

BRAINSTEM TRACTS

	Tract	Function	1 st order neuron	Pathway	2 nd order neuron	3 rd order neuron	Final destination	
TRIGEMINAL	Trigeminal (analogous to dorsal column)	Fine touch, pressure, position	Trigeminal ganglion		Main sensory nucleus of V	VPM (thalamus) (contralateral)	Somatosensory cortex	
	Trigeminal (anal. to spinothalamic tract)	Pain and temperature, poorly localized touch	Trigeminal ganglion		Spinal nuc of V (via spinal tract) -Lissauer's tract (communicate with SC)	VPM (contra) Dorsal horn gray	Somatosensory cortex	
	Trigeminal (anal. to spinocerebellar tract)	Muscle sense	Mesencephalic nucleus of V		-Motor nuc of V -Spinal nuc of V		-Jaw muscles -cerebellum	
SPECIAL SENSE	Taste and Visceral Sensation	Taste, sensation from facial viscera	Ganglia of VII, IX, X	Tractus solitarius	Nucleus of tractus solitarius	-Dorsal motor X -Reticular form. -Parabrachial nuc -VPM	-Visceral efferents (parasymp) -(interneurons) -Hypothalamus and amygdala -Cortex (facial region)	
	Auditory Sensation	Hearing	Spiral ganglia → Cochlear nuc → (trap body) → Sup Oliv → (lat lem) → inf coll → (brachium) → MGB OR → directly to lat lemniscus → IC...					Primary auditory cortex (sup gyrus of temp lobe)
	Vestibular Sensation	Sense motion Spatial orientation Balance Stabilize vision	Vestibular nuclei (lat, med, sup, inf)	-LVST (unilateral) -MVST (bilateral) -med long. Fasciculus -inf cerebellar peduncle	-motor neurons-SC -motor-cervical SC -CN III, IV, VI -cerebellum	-back to vestibular nuc/retic form	-(controls antigravity muscle) -(head and neck reflexes) -(coordinate eye movement) -(modulate activity of vestibular system)	
CEREBELLAR PATHWAYS	To cerebellum	Modulate responses	-Clarke's/Ext cun -Inf Olivary nuc -Pontine nuclei	-Ipsi via PSCT, ICP -via ICP, x at medulla -via MCP, x basal pons	Cerebellum (deep cerebellar nuclei)			
	From cerebellum		Deep cerebellar nuclei	(relays to different nuclei in cerebellum)	-Fastigial nuclei -Dentate/emboliform/globos nuclei	-vestibular nuc, retic form via ICP -red nuc via SCP (x at midbrain tegmentum)	Descends via VSTs, ReST Descends via RuST	

	Tract	Function	Origin	Pathway/Decussation	Destination
DESC.	Corticobulbar tract	Voluntary movement to head	Primary motor cortex	Internal capsule → Cerebral peduncle → Corticobulbar tract	Cranial nerve nuclei (bilaterally) *also ReST (bilat), Red nuc (ipsi), VST (contra)

