3 Cranial Nerves

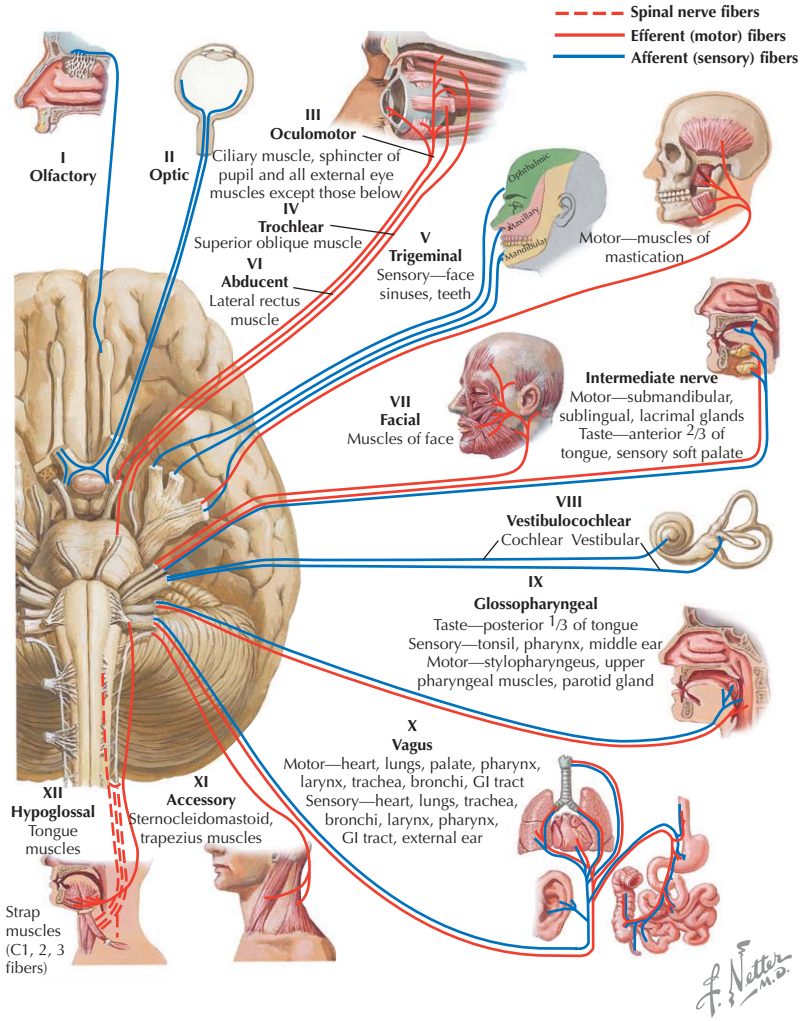
GENERAL INFORMATION

Cranial nerves or *cerebral nerves* are those peripheral nerves that leave the brain or brainstem

The cranial nerves customarily are subdivided into 12 pairs:

I: Olfactory nerve
II: Optic nerve
III: Oculomotor nerve
IV: Trochlear nerve
V: Trigeminal nerve
VI: Abducens nerve
VII: Facial nerve
VIII: Vestibulocochlear nerve
IX: Glossopharyngeal nerve
X: Vagus nerve
XI: Spinal accessory nerve
XII: Hypoglossal nerve

Because of the high degree of differentiation in the brain of humans, cranial nerves are more complex in structure and function than spinal nerves



Cranial Nerves

3

FUNCTIONAL COLUMNS

7 functional components (or functional columns) of the cranial nerves are recognized

- Concept of *functional columns* comes from studies of spinal nerves—functions associated with different neurologic pathways along spinal column are assigned corresponding "columns"

A given cranial nerve may have 1 to 5 functional columns

The functional columns are classified as *general* or *special*:

- General—these functional columns have the same functions as those for spinal nerves
- Special—these functional columns are specific only to cranial nerves

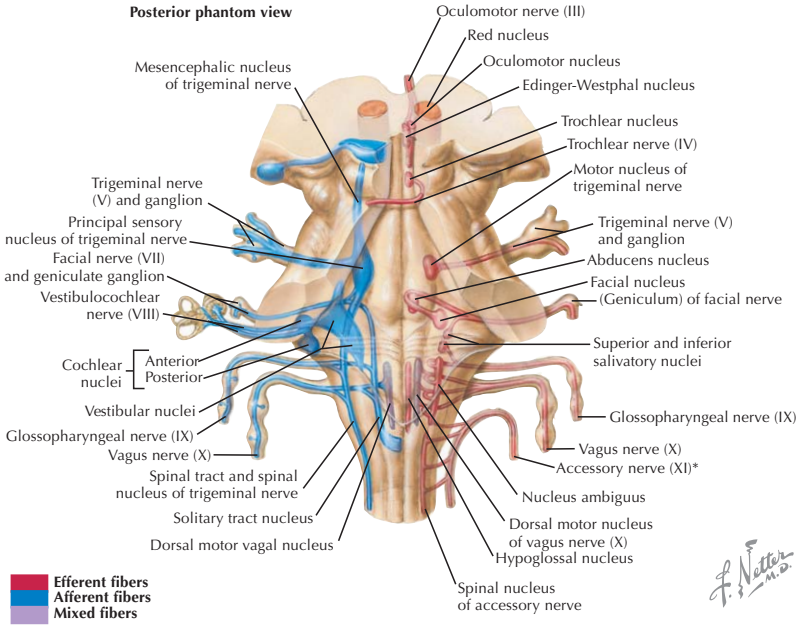
General and special functional columns each are subdivided into 2 additional categories:

- *Afferent* (sensory) and *efferent* (motor)
- *Somatic* (body-related) and *visceral* (organ-related)

SUMMARY OF FUNCTIONS

GSA	Exteroceptors and proprioceptors (e.g., for pain, touch, and temperature, or within tendons and joints) These are the same as in spinal nerves
SSA	Special senses in eye and ear (vision; hearing and equilibrium)
GVA	Sensory from viscera (e.g., gut) These are the same as in spinal nerves
SVA	Olfaction and taste
GVE	Autonomic nervous system (innervates cardiac muscle, smooth muscle, and glands) These are the same as in spinal nerves
GSE	Skeletal (somatic) muscle These are the same as in spinal nerves
SVE	Skeletal muscle which develops from the pharyngeal (branchial) arches (homologous to GSE)

