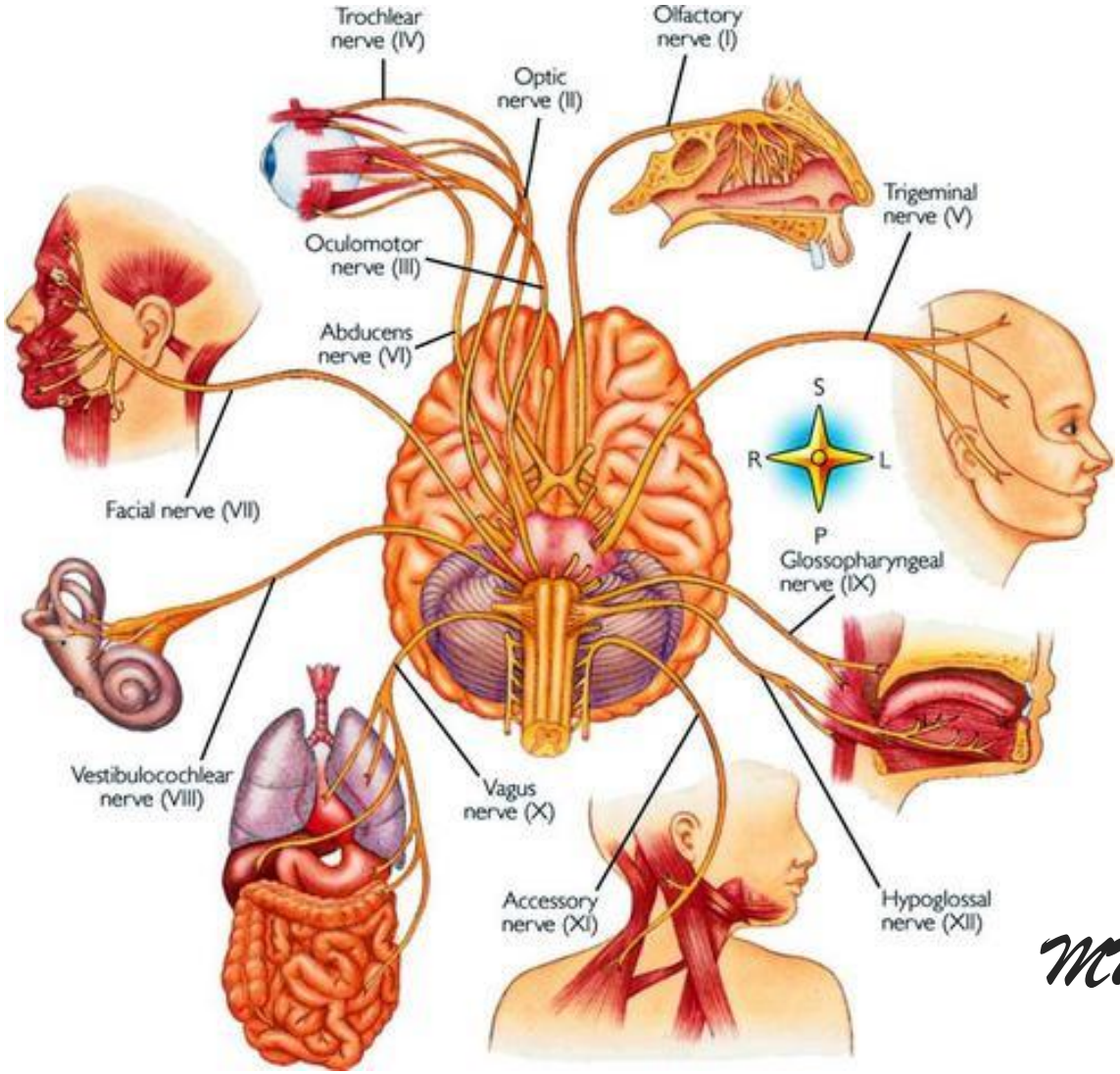
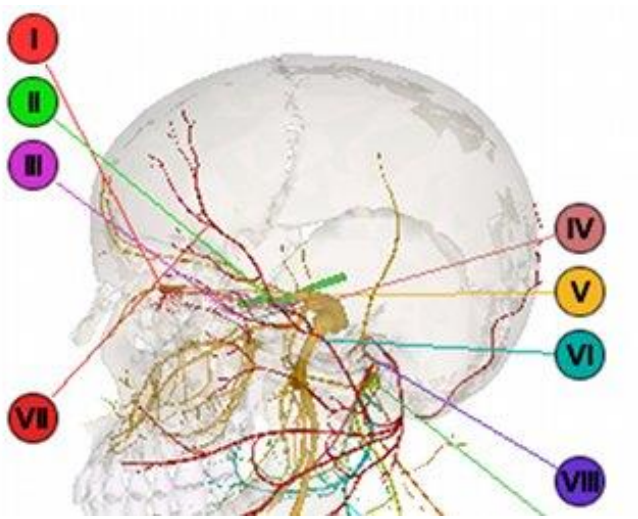
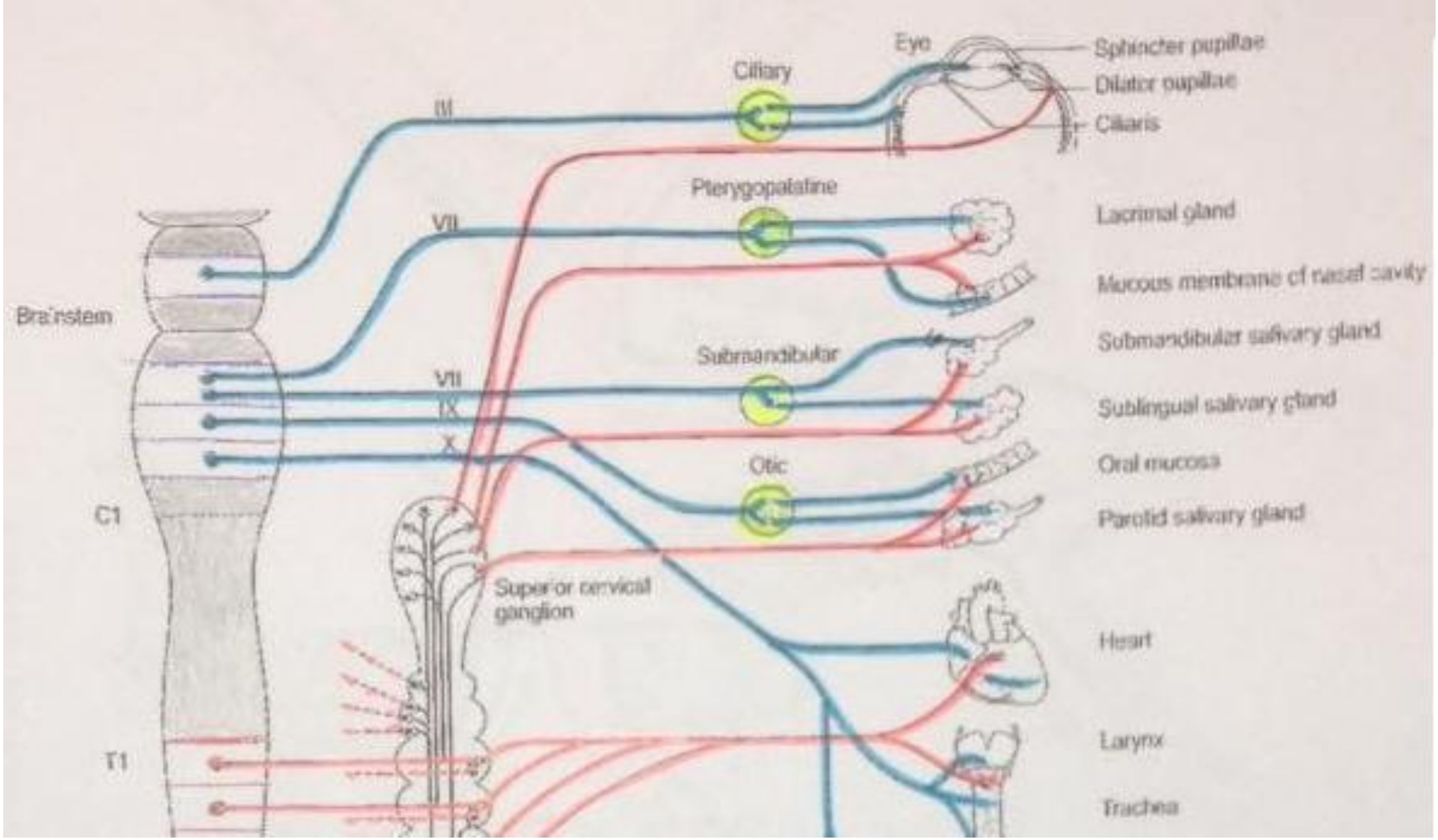
PNS- CRANIAL NERVES

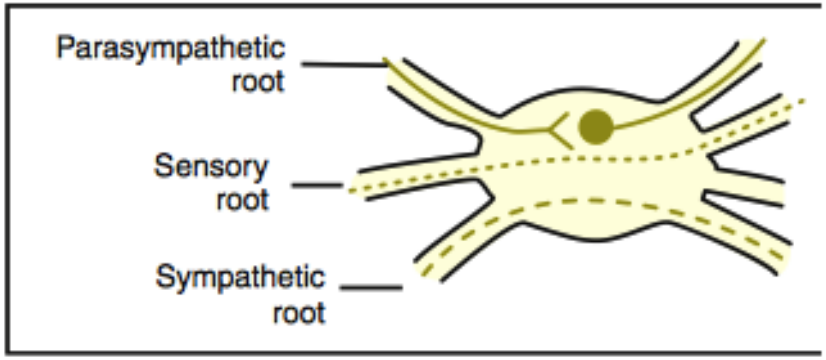




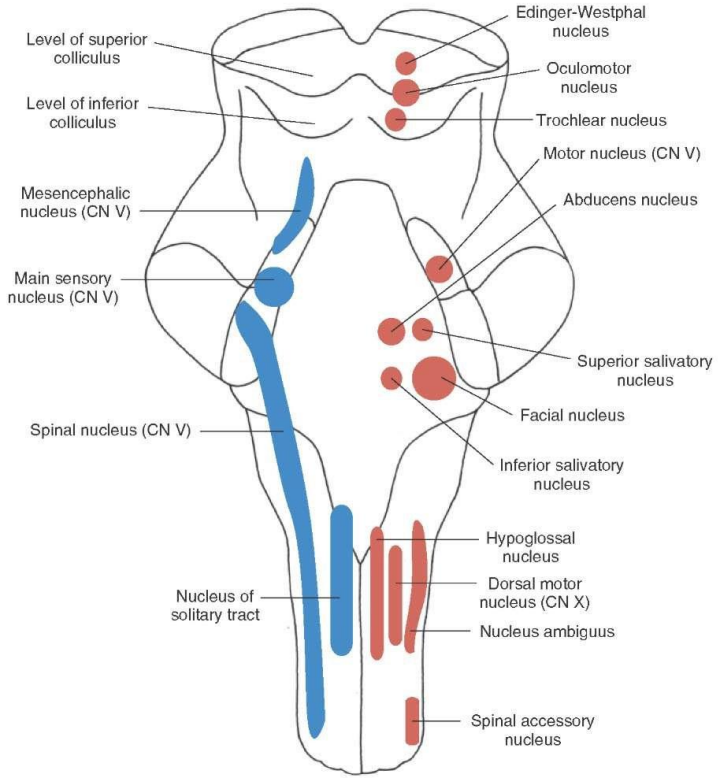
MDr. Azzat Al-Redouan

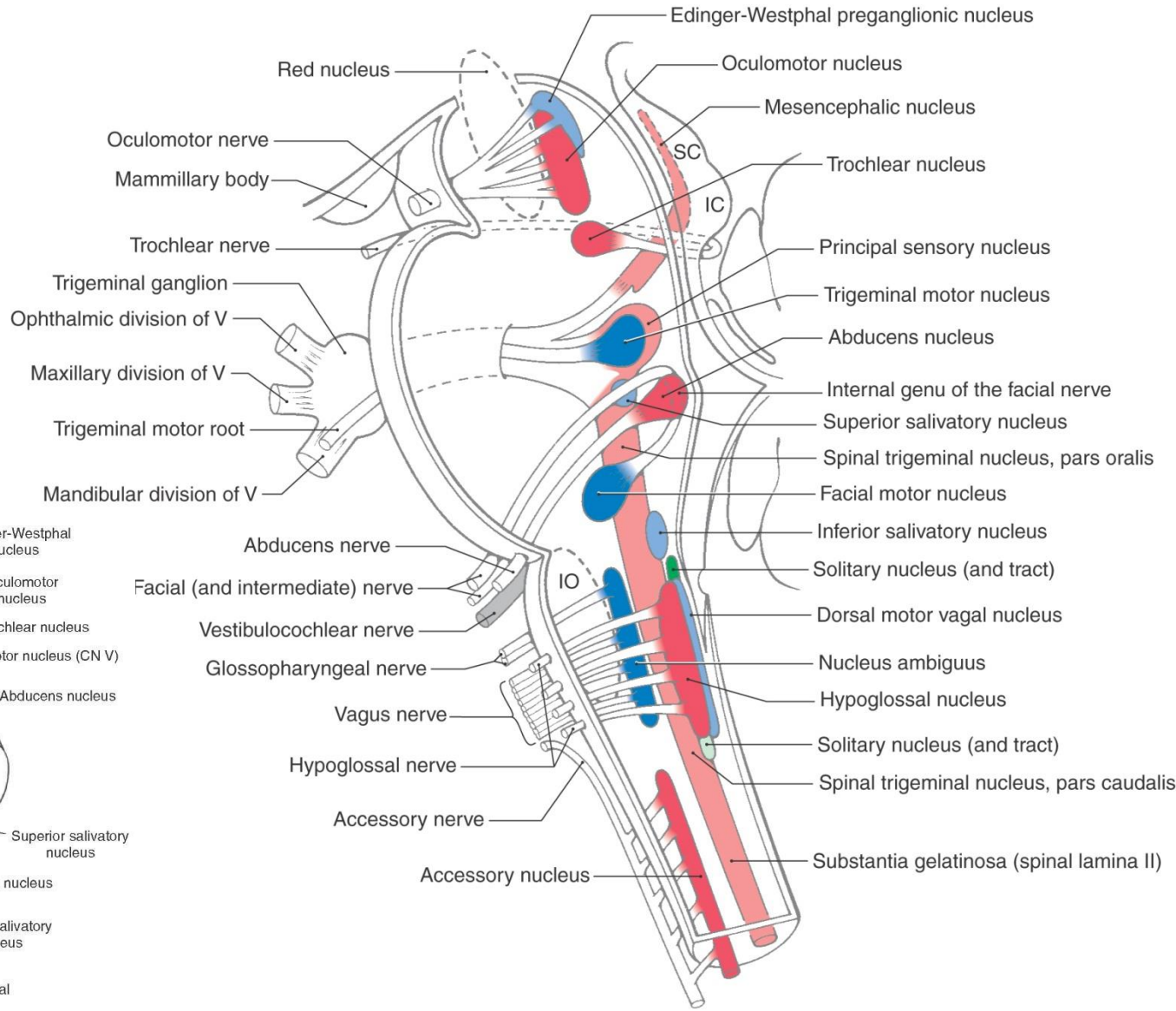
March.2020


Eye
Sphincter pupillae
Dilator pupillae
Ciliaris
Ciliary
III
Pterygopalatine
VII
Lacrimal gland
Mucous membrane of nasal cavity
Brainstem
Submandibular
Submandibular salivary gland
VII
IX
X
Sublingual salivary gland
Otic
Oral mucosa
C1
Parotid salivary gland
Superior cervical ganglion
Heart
Larynx
T1
Trachea

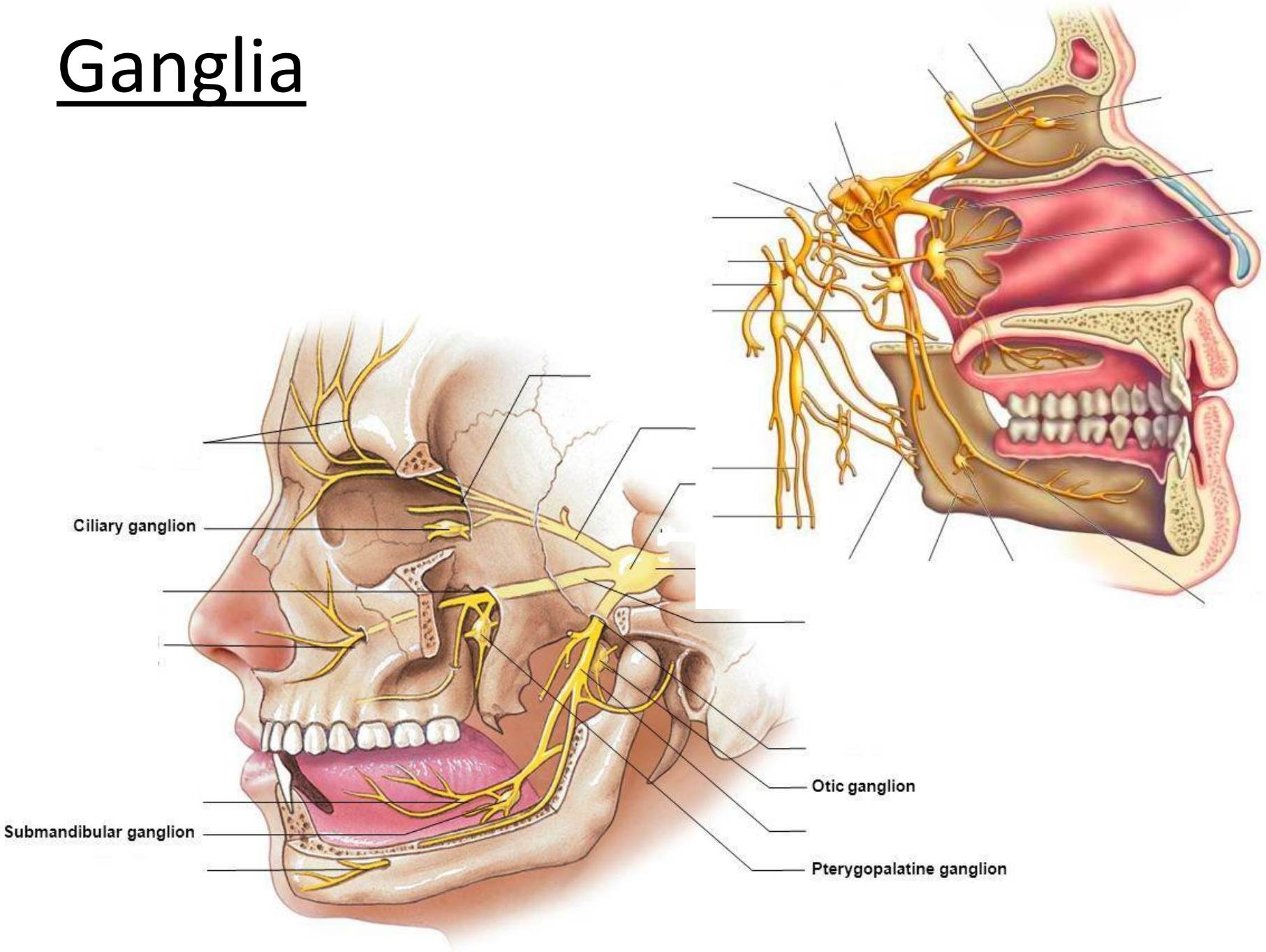

Parasympathetic root
Sensory root
Sympathetic root

Rhomboid Fossa





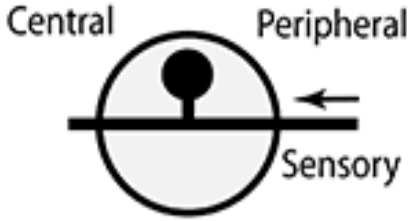
Ganglia


Ciliary ganglion
Submandibular ganglion
Otic ganglion
Pterygopalatine ganglion

Ganglia

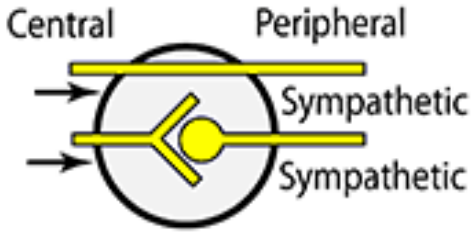
GANGLIA

3 TYPES OF GANGLIA



SENSORY GANGLION has cell bodies only and NO synapses Examples:

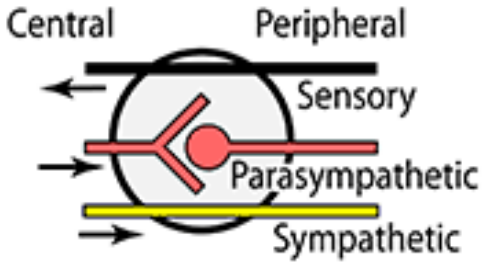
- Posterior (dorsal) root
- Trigeminal
- Glossopharyngeal
- Geniculate
- Vagal



SYMPATHETIC GANGLION has either a synapse or a fibre passing through it to synapse later.

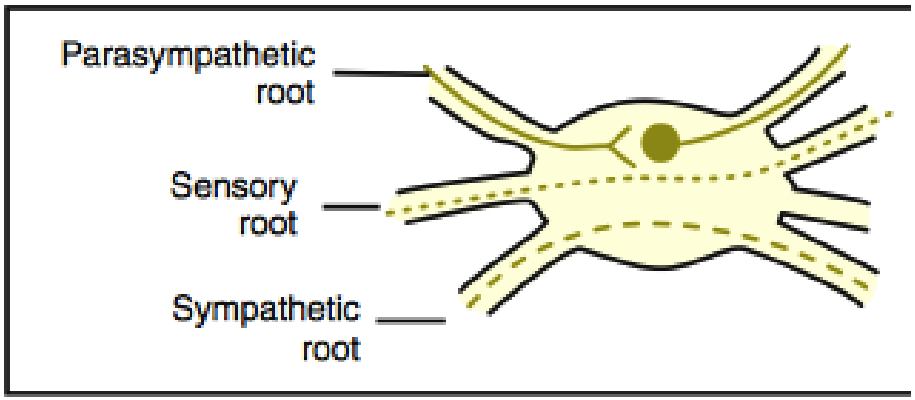
Examples:

- Sympathetic chain
- Sympathetic peripheral ganglia (coeliac, renal, superior mesenteric)

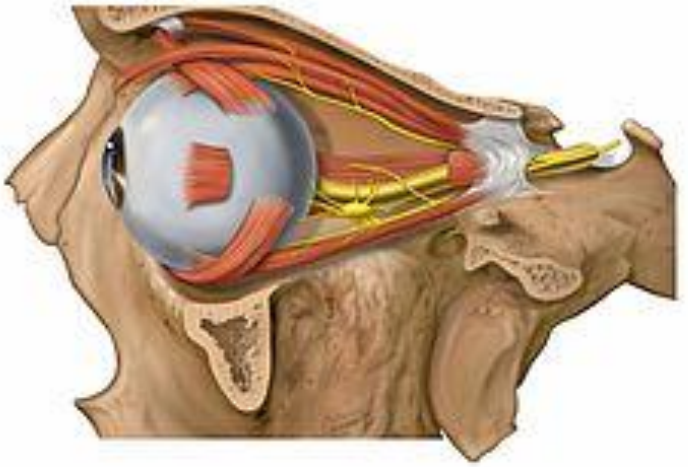


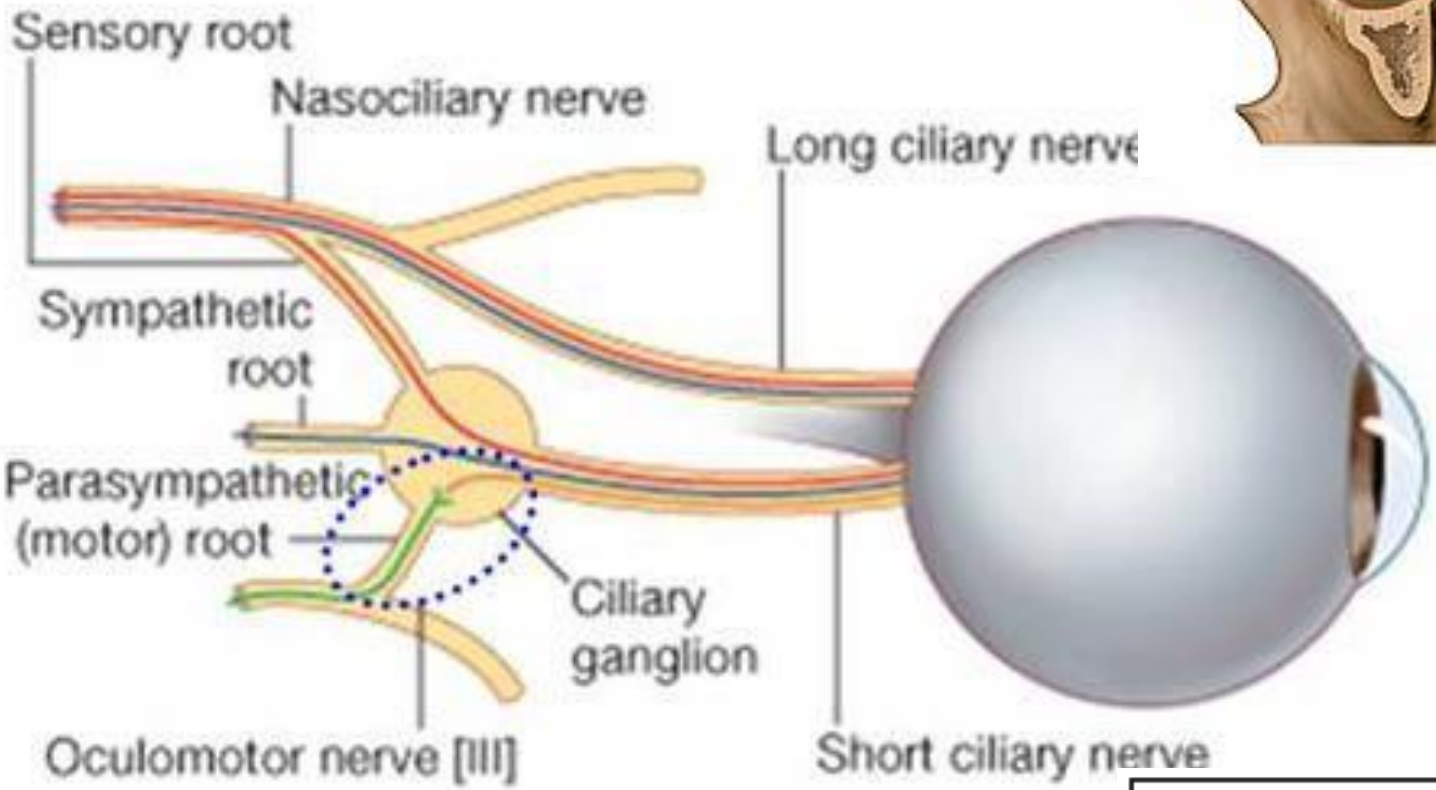
PARASYMPATHETIC GANGLION has parasympathetic nerves synapsing and both a somatic sensory and a sympathetic nerve passing through it. Examples:

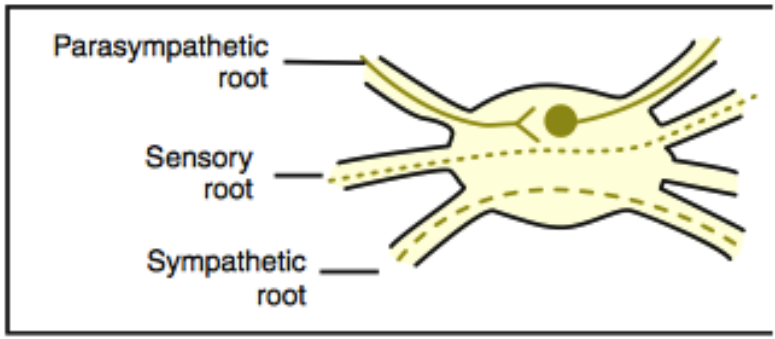
- Ciliary
- Ptergopalatine
- Submandibular
- Otic

