

## NERVES OF THE HUMAN BODY

Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Abdominopelvic splanchnic	Lower thoracic and lumbar segments sympathetic trunk	Pass medially and inferiorly to pre- of vertebral ganglion of paraaortic plexus	Motor: presynaptic sympathetics for innervation of abdominopelvic blood vessels and viscera
Abducent (CN VI)	Pons	Become intradural on clivus; traverse cavernous sinus and superior orbital fissure to enter orbit	Motor: lateral rectus
Accessory (CN XI)	Cranial root: medulla Spinal root: cervical spinal cord	Spinal root ascends into cranial cavity through foramen magnum, exits through jugular foramen, traverses posterior triangle of neck	Motor: sternocleidomastoid and trapezius
Ansa cervicalis	Superior root: hypoglossal nerve (C1–C2 fibers) Inferior root: cervical plexus (C2–C3 fibers)	Descends on external surface of carotid sheath and sternothyroid	Motor: omohyoid, sternohyoid,
Anterior ethmoidal	Nasociliary nerve (CN V1)	Arises in orbit, passes through anterior ethmoidal foramen to cranial cavity, then through cribriform plate of ethmoid to nasal cavity	Sensory: dural of anterior cranial fossa; mucous membranes of sphenoidal sinus, ethmoidal cells, and upper nasal cavity
Anterior femoral cutaneous	Femoral nerve (L2–L3 fibers)	Arise in femoral triangle and pierce fascia lata of thigh along path of sartorius muscle	Sensory: skin on medial and anterior aspects of thigh
Anterior interosseous	Median nerve in distal part of cubital fossa	Passes inferiorly on interosseous membrane	Motor: flexor digitorum profundus, flexor pollicis longus, and pronator quadratus
Auriculotemporal	Mandibular nerve (CN V3)	From posterior division of CN V3, it passes between neck of mandible and external acoustic meatus to accompany superficial temporal artery	Sensory: skin anterior to auricle and posterior temporal region, tragus and part of helix of auricle, and roof of exterior acoustic meatus and upper tympanic membrane
Axillary	Terminal branch of posterior cord of brachial plexus (C5–C6 fibers)	Passes to posterior aspect of arm through quadrangular space in company with posterior circumflex humeral artery and then winds around surgical neck of humerus; gives rise to lateral brachialcutaneous nerve	Motor: teres minor and deltoid Sensory: shoulder joint and skin over inferior part of deltoid
Buccal	Mandibular nerve (CN V3)	From the anterior division of CN V3 in infratemporal fossa, it passes anteriorly to reach cheek	Sensory: skin and mucosa of cheek, buccal gingiva adjacent to 2nd and 3rd molar teeth
Calcaneal branches	Tibial and sural nerves of leg to skin on heel	Pass from distal part of posterior aspect	Sensory: skin of heel
Cardiac plexus	Cervical and cardiac branches of vagus nerve and cardiopulmonary splanchnic nerves from sympathetic trunk	From arch of aorta and posterior surface of heart, fibers extend along coronary arteries and to sinoatrial node	Sinoatrial nodal tissue and coronary arteries; parasympathetic fibers slow rate, reduce force of heartbeat, and constrict arteries; sympathetic fibers have opposite effect
Cardiopulmonary splanchnic	Cervical and upper thoracic ganglia of sympathetic trunk	Descend anteromedially to cardiac, pulmonary, and esophageal plexuses	Motor: convey postsynaptic sympathetic fibers to nerve plexuses of thoracic viscera
Cavernous nerves of penis and clitoris	Parasympathetic fibers of prostatic nerve plexus	Perforates perineal membrane to reach erectile bodies of penis	Motor: helicine arteries of cavernous bodies; stimulation produces engorgement at arterial pressure (erection)
Cervical splanchnic	Cervical ganglia of sympathetic trunk	Pass medially and inferiorly to cardiac and pulmonary plexuses	Conducting tissue (sinoatrial and atrioventricular nodes) and coronary arteries
Chorda tympani	Facial nerve (CN VII) within facial canal	Traverses tympanic cavity, passing between incus and malleus; exits temporal bone through petrotympanic fissure to enter infratemporal fossa where it merges with lingual nerve	Motor: submandibular and sublingual (salivary) glands Sensory: taste sensation from anterior two thirds of tongue
Ciliary (long, short)	Long ciliary: nasociliary nerve (CN V1) Short ciliary: ciliary ganglion	Pass to posterior aspect of eyeball Short ciliary: ciliary ganglion	Sensory: cornea, conjunctiva Motor: ciliary body and iris