**Within each designation:* G or S, general or special; S or V, somatic or visceral; A or E, afferent or efferent.

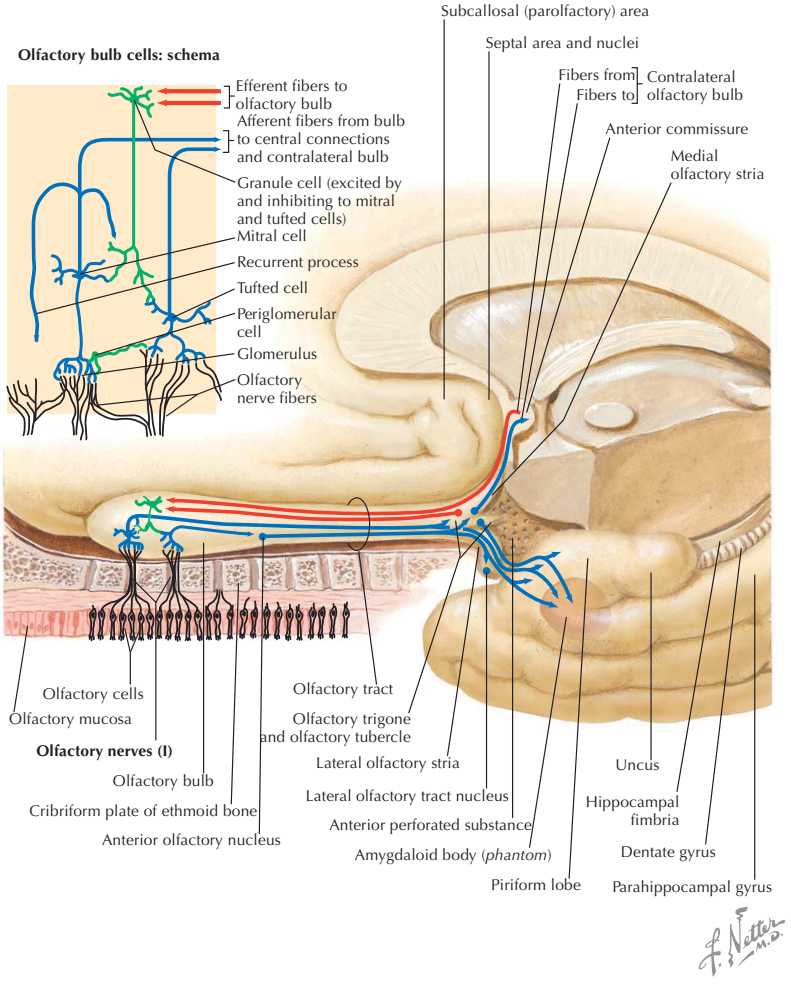


*Recent evidence suggests that the accessory nerve lacks a cranial root and has no connection to the vagus nerve. Verification of this finding awaits further investigation

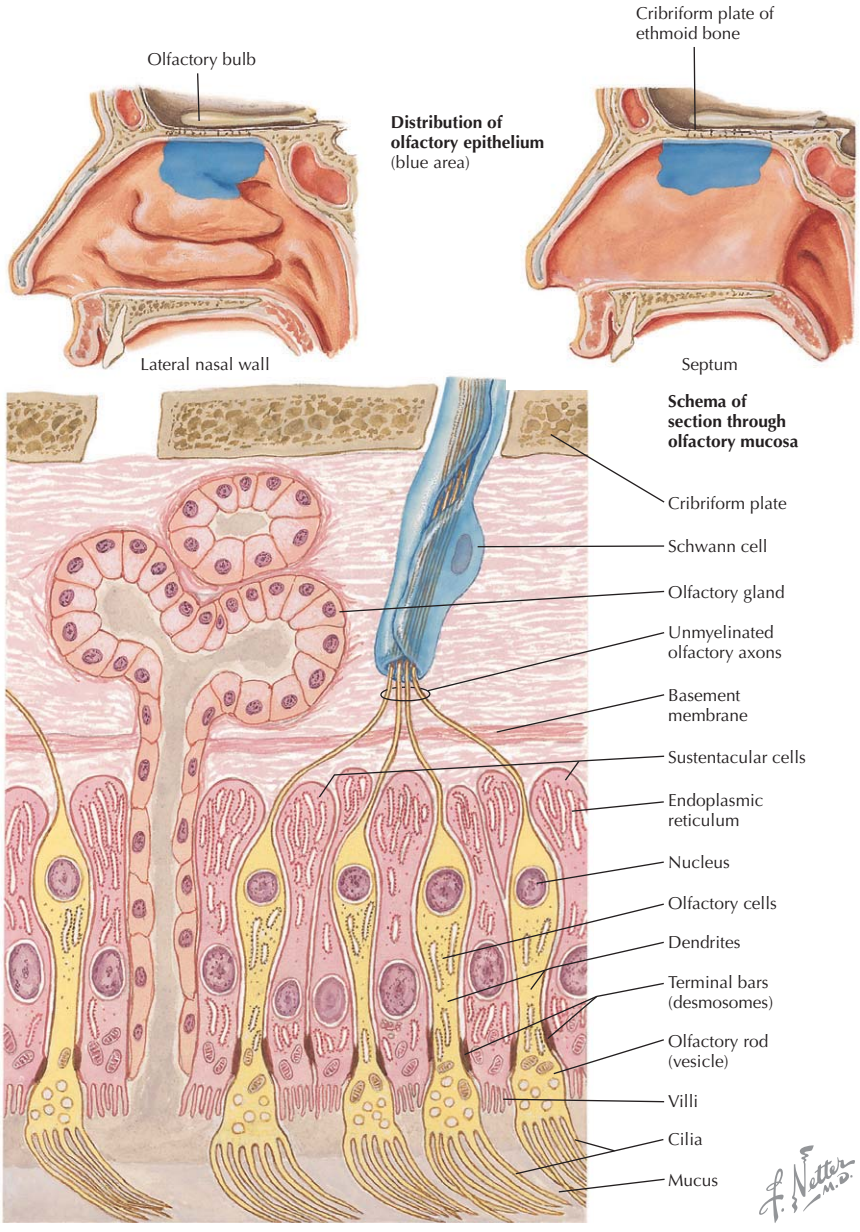
3 Cranial Nerves

CRANIAL NERVE I: OLFACTORY NERVE

Functional Column	Origin of Fibers	Termination of Fibers	Summary	Comment
SVA	Fibers originate in the neurosensory cells of the olfactory epithelium The primary fibers travel through the cribriform plate to synapse on the secondary fibers within the olfactory bulb These fibers continue posteriorly as the olfactory tract that carries the fibers to the olfactory areas	The secondary fibers continue to synapse in the olfactory areas: • Lateral olfactory area • Anterior olfactory nucleus • Intermediate olfactory area • Medial olfactory area	The SVA fibers are responsible for the sense of smell	Tumors of the olfactory lobe can affect the olfactory system

