

# A&P Key Terms

## 14 Brain & Cranial Nerves

Author: OpenStax College

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## 4. Chapter: A&P Key Terms 14 Brain & Cranial Nerves

### 1. A&P Key Terms 14 Brain & Cranial Nerves Questions

<a href="#">alkaloid</a>	substance, usually from a plant source, that is chemically basic with respect to pH and will stimulate bitter receptors
<a href="#">amacrine cell</a>	type of cell in the retina that connects to the bipolar cells near the outer synaptic layer and provides the basis for early image processing within the retina
<a href="#">ampulla</a>	in the ear, the structure at the base of a semicircular canal that contains the hair cells and cupula for transduction of rotational movement of the head
<a href="#">anosmia</a>	loss of the sense of smell; usually the result of physical disruption of the first cranial nerve
<a href="#">anterior corticospinal tract</a>	division of the corticospinal pathway that travels through the ventral (anterior) column of the spinal cord and controls axial musculature through the medial motor neurons in the ventral (anterior) horn
<a href="#">aqueous humor</a>	watery fluid that fills the anterior chamber containing the cornea, iris, ciliary body, and lens of the eye
<a href="#">ascending pathway</a>	fiber structure that relays sensory information from the periphery through the spinal cord and brain stem to other structures of the brain
<a href="#">association area</a>	region of cortex connected to a primary sensory cortical area that further processes the information to generate more complex sensory perceptions
<a href="#">audition</a>	sense of hearing
<a href="#">auricle</a>	fleshy external structure of the ear
<a href="#">Betz cells</a>	output cells of the primary motor cortex that cause musculature to move through synapses on cranial and spinal motor neurons
<a href="#">Broca's area</a>	region of the frontal lobe associated with the motor commands necessary for speech production
<a href="#">basilar membrane</a>	in the ear, the floor of the cochlear duct on which the organ of Corti sits
<a href="#">binocular depth cues</a>	indications of the distance of visual stimuli on the basis of slight differences in the images projected onto either retina
<a href="#">bipolar cell</a>	cell type in the retina that connects the photoreceptors to the RGCs

<u>capsaicin</u>	molecule that activates nociceptors by interacting with a temperature-sensitive ion channel and is the basis for "hot" sensations in spicy food
<u>cerebral peduncles</u>	segments of the descending motor pathway that make up the white matter of the ventral midbrain
<u>cervical enlargement</u>	region of the ventral (anterior) horn of the spinal cord that has a larger population of motor neurons for the greater number of and finer control of muscles of the upper limb
<u>chemoreceptor</u>	sensory receptor cell that is sensitive to chemical stimuli, such as in taste, smell, or pain
<u>chief sensory nucleus</u>	component of the trigeminal nuclei that is found in the pons
<u>choroid</u>	highly vascular tissue in the wall of the eye that supplies the outer retina with blood
<u>ciliary body</u>	smooth muscle structure on the interior surface of the iris that controls the shape of the lens through the zonule fibers
<u>circadian rhythm</u>	internal perception of the daily cycle of light and dark based on retinal activity related to sunlight
<u>cochlea</u>	auditory portion of the inner ear containing structures to transduce sound stimuli
<u>cochlear duct</u>	space within the auditory portion of the inner ear that contains the organ of Corti and is adjacent to the scala tympani and scala vestibuli on either side
<u>cone photoreceptor</u>	one of the two types of retinal receptor cell that is specialized for color vision through the use of three photopigments distributed through three separate populations of cells
<u>contralateral</u>	word meaning "on the opposite side," as in axons that cross the midline in a fiber tract
<u>cornea</u>	fibrous covering of the anterior region of the eye that is transparent so that light can pass through it
<u>corneal reflex</u>	protective response to stimulation of the cornea causing contraction of the orbicularis oculi muscle resulting in blinking of the eye
<u>corticobulbar tract</u>	connection between the cortex and the brain stem responsible for generating movement