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Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Cluneal (superior, middle, and inferior)	Superior: posterior rami of L1, L2, and L3 Middle: posterior rami of S1, S2, and S3 Inferior: posterior cutaneous nerve of thigh	Superior nerves cross iliac crest; middle nerves exit through posterior sacral foramina and enter gluteal region; inferior nerves curve around inferior border of gluteus maximus	Sensory: skin of buttock or gluteal region as far as greater trochanter
Coccygeal	Conus medullaris of spinal cord	Anterior and posterior rami join adjacent rami of S4 and S5; anterior rami form coccygeal plexus, which gives rise to anococcygeal nerve	Sensory: skin over coccyx
Cochlear nerve	As a division of the vestibulocochlear nerve e (CN VIII)	Traverses internal acoustic meatus, entering modiolus with spiral ganglia and peripheral processes in spiral lamina	Sensory: spiral organ (for hearing)
Common fibular (peroneal)	Terminal branch (with tibial nerve) of sciatic nerve (L4–S2 fibers)	Begins at apex of popliteal fossa; follows medial border of biceps femoris muscle to posterior aspect of head of fibula; bifurcates into superficial and deep fibular nerves as it winds around neck of fibula	Sensory: skin on lateral part of posterior aspect of leg through its branch, lateral sural cutaneous nerve; knee joint through its articular branch Motor: short head of biceps femoris
Common palmar digital	Median and superficial branches of ulnar nerves	Run distally between long flexor tendons of palm, bifurcating in distal palm	Branches: proper palmar digital nerves, supplying skin and joints of palmar and distal dorsal aspect of fingers
Common plantar digital	Median and lateral plantar nerves	Run anteriorly in sole of foot between flexor tendons, bifurcating in distal sole	Branches: proper plantar digital nerves, supplying skin and joints of plantar and distal dorsal aspect of toes
Deep branch of radial nerve	Radial nerve just distal to elbow	Winds around neck of radius in supinator; enters posterior compartment of forearm becoming posterior interosseous nerve	Motor: extensor carpi radialis brevis and supinator
Deep branch of ulnar nerve	Ulnar nerve at wrist as it passes between pisiform and hamate bones (T1 fibers)	Passes deep between muscles of hypothenar eminence, then across palm with deep palmar (arterial) arch	Motor: hypothenar muscles (abductor, flexor, and opponens digiti minimi), lumbricals of 4th and 5th digits, all interossei, adductor pollicis, and deep head of flexor pollicis brevis
Deep fibular (peroneal)	Common fibular (peroneal) nerve	Arises between fibularis longus and neck of fibula; passes through extensor digitorum longus and descends on interosseous membrane; passes deep to extensor retinaculum, crosses distal end of tibia, and enters dorsum of foot	Motor: muscles of anterior compartment of leg and dorsum of foot Sensory: skin of 1st interdigital cleft (i.e., skin on adjacent sides of 1st and 2nd toes); sends articular branches to joints it crosses
Deep petrosal	Internal carotid plexus	Traverses cartilage of foramen lacerum to join greater petrosal nerve at entrance to pterygoid canal	Conveys the postsynaptic sympathetic fibers destined for lacrimal gland and mucosa of nasal cavity, palate, and upper pharynx
Deep temporal	Mandibular nerve (CN V3)	Ascend temporal fossa deep to temporalis muscle	Motor: temporalis Sensory: periosteum of temporal fossa
Dorsal branch of ulnar nerve	Ulnar nerve about 5 cm proximal to flexor retinaculum	Passes distally deep to flexor carpi ulnaris, then dorsally to perforate deep fascia and course along medial side of dorsum of hand, dividing into 2 to 3 dorsal digital nerves	Sensory: skin of medial aspect of dorsum of hand and proximal portions of 5th and medial half of 4th digit (occasionally also adjacent sides of proximal portions of 4th and 3rd fingers)
Dorsal scapular	Anterior ramus of C5 with frequent contribution from C4	Pierces scalenus medius, descends deep to levator scapulae, and enters deep surface of rhomboids	Motor: rhomboids; occasionally supplies levator scapulae
Esophageal plexus	Vagus nerve, sympathetic ganglia, greater splanchnic nerve	Distal to tracheal bifurcation, vagus and sympathetic nerves form a plexus around esophagus	Vagal (parasympathetic) and sympathetic fibers to smooth muscle and glands of inferior two thirds of esophagus
External nasal	Anterior ethmoidal nerve (CN V1)	Runs in nasal cavity and emerges on face between nasal bone and lateral nasal	Sensory: skin on dorsum of nose, including tip of nose cartilage

Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Facial (CN VII)	Posterior border of pons	Runs through internal acoustic meatus and facial canal of petrous part of temporal bone, exiting through stylomastoid foramen; main trunk forms intraparotid plexus	Motor: stapedius, posterior belly of digastric, stylohyoid, facial, and scalp muscles Sensory: some skin of external acoustic meatus SEE ALSO intermediate nerve
Femoral	Lumbar plexus (L2–L4 fibers)	Passes deep to midpoint of inguinal ligament, lateral to femoral vessels, and divides into muscular and cutaneous branches	Motor: anterior thigh muscles Sensory: hip and knee joints; skin on anteromedial side of thigh and leg
Frontal	Ophthalmic nerve (CN V1)	Crosses orbit on superior aspect of levator palpebrae superioris; divides into supraorbital and supratrochlear branches	Sensory: skin of forehead, scalp, upper eyelid, and nose; conjunctiva of upper lid and mucosa of frontal sinus
Genitofemoral	Lumbar plexus (L1–L2 fibers)	Descends on anterior surface of psoas major and divides into genital and femoral branches	Sensory: femoral branch supplies skin over femoral triangle; genital branch supplies scrotum or labia majora Motor: genital branch to cremaster muscle
Glossopharyngeal (CN IX)	Glossopharyngeal (CN IX)	Exits cranium through jugular foramen, passes between superior and middle constrictors of pharynx to tonsillar fossa; enters posterior third of tongue	Motor: somatic to stylopharyngeus; visceral (presynaptic parasympathetic) to parotid gland Sensory: posterior two thirds of tongue (including taste), pharynx, tympanic cavity, auditory tube, carotid body, and sinus
Great auricular	Cervical plexus (C2–C3 fibers)	Ascends vertically over sterno, cleidomastoid anterior and parallel to external jugular vein	Sensory: skin of auricle, adjacent scalp, and over angle of jaw; parotid sheath
Greater occipital	As medial branch of posterior ramus of spinal nerve C2	Pierces deep muscles of neck and trapezius to ascend posterior scalp to vertex	Motor: multifidus cervicis, semispinalis capitis Sensory: posterior scalp
Greater palatine	Branch of pterygopalatine ganglion (maxillary nerve)	Passes inferiorly through greater palatine canal and foramen	Motor: postsynaptic parasympathetics to palatine glands Sensory: mucosa of hard palate
Greater petrosal	Genu of facial nerve (CN VII)	Exits facial canal through hiatus for greater petrosal nerve; courses across to tegmen tympani and passes through cartilage of foramen lacerum to join deep petrosal nerve at opening of pterygoid canal	Motor: presynaptic parasympathetics pterygopalatine ganglion for innervation of lacrimal and nasal, palatine, and upper pharyngeal mucous glands
Greater splanchnic	5th–6th through 9th–10th thoracic sympathetic ganglia	Highest abdominopelvic splanchnic nerve; passes anteromedially on bodies of thoracic vertebrae, piercing diaphragm to converge on root of celiac trunk they supply	Motor: conveys presynaptic sympathetics to celiac ganglia for innervation of celiac arteries and derivatives, and of that portion of gut
Hypogastric	As continuation of superior hypogastric plexus into pelvis	Courses anteriorly to sacrum within hypogastric sheath to merge with pelvic splanchnic nerves in inferior hypogastric plexus	Motor: conveys presynaptic and postsynaptic sympathetic fibers destined for pelvic viscera Sensory: conveys pain fibers from intraperitoneal pelvic viscera (e.g., fundus, body of uterus)
Hypoglossal (CN XII)	Between pyramid and olive of myelencephalon	Passes through hypoglossal canal, then runs inferiorly and anteriorly, passing medially to angle of mandible and between mylohyoid and hyoglossus to reach muscles of tongue	Motor: intrinsic and extrinsic muscles of tongue (exception: palatoglossus)
Iliohypogastric	Lumbar plexus (L1 fibers)	Parallels iliac crest; pierces transverse abdominal muscle; branches pierce external oblique aponeurosis to reach inguinal and pubic regions	Motor: internal oblique and transverse abdominal muscles Sensory: lateral cutaneous branch supplies superolateral quadrant of buttocks, skin over iliac crest, and hypogastric region