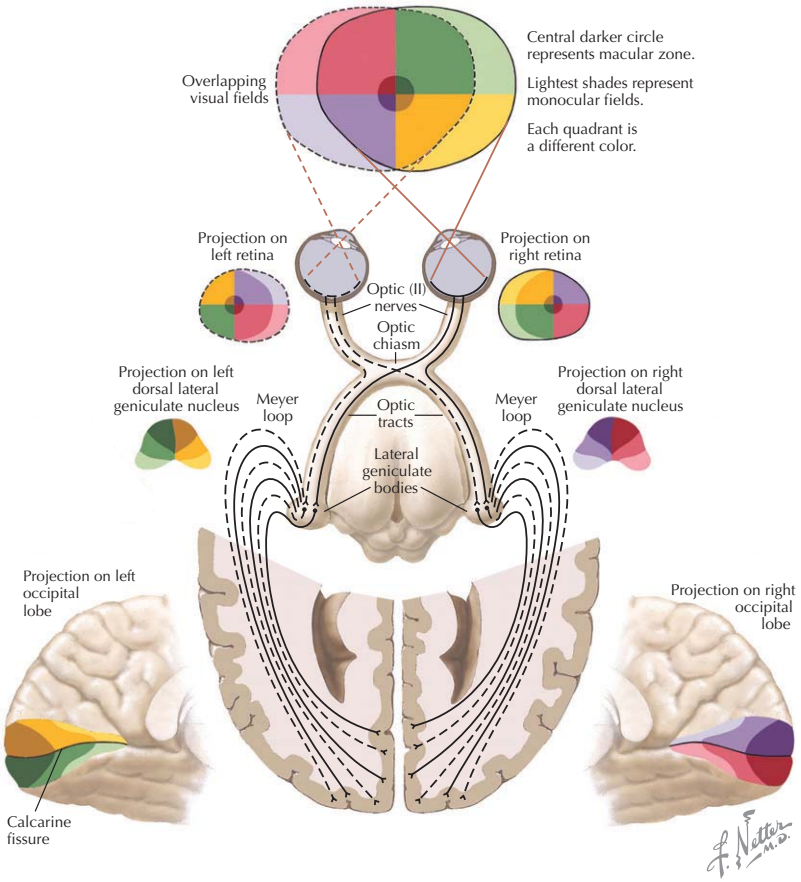


CRANIAL NERVE I: OLFACTORY NERVE *CONTINUED*

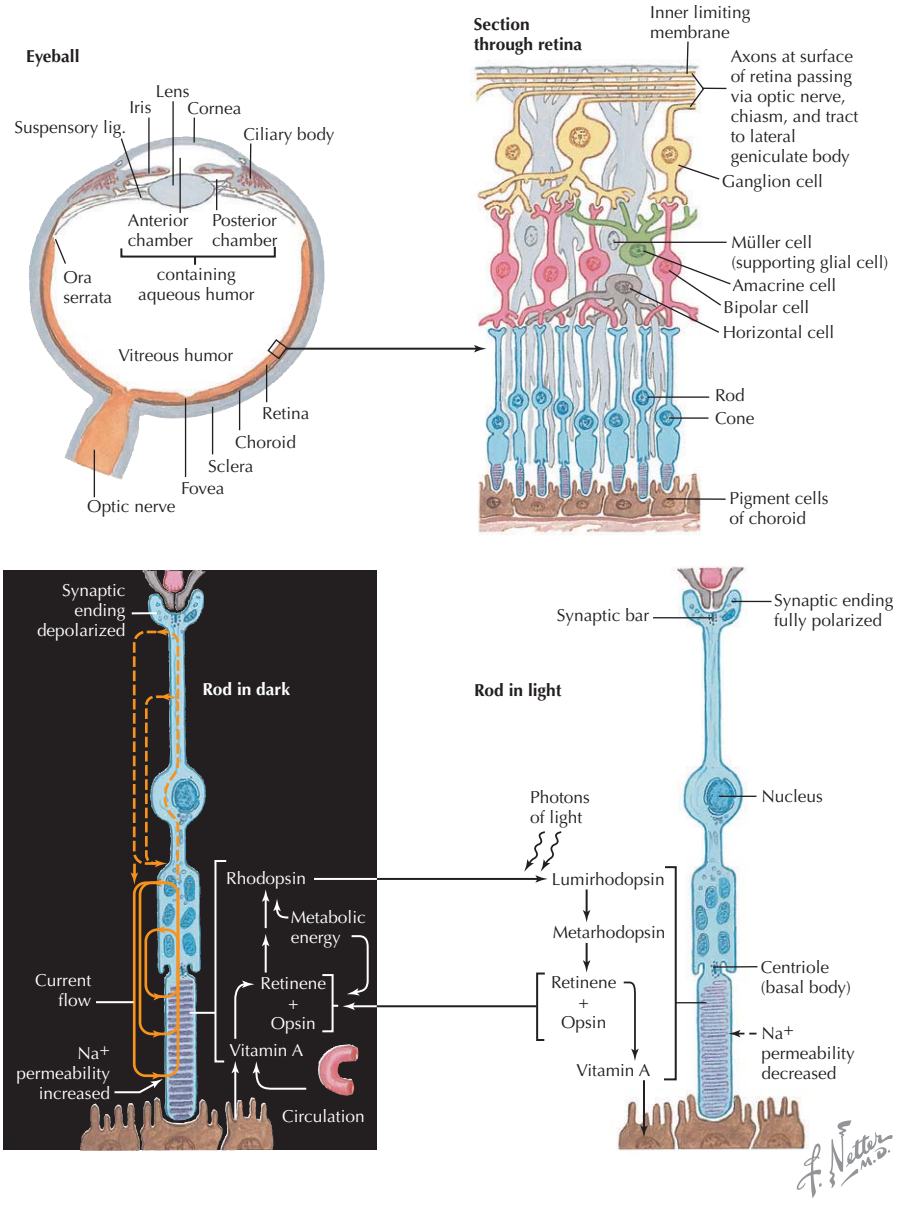


CRANIAL NERVE II: OPTIC NERVE

Functional Column	Origin of Fibers	Termination of Fibers	Summary	Comment
SSA	Begins in the retina with the receptors of rods and cones that synapse on bipolar cells which synapse with ganglion cells	Ganglionic axons form the optic nerve that meets in an incomplete crossing at the optic chiasm where: • Nasal retinal fibers decussate to the opposite side • Temporal retinal fibers remain on the ipsilateral side These form an optic tract that terminates on the lateral geniculate nucleus Fibers from the lateral geniculate travel to synapse in the occipital lobe	The SSA fibers are responsible for vision	Lesions of the optic nerve lead to blindness Lesions of the optic chiasm lead to bitemporal hemianopsia Lesions of the optic tract lead to homonymous hemianopsia