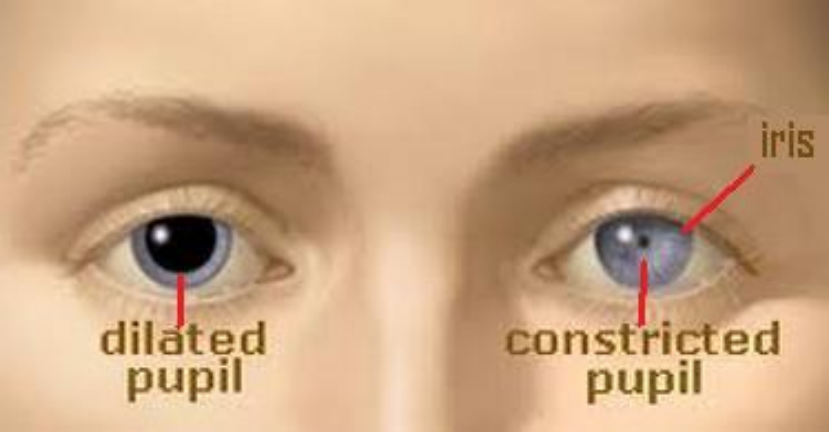


Ciliary Ganglion

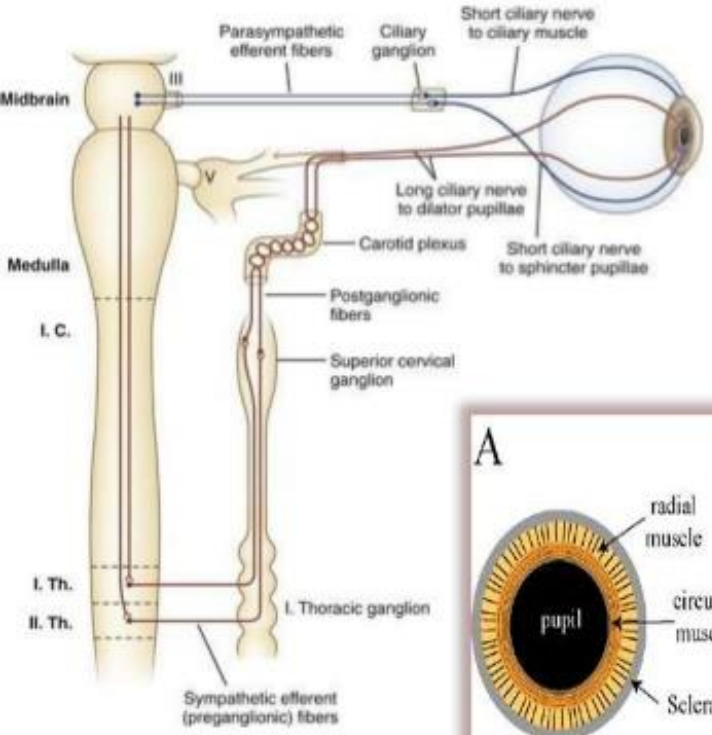


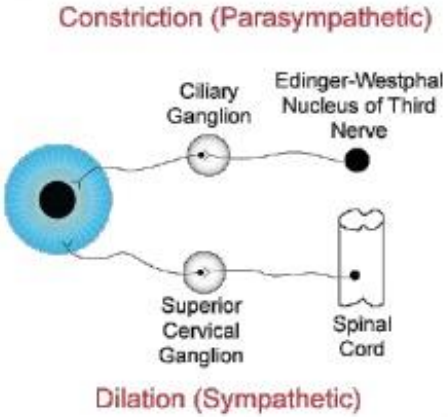


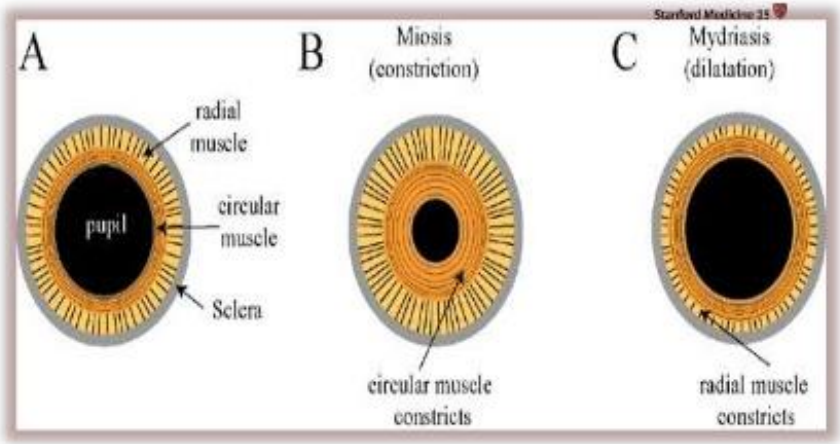




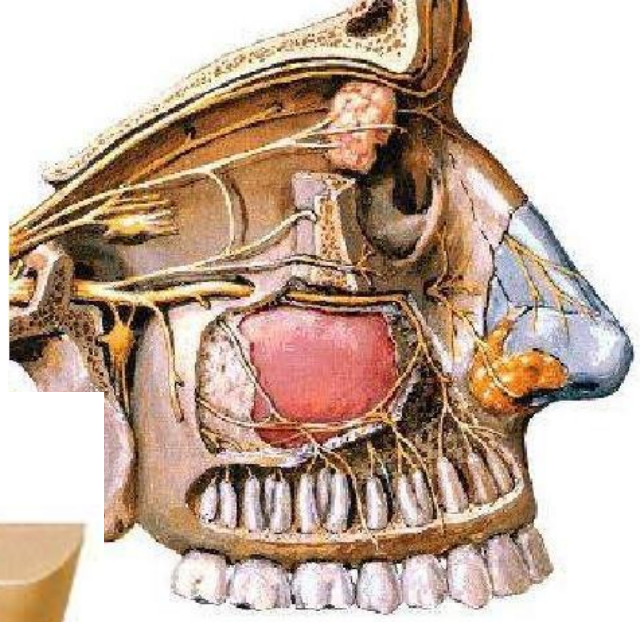
Nerve Pathway & Muscles

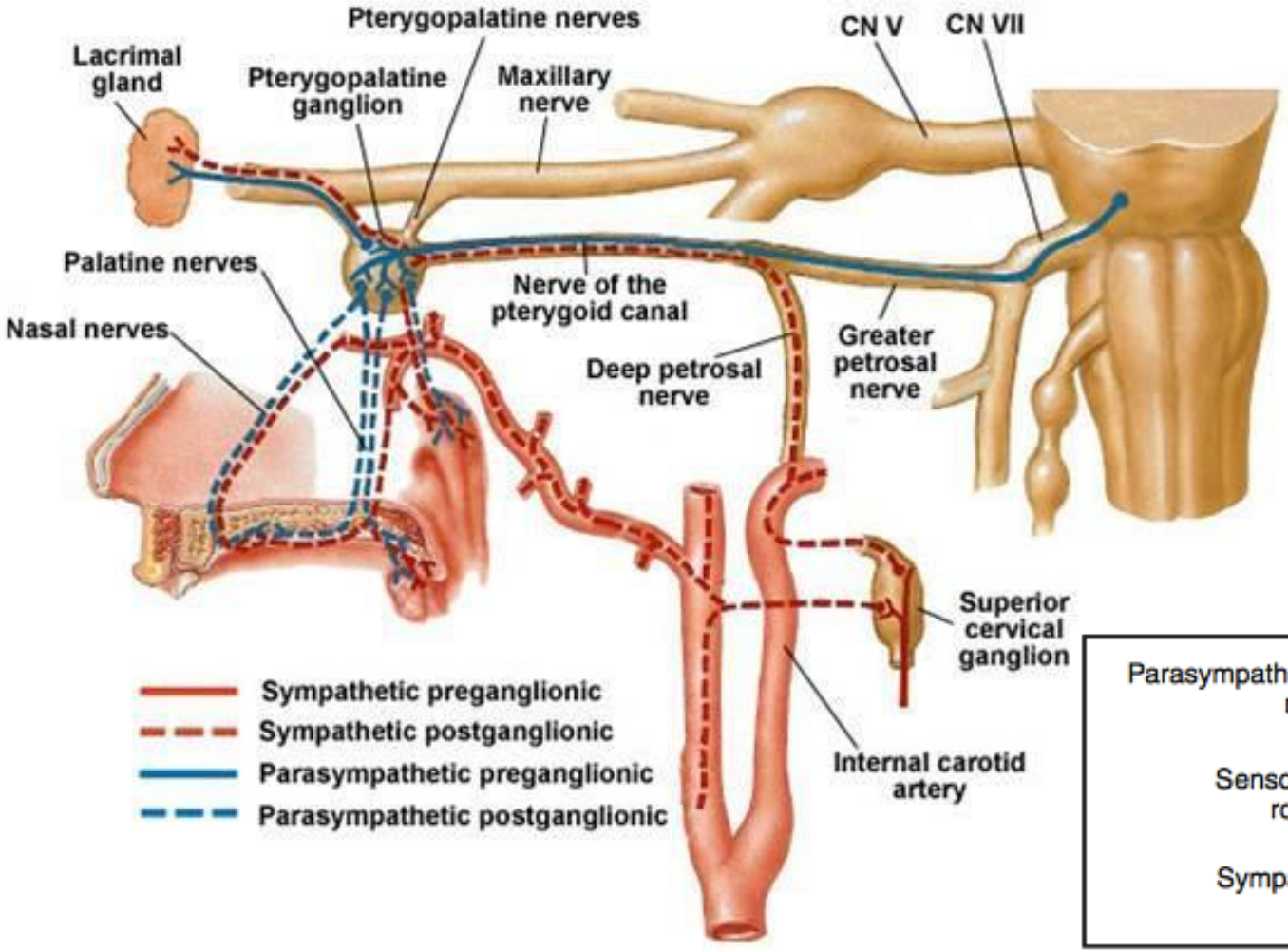


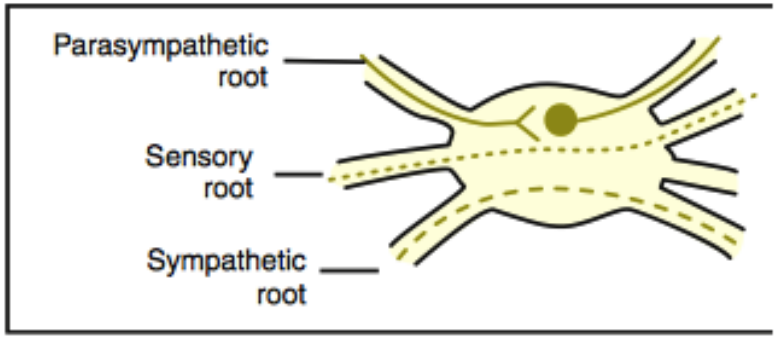




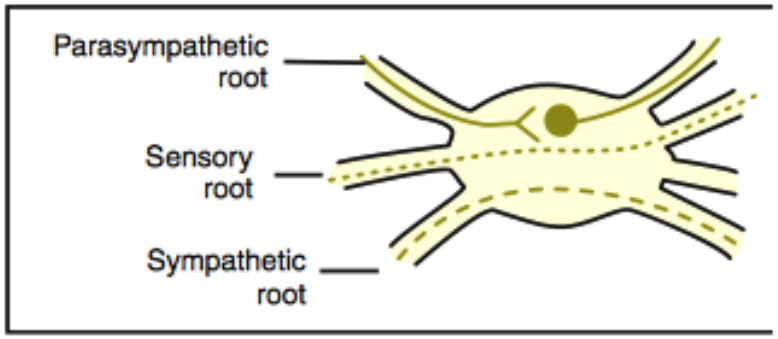
Pterygopalatine Ganglion

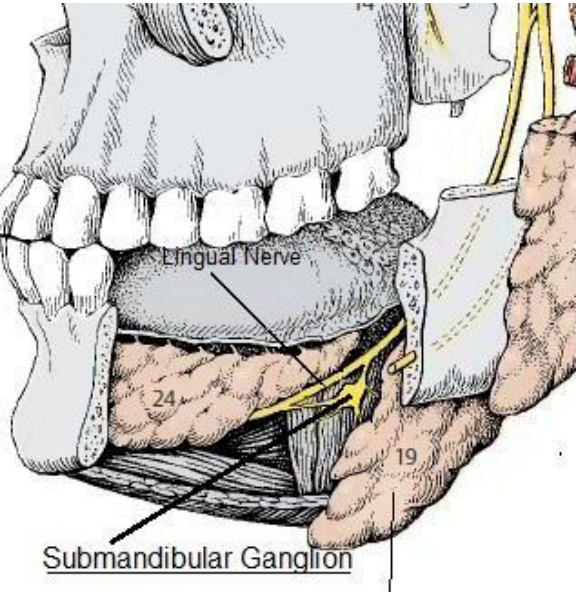


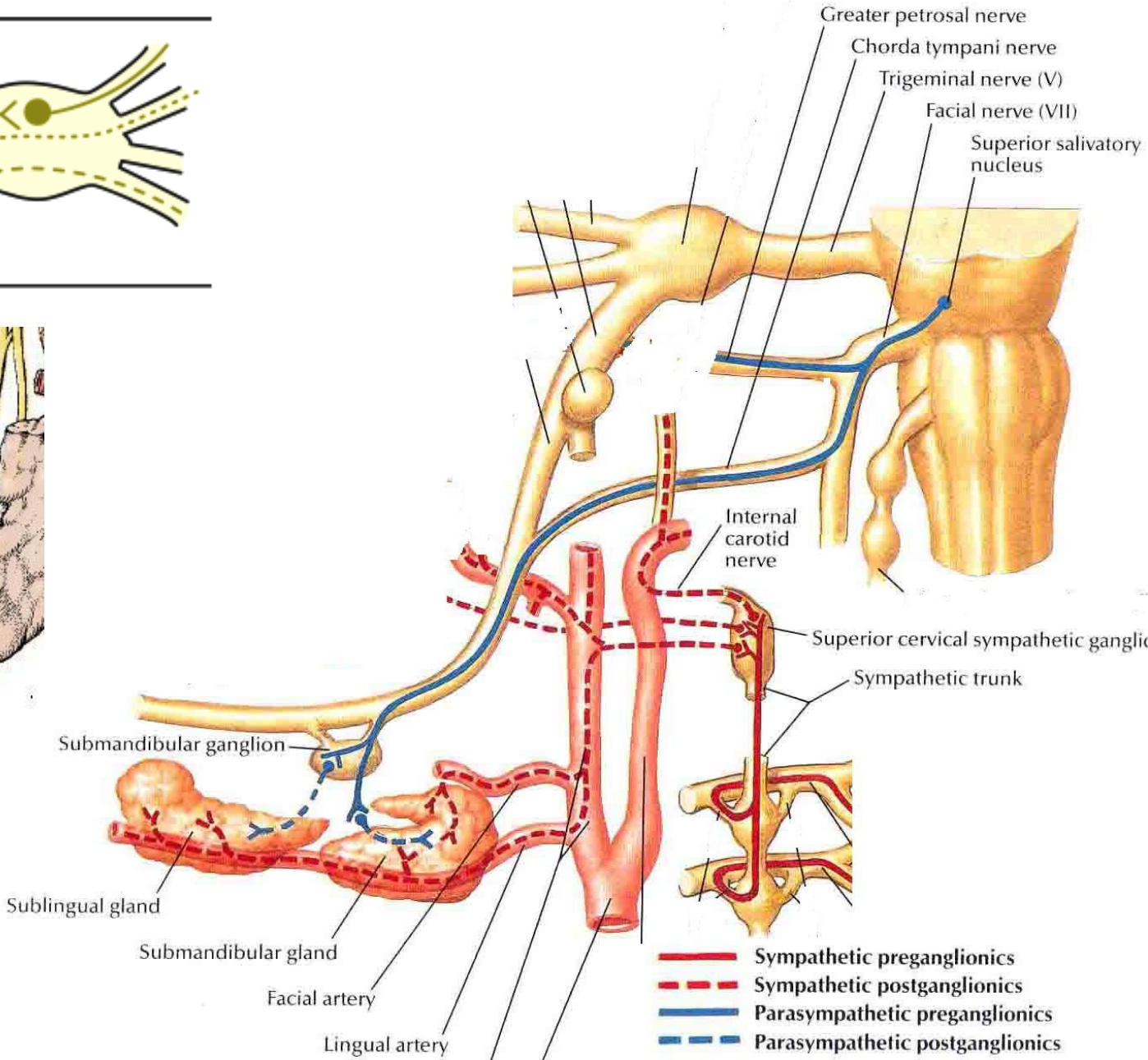




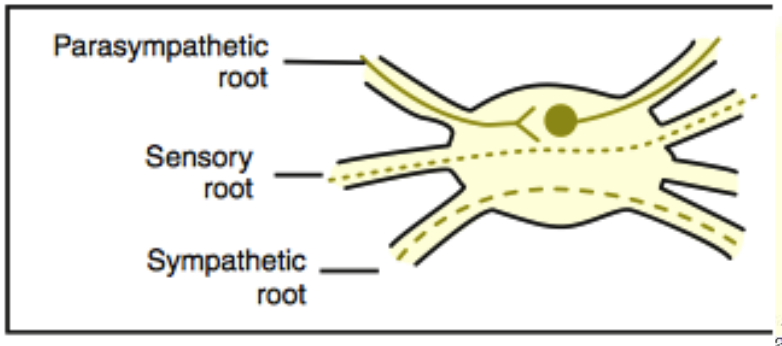
Submandibular Ganglion

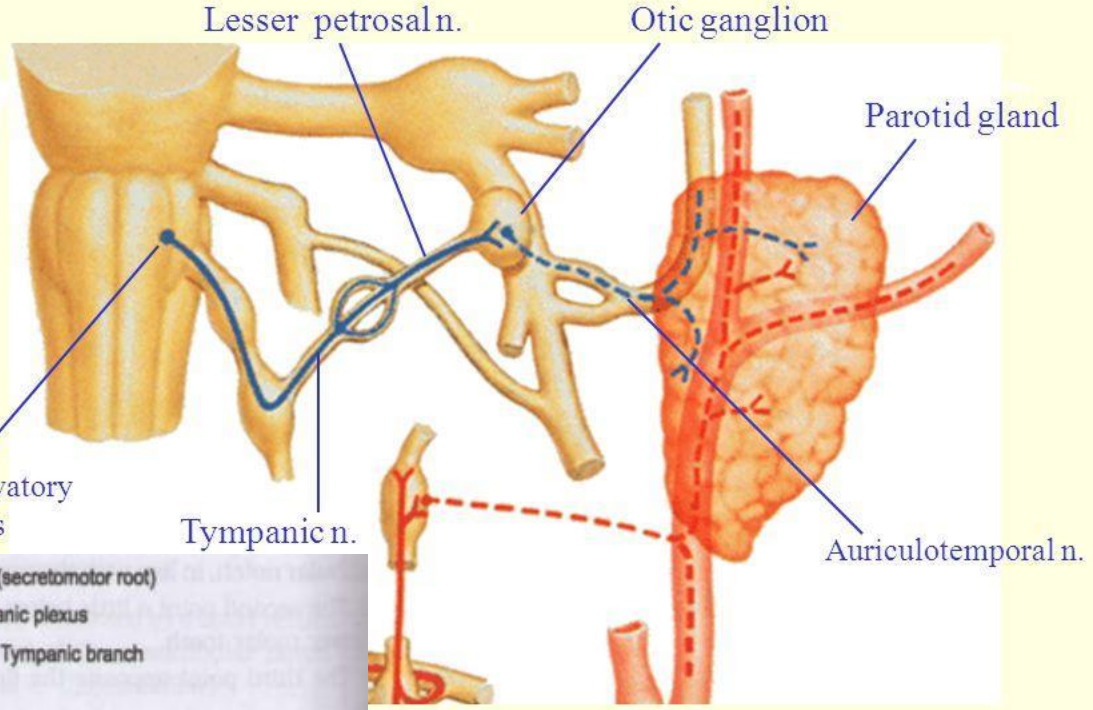


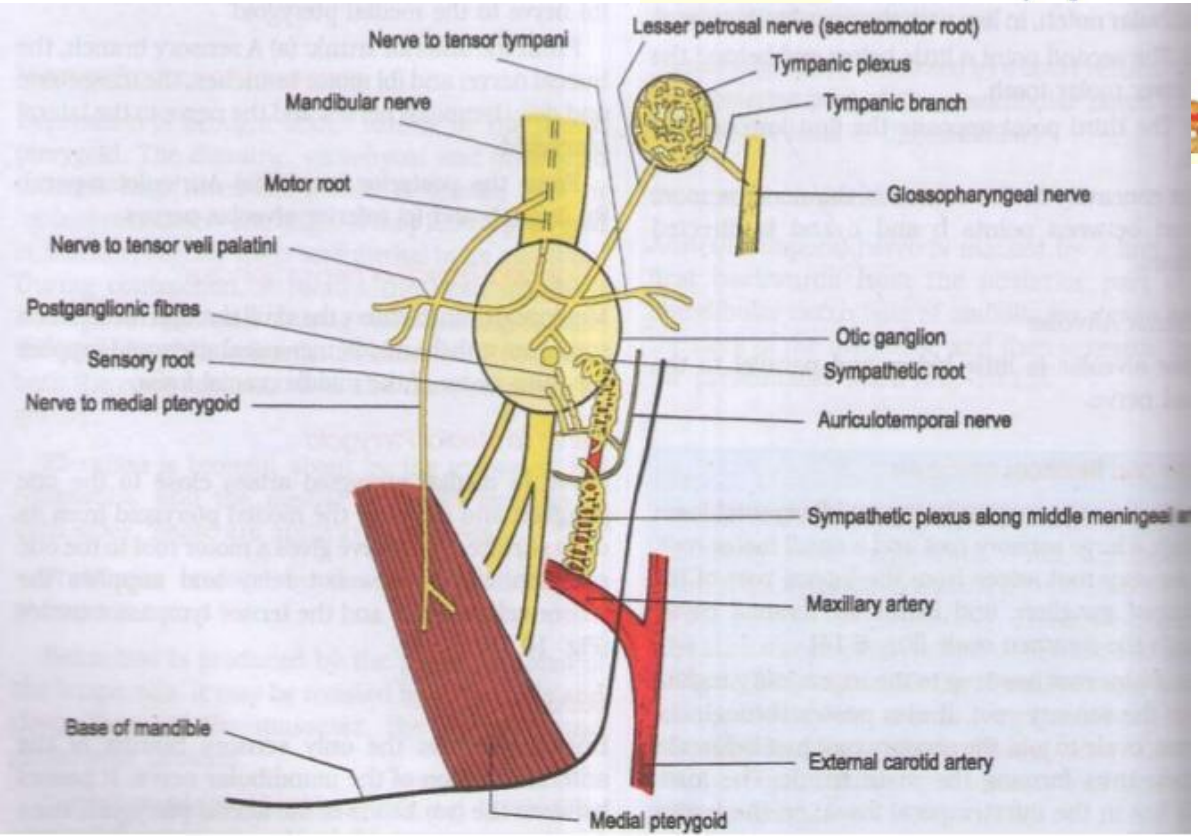


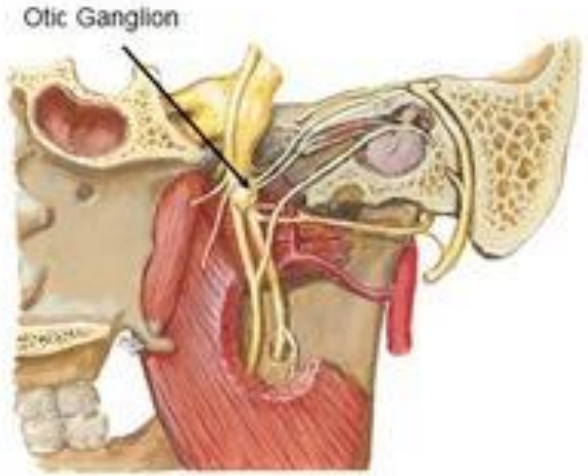


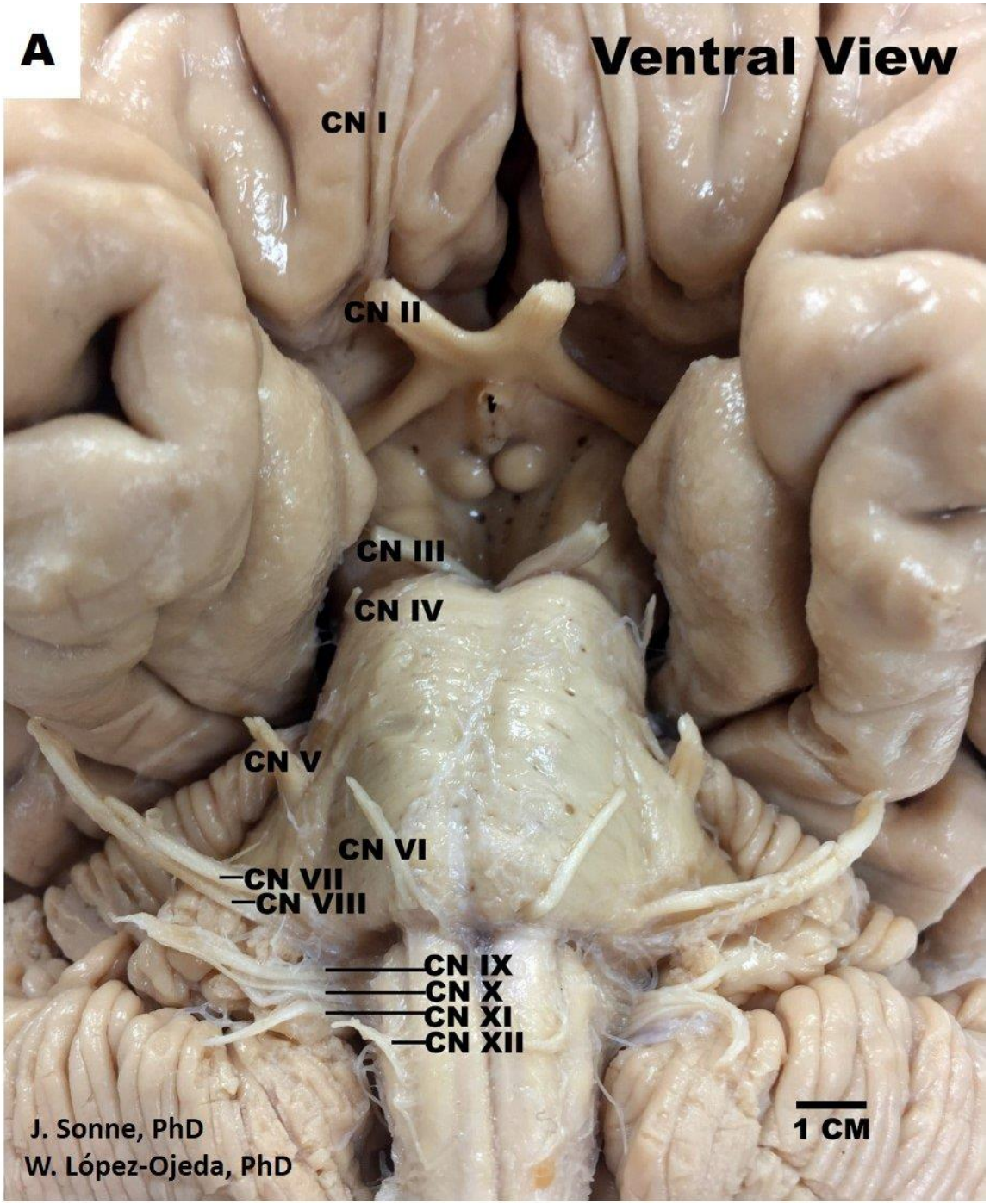
Otic Ganglion

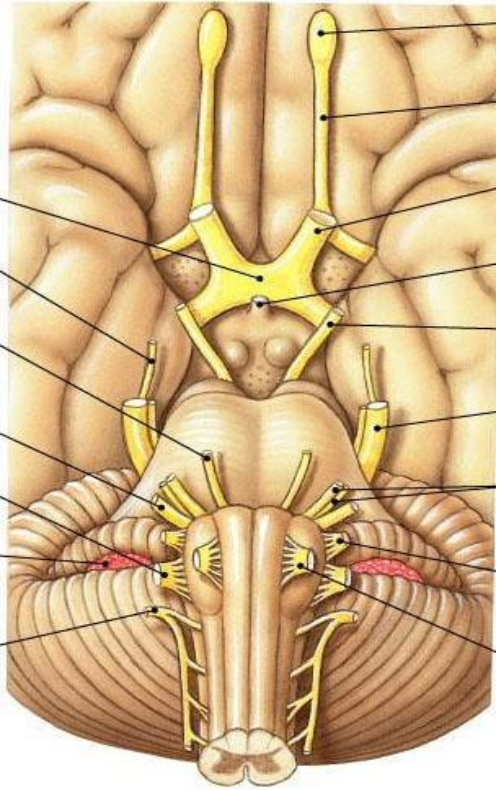


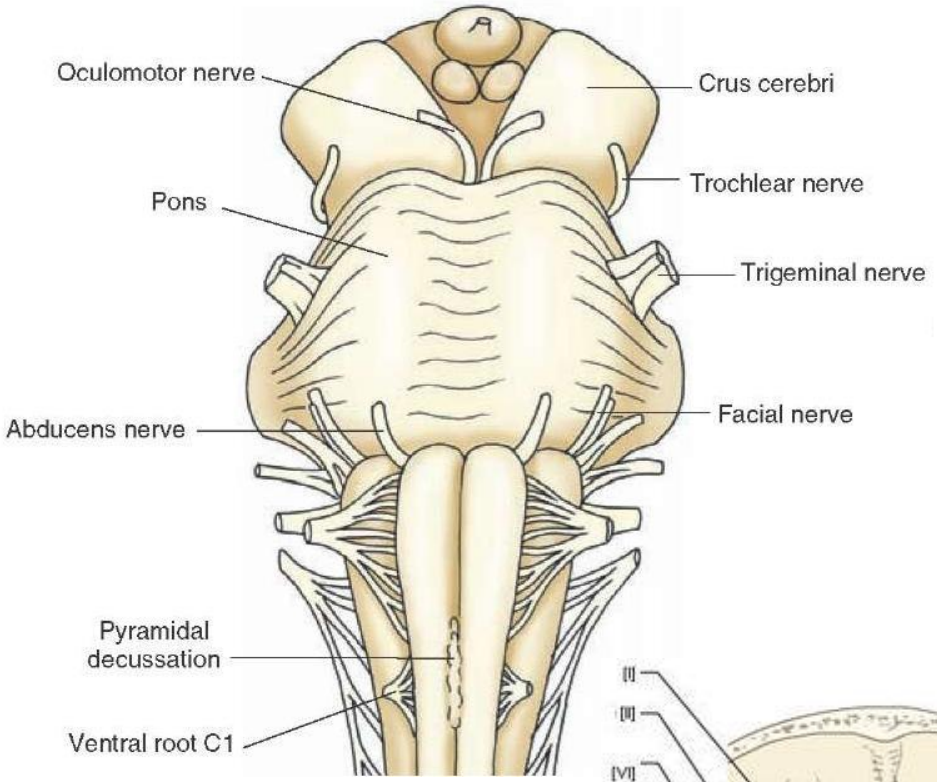


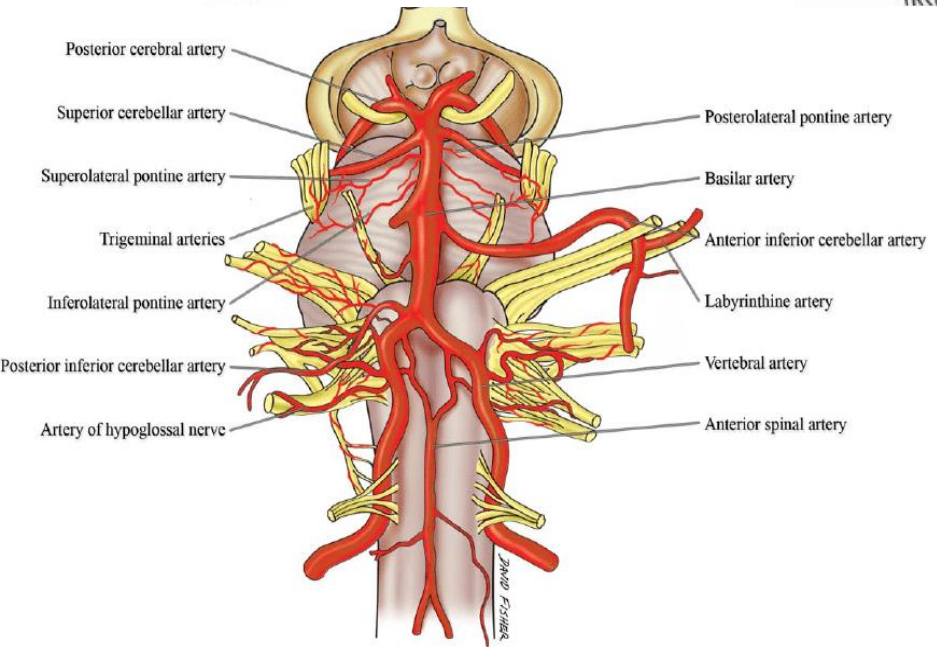


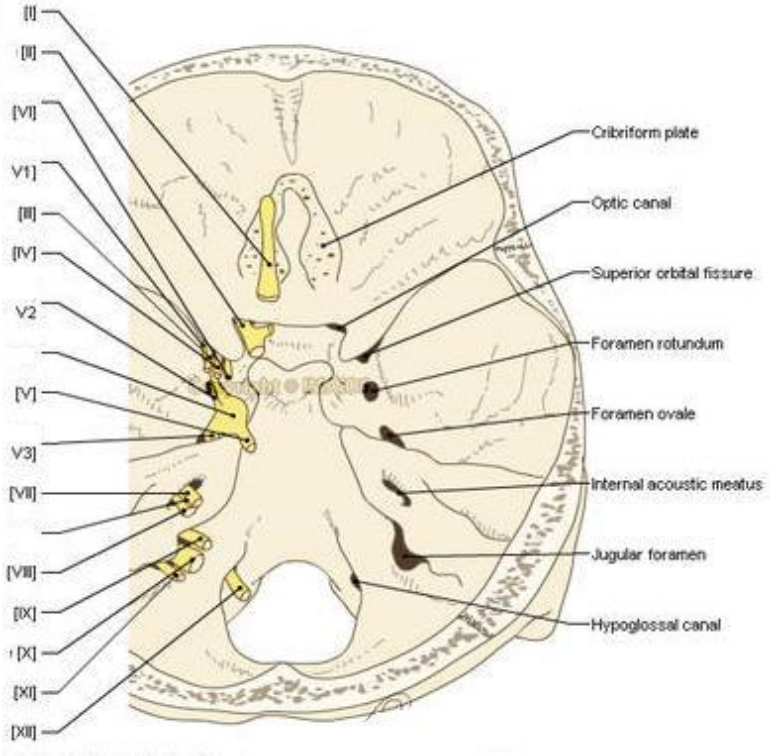


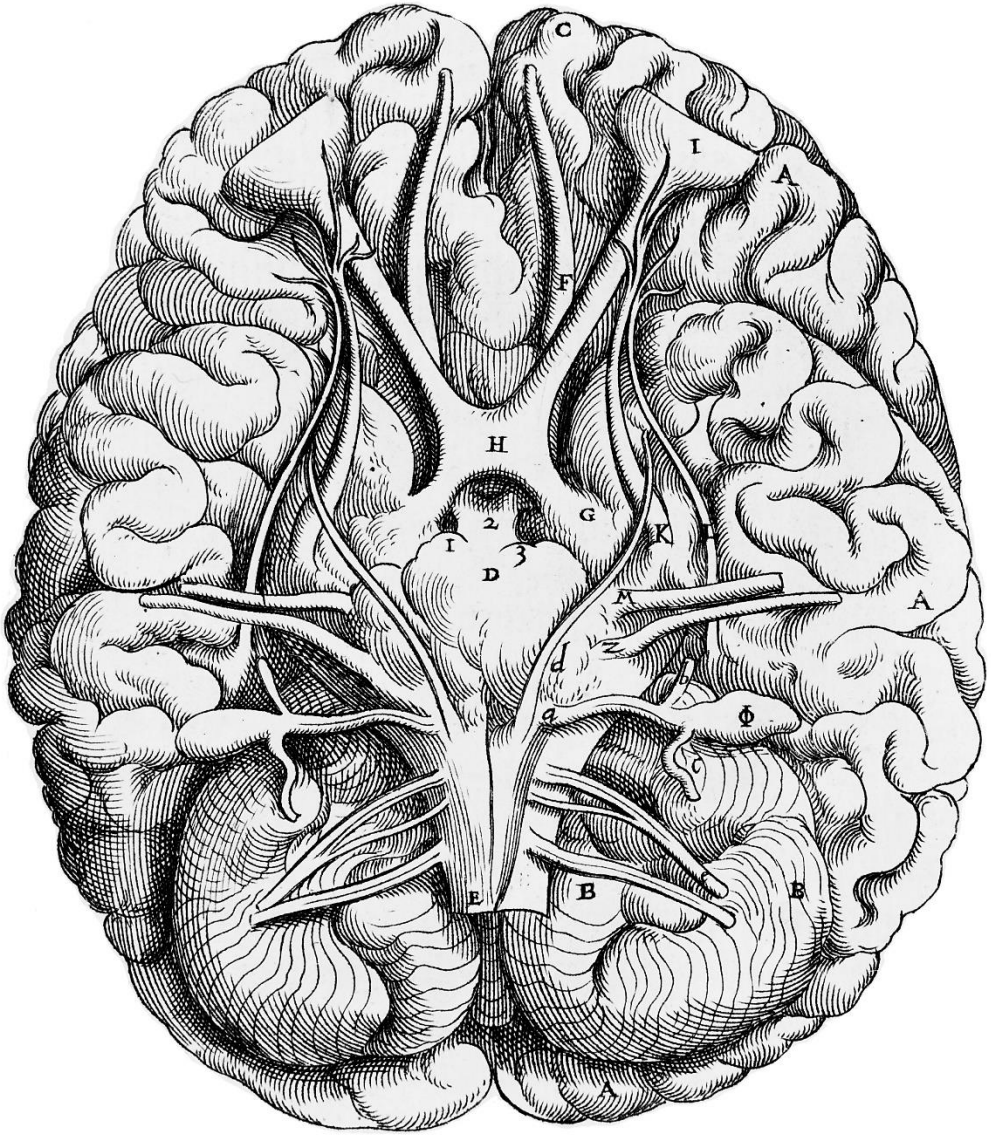

A
Ventral View
CN I
CN II
CN III
CN IV
CN V
CN VI
CN VII
CN VIII
CN IX
CN X
CN XI
CN XII
J. Sonne, PhD
W. López-Ojeda, PhD
1 CM




Oculomotor nerve
Crus cerebri
Trochlear nerve
Pons
Trigeminal nerve
Abducens nerve
Facial nerve