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Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Ilioinguinal	Lumbar plexus (L1 fibers)	Passes between 2nd and 3rd layers of abdominal muscles, passes through inguinal canal, and divides into femoral and scrotal or labial branches	Motor: lowermost part of internal oblique and transverse abdominal muscles Sensory: femoral branch supplies skin over femoral triangle; genital branch supplies mons pubis and adjacent skin of labia majora or scrotum
Inferior alveolar	As terminal branch (with lingual nerve) of posterior trunk of mandibular nerve (CN V3)	Descends between lateral and medial pterygoid muscles of infratemporal fossa to enter mandibular canal of mandible	Sensory: lower teeth, periodontium, periosteum, and gingiva of lower jaw. SEE ALSO nerve to mylohyoid, mental nerve
Inferior anal (rectal)	Pudendal nerve (S2–S4 fibers)	Arises at entry to pudendal canal (ischial spine), courses medially through ischioanal fat pad to anal canal	Motor: external anal sphincter Sensory: anoderm, perianal skin
Inferior gluteal	Sacral plexus (L5–S2 fibers)	Leaves pelvis through greater sciatic foramen inferior to piriformis and divides into several branches	Motor: gluteus maximus
Infraorbital	Terminal branch of maxillary nerve (CN V2)	Runs in floor of orbit and emerges at infraorbital foramen	Sensory: skin of cheek, lower lid, lateral side of nose and inferior septum and upper lip, upper premolar incisors and canine teeth, mucosa of maxillary sinus and upper lip
Infratrochlear	Nasociliary nerve (CN V1)	Follows medial wall of orbit to upper eyelid	Sensory: skin and conjunctiva (lining) of upper eyelid
Intercostals	Anterior rami of T1–T11 nerves	Run in intercostal spaces between internal and innermost layers of intercostal muscles	Motor: intercostal muscles; lower nerves supply muscles of anterolateral abdominal wall Sensory: skin overlying and pleura and peritoneum deep to muscles innervated
Intermediary	From the pons as a smaller root of the facial nerve (CN VII)	Traverses internal acoustic meatus, merging at its distal end with larger (root of) facial nerve	Motor: presynaptic parasympathetics destined for pterygopalatine and submandibular ganglia through greater petrosal nerve and chorda tympani respectively Sensory: taste from anterior two thirds of tongue and soft palate
Lacrimal	Ophthalmic nerve (CN V1)	Passes through palpebral fascia of upper eyelid near lateral angle (canthus) of eye	Sensory: a small area of skin and conjunctiva of lateral part of upper eyelid
Lateral branch of median nerve	Median nerve as it enters	Runs laterally to palmar thumb and palm of hand radial side of index finger	Motor: 1st lumbrical Sensory: skin of palmar and distal dorsal aspects of thumb and radial half of index finger
Lateral cutaneous nerve of forearm	Continuation of musculocutaneous nerve (C6–C7 fibers)	Descends along lateral border of forearm to wrist	Sensory: skin of lateral aspect of forearm
Lateral cutaneous nerve of thigh	Lumbar plexus (L2–L3 fibers)	Passes deep to inguinal ligament, 2–3 cm medial to anterior superior iliac spine	Sensory: skin on anterior and lateral aspects of thigh
Lateral pectoral	Lateral cord of brachial plexus (C5–C7 fibers)	Pierces clavipectoral fascia to reach deep surface of pectoral muscles	Motor: primarily pectoralis major but sends a loop to medial pectoral nerve that innervates pectoralis minor
Lateral plantar	Smaller terminal branch of the tibial nerve (S1–S2 fibers)	Passes laterally in foot between quadratus plantae and flexor digitorum brevis muscles and divides into superficial and deep branches	Motor: quadratus plantae, abductor digiti minimi, flexor digiti minimi brevis; deep branch supplies plantar and dorsal interossei, lateral three lumbricals, and adductor hallucis Sensory: skin on sole lateral to a line splitting 4th digit
Least splanchnic	12th (lowest) thoracic ganglion of sympathetic trunk	Passes through diaphragm with sympathetic trunk and ends in renal plexus	Motor: presynaptic sympathetic to renal arteries and derivatives
Lesser occipital	Cervical plexus (C2–C3 fibers)	Ascends posterosuperiorly, parallel to anteriosuperior border of sternocleidomastoid	Sensory: skin of posterior surface of auricle and adjacent scalp

Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Lesser palatine	Pterygopalatine ganglion (maxillary nerve—CN V2)	Passes inferiorly through palatine canal and lesser palatine foramen	Motor: postsynaptic parasympathetics to glands of soft palate Sensory: mucosa of soft palate
Lesser petrosal	Tympanic plexus (glossopharyngeal nerve—CN IX)	Perforates tegmen tympani to exit tympanic cavity into middle cranial fossa; runs anteriorly to descend through sphenopetrosal fissure	Motor: conveys presynaptic parasympathetic fibers to otic ganglion for secretomotor innervation of parotid or foramen ovale gland
Lesser splanchnic	10th and 11th thoracic ganglia of sympathetic trunk	Descends anteromedially to perforate diaphragm to reach aorticorenal ganglion	Motor: presynaptic sympathetics to prevertebral ganglia Sensory: visceral afferents from upper gastrointestinal tract
Lingual	Terminal branch (with inferior alveolar nerve) of posterior trunk of mandibular nerve (CN V3)	Joined by chorda tympani in infratemporal fossa; passes anteroinferiorly between lateral and medial pterygoid muscles, and above mylohyoid to enter oral cavity	Motor: presynaptic parasympathetic fibers to submandibular ganglion for submandibular and sublingual salivary glands Sensory: anterior two thirds of tongue, floor of mouth, and lingual mandibular gingiva
Long thoracic	Anterior rami of C5–C7	Descends posterior to C8 and T1 rami and passes distally on external surface of serratus anterior	Motor: serratus anterior
Lower subscapular	Posterior cord of brachial plexus (C5–C6 fibers)	Passes inferolaterally, deep to subscapular artery and vein to subscapularis and and teres major	Motor: inferior portion of subscapularis and teres major
Lumbar splanchnic	Lumbar ganglia of sympathetic trunks	Pass anteromedially on bodies of lumbar vertebrae to prevertebral ganglia of paraaortic plexus	Motor: presynaptic sympathetics for lower abdominal and pelvic viscera Sensory: visceral afferents from same
Mandibular (CN V3)	Trigeminal ganglion (motor root from pons)	Descends through foramen ovale into infratemporal fossa; divides into anterior and posterior trunks, anterior ramifying immediately into several smaller branches, posterior bifurcating into lingual and inferior alveolar nerves	Motor: muscles of mastication, mylohyoid, anterior belly of digastric, tensor tympani, and tensor veli palatini Sensory: skin overlying mandible (except angle), lower half of mouth (including teeth, gingiva, mucosa of floor and vestibule, and anterior two thirds of tongue), and temporomandibular joint
Masseteric	Anterior trunk of mandibular nerve (CN V3)	Passes laterally through mandibular notch	Motor: masseter Sensory: temporomandibular joint
Maxillary (CN V2)	Trigeminal ganglion	Runs anteriorly through foramen rotundum into pterygopalatine fossa, sending sensory roots to the pterygopalatine ganglion (branches of the ganglion are considered branches of the maxillary nerve); main trunk continues anteriorly through infraorbital fissure as infraorbital nerve	Motor: no motor fibers initially; branches of pterygopalatine ganglion distribute postsynaptic parasympathetic fibers to lacrimal gland and mucosal glands of nasal cavity, palate, and upper pharynx Sensory: skin overlying maxilla, mucosa of posteroinferior nasal cavity and maxillary sinus; upper half of mouth (including teeth, gingiva, and mucosa of palate, vestibule, and cheek)
Medial branch of median nerve	Median nerve as it enters palm of hand	Runs medially to adjacent sides of index, middle, and ring fingers	Motor: 2nd lumbrical Sensory: skin of palmar and distal dorsal aspects of adjacent sides of the 2nd, 3rd, and 4th digits
Medial cutaneous nerve of arm	Medial cord of brachial plexus (C8 and T1 fibers)	Runs along the medial side of axillary vein and communicates with intercostobrachial nerve	Sensory: skin on medial side of arm
Medial cutaneous nerve of forearm	Medial cord of brachial plexus (C8 and T1 fibers)	Runs between axillary artery and vein	Sensory: skin over medial side of forearm
Medial cutaneous nerve of leg	Saphenous nerve	Descends medial side of leg with greater saphenous vein	Skin of anteromedial side of leg and medial side of foot
Medial dorsal cutaneous nerve	Superficial fibular (peroneal) nerve	Descends across ankle anteriorly running nerve onto medial aspect of dorsum of foot	Supplies most of skin of dorsum of foot; proximal portion of toes, except for web between great and 2nd toes
Medial pectoral	Medial cord of brachial plexus (C8 and T1 fibers)	Passes between axillary artery and vein and enters deep surface of pectoralis minor	Motor: pectoralis minor and part of pectoralis major