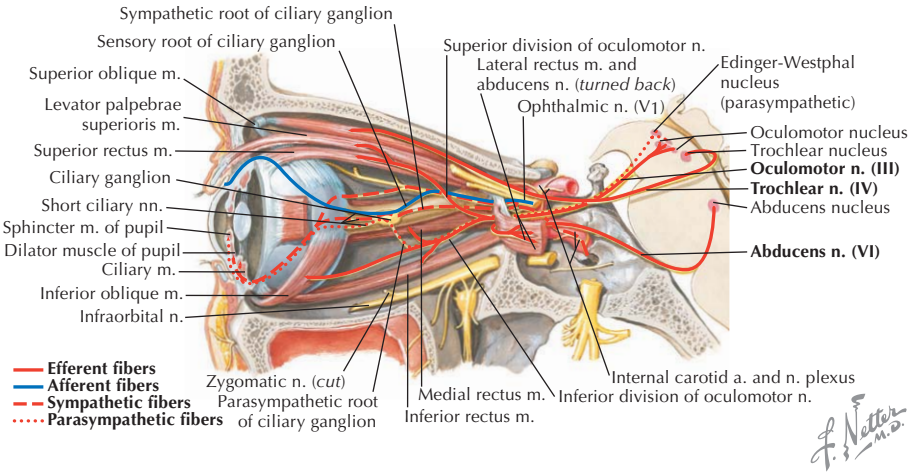


CRANIAL NERVE II: OPTIC NERVE *CONTINUED*



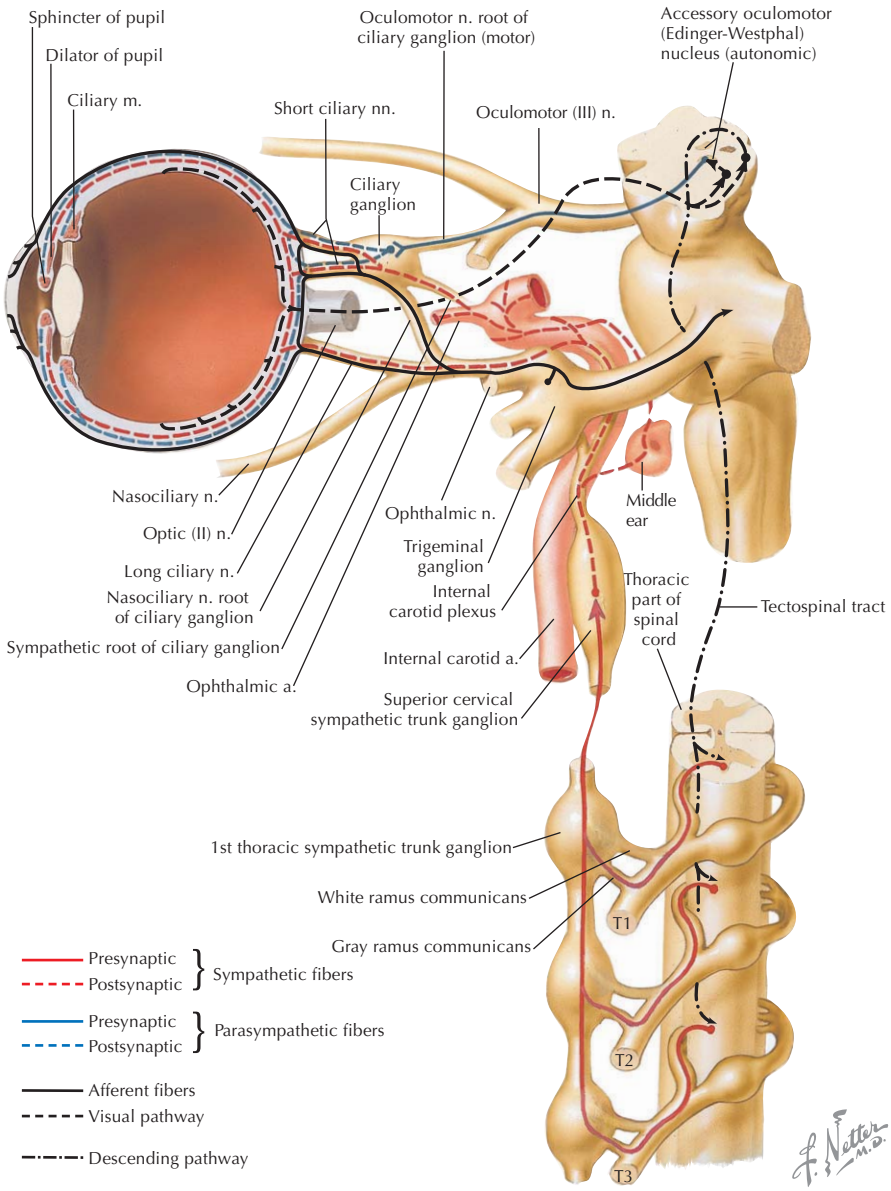
CRANIAL NERVES III, IV, AND VI: OCULOMOTOR, AND TROCHLEAR, ABDUCENS NERVES

OCULOMOTOR NERVE				
Functional Column	**Origin of Fibers**	**Termination of Fibers**	**Summary**	**Comment**
GSE	Begins in the oculomotor nucleus	Innervates the superior rectus, inferior rectus, medial rectus, inferior oblique, and levator palpebrae superioris mm.	GSE fibers are responsible for innervating the majority of the extraocular eye muscles	Lesions of the oculomotor nerve result in diplopia, lateral strabismus, ptosis, and mydriasis
GVE	Preganglionic parasympathetic fibers begin in the Edinger-Westphal nucleus	Innervates the sphincter pupillae and ciliary mm.	GVE fibers are responsible for providing the parasympathetic innervation to the intrinsic eye muscles	GVE fibers utilize 1 ganglion: • Ciliary
TROCHLEAR NERVE				
Functional Column	**Origin of Fibers**	**Termination of Fibers**	**Summary**	**Comment**
GSE	Begins in the trochlear nucleus	Innervates the superior oblique m.	GSE fibers are responsible for innervating 1 extraocular muscle of the eye: the superior oblique	The trochlear nerve exits the brainstem dorsally Lesions of the trochlear n. result in diplopia In trochlear n. lesions, the eye is adducted and elevated
ABDUCENS NERVE				
Functional Column	**Origin of Fibers**	**Termination of Fibers**	**Summary**	**Comment**
GSE	Begins in the abducens nucleus	Innervates the lateral rectus m.	GSE fibers are responsible for innervating 1 extraocular muscle of the eye: the lateral rectus	Lesions of the abducens nerve result in diplopia and medial strabismus