<u>corticospinal tract</u>	connection between the cortex and the spinal cord responsible for generating movement
<u>cupula</u>	specialized structure within the base of a semicircular canal that bends the stereocilia of hair cells when the head rotates by way of the relative movement of the enclosed fluid
<u>decussate</u>	to cross the midline, as in fibers that project from one side of the body to the other
<u>dorsal column system</u>	ascending tract of the spinal cord associated with fine touch and proprioceptive sensations
<u>dorsal stream</u>	connections between cortical areas from the occipital to parietal lobes that are responsible for the perception of visual motion and guiding movement of the body in relation to that motion
<u>encapsulated ending</u>	configuration of a sensory receptor neuron with dendrites surrounded by specialized structures to aid in transduction of a particular type of sensation, such as the lamellated corpuscles in the deep dermis and subcutaneous tissue
<u>equilibrium</u>	sense of balance that includes sensations of position and movement of the head
<u>executive functions</u>	cognitive processes of the prefrontal cortex that lead to directing goal-directed behavior, which is a precursor to executing motor commands
<u>external ear</u>	structures on the lateral surface of the head, including the auricle and the ear canal back to the tympanic membrane
<u>exteroceptor</u>	sensory receptor that is positioned to interpret stimuli from the external environment, such as photoreceptors in the eye or somatosensory receptors in the skin
<u>extraocular muscle</u>	one of six muscles originating out of the bones of the orbit and inserting into the surface of the eye which are responsible for moving the eye
<u>extrapyramidal system</u>	pathways between the brain and spinal cord that are separate from the corticospinal tract and are responsible for modulating the movements generated through that primary pathway
<u>fasciculus cuneatus</u>	lateral division of the dorsal column system composed of fibers from sensory neurons in the upper body
<u>fasciculus gracilis</u>	medial division of the dorsal column system composed of fibers from sensory neurons in the lower body

	of fibers from sensory neurons in the lower body
<u><a href="#">fibrous tunic</a></u>	outer layer of the eye primarily composed of connective tissue known as the sclera and cornea
<u><a href="#">fovea</a></u>	exact center of the retina at which visual stimuli are focused for maximal acuity, where the retina is thinnest, at which there is nothing but photoreceptors
<u><a href="#">free nerve ending</a></u>	configuration of a sensory receptor neuron with dendrites in the connective tissue of the organ, such as in the dermis of the skin, that are most often sensitive to chemical, thermal, and mechanical stimuli
<u><a href="#">frontal eye fields</a></u>	area of the prefrontal cortex responsible for moving the eyes to attend to visual stimuli
<u><a href="#">general sense</a></u>	any sensory system that is distributed throughout the body and incorporated into organs of multiple other systems, such as the walls of the digestive organs or the skin
<u><a href="#">gustation</a></u>	sense of taste
<u><a href="#">gustatory</a></u>	receptor cells sensory cells in the taste bud that transduce the chemical stimuli of gustation
<u><a href="#">hair cells</a></u>	mechanoreceptor cells found in the inner ear that transduce stimuli for the senses of hearing and balance
<u><a href="#">incus</a></u>	(also, anvil) ossicle of the middle ear that connects the malleus to the stapes
<u><a href="#">inferior colliculus</a></u>	last structure in the auditory brainstem pathway that projects to the thalamus and superior colliculus
<u><a href="#">inferior oblique</a></u>	extraocular muscle responsible for lateral rotation of the eye
<u><a href="#">inferior rectus</a></u>	extraocular muscle responsible for looking down
<u><a href="#">inner ear</a></u>	structure within the temporal bone that contains the sensory apparatus of hearing and balance
<u><a href="#">inner segment</a></u>	in the eye, the section of a photoreceptor that contains the nucleus and other major organelles for normal cellular functions
<u><a href="#">inner synaptic layer</a></u>	layer in the retina where bipolar cells connect to RGCs
<u><a href="#">interaural intensity difference</a></u>	cue used to aid sound localization in the horizontal plane that compares the relative loudness of