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Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Medial plantar	Larger terminal branch of the tibial nerve (L4 and L5 fibers)	Passes distally in foot between abductor hallucis and flexor digitorum brevis and divides into muscular and cutaneous branches	Motor: abductor hallucis, flexor digitorum brevis, flexor hallucis brevis, and 1st lumbrical Sensory: skin of medial side of sole of foot and sides of 1st 3 digits
Median	Arises by two roots, one from the lateral cord of brachial plexus (C6–C7 fibers) and one from medial cord (C8 and T1 fibers); roots join lateral to axillary artery	Over length of arm, crosses to medial side of brachial artery; exits cubital fossa between heads of pronator teres, running between intermediate and deep layers of anterior forearm compartment; becomes superficial proximal to wrist and passes deep to flexor retinaculum (transverse carpal ligament) as it passes through carpal tunnel to the hand	Motor: flexor muscles in forearm (except flexor carpi ulnaris, ulnar half of flexor digitorum profundus); thenar muscles (except adductor pollicis and deep head of flexor pollicis brevis), lateral lumbricals (for 2nd and 3rd) digits Sensory: skin of the palmar and distal dorsal aspects of the lateral (radial) 3-1/2 digits and adjacent palm
Mental	Terminal branch of inferior alveolar nerve (CN V3)	Emerges from mandibular canal at mental foramen	Sensory: skin of chin; skin and mucosa of lower lip
Musculocutaneous	Lateral cord of brachial plexus (C5–C7 fibers)	Enters deep surface of coracobrachialis and descends between biceps brachii and brachialis	Motor: flexor muscles of arm (coracobrachialis, biceps brachii, and brachialis) Sensory: continues as lateral antebrachial cutaneous nerve
Nasociliary	Ophthalmic nerve (CN V1)	Arises in superior orbital fissure, passes anteromedially across retrobulbar orbit, providing sensory root to ciliary ganglion and terminating as infratrochlear nerve and nasal branches	Motor: no motor fibers initially; branches of ciliary ganglion (short ciliary nerves) convey postsynaptic sympathetic and parasympathetics to ciliary body and iris Sensory: tactile sensation from eyeball (conjunctiva and cornea); mucous membrane of ethmoidal cells and anterosuperior nasal cavity; skin of root, dorsum, and apex of nose
Nasopalatine	Pterygopalatine ganglion (maxillary nerve—CN V2)	Exits pterygopalatine fossa through sphenopalatine foramen; crossing to and then running anteroinferiorly across nasal septum; passes through incisive foramen to palate	Motor: postsynaptic parasympathetics to mucosal glands of nasal septum Sensory: mucosa of nasal septum, anteriormost hard palate
Nerves to lateral/medial pterygoid	Anterior trunk of mandibular nerve (CN V3)	Arise in infratemporal fossa immediately inferior to foramen ovale	Motor: lateral and medial pterygoid muscles
Nerve to mylohyoid	Inferior alveolar nerve	Arises from posterior aspect of inferior alveolar nerve immediately outside mandibular foramen; descends in bony groove on medial aspect of ramus of mandible	Motor: mylohyoid and anterior belly of digastric muscle
Nerve to obturator internus	Sacral plexus (L5, S1, and S2)	Enters gluteal region through greater sciatic foramen inferior to piriformis; descends posteriorly to ischial spine; enters lesser sciatic foramen and passes to obturator internus	Motor: superior gemellus and obturator internus
Nerve of pterygoid canal	Formed by merger of greater and deep petrosal nerves	Traverses pterygoid canal to reach pterygopalatine ganglion in pterygopalatine fossa	Motor: conveys postsynaptic sympathetic and presynaptic parasympathetic fibers to pterygopalatine ganglion
Nerve to quadratus femoris	Sacral plexus (L5, S1, and S2)	Leaves pelvis through greater sciatic foramen deep to sciatic nerve	Motor: inferior gemellus and quadratus femoris Sensory: hip joint
Nerve to stapedius muscle	Facial nerve (CN VII)	Arises as facial nerve descends posterior to muscle in facial canal	Motor: stapedius
Nerve to tensor tympani muscle	Otic ganglion (mandibular nerve—CN V3)	Courses along cartilaginous portion of pharyngotympanic (auditory) tube to hemicanal for tensor tympani	Motor: tensor tympani
Nerve to tensor veli palatini muscle	Anterior trunk of mandibular nerve—(CN V3)	Arises as a branch of nerve to medial pterygoid	Motor: tensor veli palatini

Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Obturator	Lumbar plexus (L2–L4 fibers)	Enters thigh through obturator foramen and divides; its anterior branch descends between adductor longus and adductor brevis; its posterior branch descends between adductor brevis and adductor magnus	Motor: anterior branch supplies adductor longus, adductor brevis, gracilis, and pectineus; posterior branch supplies obturator externus and adductor magnus Sensory: skin of medial thigh above knee
Oculomotor (CN III)	Interpeduncular fossa of mesencephalon	Pierces dura lateral to posterior clinoid process, runs in lateral wall of cavernous sinus, enters orbit through superior fissure and divides into superior and inferior branches	Motor: somatic: all extraocular muscles except superior oblique and lateral rectus; presynaptic paraorbital sympathetic fibers to ciliary ganglion for ciliary body and sphincter pupillae
Olfactory (CN I)	Olfactory cells in olfactory epithelium (mucosa) of roof of nasal cavity plate	Approximately 20 bundles of nerve fibers ascend through foramina of cribriform of ethmoid to reach olfactory bulbs (anterior cranial fossa)	Sensory: olfactory mucosa (sense of smell)
Ophthalmic (CN V1)	Trigeminal ganglion	Passes anteriorly in lateral wall of cavernous sinus to enter orbit through superior orbital fissure, branching into frontal, nasociliary, and lacrimal nerves	Sensory: general sensation from eyeball (conjunctiva and cornea); mucous membrane of ethmoidal cells and frontal sinus, dura of anterior cranial fossa, falx cerebri and tentorium cerebelli, anterosuperior nasal cavity; skin of forehead, upper lid; root, dorsum, and apex of nose
Optic (CN II)	Ganglion cells of retina	Exits orbit through optic canals; fibers from nasal half of retina cross to contralateral side at chiasm; fibers pass through optic tracts to geniculate bodies, superior colliculus, and pretectum	Sensory: vision from retina
Palmar cutaneous branch of median nerve	Arises from median nerve just proximal to flexor retinaculum	Passes between tendons of palmaris longus and flexor carpi radialis and runs superficially to flexor retinaculum	Sensory: skin of central palm
Palmar cutaneous branch of ulnar nerve	Arises from ulnar nerve near middle of forearm	Descends on ulnar artery and perforates deep fascia in the distal third of forearm	Sensory: skin at base of medial palm, overlying medial carpals
Pelvic splanchnic	Sacral plexus (S2–S4 fibers)	Run anteriorly and inferiorly to merge with inferior hypogastric plexus	Motor: presynaptic parasympathetic fibers for pelvic viscera, descending and sigmoid colon Sensory: visceral afferent fibers from subperitoneal pelvic viscera (cervix of uterus and upper vagina, floor of bladder, rectum and upper anal canal; prostate)
Perineal	Terminal branch (with dorsal nerve of penis or clitoris) of pudendal nerve (S2–S4 fibers)	Separates from pudendal nerve on exit from pudendal canal; runs to superficial perineum dividing into a superficial cutaneous branch (posterior labial/scrotal) and a deep motor branch triangle	Motor: muscles of urogenital triangle (superficial and deep perineal muscles) Sensory: skin of posterior urogenital (posterior portion of labia majora and minora, vestibule of vagina; posterior aspect of scrotum)
Pharyngeal	Pterygopalatine ganglion	Passes posteriorly through palatovaginal canal	Supplies mucosa of nasopharynx posterior to pharyngotympanic (auditory) tubes
Phrenic	Cervical plexus (C3–C5 fibers)	Passes through superior thoracic aperture and runs between mediastinal pleura and pericardium	Motor: diaphragm Sensory: pericardial sac, mediastinal and diaphragmatic pleura, and diaphragmatic peritoneum
Posterior auricular	As first extracranial branch of facial nerve (CN VII)	Passes posterior to ear, sending branch to occipital region	Motor: posterior auricular muscle and intrinsic auricular muscles, occipital belly of occipitofrontalis (epicranius)
Posterior cutaneous nerve of arm	Radial nerve (C5–C8 fibers)	Emerges from under posterior border of deltoid, between long and lateral heads of triceps brachii	Sensory: skin of posterior aspect of arm
Posterior cutaneous nerve of forearm	Arises in arm from radial nerve (C5–C8 fibers)	Perforates lateral head of triceps and descends along lateral side of arm and posterior aspect of forearm to wrist	Sensory: skin of distal posterior arm, posterior aspect of forearm

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APP 51

Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Posterior cutaneous nerve of thigh	Sacral plexus (S1–S3 fibers)	Leaves pelvis through greater sciatic foramen inferior to piriformis, runs deep to gluteus maximus, and emerges from its inferior border	Sensory: skin of buttock through inferior cluneal branches and skin over posterior aspect of thigh and calf; lateral perineum, upper medial thigh through perineal branch
Posterior ethmoidal	Nasociliary	Leaves orbit through posterior ethmoidal foramen	Supplies ethmoidal and sphenoidal paranasal sinuses
Posterior inferior nasal	Greater palatine	Arise in greater palatine canal, pierce through perpendicular plate of palatine bone	Mucosa of inferior nasal concha and walls of inferior and middle nasal meatuses
Posterior interosseous	Terminal branch of deep branch of radial nerve (continuation of deep radial after emerging from supinator)	Runs between superficial and deep layers of posterior forearm, then passes between extensor pollicis longus and interosseous membrane	Motor: extensor carpi ulnaris, extensors of digits (including thumb), and abductor pollicis longus
Posterior labial	Perineal nerve	Emerge from pudendal canal and ramify in subcutaneous tissue	Skin of posterior portion of labium majus
Pudendal	Sacral plexus (S2–S4)	Enters gluteal region through greater sciatic foramen inferior to piriformis; descends posteriorly to sacrospinous ligament; enters perineum through lesser sciatic foramen	Supplies most motor and sensory innervation to perineum (supplies no structures in gluteal region)
Pulmonary plexus	Vagus nerve and cardiopulmonary splanchnic nerves from sympathetic trunk	Forms on primary bronchi and extends along root of lung and bronchial subdivisions	Motor: parasympathetic fibers constrict bronchioles; sympathetic fibers dilate them
Radial	Terminal branch of posterior cord of brachial plexus (C5–C8 and T1 fibers)	Descends posterior to axillary artery; enters radial groove with deep brachial artery to pass between long and medial heads of triceps; bifurcates in cubital fossa into superficial and deep radial nerves	Motor: proximal to bifurcation, innervates triceps brachii, anconeus, brachioradialis, and extensor carpi radialis longus muscles Sensory: skin on posterior aspect of arm and forearm via posterior cutaneous nerves of arm and forearm
Recurrent (thenar) branch of median nerve	Median nerve immediately distal to flexor retinaculum	Loops around distal border of flexor retinaculum and enters thenar muscles	Motor: abductor pollicis brevis, opponens pollicis, and superficial head of flexor pollicis brevis
Recurrent laryngeal	Vagus nerve (CN X)	Loops around subclavian on right; on left runs around arch of aorta and ascends in tracheoesophageal groove	Motor: intrinsic muscles of larynx (except cricothyroid) Sensory: inferior to level of vocal folds
Saphenous	Femoral nerve	Descends with femoral vessels through femoral triangle and adductor canal, then descends with great saphenous vein	Sensory: skin on medial side of leg and foot
Sciatic	Sacral plexus (L4–S3 fibers)	Enters gluteal region through greater sciatic foramen inferiorly to piriformis, descends along posterior aspect of thigh, and divides proximally to knee into tibial and common fibular peroneal nerves	Motor: hamstrings by tibial division (except for short head of biceps femoris, which is innervated by its common fibular division) Sensory: provides articular branches to hip and knee joints Motor: subclavius
Subclavian nerve	Superior trunk of brachial plexus (C5–C6; often C4 as well)	Descends posterior to clavicle and anterior to brachial plexus and subclavian artery	Sensory: sternoclavicular joint
Subcostal	Anterior ramus of T12 spinal nerve	Courses along inferior border of 12th rib in same manner as intercostal nerves	Motor: muscles of anterolateral abdominal wall Sensory: lateral cutaneous branch supplies skin inferior to anterior iliac crest
Suboccipital	Posterior ramus of C1 spinal nerve	Emerges between occipital bone and atlas, inferior to transverse part of vertebral artery, into suboccipital triangle; communicates with occipital nerve (C2)	Motor: suboccipital muscles (rectus capitis major and minor, obliquus capitis inferior and superior)