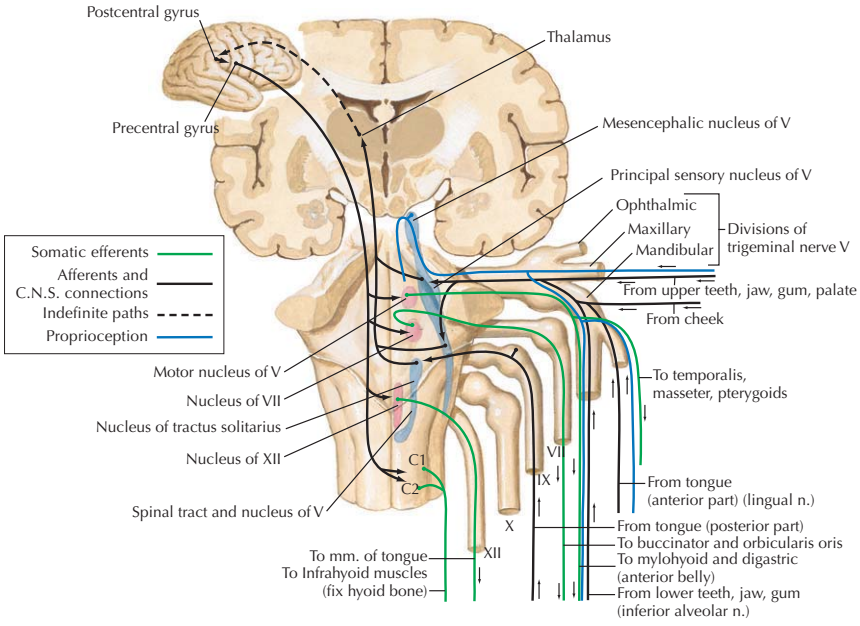
Cranial Nerves

CRANIAL NERVES III, IV, AND VI: OCULOMOTOR, AND TROCHLEAR, ABDUCENS NERVES *CONTINUED*

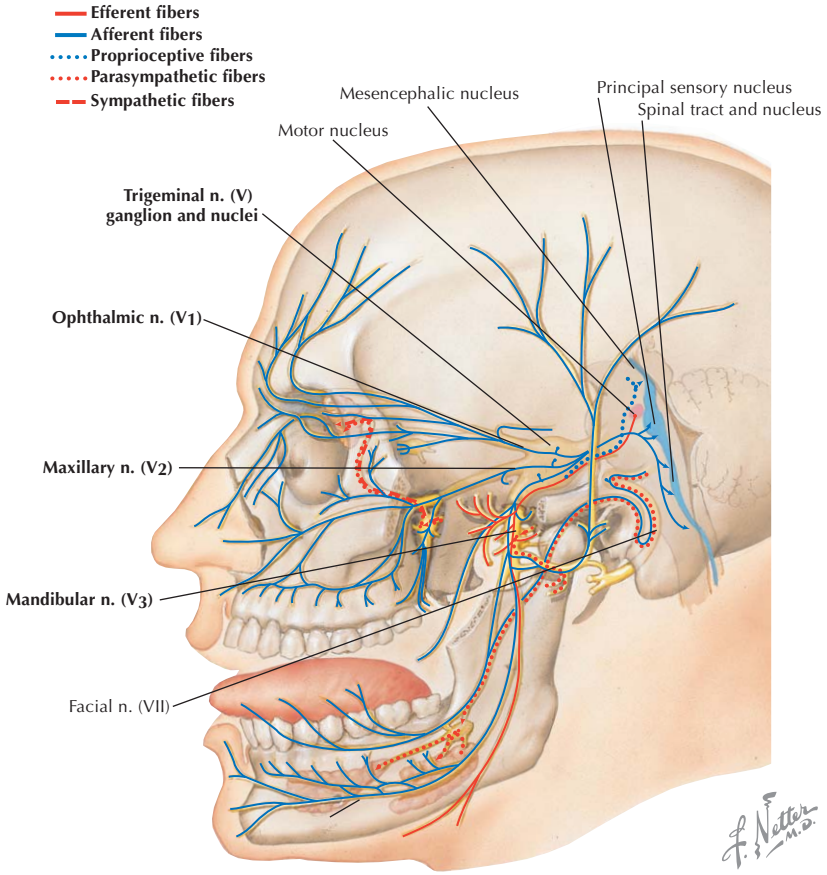


CRANIAL NERVE V: TRIGEMINAL NERVE

Functional Column	Origin of Fibers	Termination of Fibers	Summary	Comment
GSA	Afferent fibers begin in the various receptors (nociceptors, mechanoceptors, proprioceptors) of the skin and deep tissues of the head	Pain and temperature, and light touch fibers terminate in the spinal nucleus of V Discriminative touch fibers terminate in the main sensory nucleus of V Proprioception fibers have their cell bodies in the mesencephalic nucleus of V	GSA fibers are responsible for providing sensory innervation to the major part of the head GSA fibers utilize the trigeminothalamic lemniscus to carry their sensory impulses to consciousness	Provides sensory innervation through 3 main divisions: • Ophthalmic • Maxillary • Mandibular The nerve cell bodies for the primary fibers are located in the trigeminal ganglion
SVE	Begins in the motor nucleus of the trigeminal	Innervates the muscles of mastication: • Masseter • Temporalis • Medial pterygoid • Lateral pterygoid Also innervates: • Mylohyoid • Anterior digastric • Tensor tympani • Tensor veli palatini	The SVE fibers are responsible for innervating the muscles of the 1st pharyngeal arch	



CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*



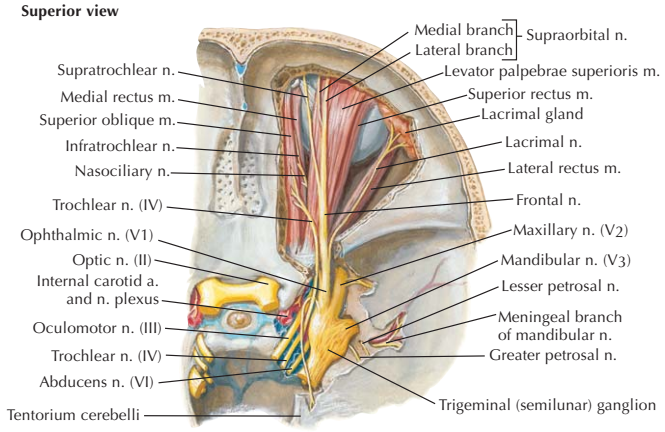
OPHTHALMIC DIVISION OF THE TRIGEMINAL NERVE		
The ophthalmic division (V_1), being a branch of the trigeminal n., is sensory in function Arises from the main nerve in the middle cranial fossa Passes anterior on the lateral wall of the cavernous sinus immediately inferior to the oculomotor and trochlear nn., but superior to the maxillary division of the trigeminal n. Immediately before entering the orbit, through the superior orbital fissure, it divides into 3 major branches: • Lacrimal • Frontal • Nasociliary		
Nerve	**Source**	**Course**
Lacrimal	1 of the 3 major branches of the ophthalmic division of the trigeminal n.	Smallest branch of the ophthalmic division of the trigeminal n. Passes anteriorly to enter the orbit through the superior orbital fissure In the orbit it travels on the superior border of the lateral rectus with the lacrimal a. Before reaching the lacrimal gland, it communicates with the zygomatic branch of the maxillary division of the trigeminal n. to receive autonomic nervous fibers Enters the lacrimal gland and supplies it and the conjunctiva before piercing the orbital septum to supply the skin of the upper eyelid

CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*

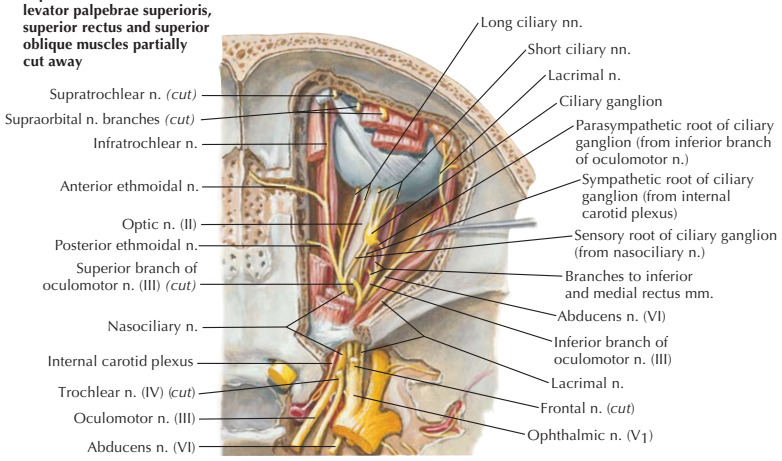
Nerve	Source	Course
Frontal	1 of the 3 major branches of the ophthalmic division of the trigeminal n.	Largest branch of the ophthalmic division of the trigeminal n. Passes anteriorly to enter the orbit through the superior orbital fissure In the orbit it passes anteriorly between the periosteum of the orbit and the levator palpebrae superioris m. About halfway in the orbit, it divides into its 2 terminal nerves, the supraorbital and supratrochlear nn.
Supraorbital	Frontal n.	1 of the 2 terminal branches of the frontal n. in the orbit Passes between the levator palpebrae superioris m. and periosteum of the orbit Continues anteriorly to the supraorbital foramen (notch) At the level of the supraorbital margin, it sends nerve supply to the frontal sinus and ascends superiorly along the scalp Divides into medial and lateral branches, which travel up to the vertex of the scalp
Supratrochlear		1 of the 2 terminal branches of the frontal n. in the orbit Once the supratrochlear a. joins it within the orbit, it continues to pass anteriorly toward the trochlear n. In the trochlear region, it often supplies the frontal sinus before exiting the orbit Ascends along the scalp, at first deep to the musculature in the region, before piercing these muscles to reach the cutaneous innervation along the scalp
Nasociliary	1 of the 3 major branches of the ophthalmic division of the trigeminal n.	Passes anteriorly to enter the orbit through the superior orbital fissure Enters the orbit lateral to the optic n. Travels across the optic n. anteriorly and medially to lie between the medial rectus m. and the superior oblique m. along the medial wall of the orbit All along its path, it gives rise to other nerves, including the sensory root of the ciliary ganglion and the long ciliary and posterior ethmoid nn., until terminating into the anterior ethmoid and infratrochlear nn. near the anterior ethmoid foramen
Sensory root of the ciliary ganglion	Nasociliary n.	Travels anteriorly on the lateral side of the optic n. to enter the ciliary ganglion Carries general sensory fibers, which are distributed by the short ciliary nn.
Short ciliary	Ciliary ganglion	Arises from the ciliary ganglion to travel to the posterior surface of the eye Supplies the sensory fibers to the eye and helps carry the postganglionic parasympathetic fibers to the sphincter pupillae and the ciliary muscle
Long ciliary	Nasociliary n.	Has 2 to 4 branches that travel anteriorly to enter the posterior part of the sclera of the eye
Posterior ethmoid		Travels deep to the superior oblique m. to pass through the posterior ethmoid foramen Supplies the sphenoid sinus and the posterior ethmoid sinus
Anterior ethmoid		Arises on the medial wall of the orbit Enters the anterior ethmoid foramen and travels through the canal to enter the anterior cranial fossa Supplies the anterior and middle ethmoid sinus before entering and supplying the nasal cavity Terminates as the external nasal n. on the face
External nasal	A terminal branch of the anterior ethmoid n.	Exits between the lateral nasal cartilage and the inferior border of the nasal bone Supplies the skin of the ala and apex of the nose around the nares
Internal nasal		Supplies the skin on the internal surface of the vestibule
Infratrochlear	Nasociliary n.	1 of the terminal branches of the nasociliary branch of the ophthalmic division of the trigeminal n. Passes anteriorly on the superior border of the medial rectus m. Passes inferior to the trochlea toward the medial angle of the eye Supplies the skin of the eyelids and bridge of the nose, the conjunctiva, and all of the lacrimal structures