Pyramidal decussation
Ventral root C1


Posterior cerebral artery
Superior cerebellar artery
Superolateral pontine artery
Trigeminal arteries
Inferolateral pontine artery
Posterior inferior cerebellar artery
Artery of hypoglossal nerve
Posterolateral pontine artery
Basilar artery
Anterior inferior cerebellar artery
Labyrinthine artery
Vertebral artery
Anterior spinal artery
JAMES FISHER


[I]
[II]
[VI]
V1]
[III]
[IV]
V2
[V]
V3]
[VII]
[VIII]
[IX]
[X]
[XI]
[XII]
Cribriform plate
Optic canal
Superior orbital fissure
Foramen rotundum
Foramen ovale
Internal acoustic meatus
Jugular foramen
Hypoglossal canal


C
I
A
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H
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1
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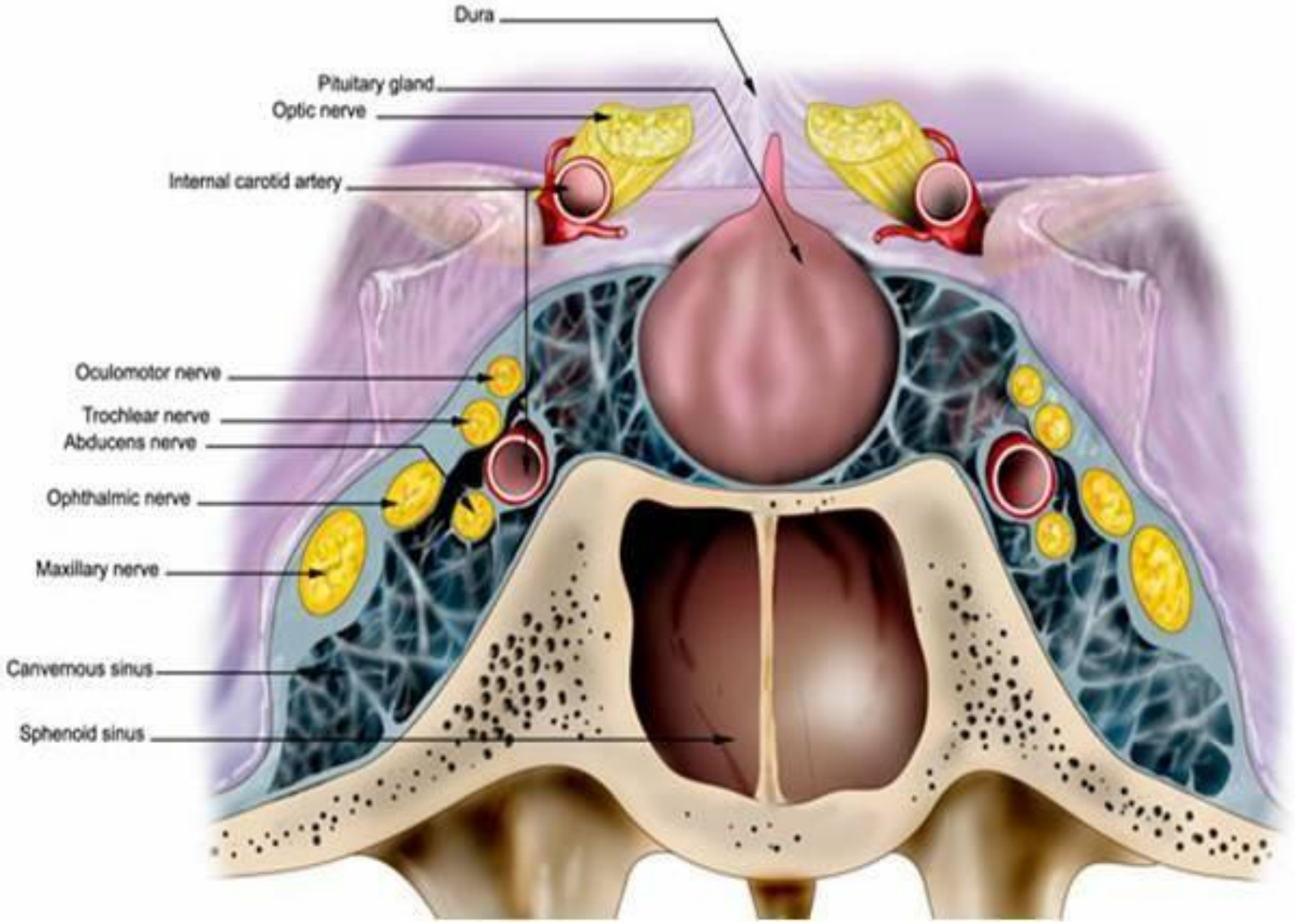
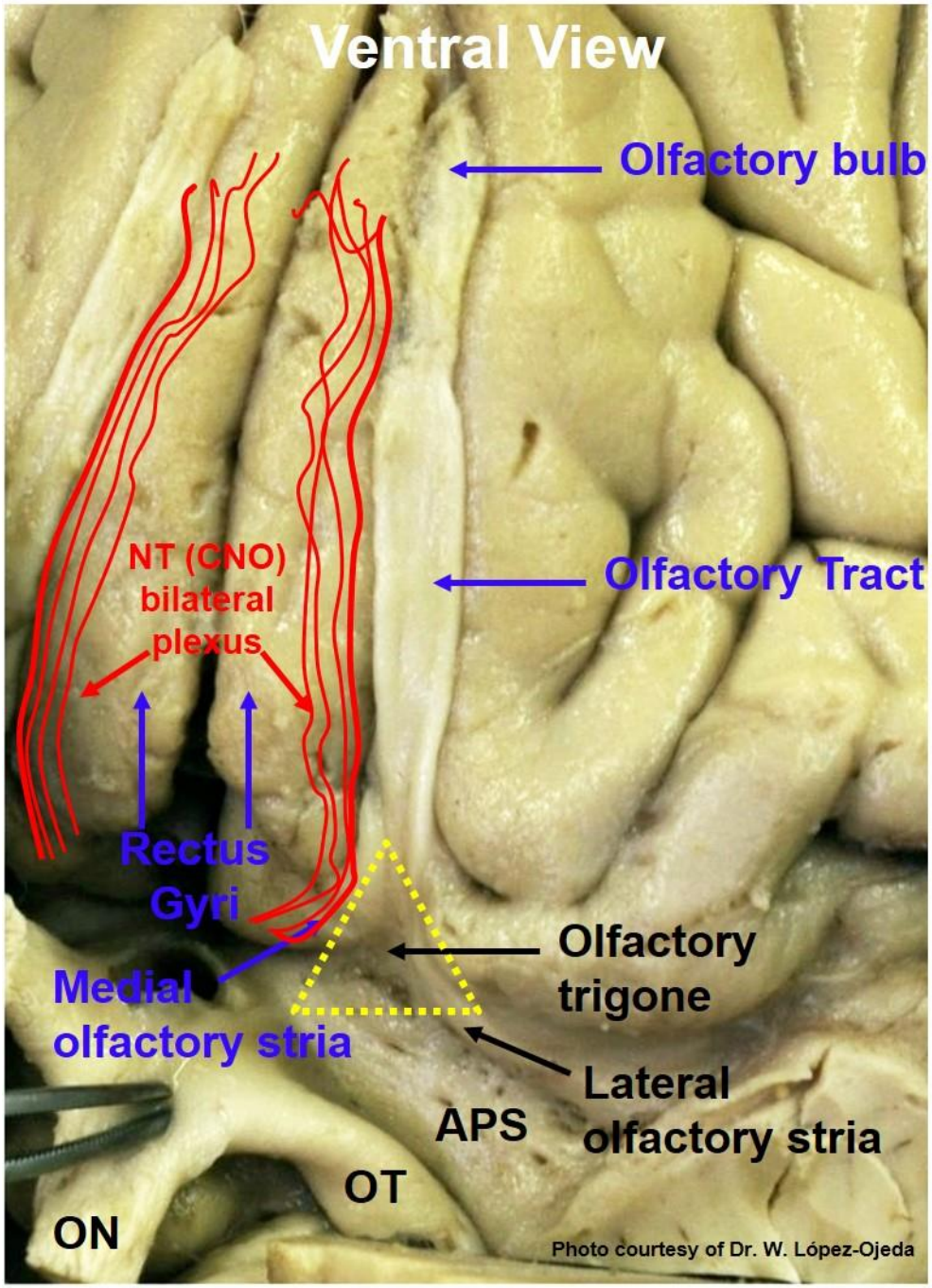
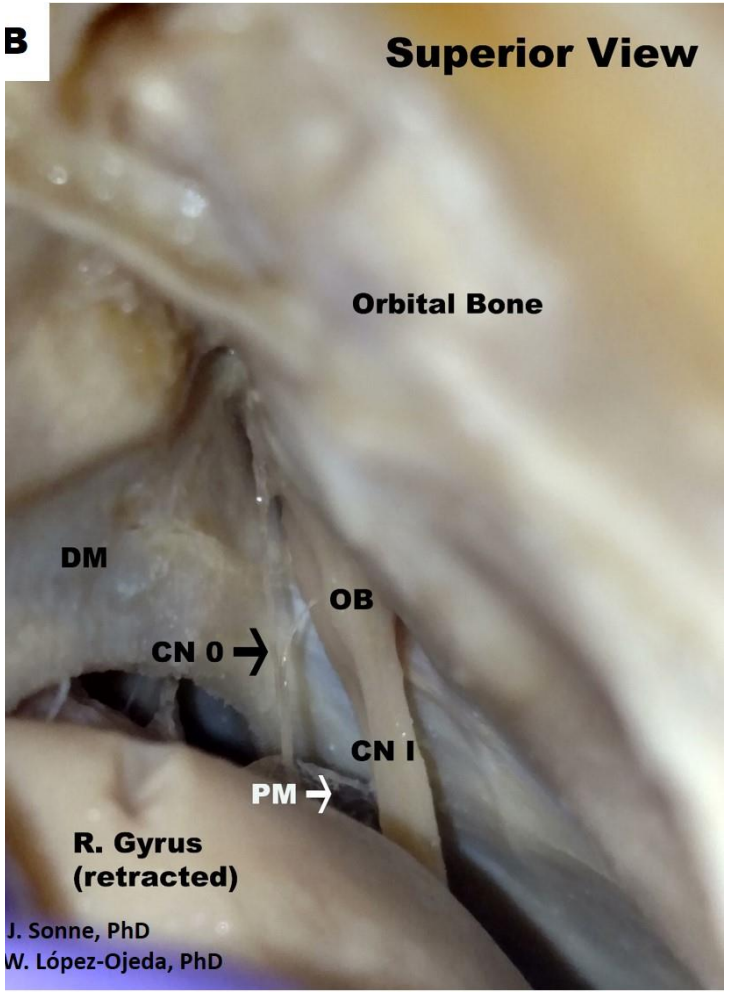
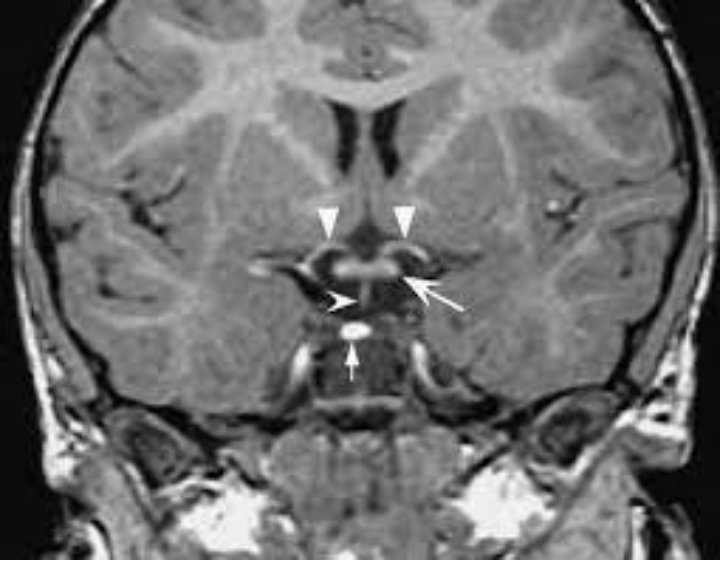
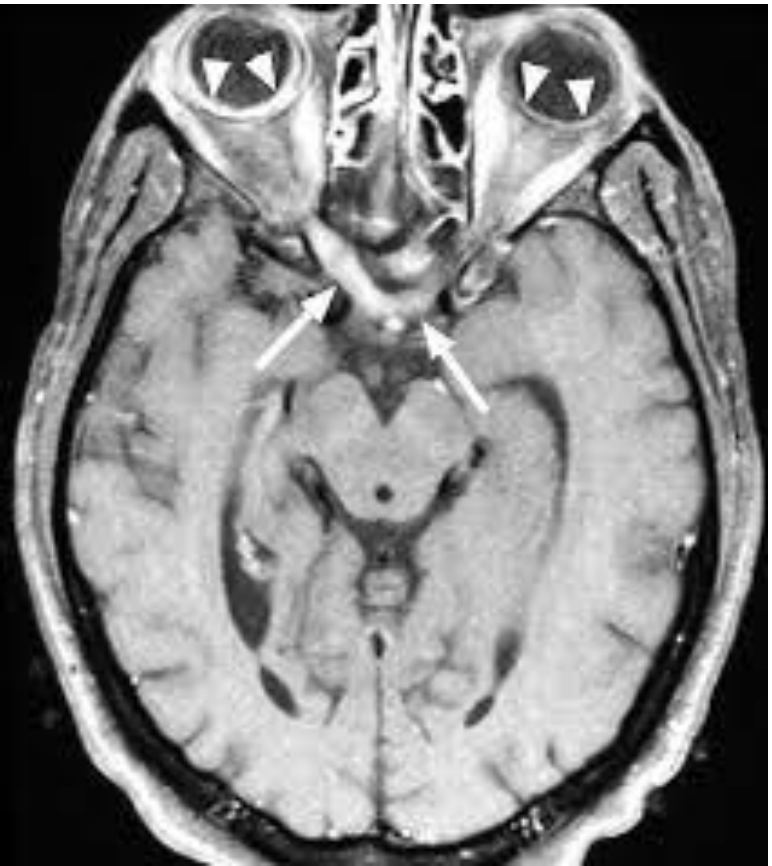
Φ
E
B
B
A

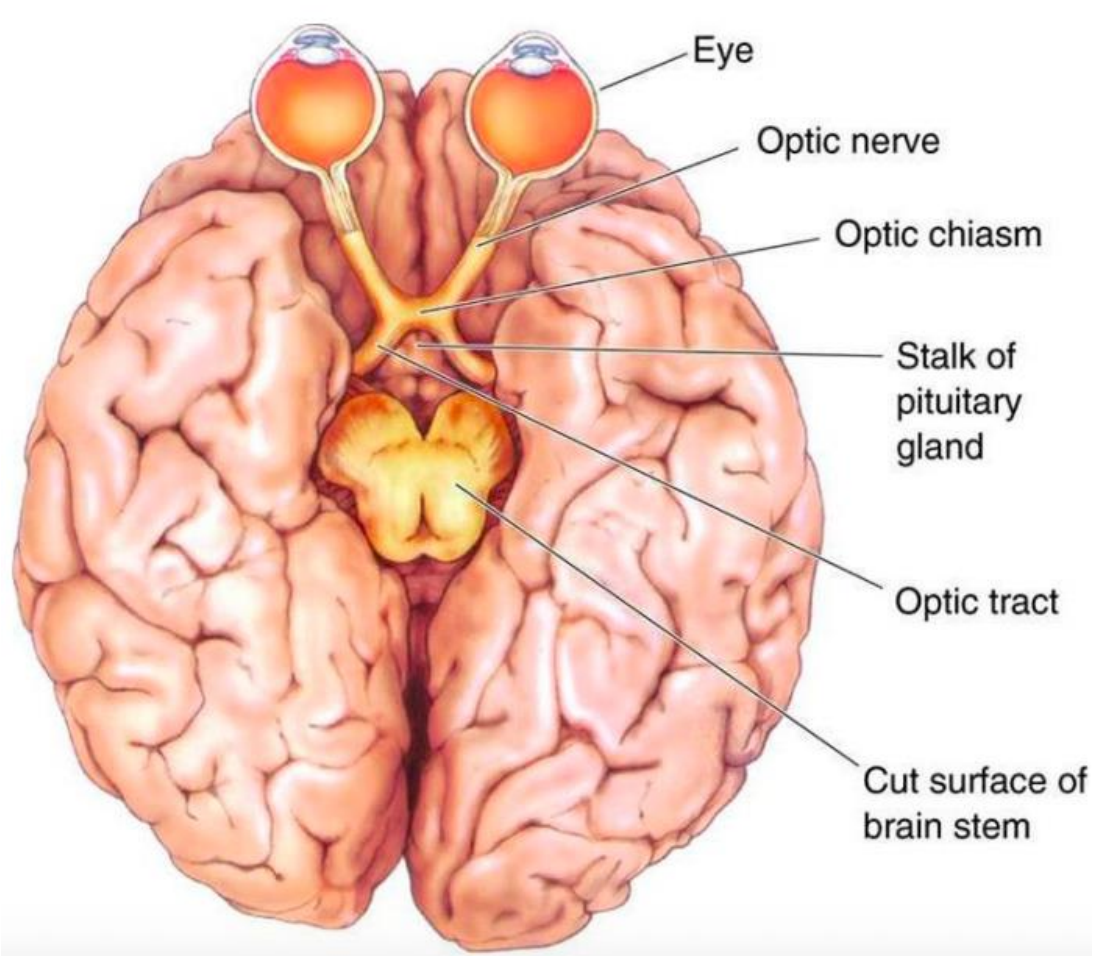

Dura
Pituitary gland
Optic nerve
Internal carotid artery
Oculomotor nerve
Trochlear nerve
Abducens nerve
Ophthalmic nerve
Maxillary nerve
Canvernous sinus
Sphenoid sinus

