

## Cranial Nerves

## Brain Stem Nuclei

Name	Action	Entry/Exit	Test	Nuclei	Level	Column	Type	Blood Supply
1 <b>Olfactory</b>	Smell	Cribriform plate of ethmoid	Smell (peppermint oil) in each nostril + control. Amnesia = no smell					
2 <b>Optic</b>	Vision	Optic Canal	Visual acuity (Snellens Chart) and extent of visual fields					
3 <b>Oculomotor</b>		Superior orbital fissure						
Extraocular muscles	Motor to extraocular muscles except lateral rectus and superior oblique		Movement of eyes: diplopia (double vision)	← Oculomotor	Mid brain - Superior foliculus	1	GSE	Posterior Cerebral
Intraocular muscles	Motor to intrinsic smooth muscles of eye (constriction of pupil, accommodation)		Pupillary light and pupillary accommodation reflex. Pupil diameter in eye and contralateral eye	← Etinger Westphal	Mid brain - Superior foliculus	2	GVE	Posterior Cerebral
4 <b>Trochlear</b>	Motor to superior oblique muscle	Superior orbital fissure	Difficult – diplopia on looking inwards and downwards	← Trochlear (NB fibres cross)	Mid brain (Inferior Colliculus)	1	GSE	Basillar
5 <b>Trigeminal</b>								
V1 – Ophthalmic div	Sensory - skin of nose to vertex, nasal mucosa, eyeball incl. Cornea	Superior orbital fissure	Corneal reflex	→ Mesencephalic (proprioception)	Rostral Pons	6	GSA	Basillar
V2 – maxillary div	Sensory - cheek, upper lip, teeth of maxilla, dura of middle and anterior cranial fossa (-> headache)	foramen rotundum	Sensation (cotton wool) and pin prick on cheek	→ Chief/Pontine (Discrimination)	Mid Pons	6	GSA	Basillar
V3 – mandibular div	Sensory - Skin over jaw to temple, teeth of mandible, anterior tongue	foramen ovale	Sensation (cotton wool) and pin prick over mandible	→ Spinal Trigeminal (Pain/Temperature)	Caudal Pons to Cervical Spine	6	GSA	AICA (superior) PICA (inferior)
	Motor - muscles of mastication & floor of mouth, tensor tymphani	foramen ovale	Power of jaw muscles (masseters for closure), jaw jerk	← Trigeminal Motor	Mid Pons	3	BE	Basillar
6 <b>Abducent</b>	Motor to lateral rectus muscle	Superior Orbital fissure	Lateral movement of eyes: diplopia	← Abducens	Caudal Pons	1	GSE	Basillar
7 <b>Facial</b>		Internal auditory meatus & facial canal						
Motor	muscles of facial expression (mimetic muscles), scalp muscles, stylohyloid, platysma, stapedius		Facial strength: frown, close eyes tightly, teathy smile	← Facial Motor	Caudal Pons	3	BE	Basillar
Taste	Taste on anterior two thirds of tongue		Taste on anterior tongue	← Superior Salvatory	Caudal Pons	2	GVE	Basillar
Sensory	concha, external auditory meatus							
Salivation	Visceral Efferent: Submandibular and sublingal glands, lacrimal glands			← Lacrimal	Caudal Pons	2	GVE	Basillar
8 <b>Vestibulochochlear</b>		Internal auditory meatus						
Hearing			Hearing	→ Dorsal/Ventral Choclear	Caudal Pons	5	SSA	AICA
Balance			Balance	→ Lateral/Medial/ Superior/Inferior Vestibular	Caudal Pons	5	SSA	AICA
9 <b>Glossopharynqeal</b>		Jugular foramen						
Taste	Back of mouth and throat Posterior 1/3rd of tongue			→ Solitary tract (superior)	Rostral Medulla	4	SVA	PICA
Sensory	Posterior tongu, upper pharynx, eustachian tube, middle ear		Gag reflex	← Ambiguous	All Medulla	3	BE	Vertebral
Motor	Sylopharyngeal (swallowing)			→ Solitary tract (inferior)	Open Medulla to closed medulla	4	GVA	PICA
Viseral afferent	Carotid sinus							
10 <b>Vagus</b>		Jugular foramen						
Motor	muscles of pharynx & larynx		Movement of soft palate (say ahh); vocal chords	← dorsal motor nucleus of vagus	All Medulla	2	GVE	Vertebral/PICA
Viseral efferent	motor to thoracic & abdominal viscera							
Viseral afferent	sensory to thoracic & abdominal viscera, aortic body & sinus							
Sensory	lower pharynx and larynx, external ear, external auditory meatus, tympanic membrane							
Taste	Oropharynx							
11 <b>Accessory</b>	Motor to sternomastoid & Trapezius	Jugular foramen	Strength of sternomastoid & trapezius (turn head & shrug against force)	← Spinal Acessory	C1-5	3	BE	Anterior Spinal
12 <b>Hypoglossal</b>	Motor to all muscles of tongue	Hypoglossal canal	Protrusion of tongue	← Hypoglossal	All Medulla	1	GSE	Anterior Spinal