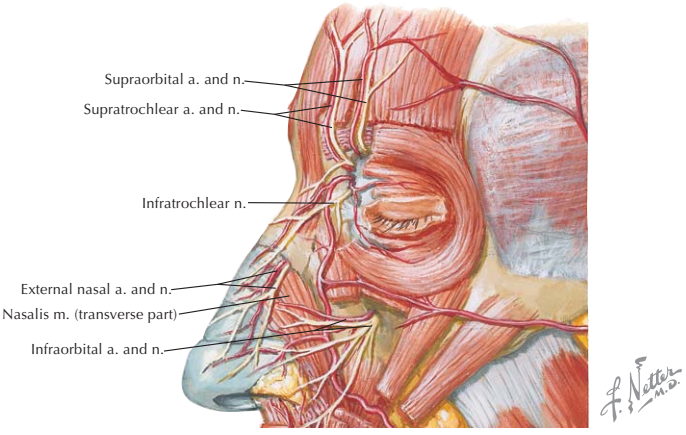
CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*

Superior view



Superior view: levator palpebrae superioris, superior rectus and superior oblique muscles partially cut away





CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*

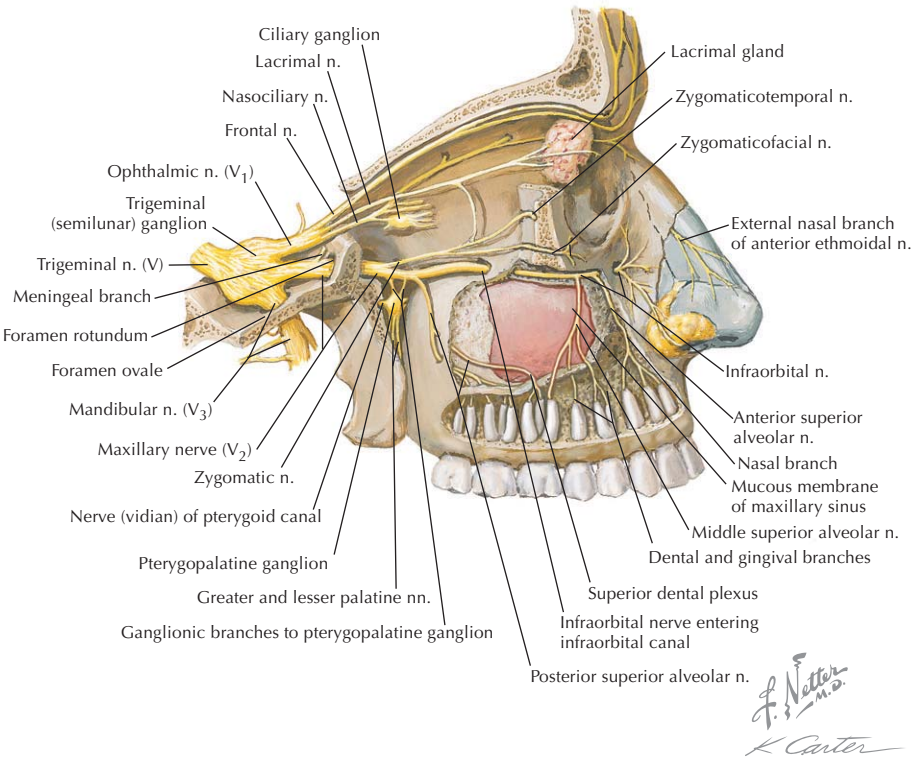
MAXILLARY DIVISION OF THE TRIGEMINAL NERVE	
The maxillary division (V_2), being a branch of the trigeminal n., is sensory in function Branches from the trigeminal n. and travels along the lateral wall of the cavernous sinus Passes from the middle cranial fossa into the pterygopalatine fossa via the foramen rotundum Within the pterygopalatine fossa, it gives rise to 4 branches 1 of those nerves, the infraorbital n., is considered the continuation of the maxillary division of the trigeminal n.	
BRANCHES WITHIN THE MIDDLE CRANIAL FOSSA	
Nerve	**Course**
Meningeal	A small meningeal branch is given off within the middle cranial fossa The nerve supplies the meninges
BRANCHES WITHIN THE PTERYGOPALATINE FOSSA	
Nerve	**Course**
Posterior superior alveolar	Passes through the pterygomaxillary fissure to enter the infratemporal fossa In the infratemporal fossa, it passes on the posterior surface of the maxilla along the region of the maxillary tuberosity Gives rise to a gingival branch that innervates the buccal gingiva alongside the maxillary molars Enters the posterior surface of the maxilla and supplies the maxillary sinus and the maxillary molars, with the possible exception of the mesiobuccal root of the 1st maxillary molar, and the gingiva and mucosa alongside the same teeth
Zygomatic	Passes through the inferior orbital fissure to enter the orbit Passes on the lateral wall of the orbit and branches into the zygomaticotemporal and zygomaticofacial branches A communicating branch from it joins the lacrimal n. from the ophthalmic division of the trigeminal n. to carry autonomics to the lacrimal gland
Ganglionic branches	Usually 1 or 2 ganglionic branches that connect the maxillary division of the trigeminal n. to the pterygopalatine ganglion Contain sensory fibers that pass through the pterygopalatine ganglion (without synapsing) to be distributed with the nerves that arise from the pterygopalatine ganglion Also contain postganglionic autonomic fibers to the lacrimal gland that pass through the pterygopalatine ganglion (parasympathetic fibers form a synapse here between the preganglionic fibers from the vidian n. and the postganglionic fibers)
Infraorbital	Considered the continuation of the maxillary division of the trigeminal n. Passes through the inferior orbital fissure to enter the orbit Passes anteriorly through the infraorbital groove and infraorbital canal and exits onto the face via the infraorbital foramen
BRANCHES ASSOCIATED WITH THE PTERYGOPALATINE GANGLION	
Nerve	**Course**
Pharyngeal	Passes through the pharyngeal canal to enter and supply the nasopharynx
Posterior superior nasal	A branch of the maxillary division of the trigeminal n. Arises from the pterygopalatine ganglion in the pterygopalatine fossa Passes through the sphenopalatine foramen to enter the nasal cavity and branches into the: • Posterior medial superior nasal n. • Posterior lateral superior nasal n.
Posterior lateral superior nasal	A branch of the posterior superior nasal n. that supplies the posterosuperior portion of the lateral wall of the nasal cavity in the region of the superior and middle concha
Posterior medial superior nasal	Arises from the posterior superior nasal n. from the maxillary division of the trigeminal n. This nerve supplies the posterior portion of the nasal septum
Greater palatine	Passes through the palatine canal to enter the hard palate via the greater palatine foramen Supplies the palatal gingiva and mucosa from the area in the premolar region to the posterior border of the hard palate to the midline