## NERVES OF THE HUMAN BODY

APP 52

Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Superficial branch of radial nerve	Continuation of radial nerve after deep branch is given off in cubital fossa	Passes distally, anterior to pronator teres and deep to brachioradialis; emerging to pierce deep fascia at wrist and pass onto dorsum of hand	Sensory: skin of lateral (radial) half of dorsum of hand and thumb, proximal portions of dorsal aspects of 2nd and 3rd digits, and of lateral (radial) half of 4th digit
Superficial branch of ulnar nerve	Arise from ulnar nerve at wrist as they pass between pisiform and hamate bones	Passes palmaris brevis and divides into 2 common palmar digital nerves	Motor: palmaris brevis Sensory: skin of palmar and distal dorsal aspects of 5th digit and of medial (ulnar) side of 4th digit and proximal portion of palm
Superficial fibular (peroneal)	Common fibular (peroneal) nerve	Arises between fibularis longus and neck of fibula and descends in lateral compartment of leg; pierces deep fascia at distal third of leg to become cutaneous and send branches to foot and digits	Motor: fibularis (peroneus) longus and brevis Sensory: skin on distal third of anterior surface of leg and dorsum of foot and all digits, except lateral side of 5th and adjoining sides of 1st and 2nd digits
Superior alveolar	Maxillary nerve (CN V2) or its continuation as infra-orbital nerve	Posterior: emerges from pterygomaxillary fissure into infratemporal fossa; pierces posterior aspect of maxilla Middle and anterior: arises from infraorbital nerve in roof of maxillary sinus, descends walls of sinus	Sensory: mucosa of maxillary sinus, maxillary teeth, and gingiva
Superior gluteal	Sacral plexus (L4–S1 fibers)	Leaves pelvis through greater sciatic foramen superior to piriformis and runs between gluteus medius and minimus	Motor: gluteus medius, gluteus minimus, and tensor fasciae latae
Superior laryngeal	Vagus (CN X)	Descends in parapharyngeal space; lateral to thyroid cartilage divides into internal and external laryngeal nerves; former pierces thyrohyoid membrane; latter runs inferomedially to gap between cricoid and thyroid cartilages	Motor: cricothyroid muscle (external laryngeal nerve) Sensory: supraglottic
Supraclavicular (lateral, intermediate, medial)	Cervical plexus (C3 and C4 fibers)	Arise from a common trunk that emerges at center of posterior border of sternocleidomastoid; fan out as they descend onto lower neck, upper thorax, and shoulder	Sensory: skin of lower anterolateral neck, uppermost thorax, and shoulder
Supraorbital	Continuation of frontal nerve (CN V1)	Emerges through supraorbital notch, or foramen, and breaks up into small branches	Sensory: mucous membrane of frontal sinus and conjunctiva (lining) of upper eyelid; skin of forehead as far as vertex
Suprascapular	Superior trunk of brachial plexus (C5–C6; often C4 also)	Passes laterally across posterior triangle of neck, through scapular notch under superior transverse scapular ligament	Motor: supraspinatus, infraspinatus muscles Sensory: superior and posterior glenohumeral (shoulder) joint
Supratrochlear	Frontal nerve (CN V1)	Passes superiorly on medial of supraorbital nerve and divides into 2 or more branches	Sensory: skin in middle of forehead to hairline
Sural	Usually arises from merging of medial and lateral sural cutaneous nerves from tibial and common fibular (peroneal) nerves, respectively	Descends between heads of gastrocnemius and becomes superficial at middle of leg; descends with small saphenous vein and passes posterior to lateral malleolus to lateral side of foot	Sensory: skin on posterior and lateral aspects of leg and lateral side of foot
Tentorial	Intracranial portion of ophthalmic nerve (CN V1)	Arises as recurrent branch passing abruptly posteriorly around margins of tentorial notch onto superior aspect of tentorium cerebelli and ascending posterior limb of falx cerebri	Sensory: supratentorial dura mater (superior aspect of tentorium cerebri and falx cerebri)
Thoracic splanchnic	Thoracic ganglia of sympathetic trunk	Pass anteromedially on bodies of thoracic vertebrae as lower cardiopulmonary splanchnic nerves to thoracic autonomic plexuses (cardiac, pulmonary, and esophageal) and as upper abdominopelvic splanchnic nerves to prevertebral ganglia of paraaortic plexus	Motor: splanchnic nerves from 1st through 5th thoracic ganglia convey postsynaptic sympathetic fibers to heart, lungs, and esophagus; those from 6th through 12th thoracic ganglia (i.e., greater, lesser, and least splanchnic nerves) convey presynaptic sympathetic fibers to prevertebral ganglia