	plane that compares the relative loudness of sounds at the two ears, because the ear closer to the sound source will hear a slightly more intense sound
<u><a href="#">interaural time difference</a></u>	cue used to help with sound localization in the horizontal plane that compares the relative time of arrival of sounds at the two ears, because the ear closer to the sound source will receive the stimulus microseconds before the other ear
<u><a href="#">internal capsule</a></u>	segment of the descending motor pathway that passes between the caudate nucleus and the putamen
<u><a href="#">interoceptor</a></u>	sensory receptor that is positioned to interpret stimuli from internal organs, such as stretch receptors in the wall of blood vessels
<u><a href="#">ipsilateral</a></u>	word meaning on the same side, as in axons that do not cross the midline in a fiber tract
<u><a href="#">iris</a></u>	colored portion of the anterior eye that surrounds the pupil
<u><a href="#">kinesthesia</a></u>	sense of body movement based on sensations in skeletal muscles, tendons, joints, and the skin
<u><a href="#">lacrimal duct</a></u>	duct in the medial corner of the orbit that drains tears into the nasal cavity
<u><a href="#">lacrimal gland</a></u>	gland lateral to the orbit that produces tears to wash across the surface of the eye
<u><a href="#">lateral corticospinal tract</a></u>	division of the corticospinal pathway that travels through the lateral column of the spinal cord and controls appendicular musculature through the lateral motor neurons in the ventral (anterior) horn
<u><a href="#">lateral geniculate nucleus</a></u>	thalamic target of the RGCs that projects to the visual cortex
<u><a href="#">lateral rectus</a></u>	extraocular muscle responsible for abduction of the eye
<u><a href="#">lens</a></u>	component of the eye that focuses light on the retina
<u><a href="#">levator palpebrae superioris</a></u>	muscle that causes elevation of the upper eyelid, controlled by fibers in the oculomotor nerve
<u><a href="#">lumbar enlargement</a></u>	region of the ventral (anterior) horn of the spinal cord that has a larger population of motor neurons for the greater number of muscles of the lower limb
<u><a href="#">macula</a></u>	enlargement at the base of a semicircular canal at which transduction of equilibrium stimuli takes

	which transduction of equilibrium stimuli takes place within the ampulla
<a href="#">malleus</a>	(also, hammer) ossicle that is directly attached to the tympanic membrane
<a href="#">mechanoreceptor</a>	receptor cell that transduces mechanical stimuli into an electrochemical signal
<a href="#">medial geniculate nucleus</a>	thalamic target of the auditory brain stem that projects to the auditory cortex
<a href="#">medial lemniscus</a>	fiber tract of the dorsal column system that extends from the nuclei gracilis and cuneatus to the thalamus, and decussates
<a href="#">medial rectus</a>	extraocular muscle responsible for adduction of the eye
<a href="#">mesencephalic nucleus</a>	component of the trigeminal nuclei that is found in the midbrain
<a href="#">middle ear</a>	space within the temporal bone between the ear canal and bony labyrinth where the ossicles amplify sound waves from the tympanic membrane to the oval window
<a href="#">multimodal integration area</a>	region of the cerebral cortex in which information from more than one sensory modality is processed to arrive at higher level cortical functions such as memory, learning, or cognition
<a href="#">neural tunic</a>	layer of the eye that contains nervous tissue, namely the retina
<a href="#">nociceptor</a>	receptor cell that senses pain stimuli
<a href="#">nucleus cuneatus</a>	medullary nucleus at which first-order neurons of the dorsal column system synapse specifically from the upper body and arms
<a href="#">nucleus gracilis</a>	medullary nucleus at which first-order neurons of the dorsal column system synapse specifically from the lower body and legs
<a href="#">odorant molecules</a>	volatile chemicals that bind to receptor proteins in olfactory neurons to stimulate the sense of smell
<a href="#">olfaction</a>	sense of smell
<a href="#">olfactory bulb</a>	central target of the first cranial nerve; located on the ventral surface of the frontal lobe in the cerebrum