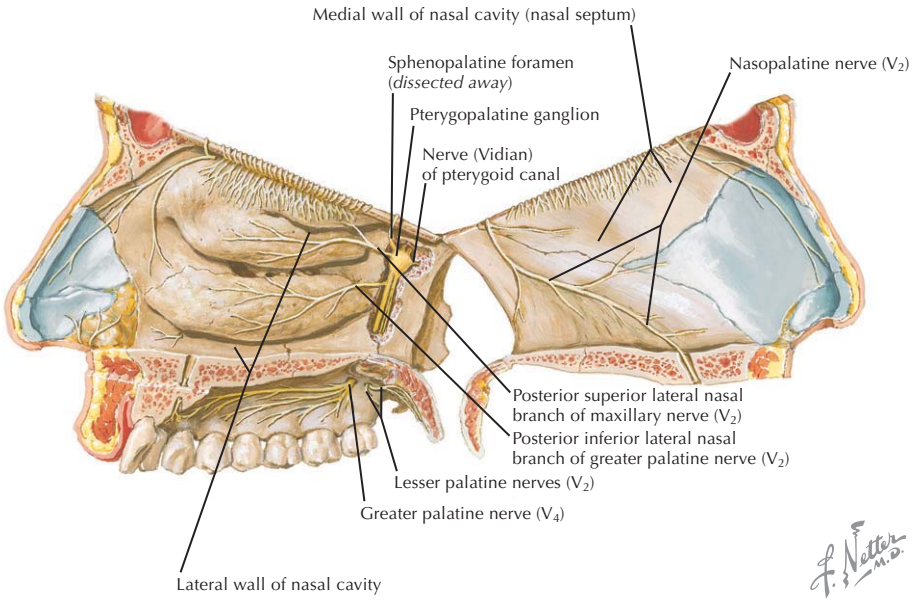
CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*

BRANCHES ASSOCIATED WITH THE PTERYGOPALATINE GANGLION *CONTINUED*	
Nerve	**Course**
Posterior inferior nasal branch of the greater palatine	While descending in the palatine canal, the greater palatine n. gives rise to a posterior inferior nasal branch Supplies the posterior part of the lateral wall of the nasal cavity in the region of the middle meatus
Lesser palatine	Passes through the palatine canal to enter and supply the soft palate via the lesser palatine foramen
Nasopalatine	Branches from the pterygopalatine ganglion in the pterygopalatine fossa Passes through the sphenopalatine foramen to enter the nasal cavity Passes along the superior portion of the nasal cavity to the nasal septum, where it travels anteroinferiorly to the incisive canal, supplying the septum Passes through the incisive canal to supply the gingiva and mucosa of the hard palate from central incisor to canine
BRANCHES WITHIN THE INFRAORBITAL CANAL	
Nerve	**Course**
Middle superior alveolar	A variable nerve When present, it branches off the infraorbital n. as it travels in the infraorbital canal As the nerve descends to form the superior dental plexus, it innervates part of the maxillary sinus; the premolars and possibly the mesiobuccal root of the 1st molar; and the gingiva and mucosa alongside the same teeth
Anterior superior alveolar	While in the infraorbital canal, it gives rise to the anterior superior alveolar n., which has a small branch that supplies the nasal cavity in the region of the inferior meatus and inferior corresponding portion of the nasal septum, the maxillary sinus As the nerve descends to form the superior dental plexus, it innervates part of the maxillary sinus; maxillary central incisor, lateral incisor, and canine teeth; and the gingiva and mucosa alongside the same teeth

BRANCHES AFTER INFRAORBITAL NERVE EMERGES FROM THE INFRAORBITAL FORAMEN	
Nerve	**Course**
Superior labial branch of the infraorbital	Supplies the skin of the upper lip
Nasal branch of the infraorbital	Supplies the ala of the nose
Inferior palpebral branch of the infraorbital	Supplies the skin of the lower eyelid

CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*





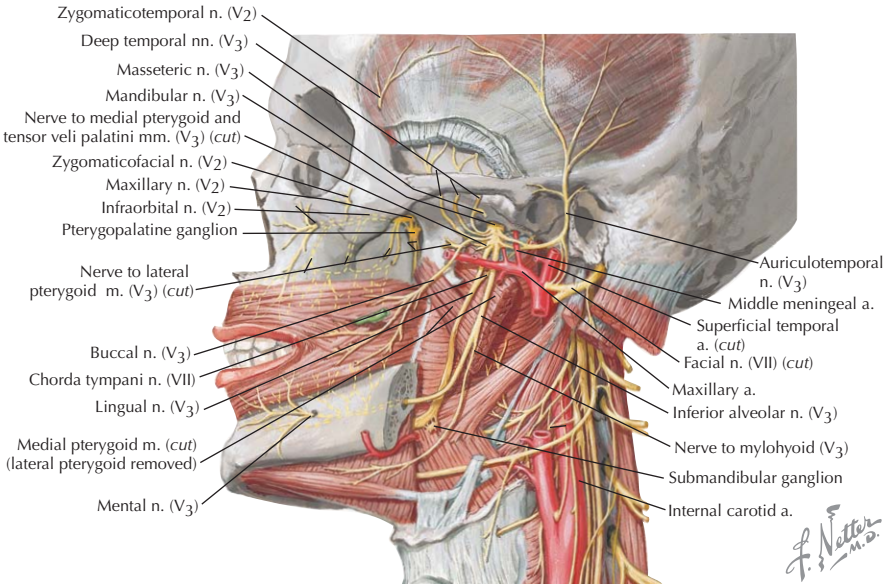
CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*