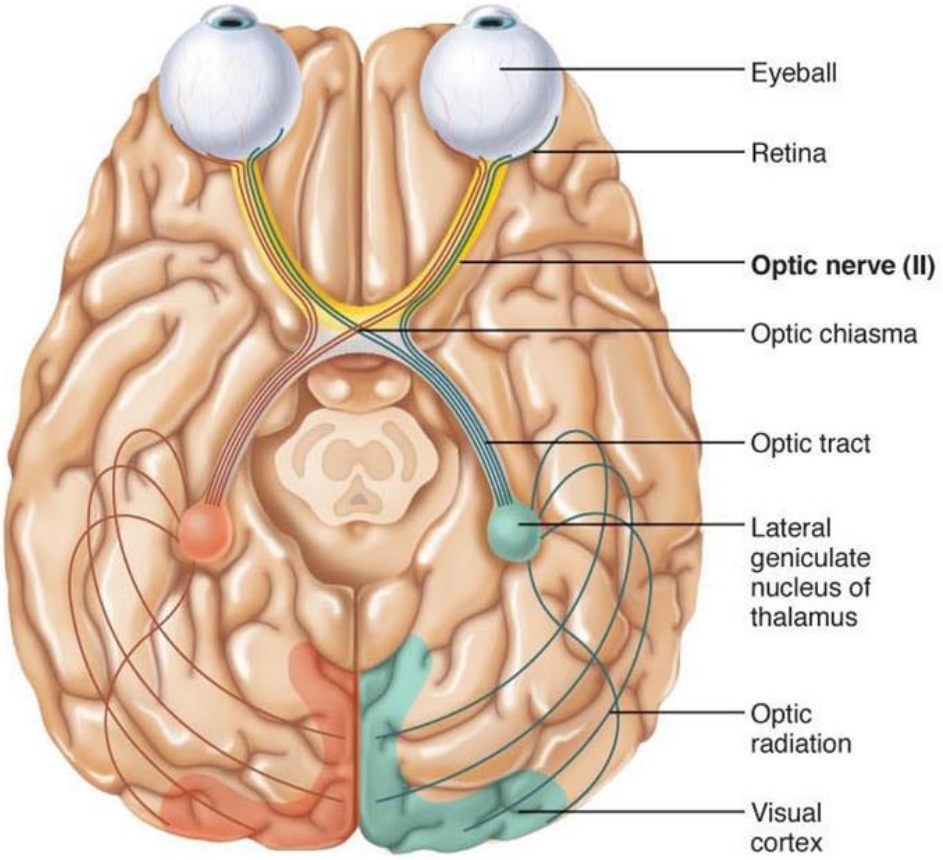

Ventral View
Olfactory bulb
NT (CNO)
bilateral
plexus
Olfactory Tract
Rectus
Gyri
Medial
olfactory stria
Olfactory
trigone
Lateral
olfactory stria
APS
OT
ON
Photo courtesy of Dr. W. López-Ojeda

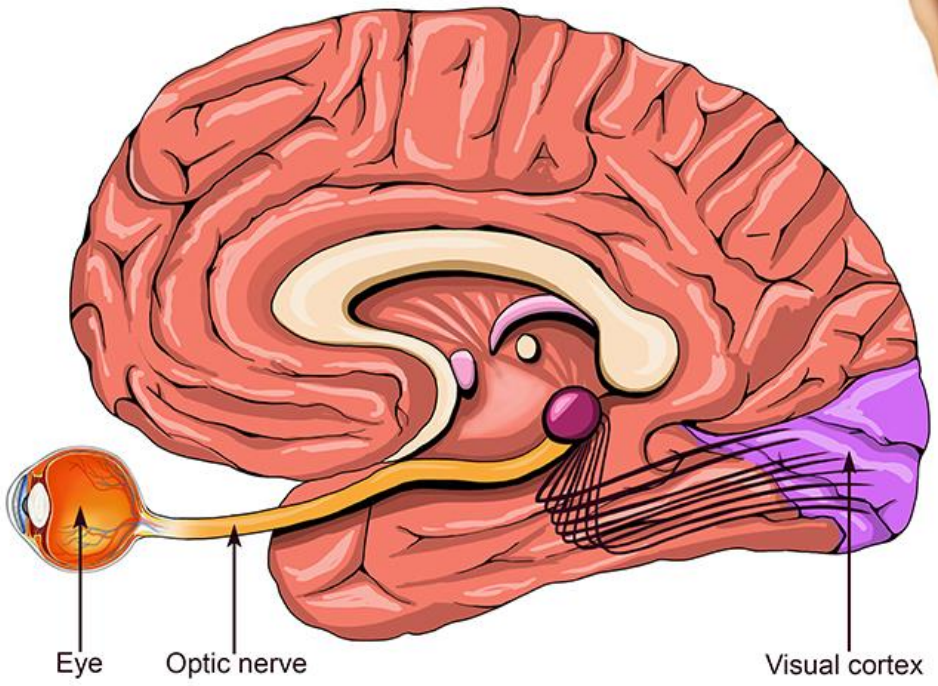

B
Superior View
Orbital Bone
DM
OB
CN 0
CN I
PM
R. Gyrus
(retracted)
J. Sonne, PhD
W. López-Ojeda, PhD

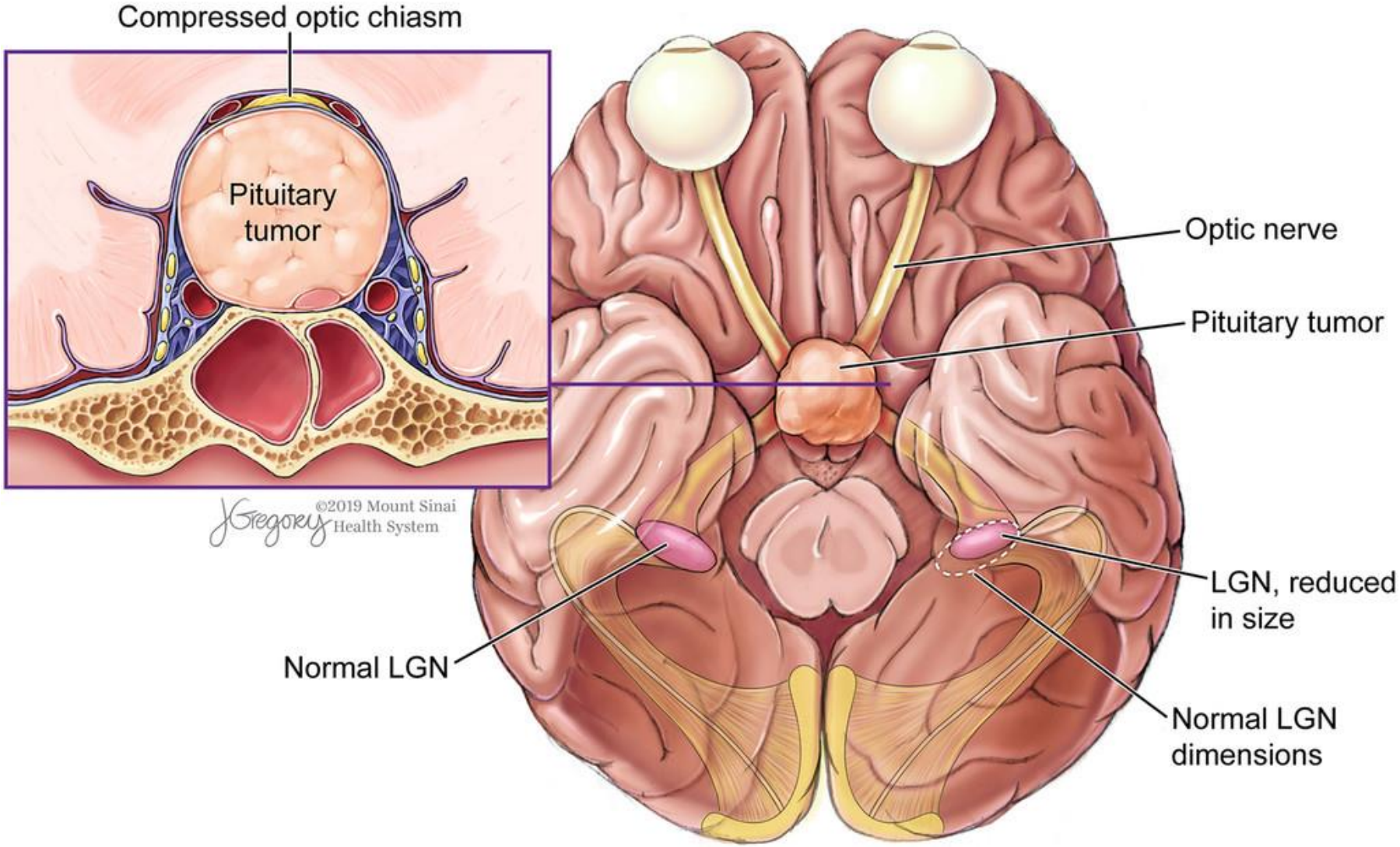




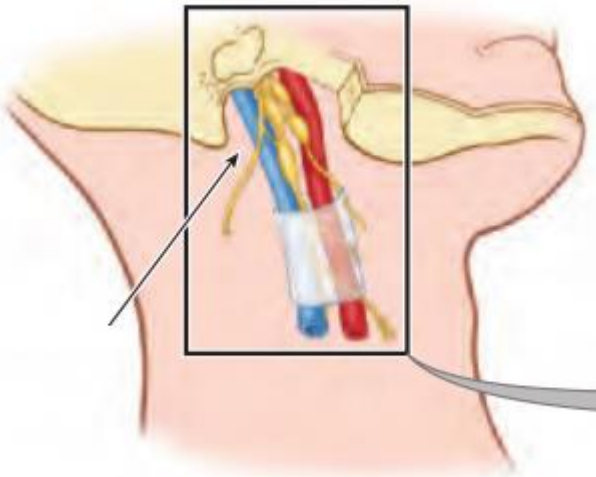

Eye
Optic nerve
Optic chiasm
Stalk of pituitary gland
Optic tract
Cut surface of brain stem

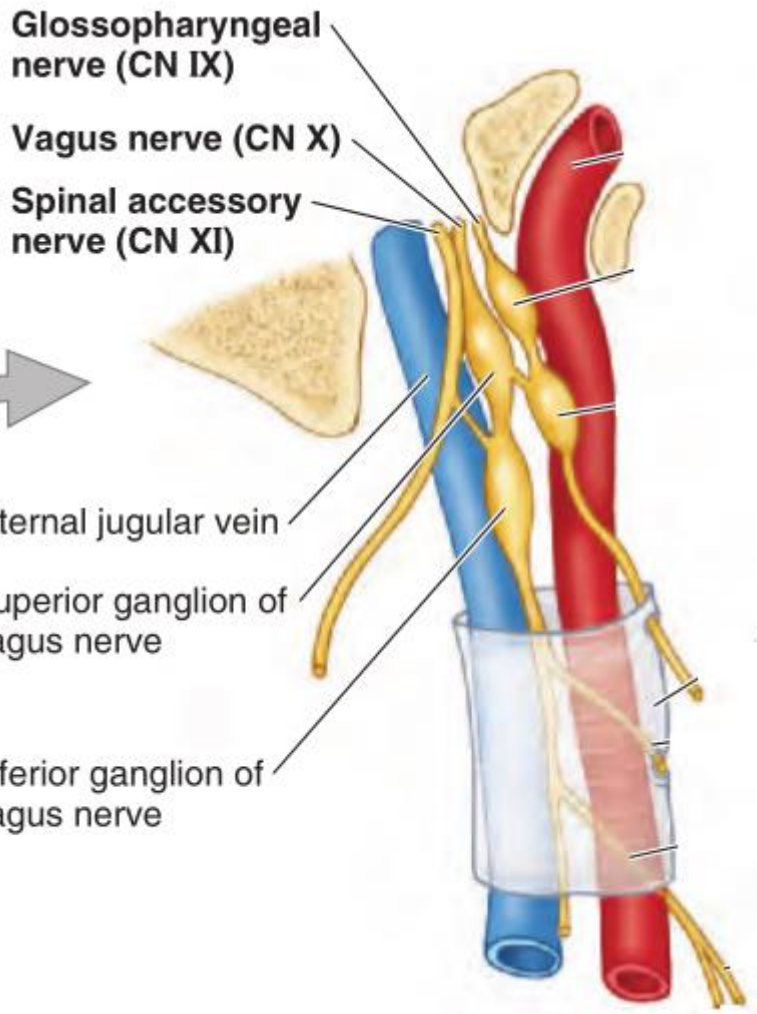

Eyeball
Retina
Optic nerve (II)
Optic chiasma
Optic tract
Lateral geniculate nucleus of thalamus
Optic radiation
Visual cortex

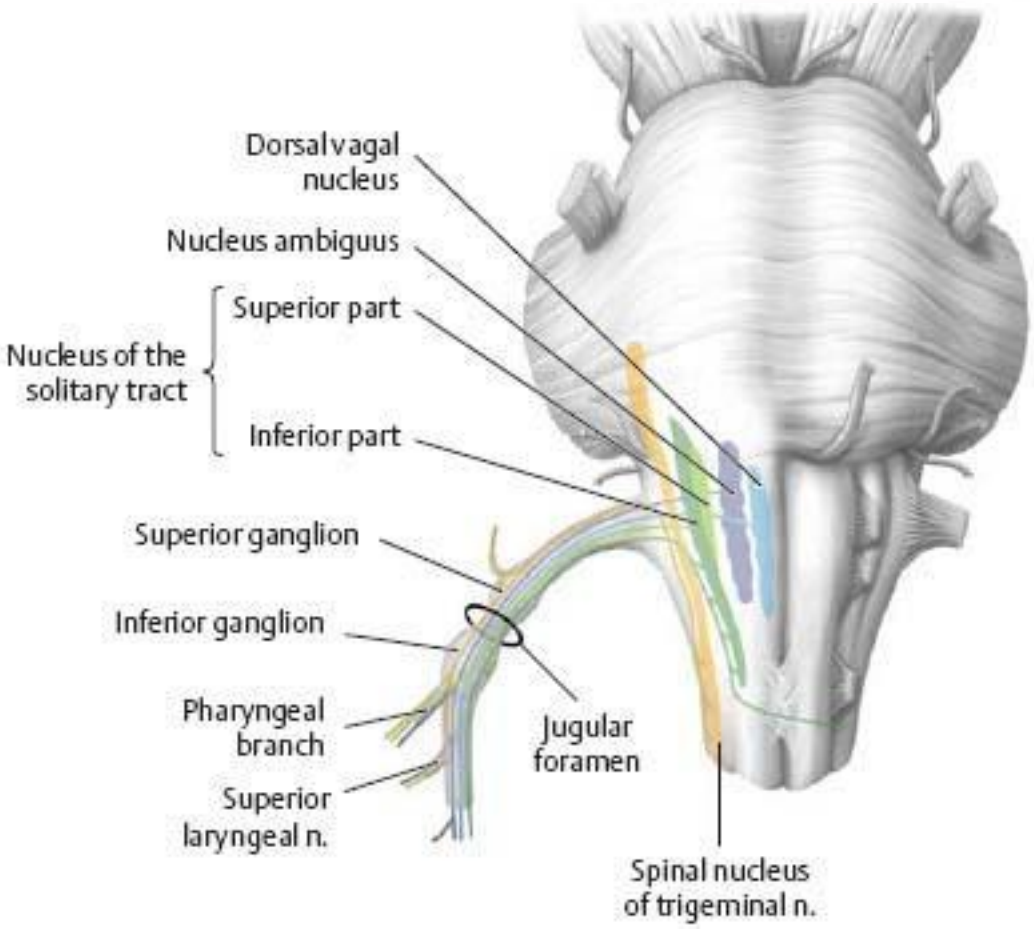

Eye
Optic nerve
Visual cortex

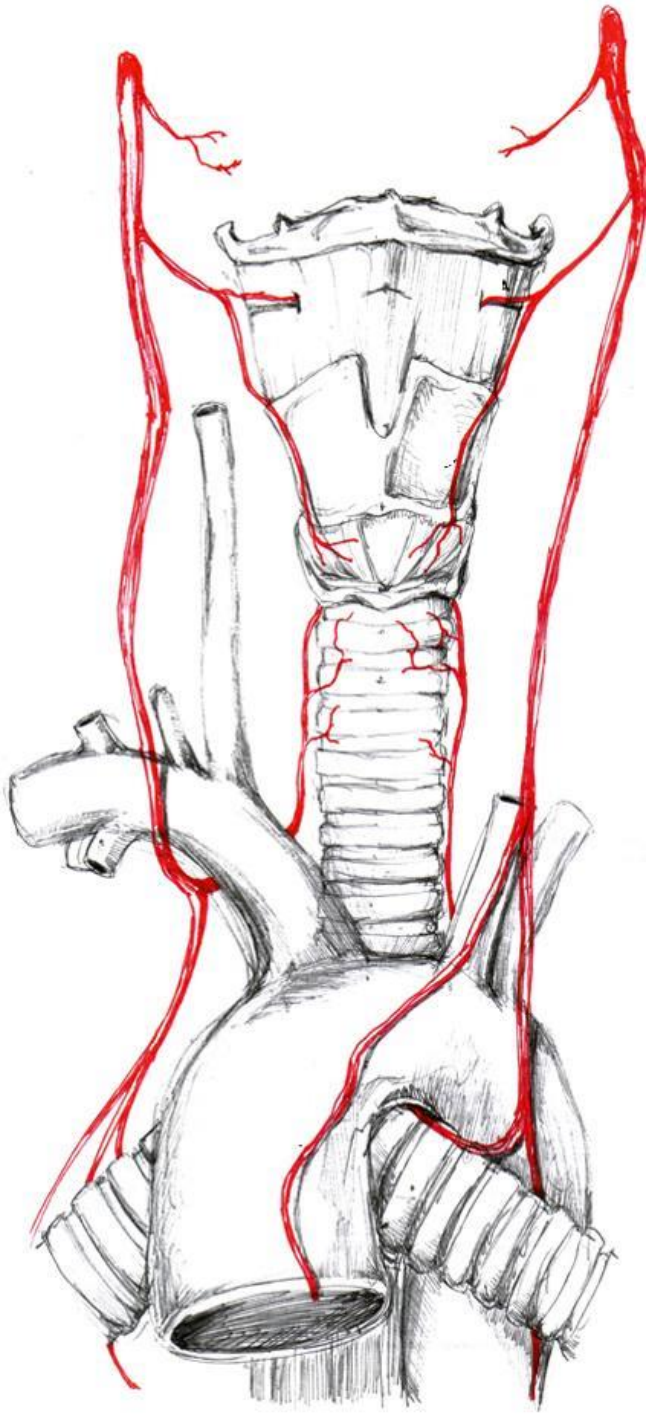

Compressed optic chiasm
Pituitary tumor
©2019 Mount Sinai Health System
Optic nerve
Pituitary tumor
LGN, reduced in size
Normal LGN
Normal LGN dimensions

Vagus n. (X)

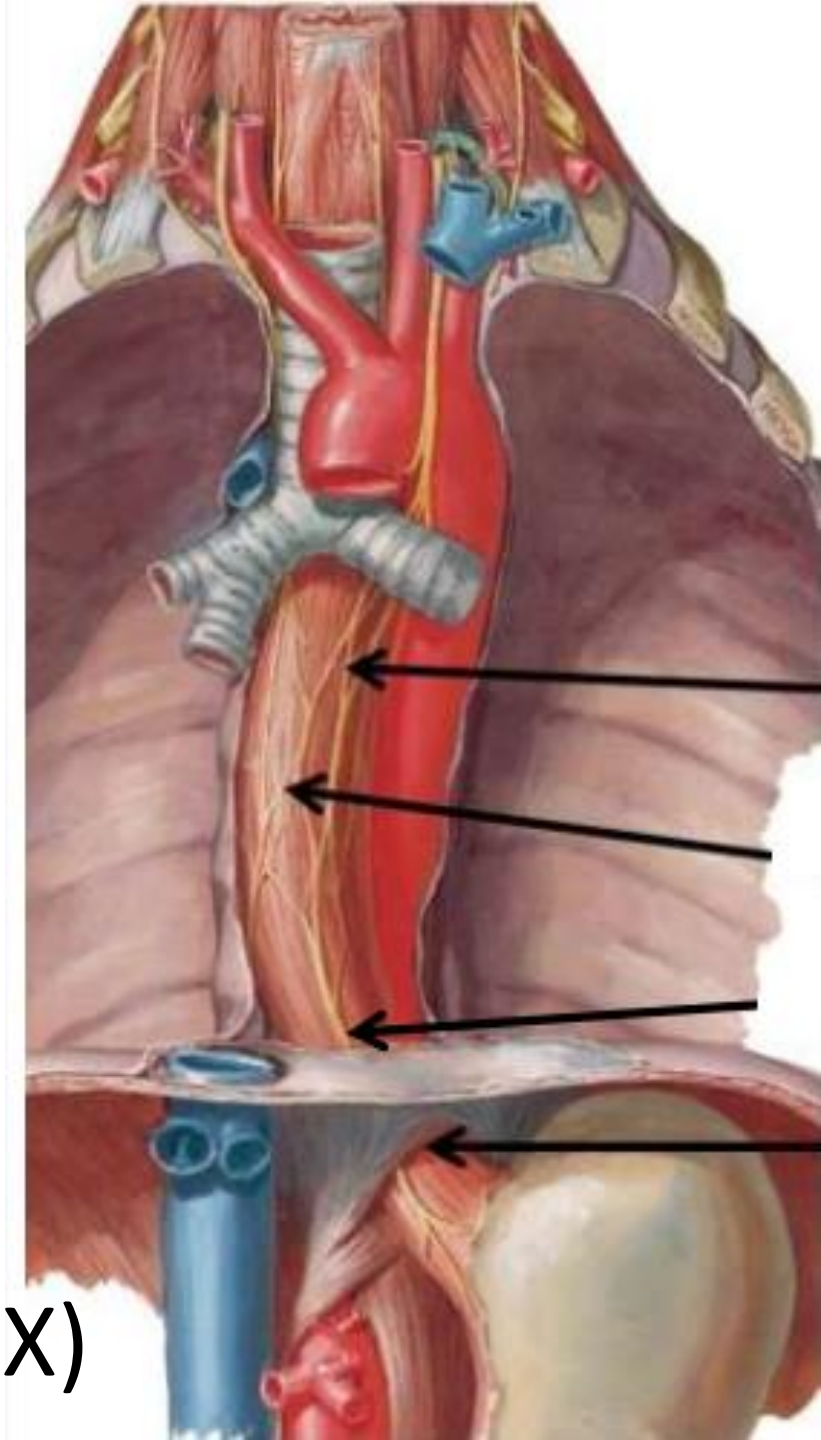



Glossopharyngeal nerve (CN IX)
Vagus nerve (CN X)
Spinal accessory nerve (CN XI)
Internal jugular vein
Superior ganglion of vagus nerve
Inferior ganglion of vagus nerve

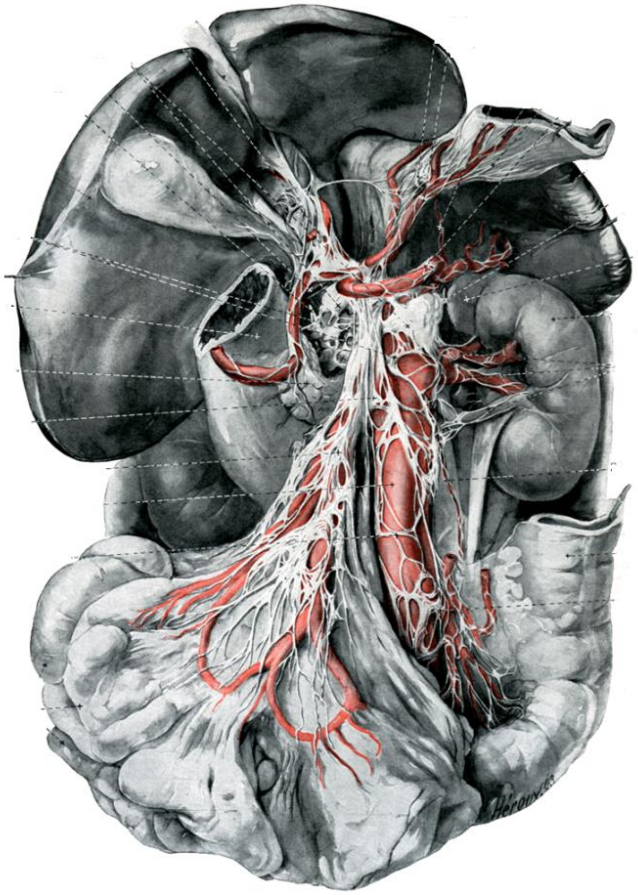

Dorsal vagal nucleus
Nucleus ambiguus
Nucleus of the solitary tract
Superior part
Inferior part
Superior ganglion
Inferior ganglion
Pharyngeal branch
Superior laryngeal n.
Jugular foramen
Spinal nucleus of trigeminal n.