<u>olfactory epithelium</u>	region of the nasal epithelium where olfactory neurons are located
<u>olfactory sensory neuron</u>	receptor cell of the olfactory system, sensitive to the chemical stimuli of smell, the axons of which compose the first cranial nerve
<u>opsin</u>	protein that contains the photosensitive cofactor retinal for phototransduction
<u>optic chiasm</u>	decussation point in the visual system at which medial retina fibers cross to the other side of the brain
<u>optic disc</u>	spot on the retina at which RGC axons leave the eye and blood vessels of the inner retina pass
<u>optic nerve</u>	second cranial nerve, which is responsible visual sensation
<u>optic tract</u>	name for the fiber structure containing axons from the retina posterior to the optic chiasm representing their CNS location
<u>organ of Corti</u>	structure in the cochlea in which hair cells transduce movements from sound waves into electrochemical signals
<u>osmoreceptor</u>	receptor cell that senses differences in the concentrations of bodily fluids on the basis of osmotic pressure
<u>ossicles</u>	three small bones in the middle ear
<u>otolith</u>	gelatinous substance in the utricle and saccule of the inner ear that contains calcium carbonate crystals and into which the stereocilia of hair cells are embedded
<u>outer segment</u>	in the eye, the section of a photoreceptor that contains opsin molecules that transduce light stimuli
<u>outer synaptic layer</u>	layer in the retina at which photoreceptors connect to bipolar cells
<u>oval window</u>	membrane at the base of the cochlea where the stapes attaches, marking the beginning of the scala vestibuli
<u>palpebral conjunctiva</u>	membrane attached to the inner surface of the eyelids that covers the anterior surface of the cornea
<u>papilla</u>	for gustation, a bump-like projection on the surface of the tongue that contains taste buds

<a href="#">photoisomerization</a>	chemical change in the retinal molecule that alters the bonding so that it switches from the 11-cisretinal isomer to the all-trans-retinal isomer
<a href="#">photon</a>	individual "packet" of light
<a href="#">photoreceptor</a>	receptor cell specialized to respond to light stimuli
<a href="#">premotor cortex</a>	cortical area anterior to the primary motor cortex that is responsible for planning movements
<a href="#">primary sensory cortex</a>	region of the cerebral cortex that initially receives sensory input from an ascending pathway from the thalamus and begins the processing that will result in conscious perception of that modality
<a href="#">proprioception</a>	sense of position and movement of the body
<a href="#">proprioceptor</a>	receptor cell that senses changes in the position and kinesthetic aspects of the body
<a href="#">pupil</a>	open hole at the center of the iris that light passes through into the eye
<a href="#">pyramidal decussation</a>	location at which corticospinal tract fibers cross the midline and segregate into the anterior and lateral divisions of the pathway
<a href="#">pyramids</a>	segment of the descending motor pathway that travels in the anterior position of the medulla
<a href="#">receptor cell</a>	cell that transduces environmental stimuli into neural signals
<a href="#">red nucleus</a>	midbrain nucleus that sends corrective commands to the spinal cord along the rubrospinal tract, based on disparity between an original command and the sensory feedback from movement
<a href="#">reticulospinal tract</a>	extrapyramidal connections between the brain stem and spinal cord that modulate movement, contribute to posture, and regulate muscle tone
<a href="#">retinal ganglion cell</a>	(RGC) neuron of the retina that projects along the second cranial nerve
<a href="#">retinal</a>	cofactor in an opsin molecule that undergoes a biochemical change when struck by a photon (pronounced with a stress on the last syllable)
<a href="#">retina</a>	nervous tissue of the eye at which phototransduction takes place

	takes place
<u>rhodopsin</u>	photopigment molecule found in the rod photoreceptors
<u>rod photoreceptor</u>	one of the two types of retinal receptor cell that is specialized for low-light vision
<u>round window</u>	membrane that marks the end of the scala tympani
<u>rubrospinal tract</u>	descending motor control pathway, originating in the red nucleus, that mediates control of the limbs on the basis of cerebellar processing
<u>sacculle</u>	structure of the inner ear responsible for transducing linear acceleration in the vertical plane
<u>scala tympani</u>	portion of the cochlea that extends from the apex to the round window
<u>scala vestibuli</u>	portion of the cochlea that extends from the oval window to the apex
<u>sclera</u>	white of the eye
<u>semicircular canals</u>	structures within the inner ear responsible for transducing rotational movement information
<u>sensory homunculus</u>	topographic representation of the body within the somatosensory cortex demonstrating the correspondence between neurons processing stimuli and sensitivity
<u>sensory modality</u>	a particular system for interpreting and perceiving environmental stimuli by the nervous system
<u>solitary nucleus</u>	medullar nucleus that receives taste information from the facial and glossopharyngeal nerves
<u>somatosensation</u>	general sense associated with modalities lumped together as touch
<u>special sense</u>	any sensory system associated with a specific organ structure, namely smell, taste, sight, hearing, and balance
<u>spinal trigeminal nucleus</u>	component of the trigeminal nuclei that is found in the medulla
<u>spinothalamic tract</u>	ascending tract of the spinal cord associated with pain and temperature sensations