## NERVES OF THE HUMAN BODY

APP 53

Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Thoracoabdominal	Continuation of lower intercostal nerves (T7–T11)	Cross costal margin to run between 2nd and 3rd layers of abdominal muscles	Motor: anterolateral abdominal muscles Sensory: overlying skin, underlying peritoneum, and periphery of diaphragm
Thoracodorsal	Posterior cord of brachial plexus (C6–C8 fibers)	Arises between upper and lower subscapular nerves and runs inferolaterally along posterior axillary wall to latissimus dorsi	Motor: latissimus dorsi
Tibial	Sciatic nerve (L4–S3 fibers)	Forms as sciatic bifurcates at apex of popliteal fossa; descends through popliteal fossa and lies on popliteus; runs inferiorly on tibialis posterior with posterior tibial vessels; terminates beneath flexor retinaculum by dividing into medial and lateral plantar nerves	Motor: muscles of posterior compartment of thigh (except short head of biceps), popliteal fossa, posterior compartment of leg, and sole of foot Sensory: knee joint; skin of leg (through medial sural), and sole of foot (through medial and lateral plantar nerves)
Transverse cervical	Cervical plexus (C2 and C3 fibers)	Emerges from middle of posterior border of sternocleidomastoid muscle; runs anteriorly across muscle	Sensory: skin overlying anterior triangle of neck
Trigeminal (CN V)	Lateral surface of pons by 2 roots: motor and sensory	Roots cross medial part of crest of petrous part of temporal bone, entering trigeminal cave of dura mater lateral to body of sphenoid and cavernous sinus; sensory root leads to trigeminal ganglion; motor root bypasses ganglion, becoming part of mandibular nerve (CN V3)	Motor: somatic: muscles of mastication, mylohyoid, anterior belly of digastric, tensor tympani, and tensor veli palatini; visceral: distributes postsynaptic parasympathetic fibers of head to their destinations Sensory: dura of anterior and middle cranial fossae, facial skin, teeth, gingiva, mucosa, nasal cavity, paranasal sinuses, and mouth
Trochlear (CN IV)	Dorsolateral aspect of mesencephalon below inferior colliculus (only cranial nerve to emerge from dorsal aspect of brainstem)	Runs longest intracranial course, passing around brainstem to enter dura in free edge of tentorium close to posterior clinoid process; runs in lateral wall of cavernous sinus, entering orbit via superior orbital fissure	Motor: superior oblique muscle
Tympanic	As 1st extracranial branch of glossopharyngeal nerve (CN IX), from inferior (petrosal) glossopharyngeal ganglion	Passes in recurrent manner into tympanic canaliculus, entering tympanic cavity and ramifying on promontory of labyrinthine wall as tympanic plexus	Motor: conveys presynaptic parasympathetic fibers that will reach otic ganglion for secretomotor innervation of parotid gland Sensory: mucosa of tympanic cavity, mastoid cells, and pharyngotympanic (auditory) tube
Ulnar	Terminal branch of medial cord of brachial plexus (C8 and T1 fibers; often also receives C7 fibers)	Terminal branch of medial cord of brachial plexus (C8 and T1 fibers; often also receives C7 fibers)	Motor: most intrinsic muscles of hand (hypotenar, interosseous, adductor pollicis, and deep head of flexor pollicis brevis, plus medial lumbricals [for 4th and 5th digits]) Sensory: skin of palmar and distal dorsal aspects of medial (ulnar) 1-1/2 digits and adjacent palm
Upper subscapular	Branch of posterior cord of brachial plexus (C5 and C6 fibers)	Passes posteriorly and enters subscapularis	Motor: superior portion of subscapularis
Vagus (CN X)	Through 8–10 rootlets from medulla of brainstem	Enters superior mediastinum posteriorly to sternoclavicular joint and brachiocephalic vein; gives rise to recurrent laryngeal nerve; continues into abdomen	Motor: voluntary muscle of larynx and upper esophagus; involuntary muscle and glands of tracheobronchial tree, gut (to left colic flexure), and heart through pulmonary plexus, esophageal plexus, and cardiac plexus Sensory: pharynx, larynx, reflex afferents from same areas as above
Vestibular	As a division of vestibulocochlear nerve (CN VIII)	Traverses internal acoustic meatus to reach vestibular ganglion at fundus; branches pass to vestibule of bony labyrinth	Sensory: cristae of ampullae of semicircular ducts, maculae of saccule and utricle (for sense of equilibration)

Nerve(s)/Nerve Branches	Origin	Course	Structures Innervated
Vestibulocochlear (CN VIII)	Groove between pons and myelencephalon	Traverses internal acoustic meatus, dividing into cochlear and vestibular nerves	Sensory: spiral organ (for sense of hearing) and cristae of ampullae of semicircular ducts, maculae of saccule and utricle (for sense of equilibration)
Zygomatic	Maxillary nerve (CN V2)	Arises in floor of orbit, divides into zygomaticofacial and zygomaticotemporal nerves, which traverse foramina of same name; communicating branch joins lacrimal nerve	Sensory: skin over zygomatic arch and anterior temporal region Motor: conveys secretory postsynaptic parasympathetic fibers from pterygopalatine ganglion to lacrimal gland