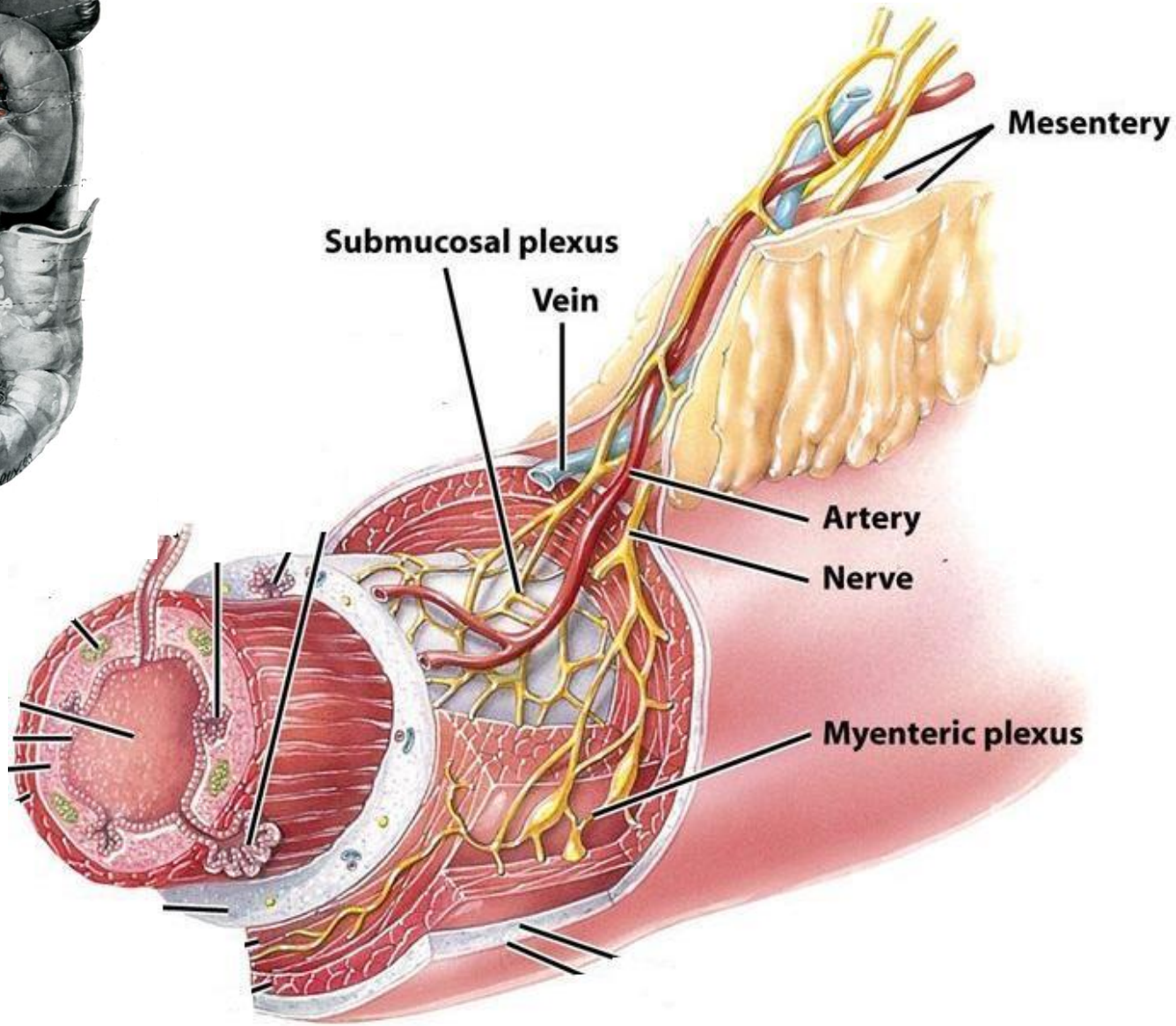


Vagus n. (X)



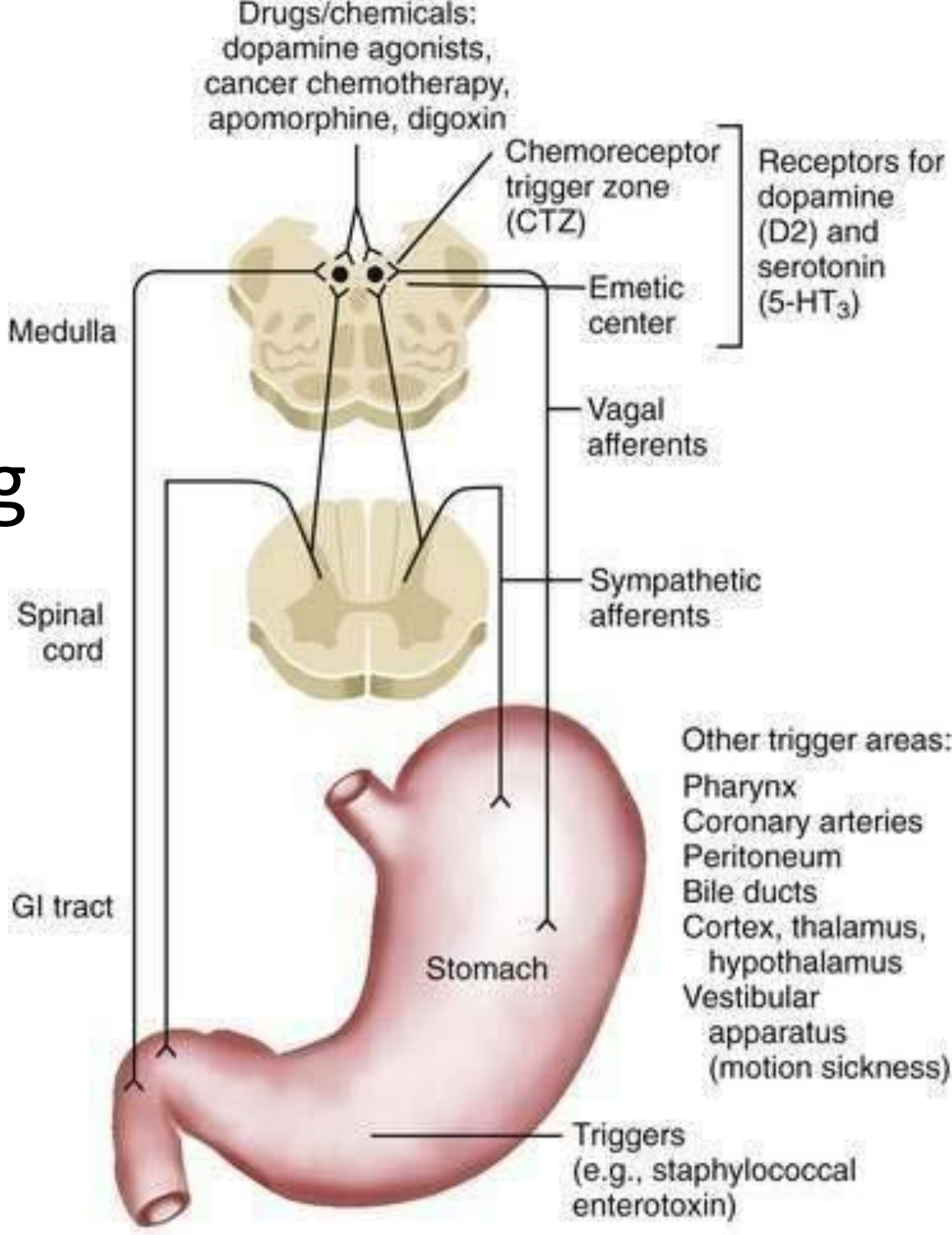
Vagus n. (X)

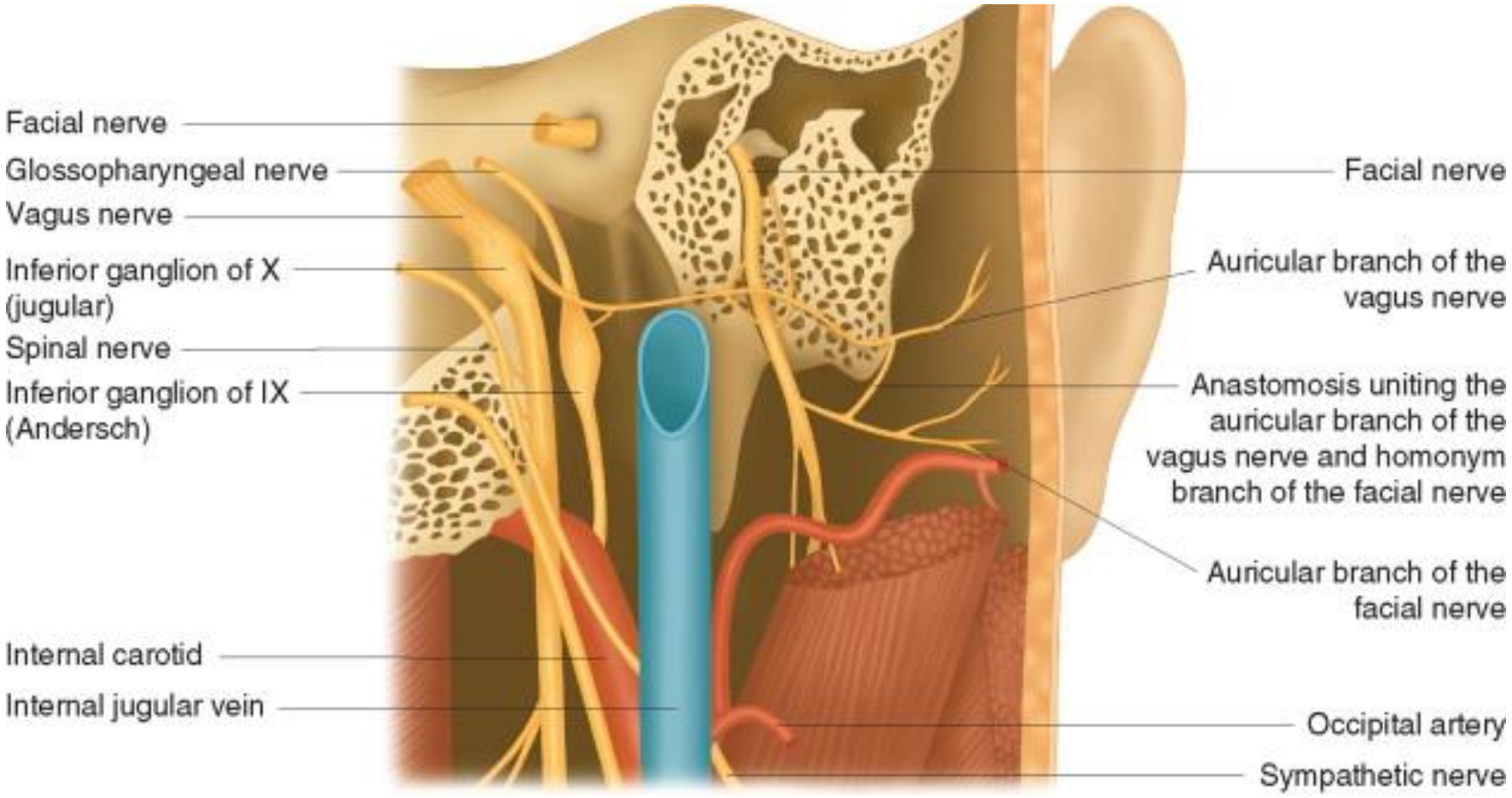



Mesentery
Submucosal plexus
Vein
Artery
Nerve
Myenteric plexus

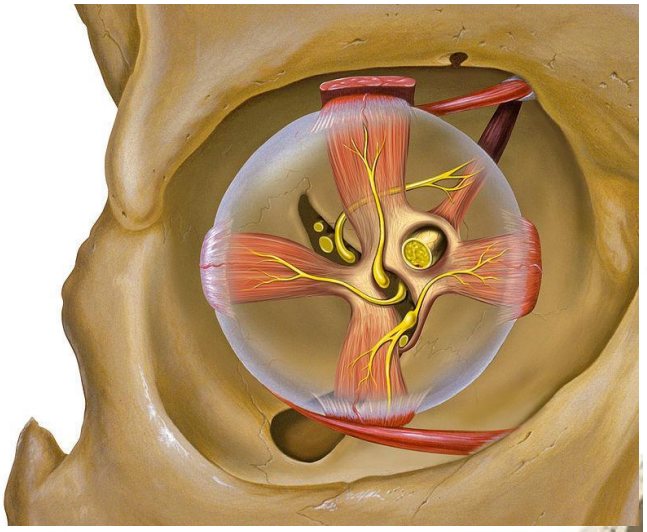
Vagus n. (X)

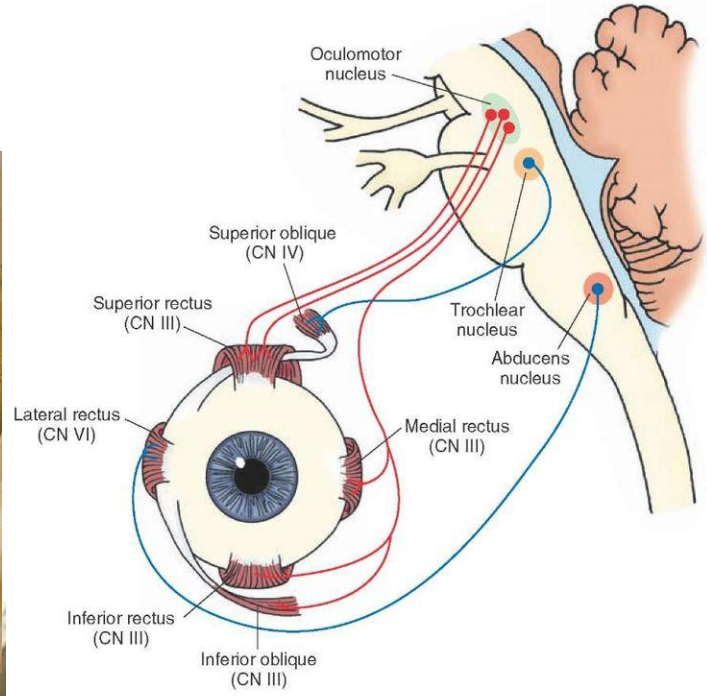
Nausea & Vomiting

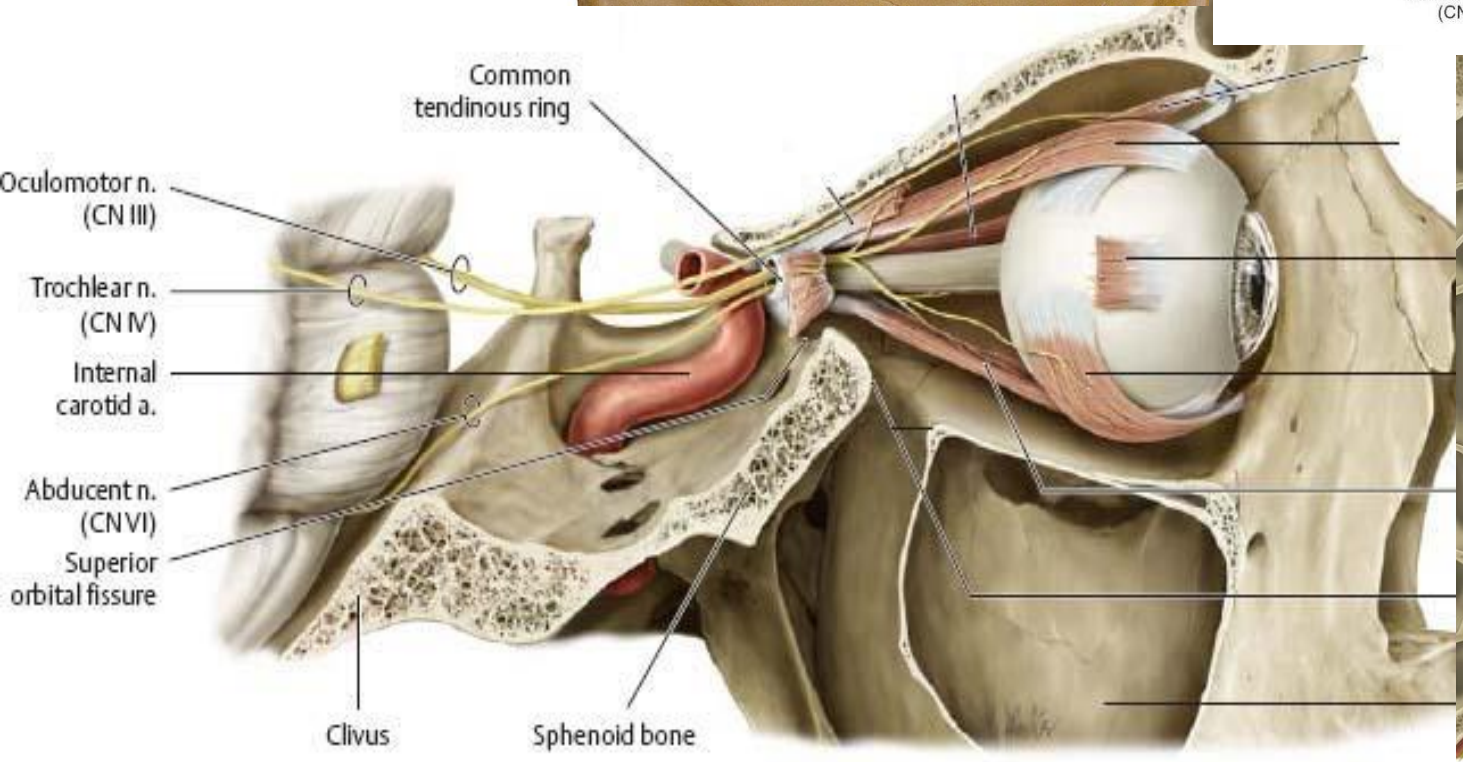


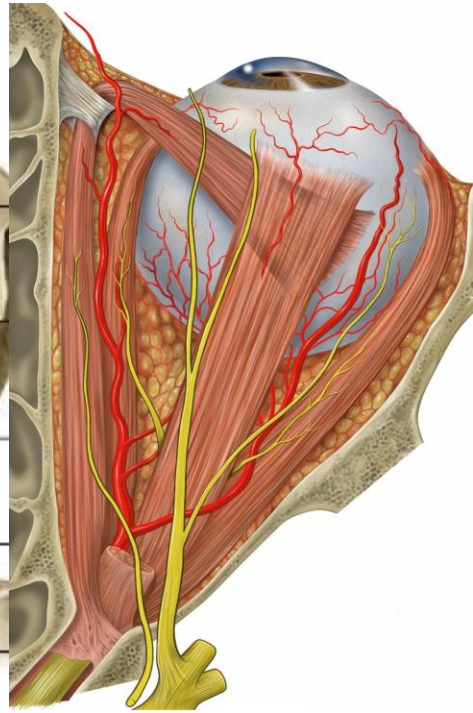

Facial nerve
Glossopharyngeal nerve
Vagus nerve
Inferior ganglion of X (jugular)
Spinal nerve
Inferior ganglion of IX (Andersch)
Internal carotid
Internal jugular vein
Facial nerve
Auricular branch of the vagus nerve
Anastomosis uniting the auricular branch of the vagus nerve and homonym branch of the facial nerve
Auricular branch of the facial nerve
Occipital artery
Sympathetic nerve

Oculomotor n. (III)
Trochlear n. (IV)
Abducens n. (VI)

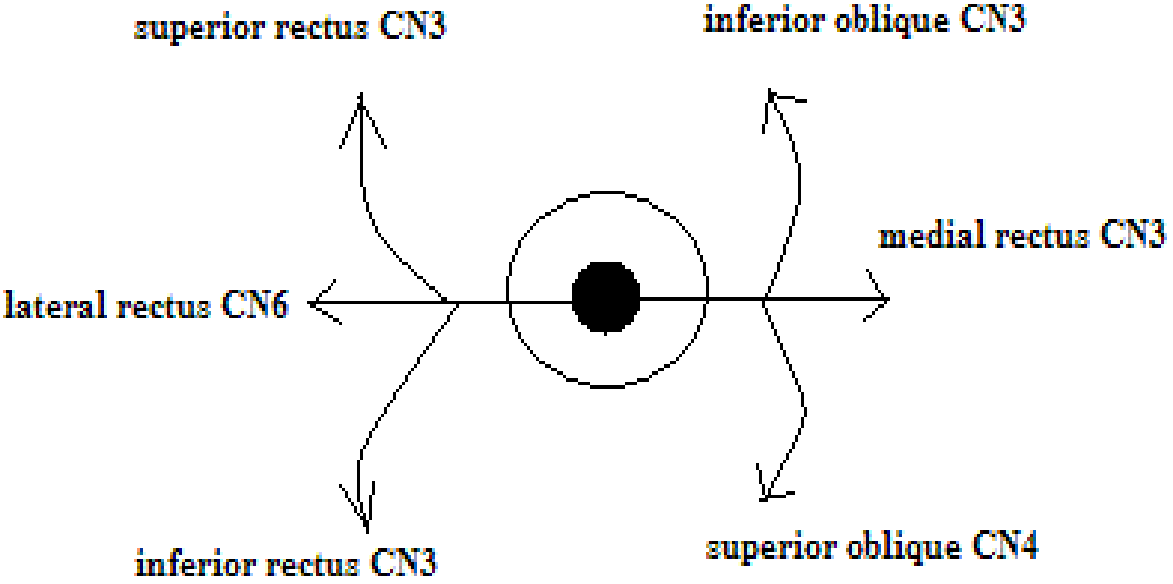


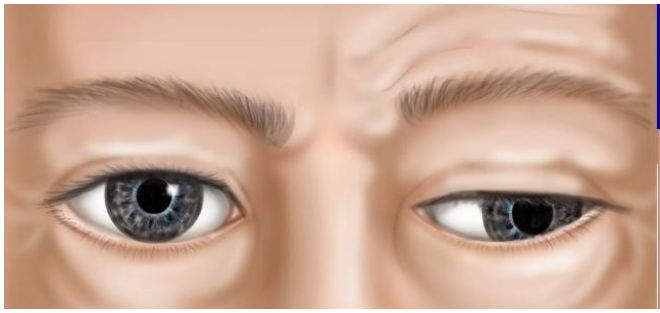


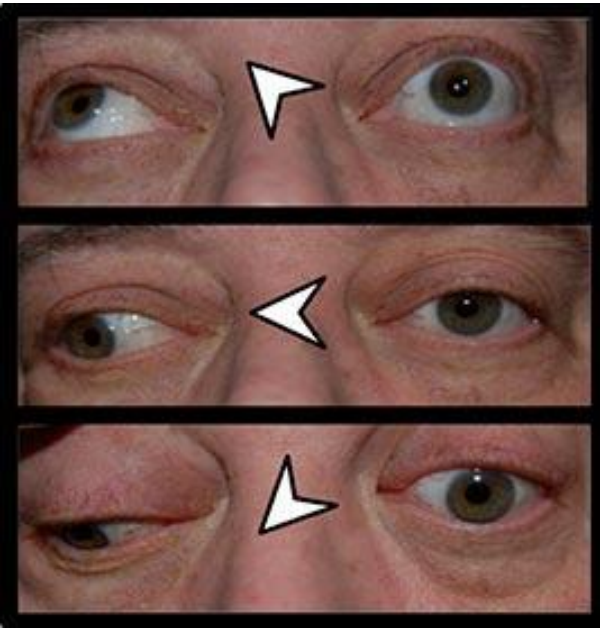


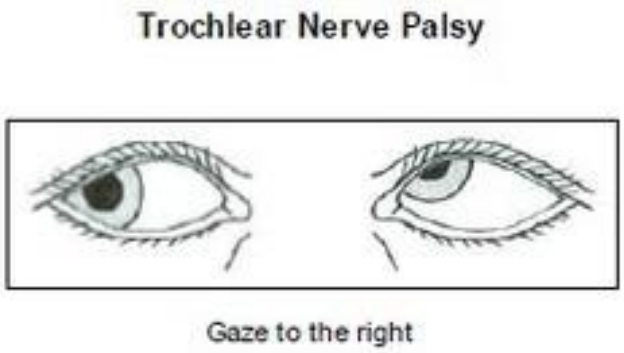


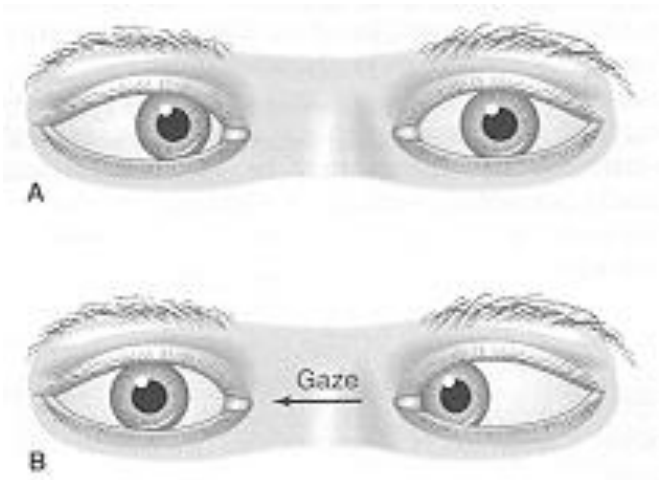
Oculomotor n. (III), Trochlear n. (IV), Abducens n. (VI) Palsy