<u><a href="#">spiral ganglion</a></u>	location of neuronal cell bodies that transmit auditory information along the eighth cranial nerve
<u><a href="#">stapes</a></u>	(also, stirrup) ossicle of the middle ear that is attached to the inner ear
<u><a href="#">stereocilia</a></u>	array of apical membrane extensions in a hair cell that transduce movements when they are bent
<u><a href="#">stretch reflex</a></u>	response to activation of the muscle spindle stretch receptor that causes contraction of the muscle to maintain a constant length
<u><a href="#">submodality</a></u>	specific sense within a broader major sense such as sweet as a part of the sense of taste, or color as a part of vision
<u><a href="#">superior colliculus</a></u>	structure in the midbrain that combines visual, auditory, and somatosensory input to coordinate spatial and topographic representations of the three sensory systems
<u><a href="#">superior oblique</a></u>	extraocular muscle responsible for medial rotation of the eye
<u><a href="#">superior rectus</a></u>	extraocular muscle responsible for looking up
<u><a href="#">supplemental motor area</a></u>	cortical area anterior to the primary motor cortex that is responsible for planning movements
<u><a href="#">suprachiasmatic nucleus</a></u>	hypothalamic target of the retina that helps to establish the circadian rhythm of the body on the basis of the presence or absence of daylight
<u><a href="#">taste buds</a></u>	structures within a papilla on the tongue that contain gustatory receptor cells
<u><a href="#">tectorial membrane</a></u>	component of the organ of Corti that lays over the hair cells, into which the stereocilia are embedded
<u><a href="#">tectospinal tract</a></u>	extrapyramidal connections between the superior colliculus and spinal cord
<u><a href="#">thermoreceptor</a></u>	sensory receptor specialized for temperature stimuli
<u><a href="#">topographical</a></u>	relating to positional information
<u><a href="#">transduction</a></u>	process of changing an environmental stimulus into the electrochemical signals of the nervous system
<u><a href="#">trochlea</a></u>	cartilaginous structure that acts like a pulley for the superior oblique muscle

	superior oblique muscle
<u>tympanic membrane</u>	ear drum
<u>umami</u>	taste submodality for sensitivity to the concentration of amino acids; also called the savory sense
<u>utricle</u>	structure of the inner ear responsible for transducing linear acceleration in the horizontal plane
<u>vascular tunic</u>	middle layer of the eye primarily composed of connective tissue with a rich blood supply
<u>ventral posterior nucleus</u>	nucleus in the thalamus that is the target of gustatory sensations and projects to the cerebral cortex
<u>ventral stream</u>	connections between cortical areas from the occipital lobe to the temporal lobe that are responsible for identification of visual stimuli
<u>vestibular ganglion</u>	location of neuronal cell bodies that transmit equilibrium information along the eighth cranial nerve
<u>vestibular nuclei</u>	targets of the vestibular component of the eighth cranial nerve
<u>vestibule</u>	in the ear, the portion of the inner ear responsible for the sense of equilibrium
<u>vestibulo-ocular reflex</u>	(VOR) reflex based on connections between the vestibular system and the cranial nerves of eye movements that ensures images are stabilized on the retina as the head and body move
<u>vestibulospinal tract</u>	extrapyramidal connections between the vestibular nuclei in the brain stem and spinal cord that modulate movement and contribute to balance on the basis of the sense of equilibrium
<u>visceral sense</u>	sense associated with the internal organs
<u>vision</u>	special sense of sight based on transduction of light stimuli
<u>visual acuity</u>	property of vision related to the sharpness of focus, which varies in relation to retinal position
<u>vitreous humor</u>	viscous fluid that fills the posterior chamber of the eye
<u>working memory</u>	function of the prefrontal cortex to maintain a representation of information that is not in the

representation of information that is not in the immediate environment

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zonule fibers

fibrous connections between the ciliary body and the lens

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