MANDIBULAR DIVISION OF THE TRIGEMINAL NERVE				
			Divisions	
Description	Source	Course	Anterior	Posterior
Mandibular division (V_3) is the largest of the 3 divisions of the trigeminal n. Has motor *and* sensory functions	Created by a large sensory root and a small motor root that unite just after passing through the foramen ovale to enter the infratemporal fossa	Immediately gives rise to a meningeal branch and then divides into anterior and posterior divisions	Smaller; mainly motor, with 1 sensory branch (buccal): • Masseteric • Anterior and posterior deep temporal • Medial pterygoid • Lateral pterygoid • Buccal	Larger; mainly sensory, with 1 motor branch (nerve to the mylohyoid): • Auriculotemporal • Lingual • Inferior alveolar • Mylohyoid nerve

ANTERIOR DIVISION OF THE MANDIBULAR NERVE	
Branch	Course
Masseteric	Passes laterally superior to the lateral pterygoid m. Lies anterior to the temporomandibular joint and posterior to the tendon of the temporalis m. Crosses the mandibular notch with the masseteric a. to innervate the masseter m. Also provides a small branch to the temporomandibular joint
Anterior and posterior deep temporal	Pass superior to the lateral pterygoid m. between the skull and the temporalis m. while passing deep to the muscle to innervate it
Medial pterygoid	Enters the deep surface of the muscle
Lateral pterygoid	Passes into the deep surface of the muscle Often arises from the buccal n.
Buccal	Passes anteriorly between the 2 heads of the lateral pterygoid m. Descends inferiorly along the lower part of the temporalis m. to appear from deep to the anterior border of the masseter m. Supplies the skin over the buccinator m. before passing through it to supply the mucous membrane lining its inner surface and the gingiva along the mandibular molars

POSTERIOR DIVISION OF THE MANDIBULAR NERVE	
Branch	Course
Auriculotemporal	Normally arises by 2 roots, between which the middle meningeal a. passes Runs posteriorly just inferior to the lateral pterygoid and continues to the medial side of the neck of the mandible Then it turns superiorly with the superficial temporal vessels between the auricle and condyle of the mandible deep to the parotid gland On exiting the parotid gland, it ascends over the zygomatic arch and divides into superficial temporal branches
Lingual	Lies inferior to the lateral pterygoid and medial and anterior to the inferior alveolar n. The chorda tympani n. also joins the posterior part The lingual n. passes between the medial pterygoid and the ramus of the mandible to pass obliquely to enter the oral cavity bounded by the superior pharyngeal constrictor m., medial pterygoid, and the mandible Supplies the mucous membrane of the anterior 2/3 of the tongue and gingiva on the lingual side of the mandibular teeth
Inferior alveolar	The largest branch of the mandibular division Descends following the inferior alveolar a. inferior to the lateral pterygoid and finally between the sphenomandibular lig. and the ramus of the mandible until it enters the mandibular foramen Innervates all mandibular teeth and the gingiva from the premolars anteriorly to the midline via the mental branch
Mylohyoid	Branches from the inferior alveolar n. immediately before it enters the mandibular foramen Descends in a groove on the deep side of the ramus of the mandible until it reaches the superficial surface of the mylohyoid Supplies the mylohyoid and the anterior belly of the digastric m.

CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*



TRIGEMINAL NERVE PATHWAYS		
Responsible for carrying to conscious level: • Pain and temperature • Light touch • Discriminative touch • Pressure Utilizes a 3-neuron sensory system: • Primary neuron • Secondary neuron • Tertiary neuron Utilizes the contralateral ventral trigeminothalamic tract Some discriminative touch and pressure fibers utilize the ipsilateral dorsal trigeminothalamic tract, but this contribution is very minor Proprioception fibers are unique in that the cell body for the sensory nerve fiber is located in the central nervous system (mesencephalic nucleus)		
Types of Fibers	**Trigeminal Sensory Nucleus**	**Ascending Pathway**
Pain and temperature Light touch	Spinal (descending) nucleus	Ventral trigeminothalamic tract
Discriminative touch Pressure	Principal (main) sensory nucleus	Ventral trigeminothalamic tract (Dorsal trigeminothalamic tract subserves discriminative touch and pressure)
Proprioception	Mesencephalic nucleus	Projects to motor nucleus of V to control the jaw jerk reflex and force of bite

CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*

MAJOR ASCENDING PATHWAYS OF THE TRIGEMINAL NERVE			
Types of Neurons	**Path of Pain and Temperature**	**Path of Light Touch**	**Path of Discriminative Touch and Pressure**
Primary neuron	Fibers (Aδ or C) travel from the receptor from the ophthalmic, maxillary, and mandibular divisions of the trigeminal n. The nerve cell body of the primary neuron is located in the trigeminal ganglion Fibers enter the pons Fibers descend in the spinal (descending) tract located from the pons to the upper cervical spinal cord Fibers synapse on the nerve cell body of the secondary neuron	Fibers (Aβ) travel from the receptor from the ophthalmic, maxillary, and mandibular divisions of the trigeminal n. The nerve cell body of the primary neuron is located in the trigeminal ganglion Fibers enter the pons Fibers may have either of 2 courses: • May descend in the spinal (descending) tract located from the pons to the upper cervical spinal cord • May ascend to synapse on the nerve cell body of the secondary neuron Fibers synapse on the nerve cell body of the secondary neuron	Fibers (Aβ) travel from the receptor from the ophthalmic, maxillary, and mandibular divisions of the trigeminal n. The nerve cell body of the primary neuron is located in the trigeminal ganglion Fibers enter the pons Fibers ascend to synapse on the nerve cell body of the secondary neuron
Secondary neuron	Secondary nerve cell bodies begin in the spinal (descending) nucleus located from the pons to the upper cervical spinal cord (pars caudalis) Fibers decussate and ascend in the ventral trigeminothalamic tract (lemniscus) to the thalamus Fibers synapse on the nerve cell body of the tertiary neuron	Secondary nerve cell bodies may reach the thalamus along either of 2 courses: • May begin in the spinal (descending) nucleus (pars interpolaris and pars oralis) and decussate and ascend in the ventral trigeminothalamic tract (lemniscus) to the thalamus • May begin in the principal (main) sensory nucleus and decussate and ascend in the ventral trigeminothalamic tract (lemniscus) to the thalamus (NOTE: some fibers ascend in the ipsilateral dorsal trigeminothalamic tract) Fibers synapse on the nerve cell body of the tertiary neuron	Secondary nerve cell bodies begin in the principal (main) sensory nucleus located in the pons Fibers decussate and ascend in the ventral trigeminothalamic tract (lemniscus) to the thalamus (NOTE: some fibers ascend in the ipsilateral dorsal trigeminothalamic tract) Fibers synapse on the nerve cell body of the tertiary neuron
Tertiary neuron	Tertiary nerve cell bodies begin in the ventral posteromedial nucleus of the thalamus (VPM) Fibers ascend through the posterior limb of the internal capsule to terminate in the postcentral gyrus	Tertiary nerve cell bodies begin in the VPM Fibers ascend through the posterior limb of the internal capsule to terminate in the postcentral gyrus	Tertiary nerve cell bodies begin in the VPM Fibers ascend through the posterior limb of the internal capsule to terminate in the postcentral gyrus

PROPRIOCEPTION OF THE TRIGEMINAL NERVE
Sensory fibers carry input from the neuromuscular spindles along the mandibular division of the trigeminal n.
The nerve cell bodies of these sensory neurons are located in the mesencephalic nucleus of the midbrain
These fibers project to the motor nucleus of the trigeminal n. and innervate the muscles of mastication, to control the jaw jerk reflex and force of bite

CRANIAL NERVE V: TRIGEMINAL NERVE *CONTINUED*