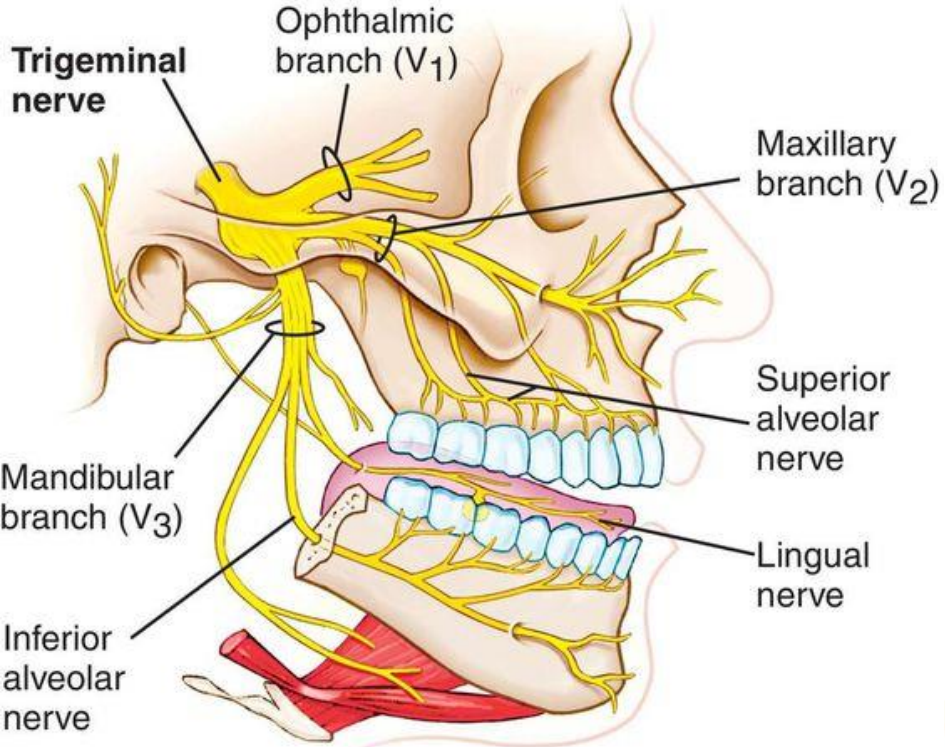


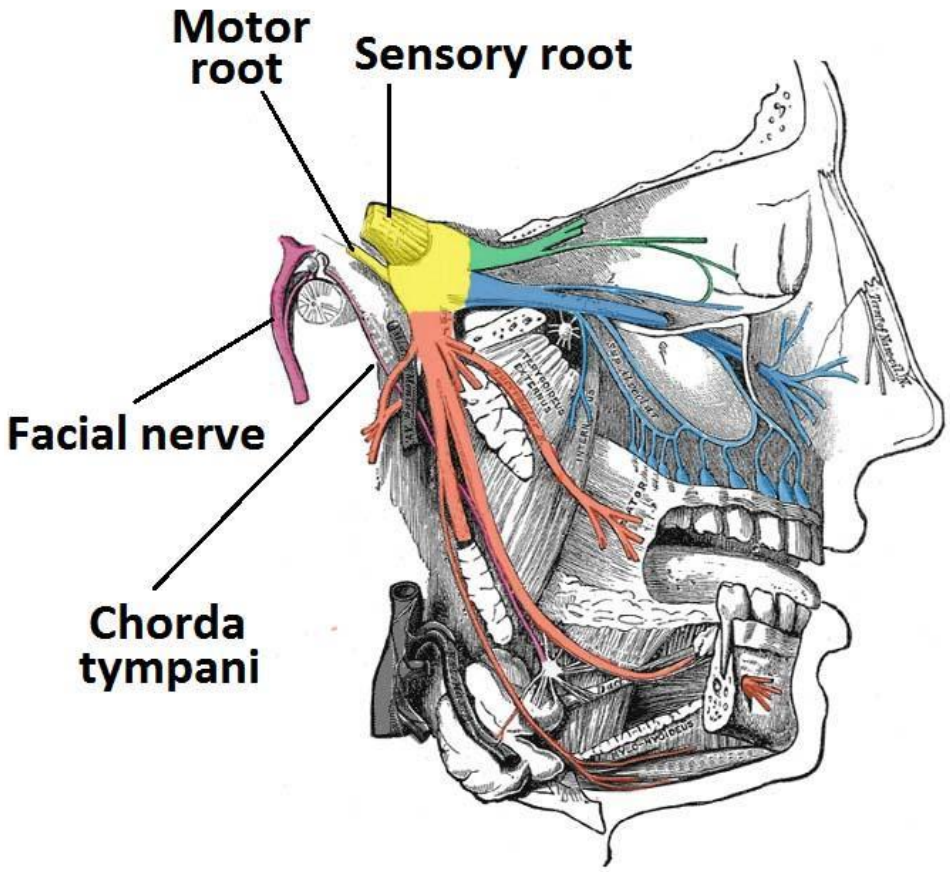


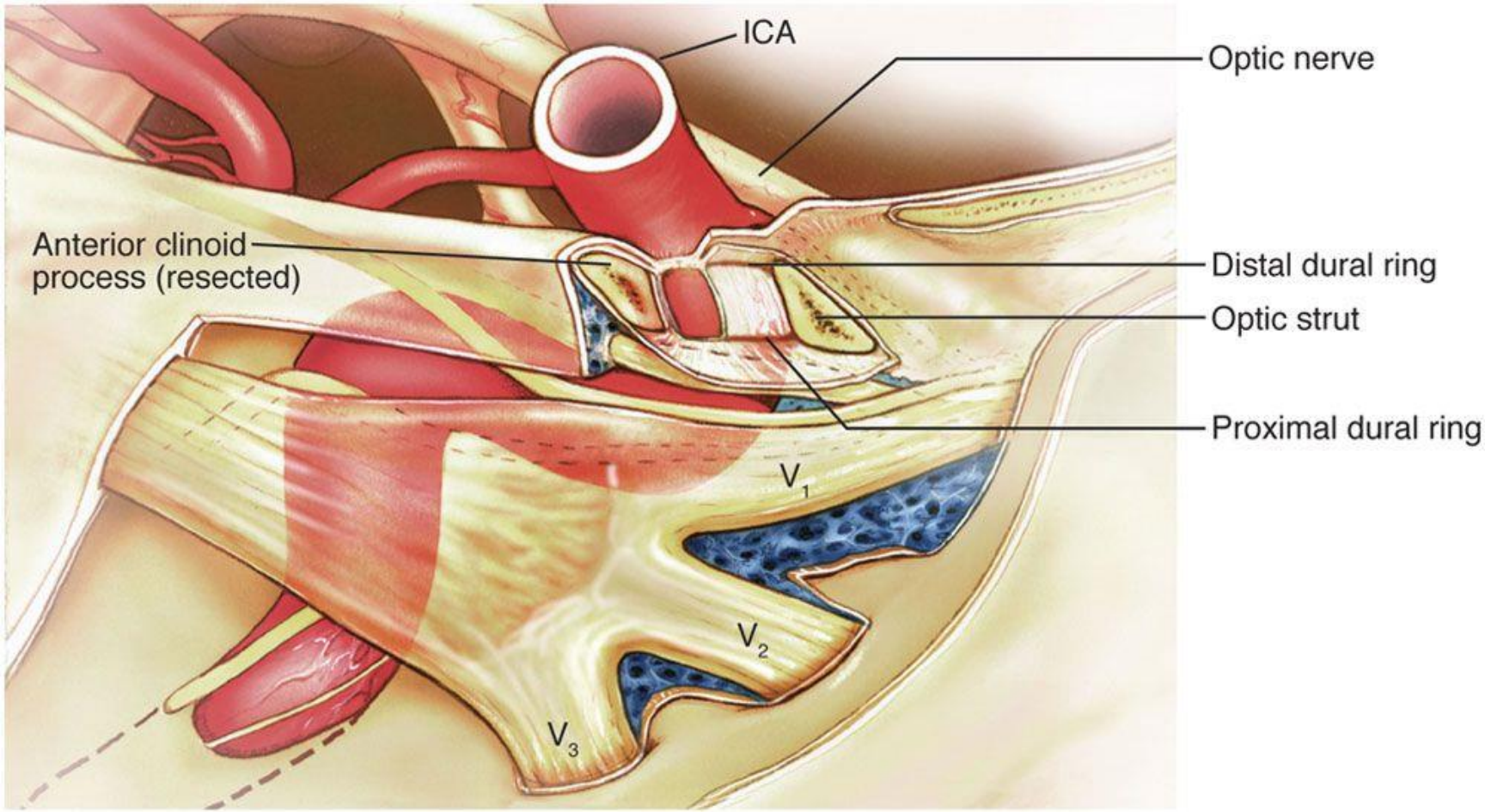


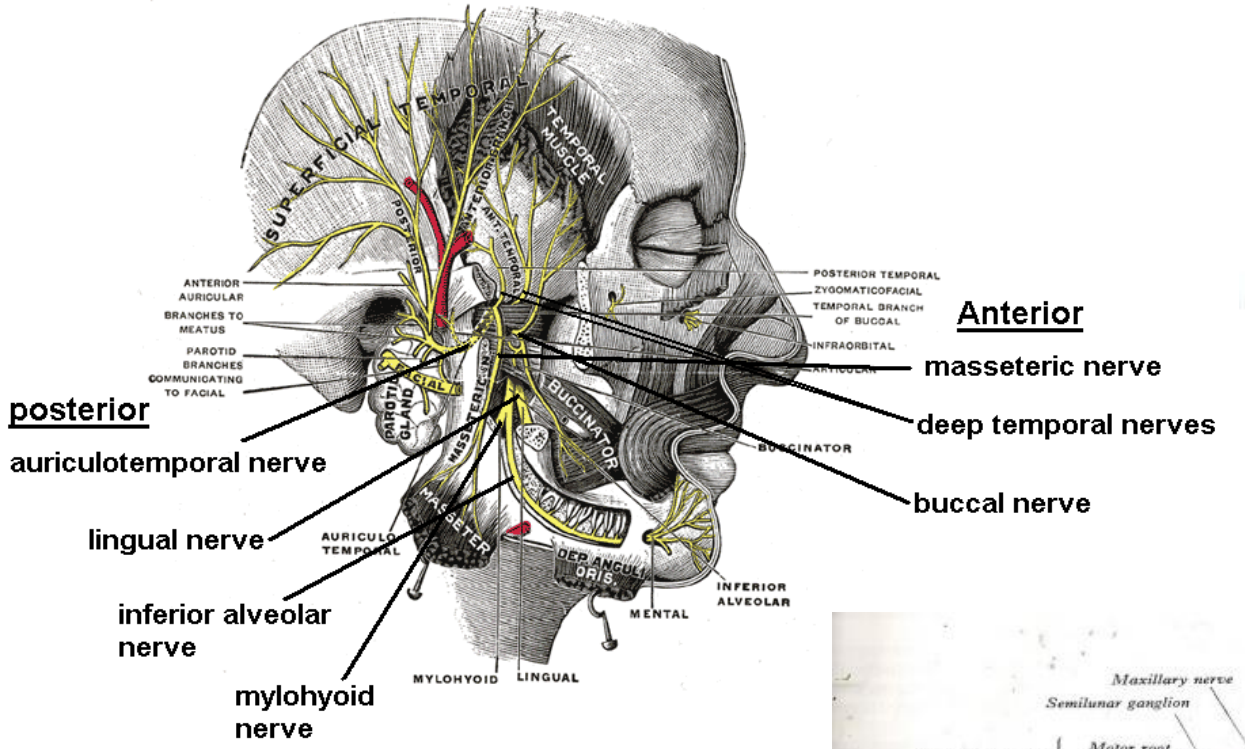


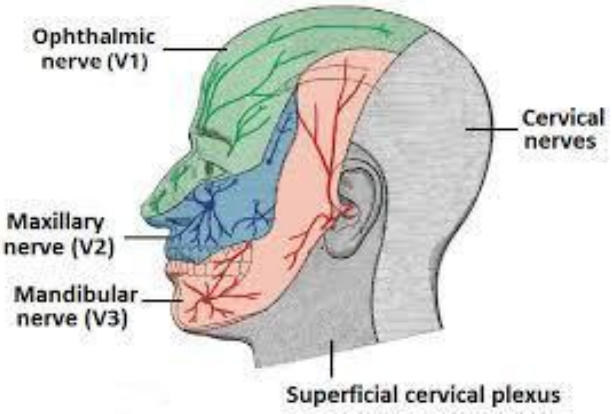
Trigeminal n. (V)

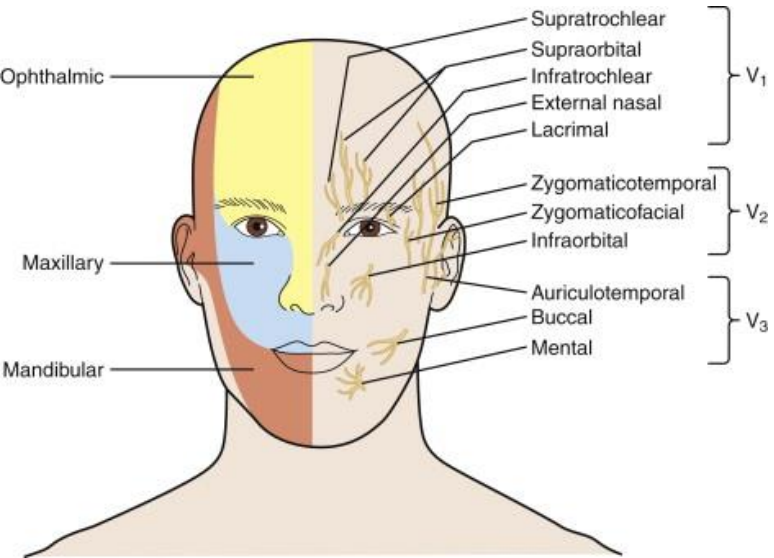


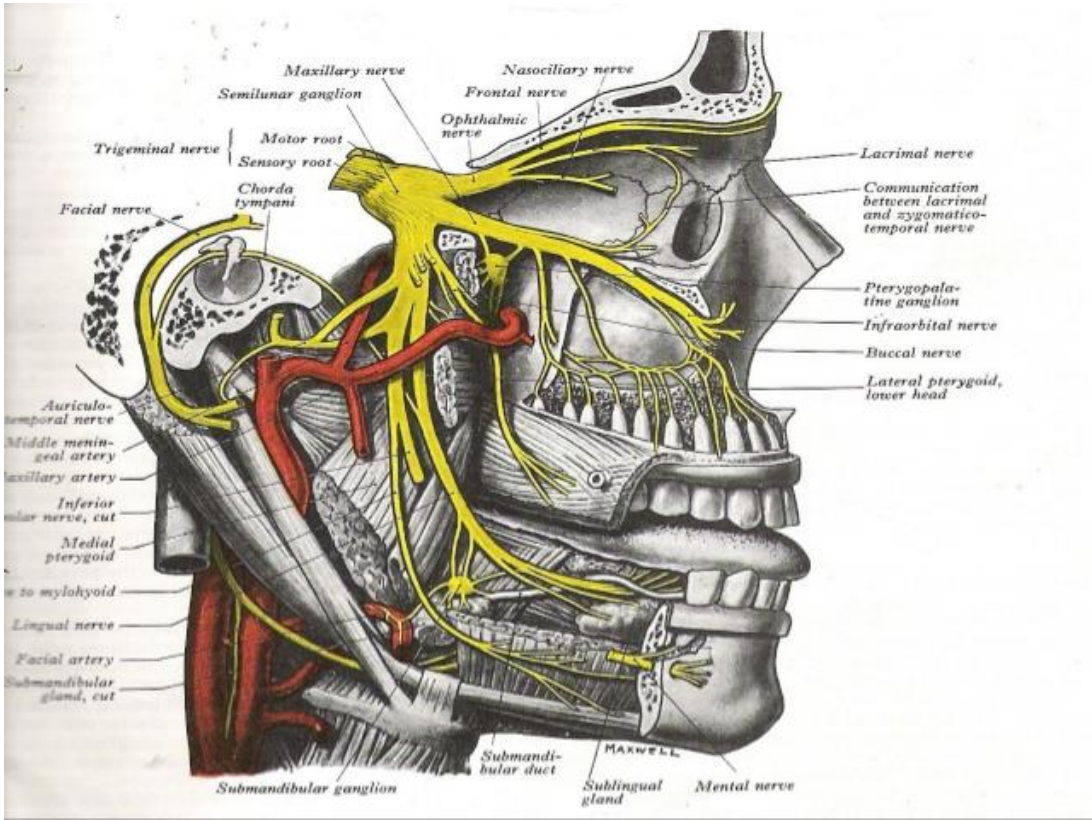



ICA
Optic nerve
Anterior clinoid process (resected)
Distal dural ring
Optic strut
Proximal dural ring
V1
V2
V3

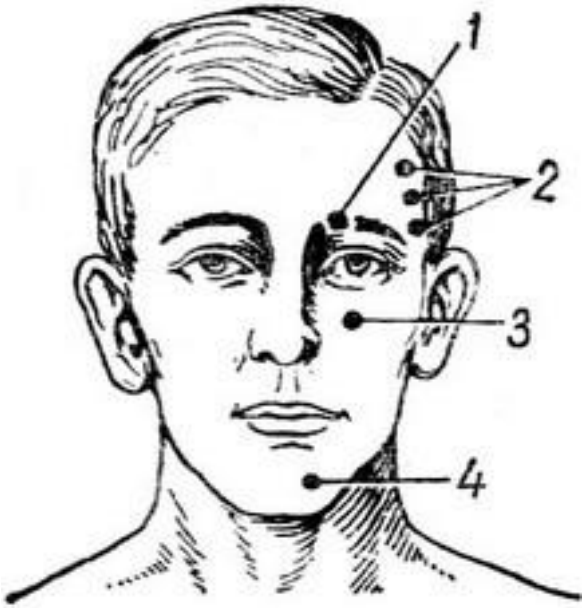

SUPERFICIAL TEMPORAL
TEMPORAL MUSCLE
ANTERIOR AURICULAR
BRANCHES TO MEATUS
PAROTID BRANCHES COMMUNICATING TO FACIAL
POSTERIOR TEMPORAL
ZYGOMATICOFACIAL
TEMPORAL BRANCH OF BUCCAL
INFRAORBITAL
PAROTID GLAND
BUCCINATOR
AURICULO-TEMPORAL
MASSETER
DEP. ANGULI ORIS
MENTAL
INFERIOR ALVEOLAR
MYLOHYOID
LINGUAL
Anterior
masseteric nerve
deep temporal nerves
buccal nerve
posterior
auriculotemporal nerve
lingual nerve
inferior alveolar nerve
mylohyoid nerve

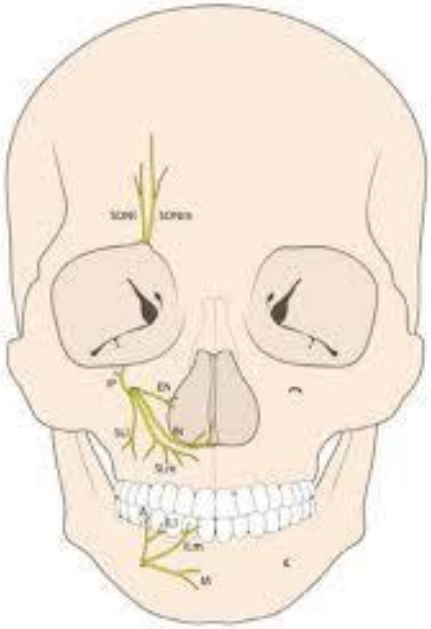

Ophthalmic nerve (V1)
Cervical nerves
Maxillary nerve (V2)
Mandibular nerve (V3)
Superficial cervical plexus


Ophthalmic
Maxillary
Mandibular
Supratrochlear
Supraorbital
Infratrochlear
External nasal
Lacrimal
V1
Zygomaticotemporal
Zygomaticofacial
Infraorbital
V2
Auriculotemporal
Buccal
Mental
V3

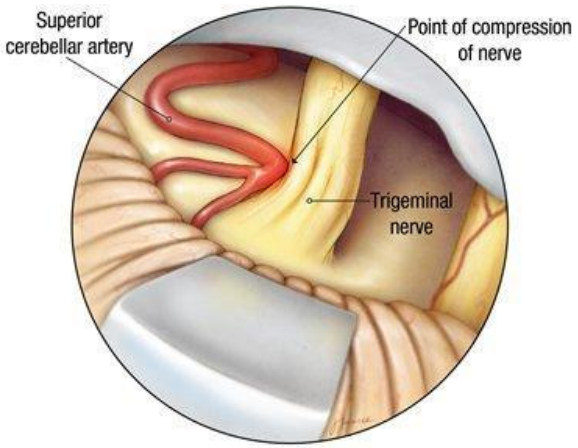

Maxillary nerve
Semilunar ganglion
Nasociliary nerve
Frontal nerve
Ophthalmic nerve
Trigeminal nerve
Motor root
Sensory root
Chorda tympani
Facial nerve
Lacrimal nerve
Communication between lacrimal and zygomatico-temporal nerve
Pterygopala-tine ganglion
Infraorbital nerve
Buccal nerve
Lateral pterygoid, lower head
Auriculo-temporal nerve
Middle menin-geal artery
Inferior alveolar nerve, cut
Medial pterygoid
Lingual nerve
Facial artery
Submandibular gland, cut
Submandi-bular duct
MAXWELL
Submandibular ganglion
Sublingual gland
Mental nerve

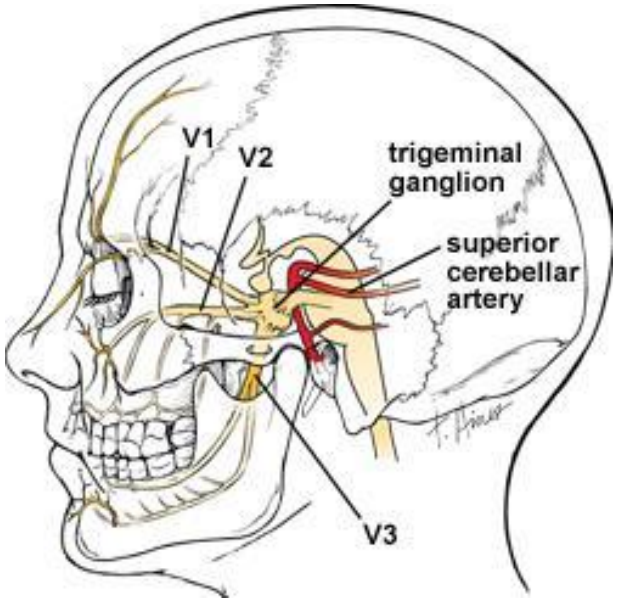
Trigeminal n. (V) Pressure Points



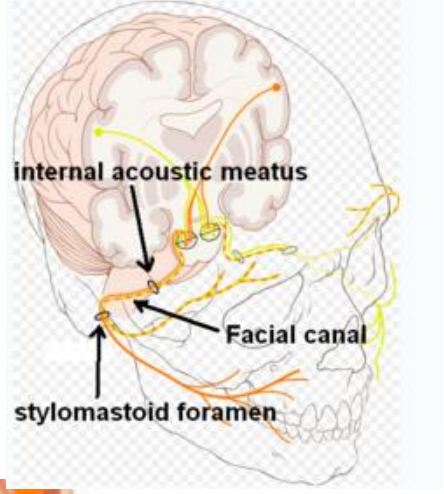


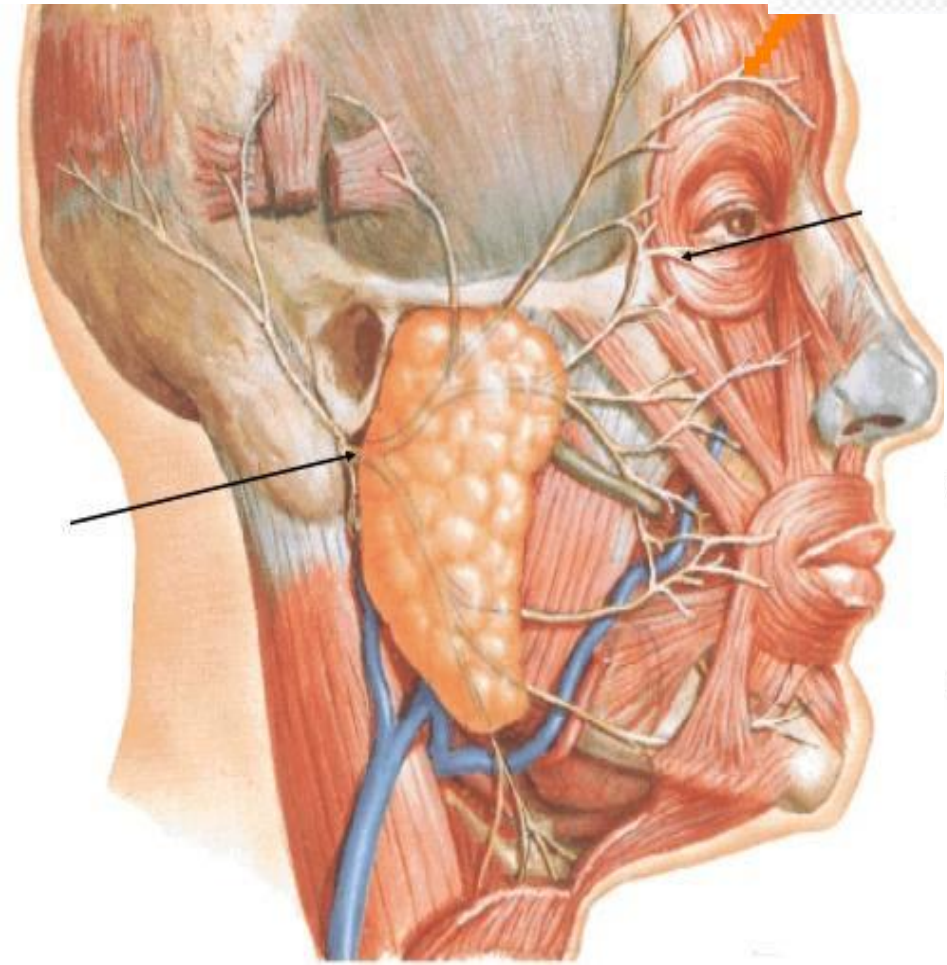
Trigeminal n. (V) Compression

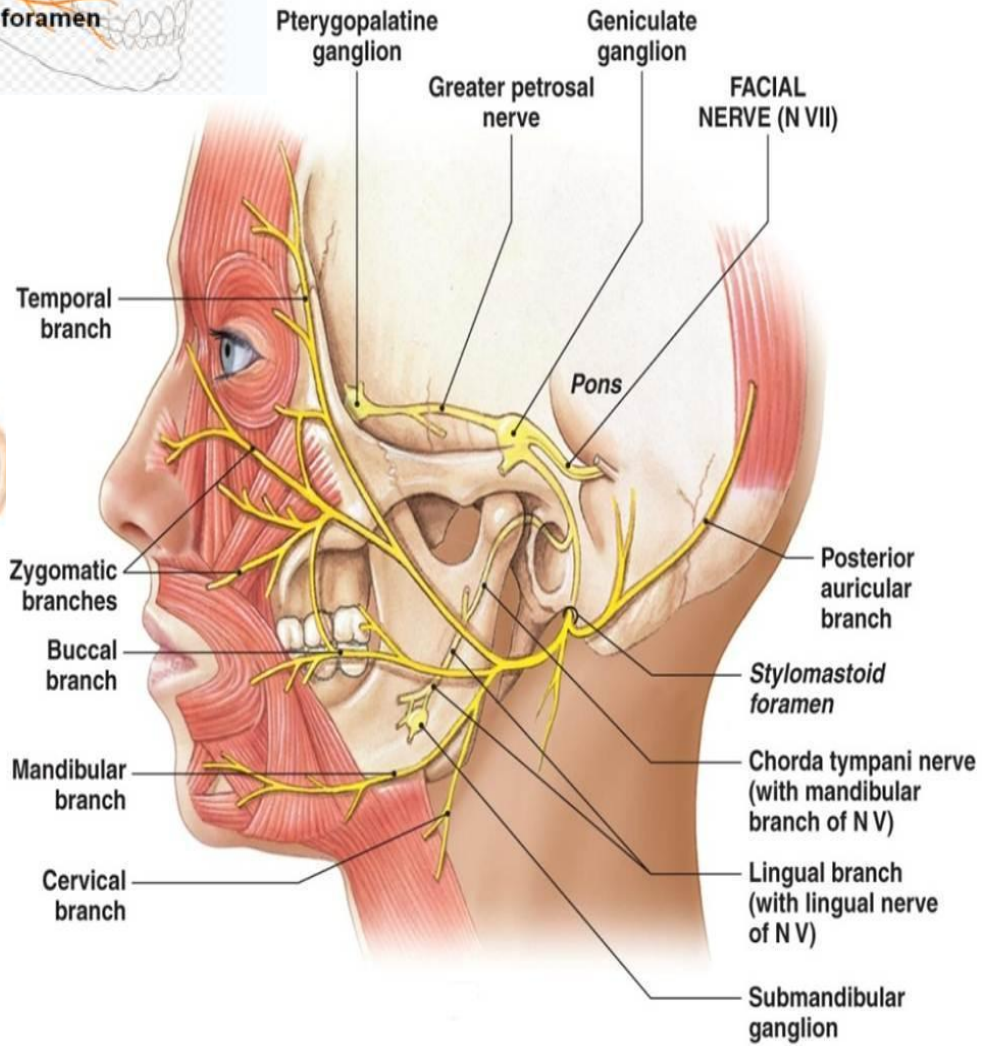


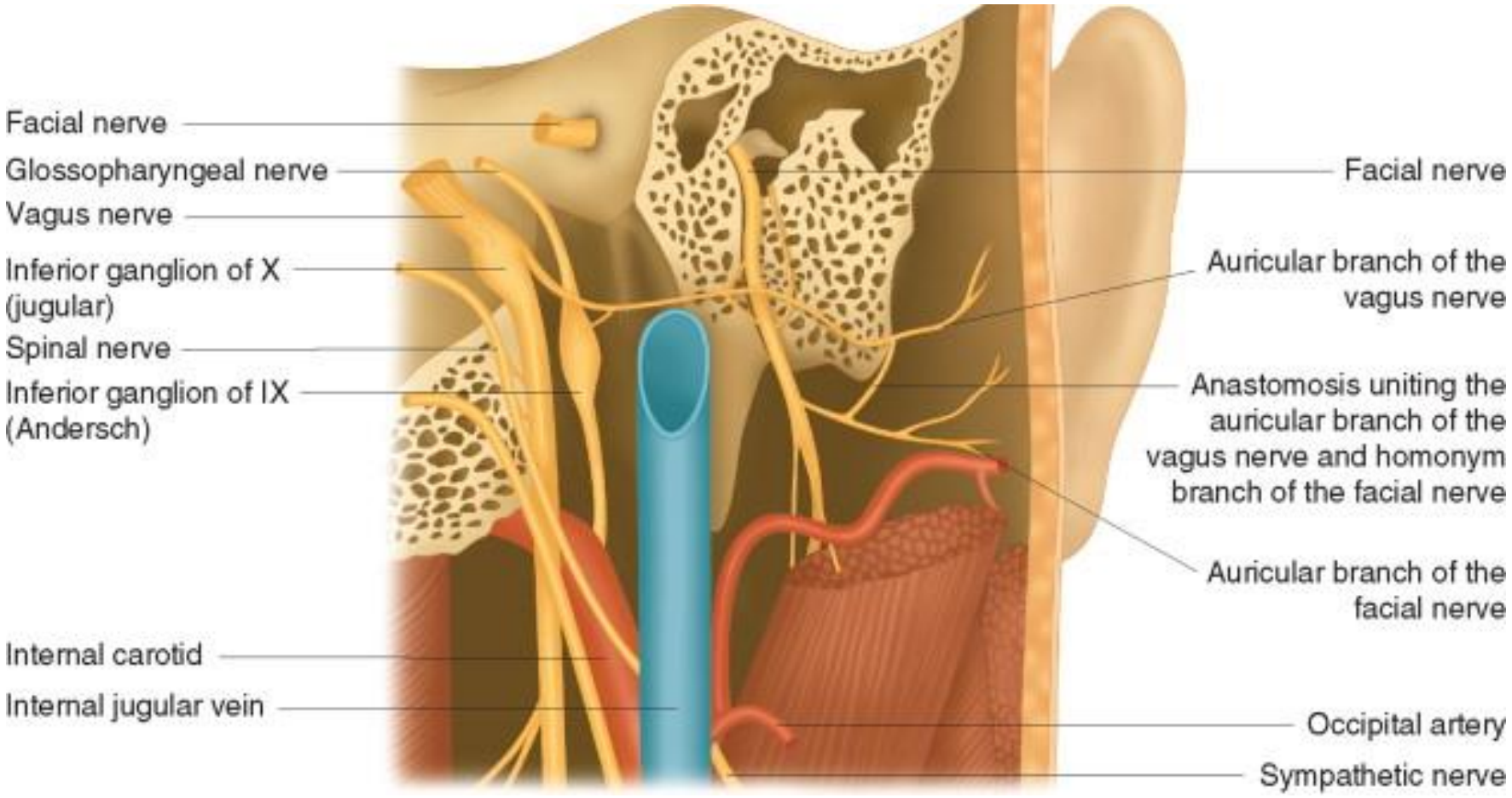


Facial n. (VII)

