 - > INFERIOR HORN OF LATERAL VENTRICLE

2) AMYGDALOID BODY

- NUCLEAR MASS IN TEMPORAL LOBE
- ANTEROSUPERIOR TO INFERIOR HORN OF LATERAL VENTRICLE
- TOPOGRAPHICALLY CONTINUOUS WITH TAIL OF CAUDATE
- FUNCTIONALLY RELATED -> STRIA TERMINALIS
- FUNCTION -> EMOTIONAL CONTROL

3) CLAUSTRUM

- SAUCER -> SHAPED NUCLEUS
- SITUATED B/W PUTAMEN AND INSULA



**PREVIOUS YEAR UNIVERSITY QUESTIONS****Q LONG QUESTIONS - 10MARKS**

- 1) DRAW LABELED DIAGRAM TO SHOW T.S OF MID BRAIN AT LEVEL OF SUPERIOR COLLICULUS
- 2) DRAW LABELED DIAGRAM TO SHOW T.S OF MID BRAIN AT LEVEL OF INFERIOR COLLICULUS
- 3) DRAW LABELED DIAGRAM TO SHOW T.S OF PONS BRAIN AT LEVEL OF FACIAL COLLICULUS
- 4) DRAW LABELED DIAGRAM TO SHOW T.S OF MEDULA AT LEVEL OF FOURTH VENTRICLE
- 5) DRAW LABELED DIAGRAM OF SUPERIOLATERAL SURFACE OF CEREBRUM
- 6) CIRCLE OF WILLAS

Q SHORT QUESTIONS - 5MARKS

- 1) HISTOLOGY OF CEREBELLUM
- 2) FLOOR OF FOURTH VENTRICLE
- 3) INTERNAL CAPSULE
- 4) FACIAL NERVE
- 5) BASAL NUCLEI