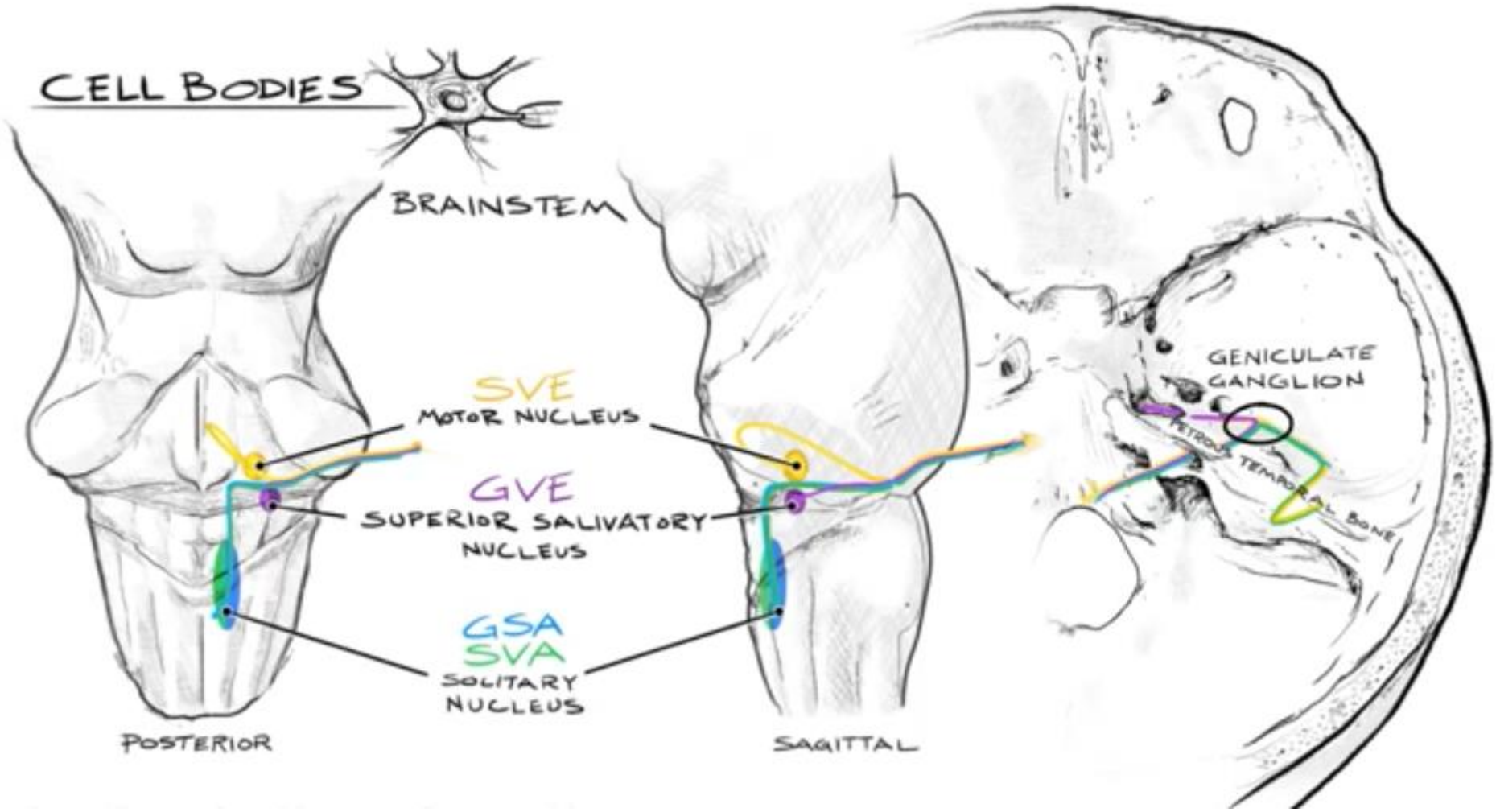

internal acoustic meatus
Facial canal
stylomastoid foramen



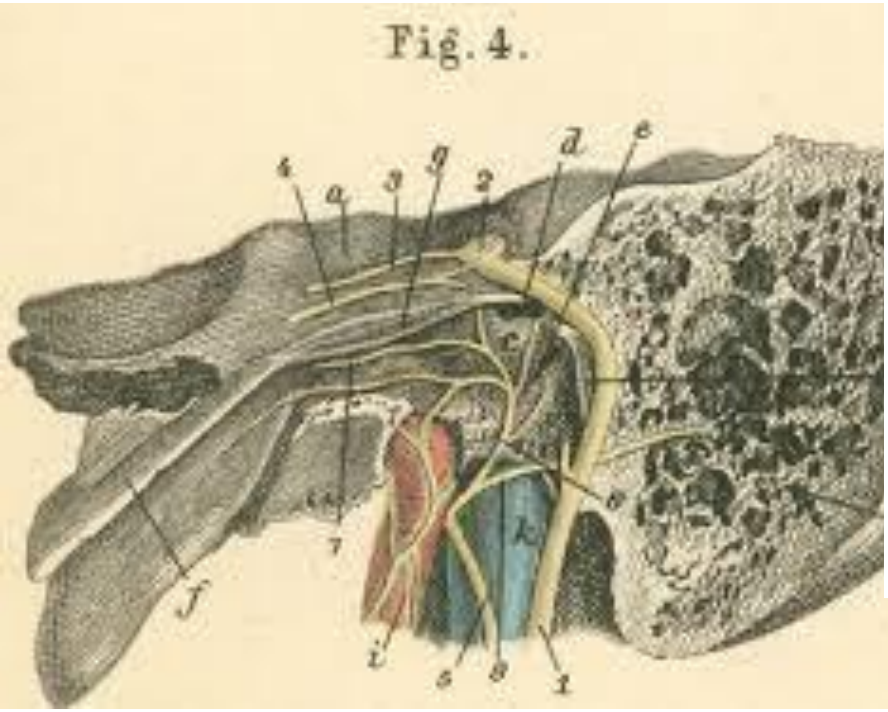

Pterygopalatine ganglion
Geniculate ganglion
Greater petrosal nerve
FACIAL NERVE (N VII)
Temporal branch
Pons
Zygomatic branches
Buccal branch
Mandibular branch
Cervical branch
Posterior auricular branch
Stylomastoid foramen
Chorda tympani nerve (with mandibular branch of N V)
Lingual branch (with lingual nerve of N V)
Submandibular ganglion

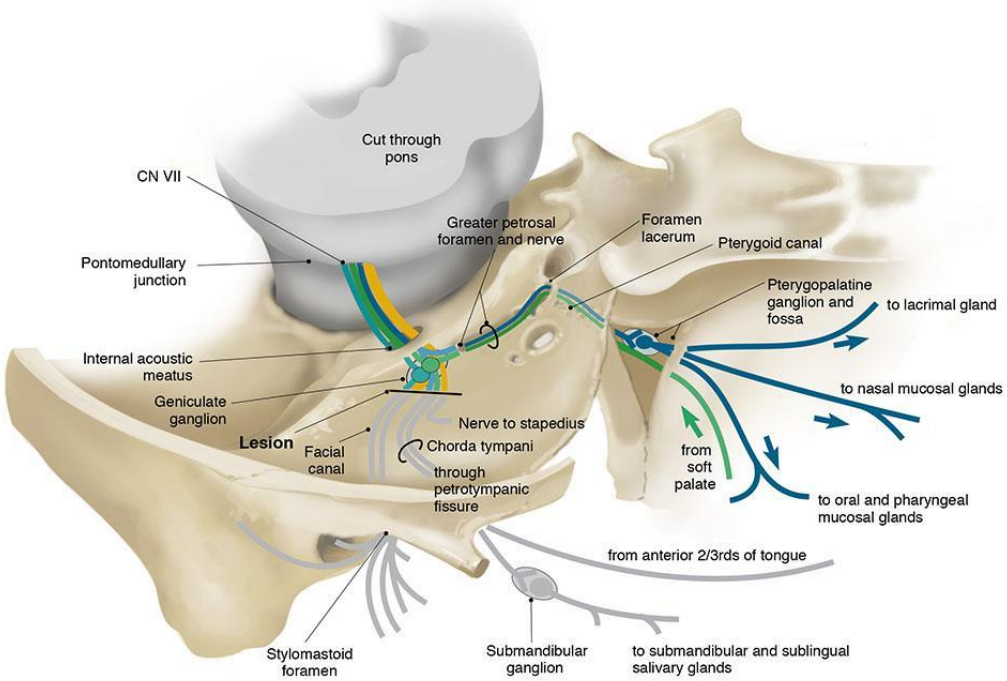

Facial nerve
Glossopharyngeal nerve
Vagus nerve
Inferior ganglion of X (jugular)
Spinal nerve
Inferior ganglion of IX (Andersch)
Internal carotid
Internal jugular vein
Facial nerve
Auricular branch of the vagus nerve
Anastomosis uniting the auricular branch of the vagus nerve and homonym branch of the facial nerve
Auricular branch of the facial nerve
Occipital artery
Sympathetic nerve

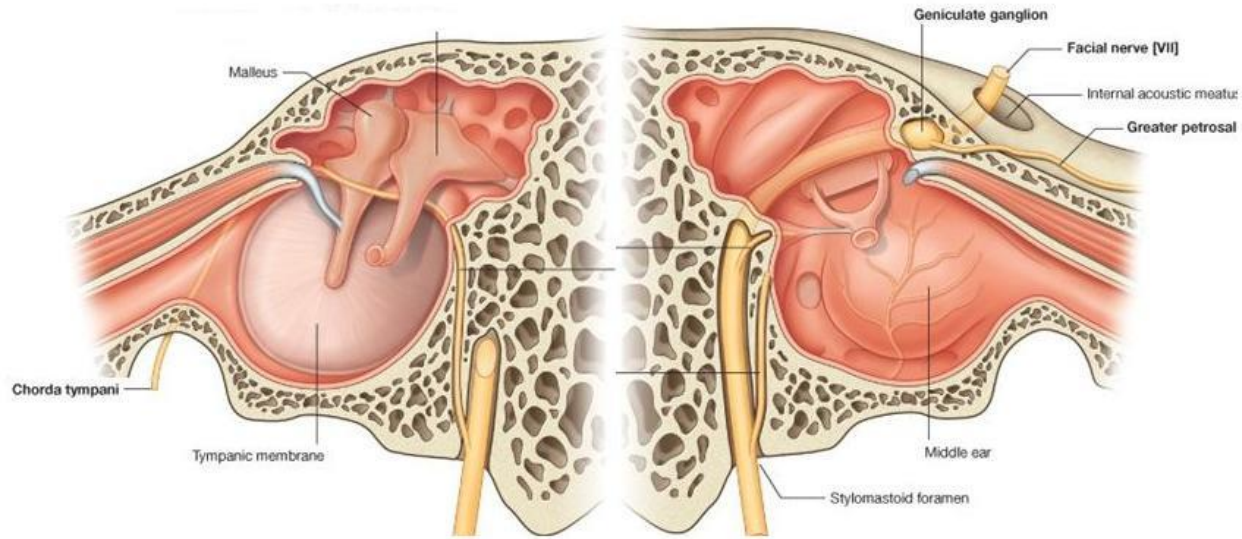
Facial n. (VII) Nuclei

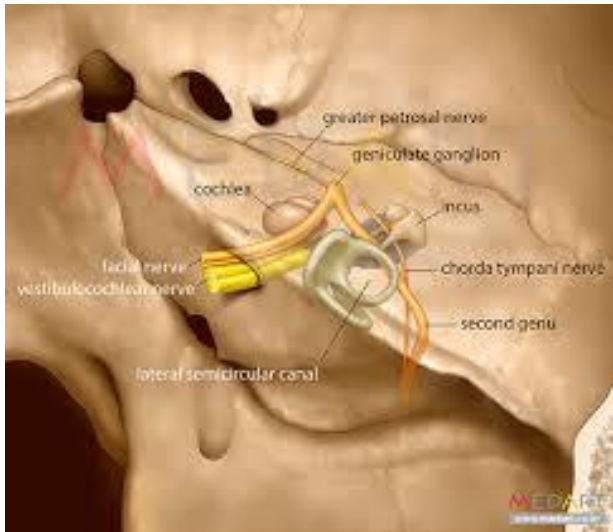


“Facial Canal”

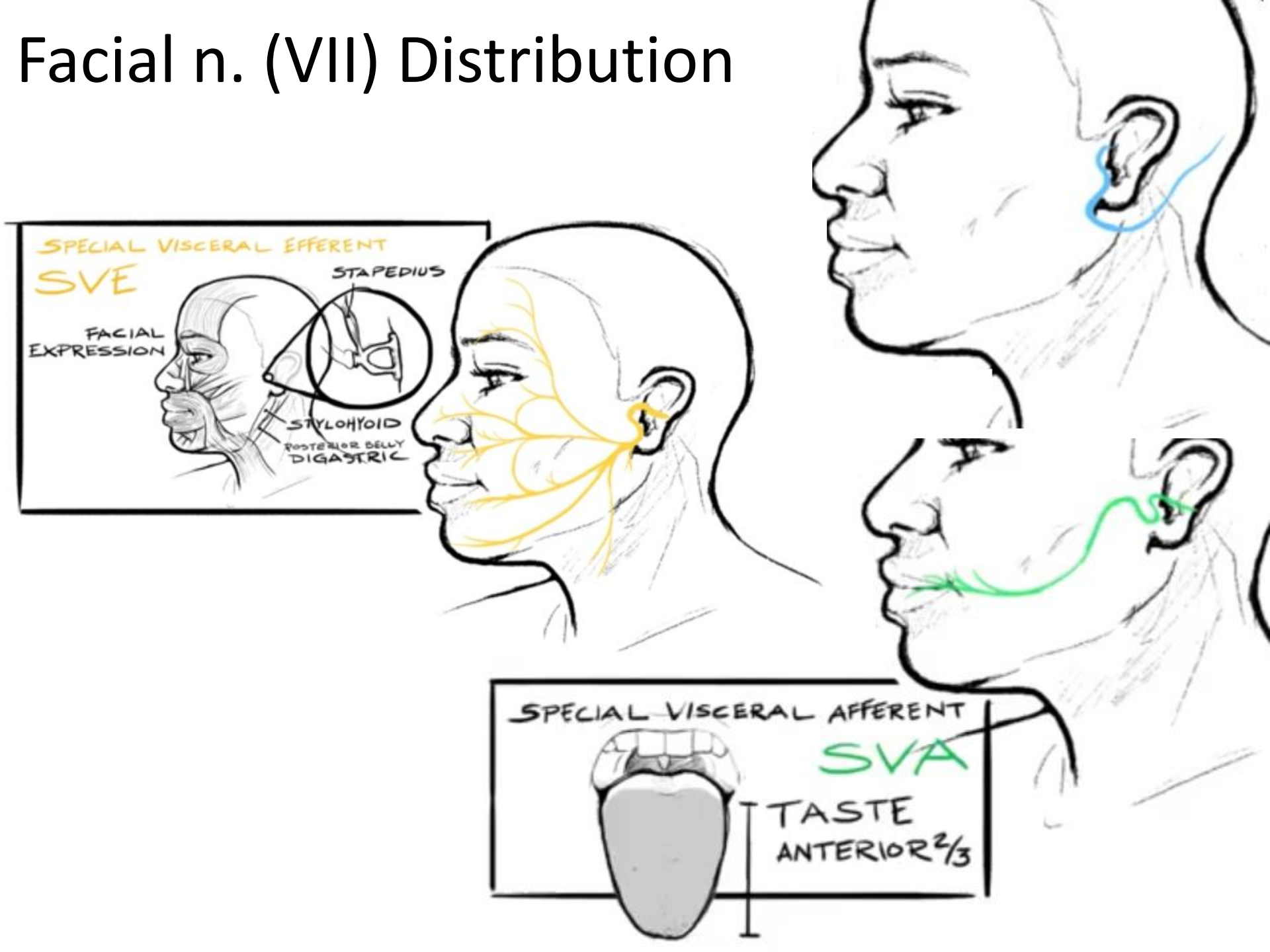




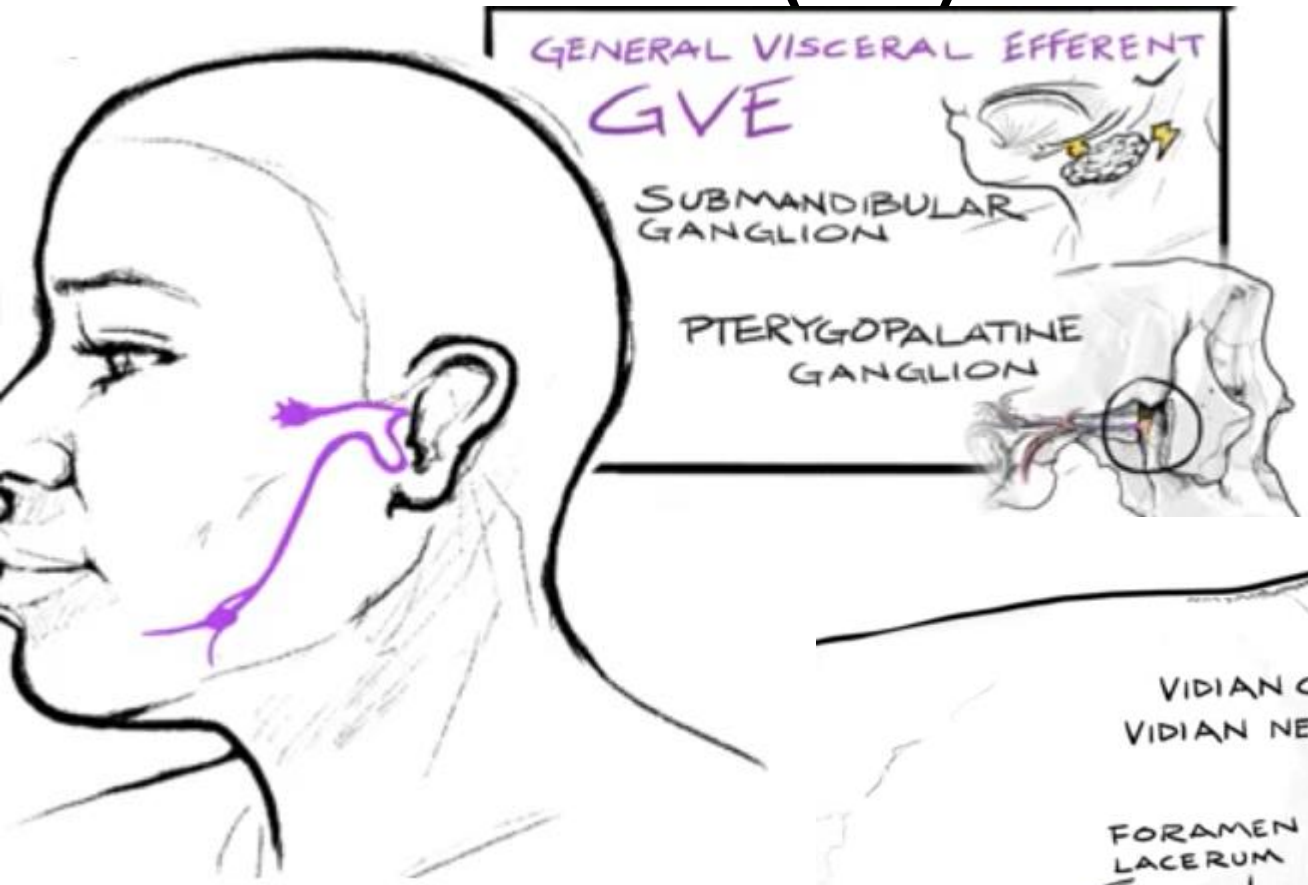


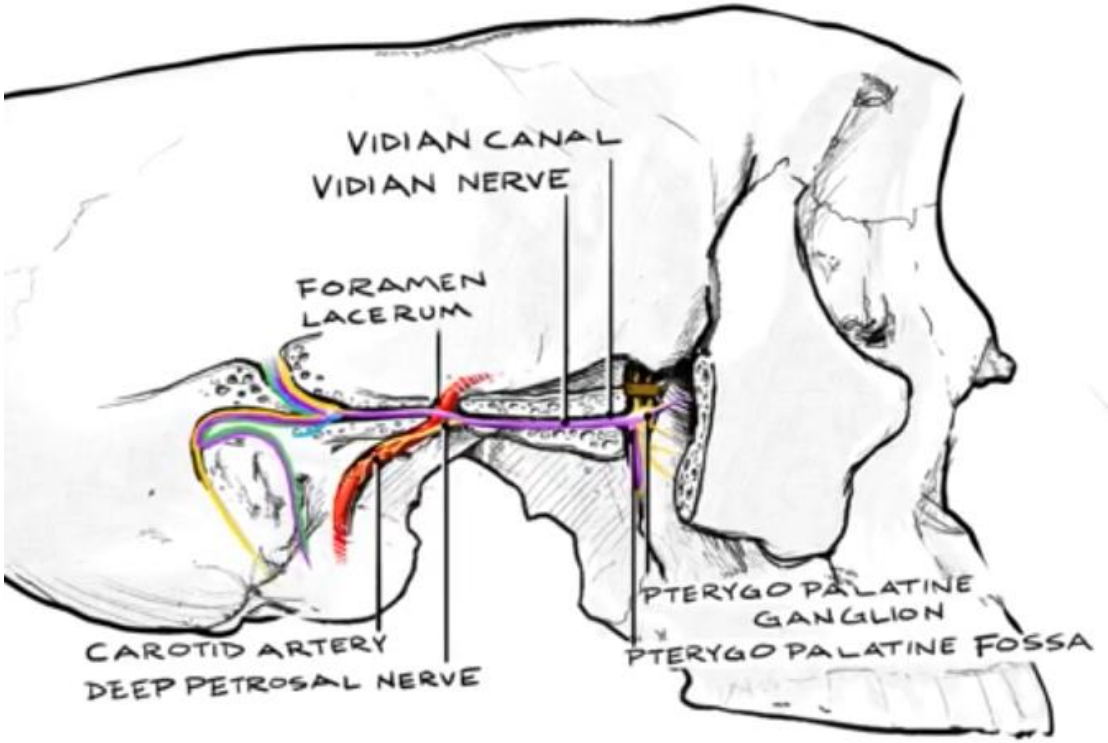


Facial n. (VII) Distribution



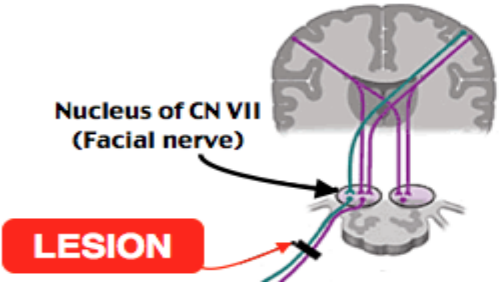
Facial n. (VII) Distribution



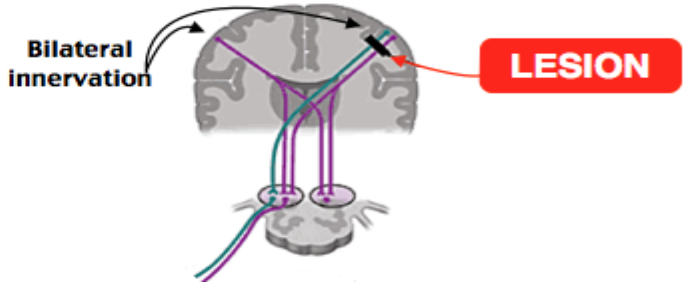


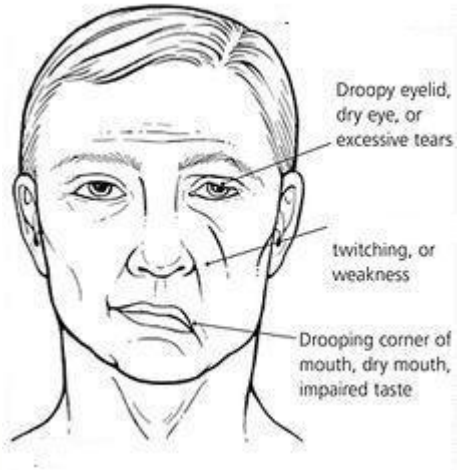
Facial n. (VII) Palsy

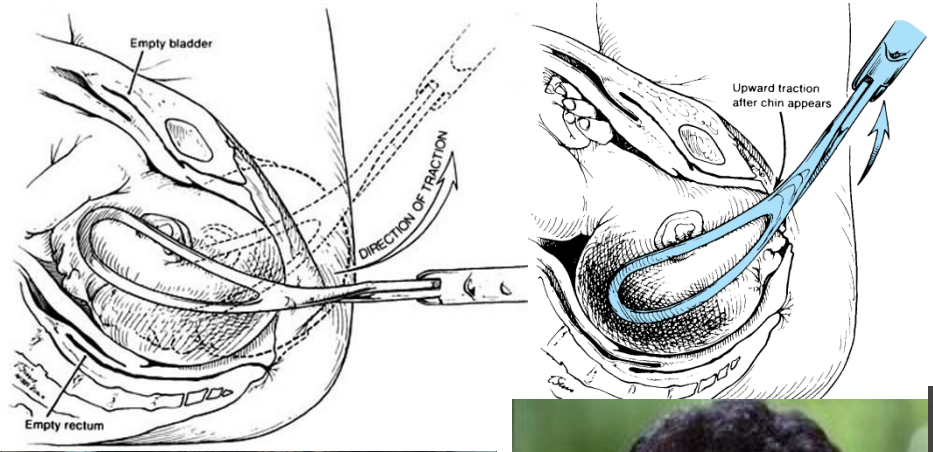
Peripheral lesion (Bell's palsy (CNVII))

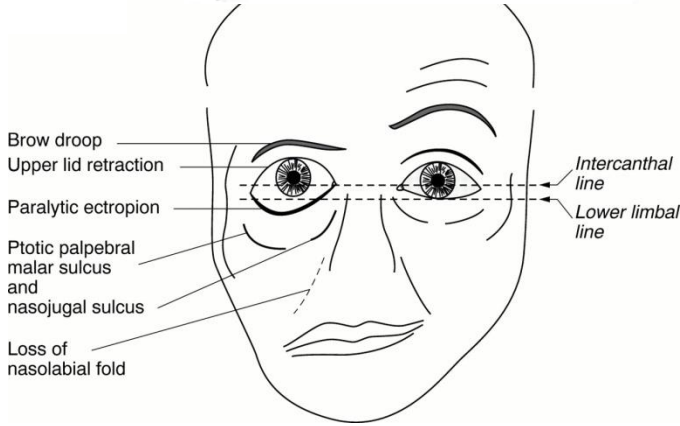


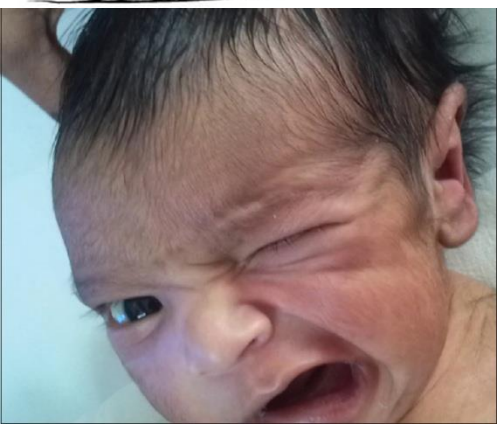
Central lesion (Stroke)

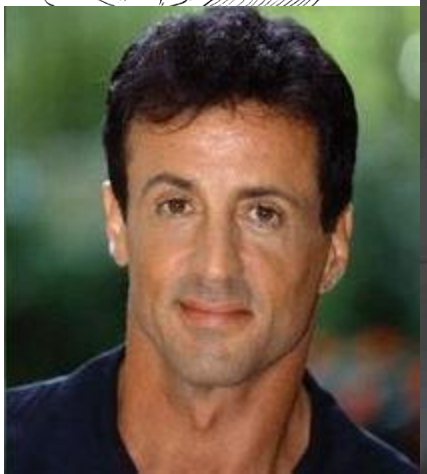




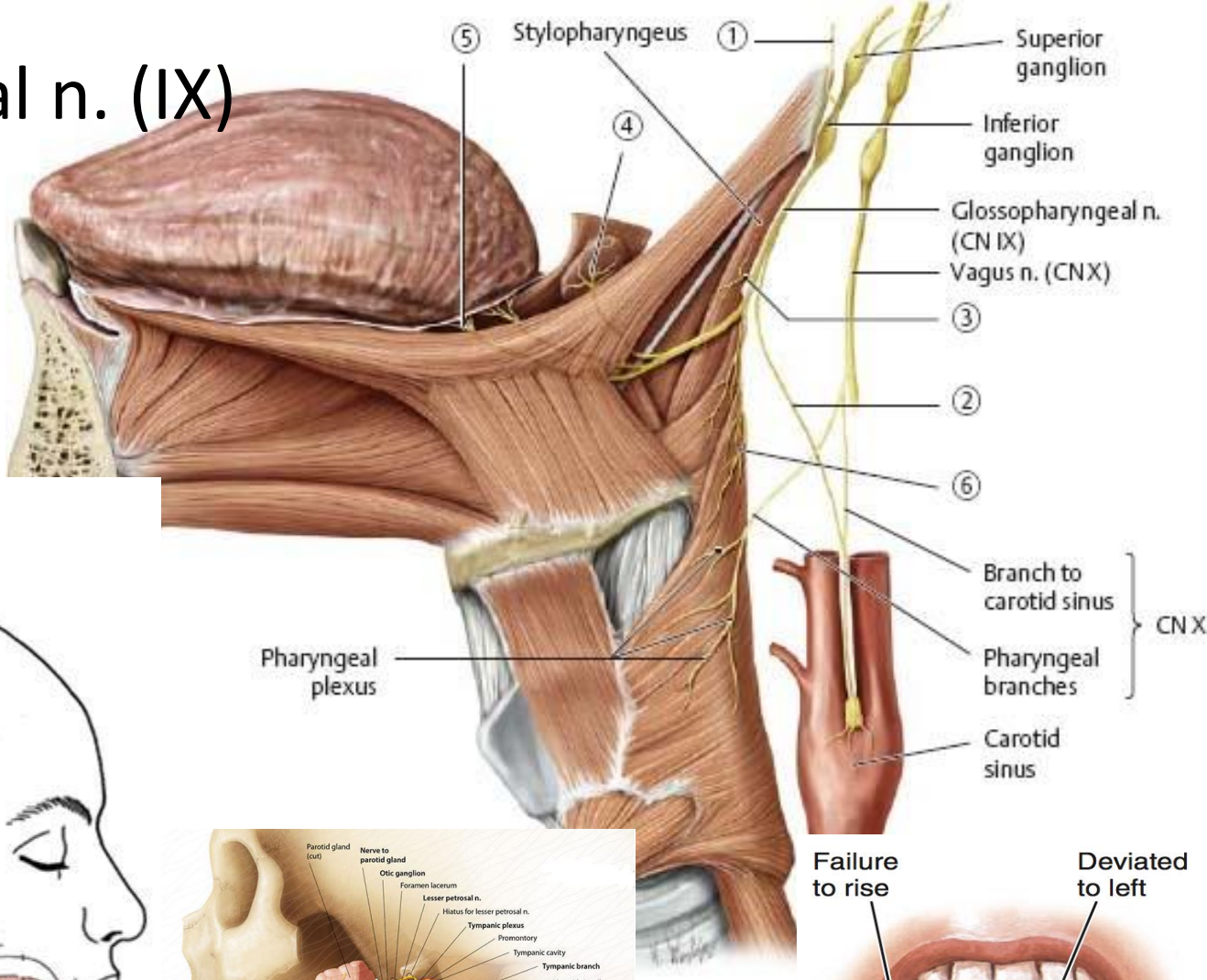


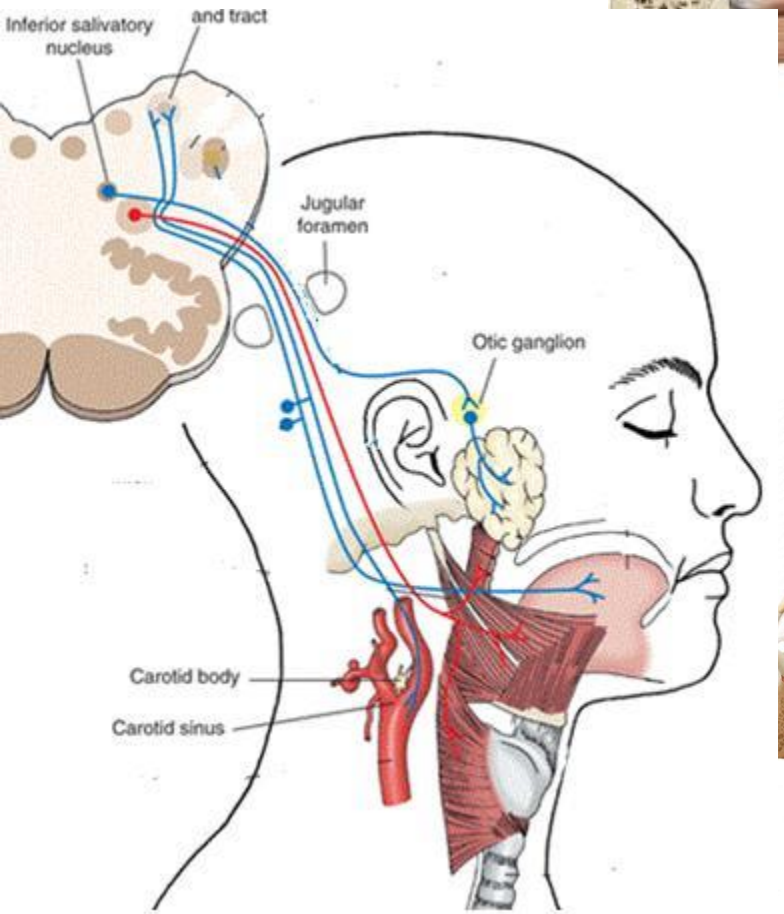


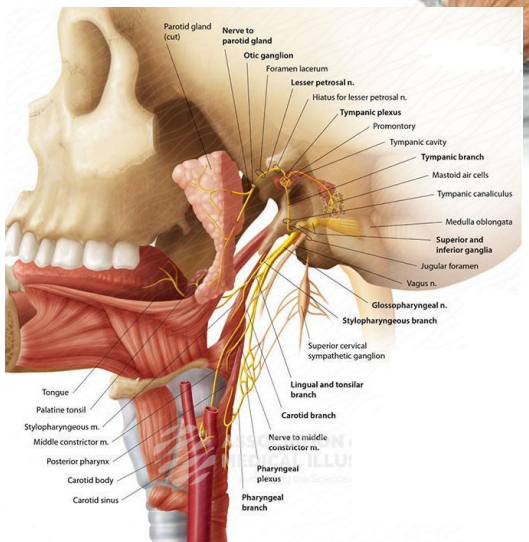


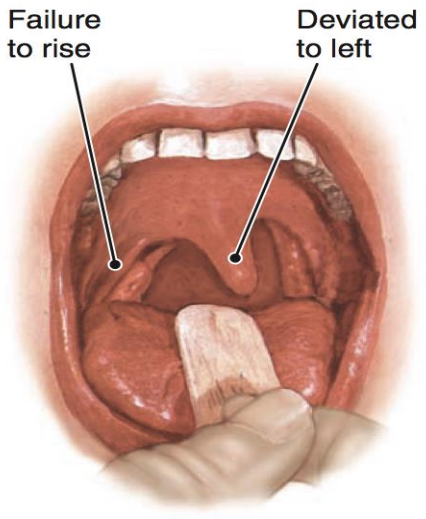


Glossopharyngeal n. (IX) & Palsy

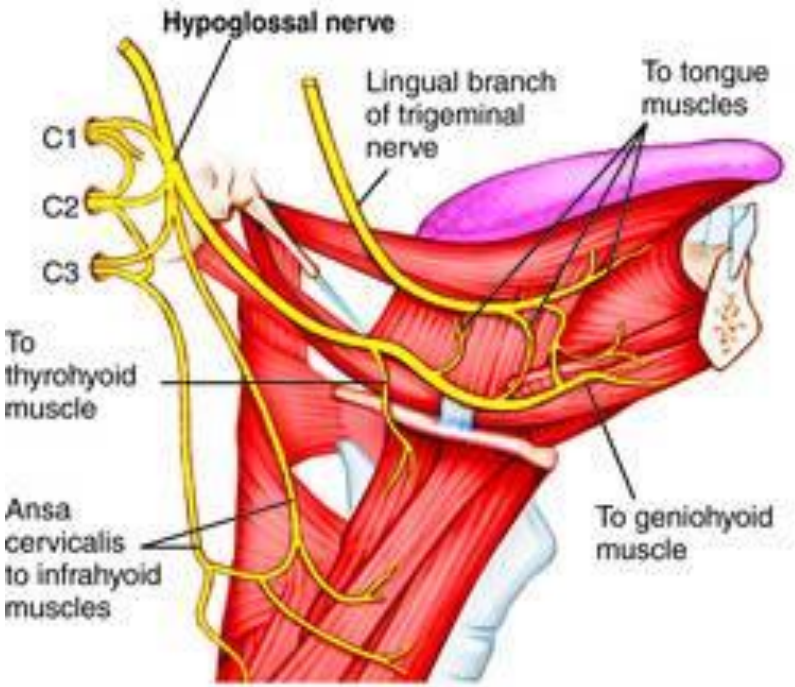


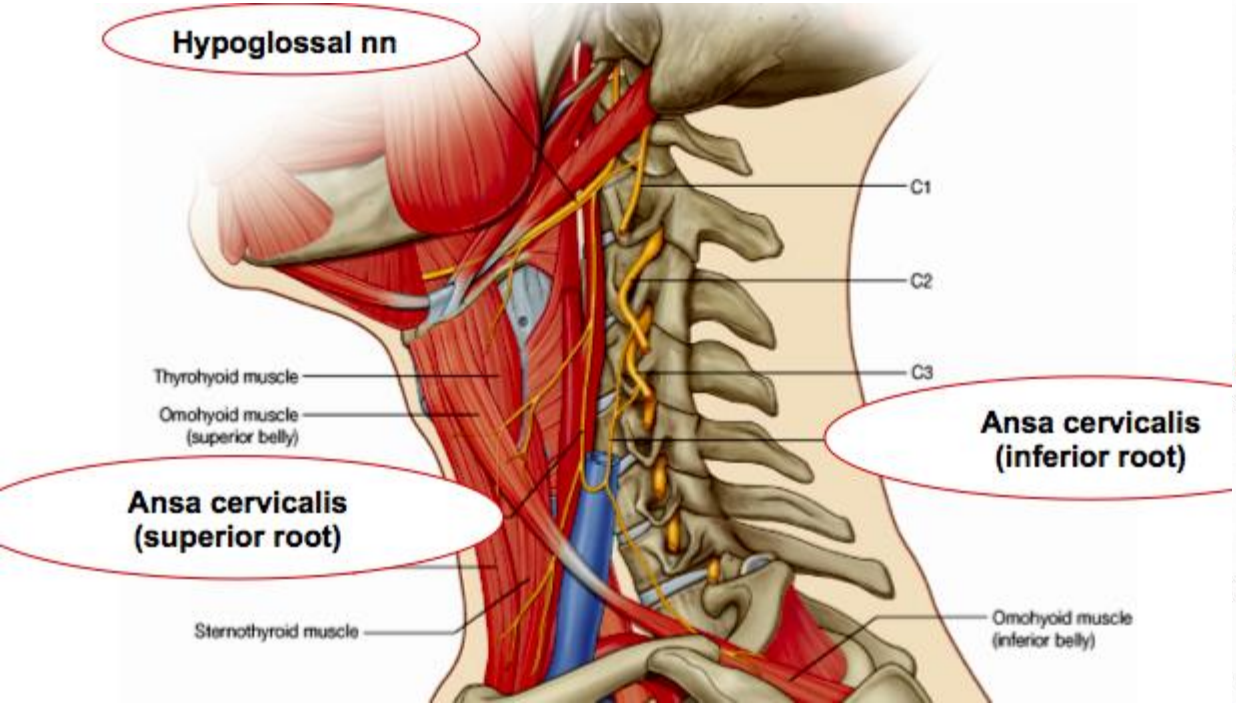


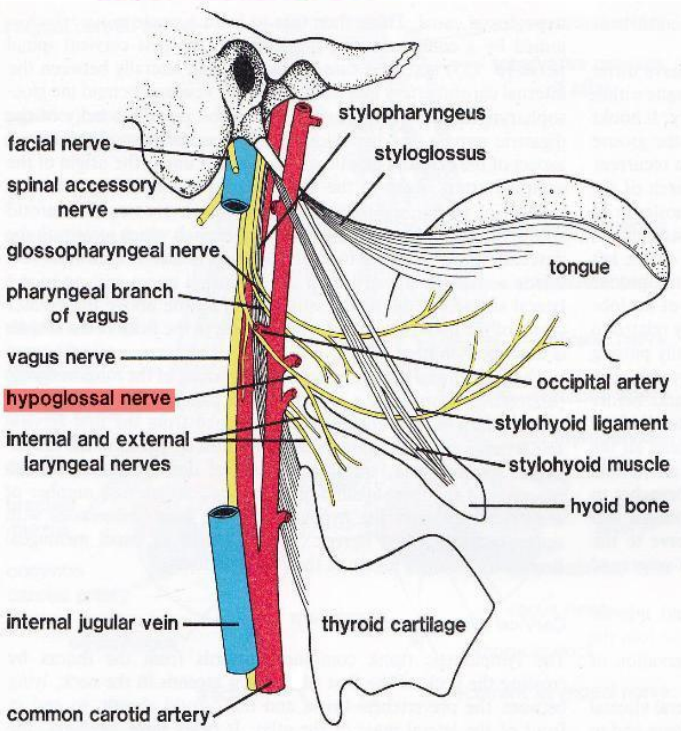


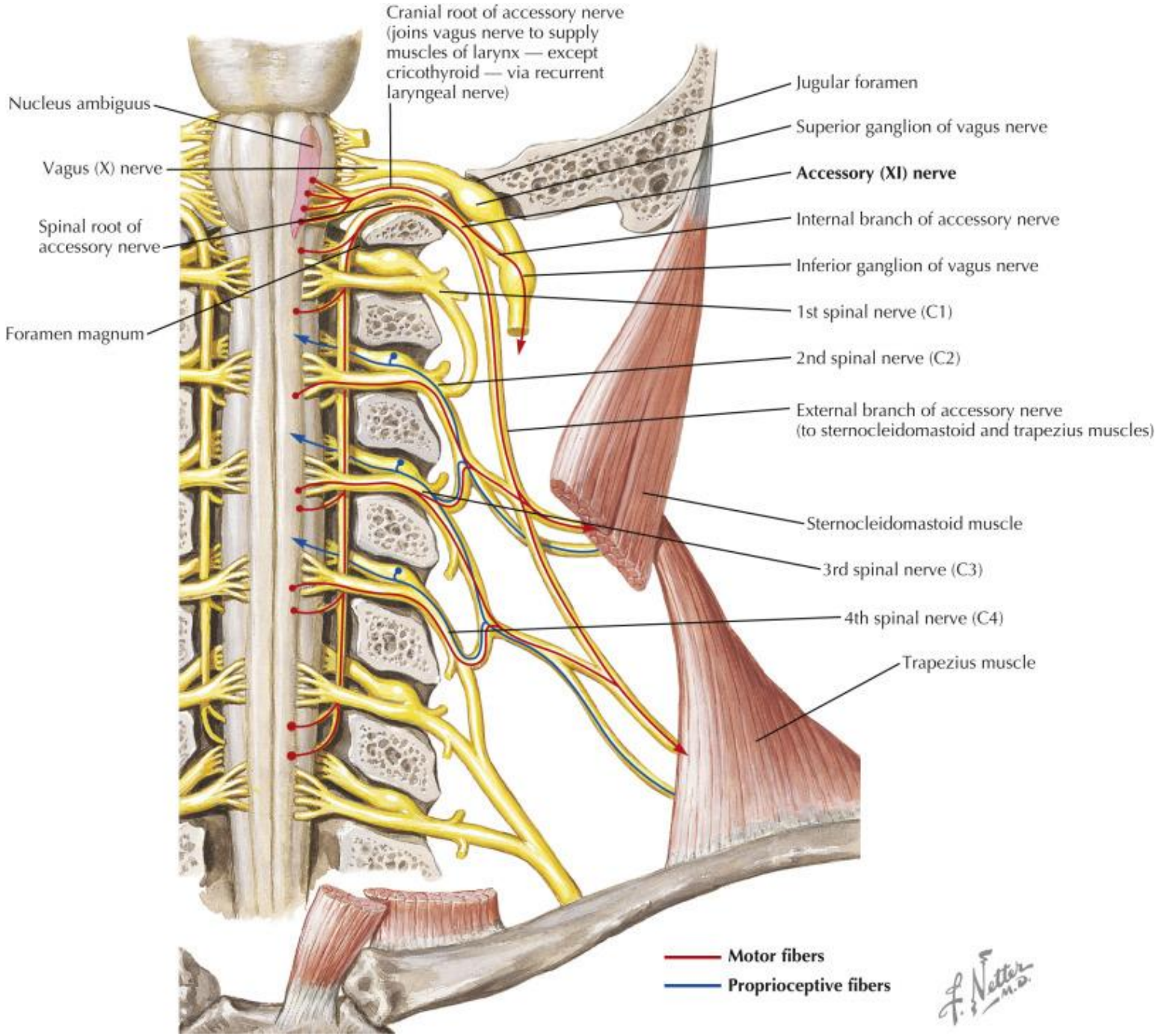


Hypoglossal n. (XII) & Palsy

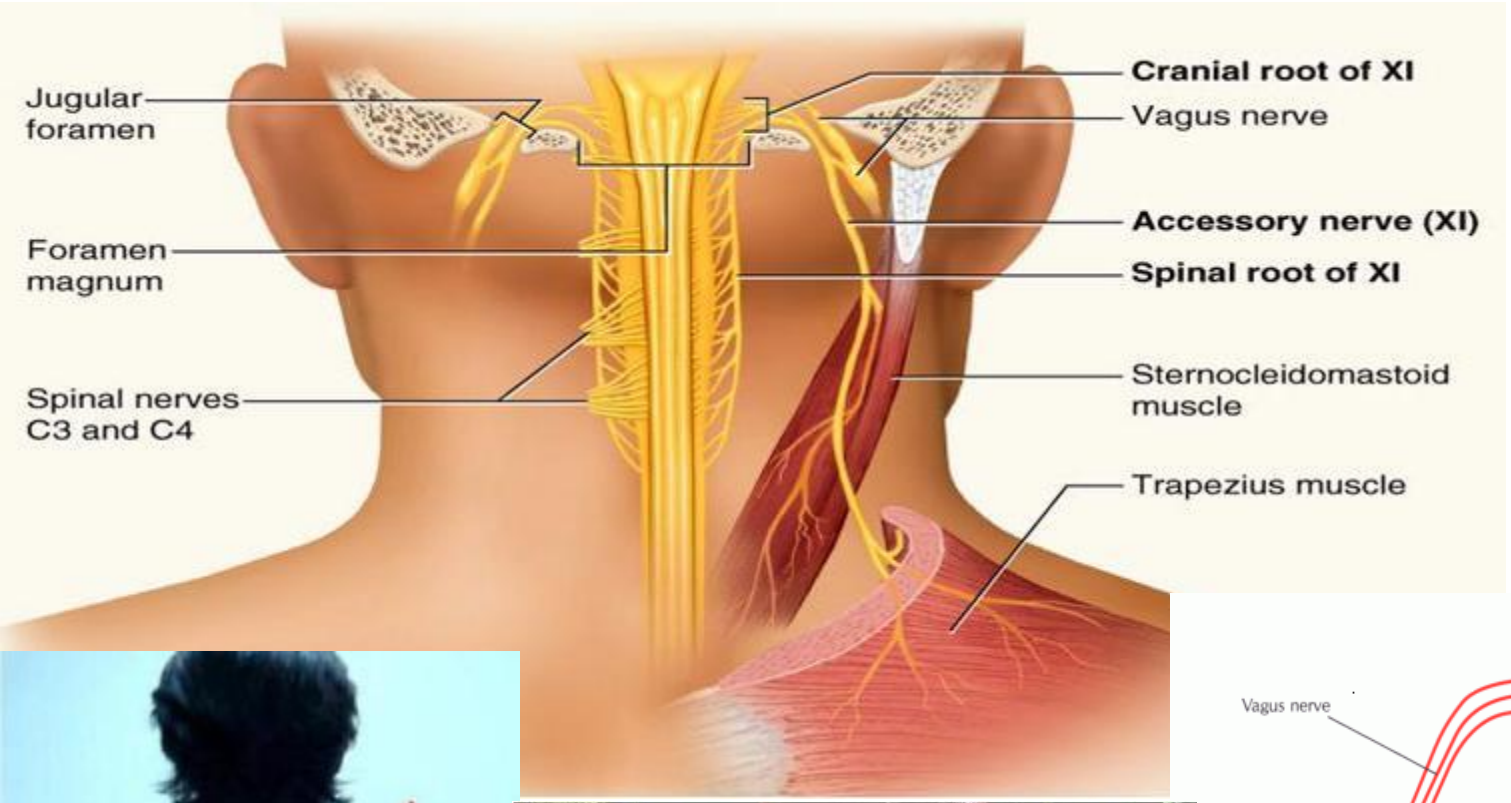


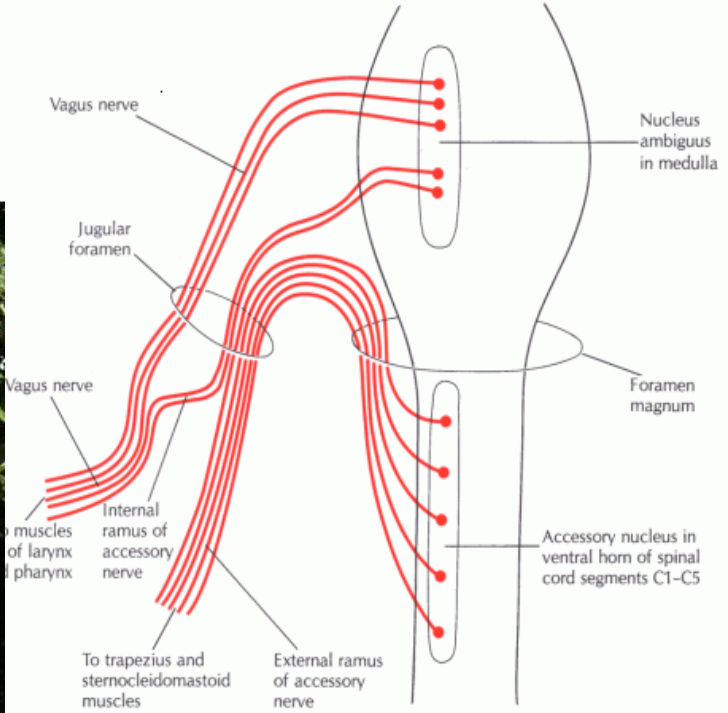


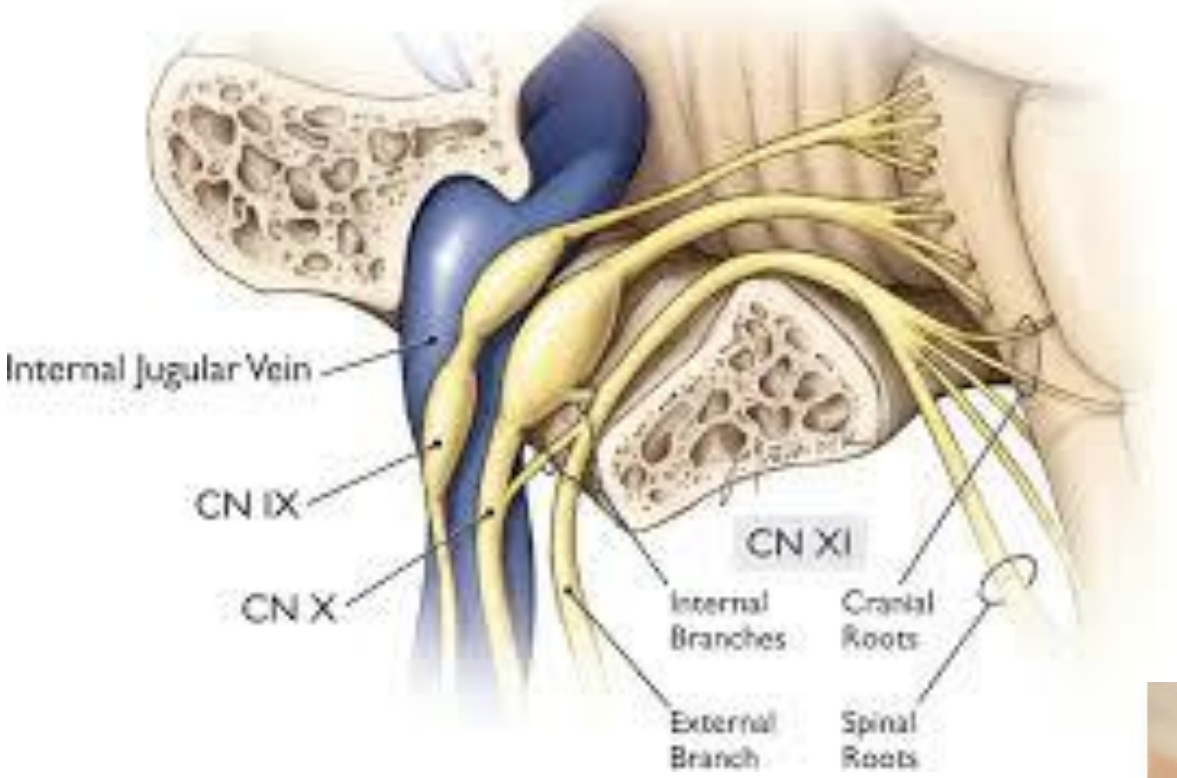



Cranial root of accessory nerve (joins vagus nerve to supply muscles of larynx — except cricothyroid — via recurrent laryngeal nerve)
Nucleus ambiguus
Vagus (X) nerve
Spinal root of accessory nerve
Foramen magnum
Jugular foramen
Superior ganglion of vagus nerve
Accessory (XI) nerve
Internal branch of accessory nerve
Inferior ganglion of vagus nerve
1st spinal nerve (C1)
2nd spinal nerve (C2)
External branch of accessory nerve (to sternocleidomastoid and trapezius muscles)
Sternocleidomastoid muscle
3rd spinal nerve (C3)
4th spinal nerve (C4)
Trapezius muscle
Motor fibers
Proprioceptive fibers
F. Netter M.D.

Accessory n. (XI)& Palsy







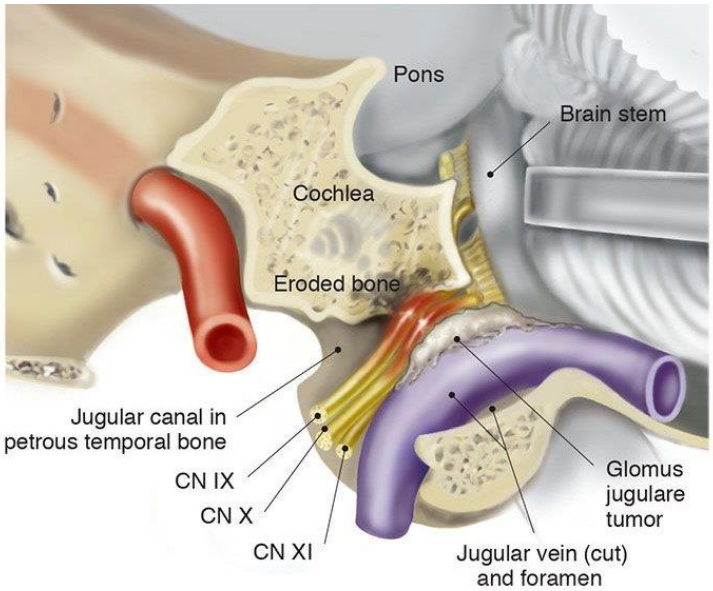


Figure X–12 Tumor of the glomus cells of the jugular bulb compressing cranial nerves IX, X, and XI (lateral view showing cut jugular foramen).

Ask before being Asked !