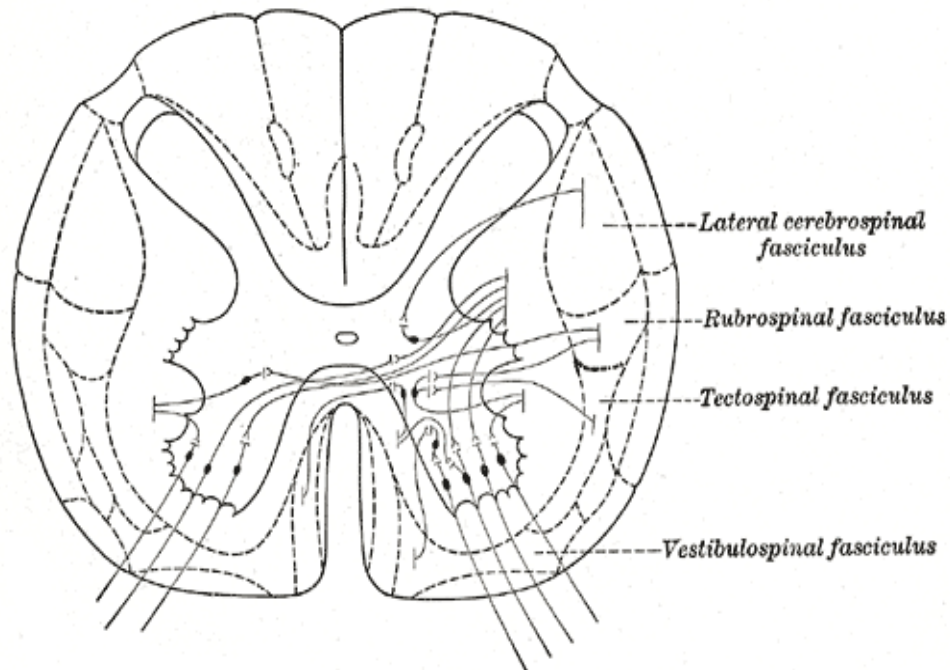


ANATOMY 4



Topic: tectospinal tract

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SITUATION

The tectospinal tract arises from neurons in deep layers of the superior colliculus, decussates in the dorsal tegmental decussation, descends contralaterally near the midline, and terminates directly and indirectly on alpha- and gamma-LMNs in the cervical spinal cord associated with head and neck movements.

The Tectospinal tract receives information from the retina and cortical visual association areas. In response to visual stimuli, the tectospinal tract **mediates reflex movements**. It is able to orientate the head/trunk towards auditory stimulus (inferior colliculus) or visual stimuli (superior colliculus)

The tectospinal tract arises from neurons in deep layers of the [superior colliculus](#), decussates in the dorsal tegmental [decussation](#), descends contralaterally near the midline, and terminates directly and indirectly on alpha- and gamma-LMNs in the cervical [spinal cord](#) associated with head and neck movements. This pathway mediates reflex and visual tracking influences for positioning the head with regard to visual input. The interstitiospinal tract arises from the interstitial nucleus of Cajal, a region of the midbrain that helps to coordinate eye movements and gaze centers. The interstitiospinal tract descends ipsilaterally in the [medial longitudinal fasciculus](#) and terminates directly and indirectly on alpha- and gamma-LMNs associated with the axial musculature of the trunk that is involved in rotational movement of the body around its central axis.

Origin

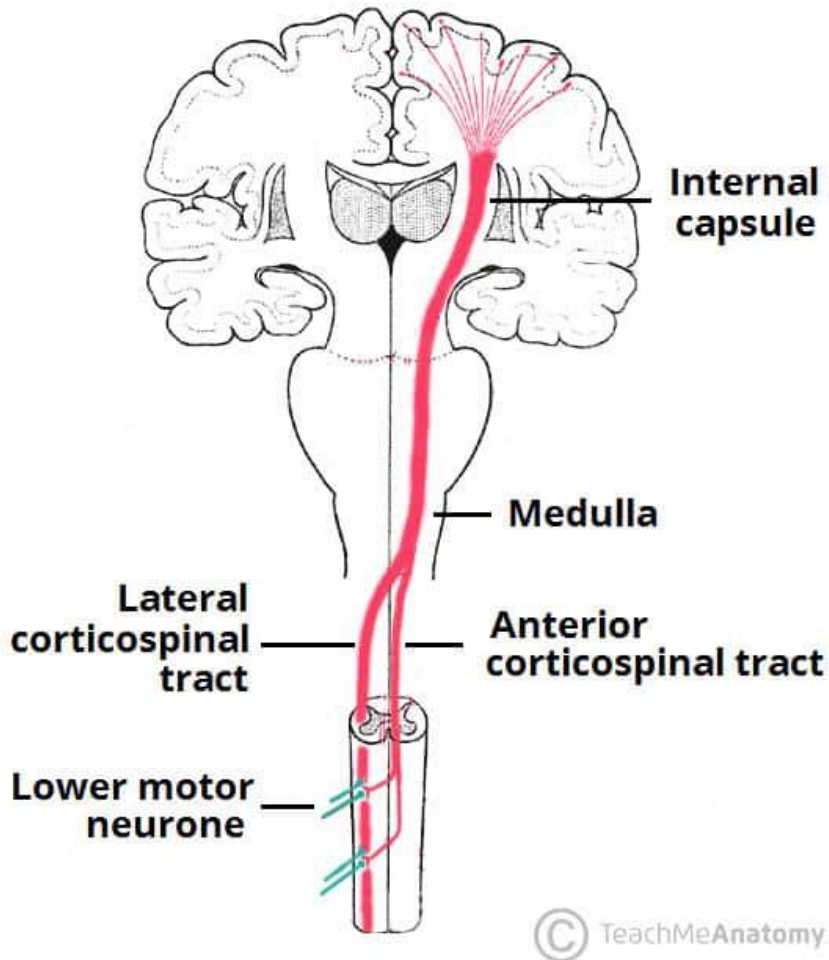
Superior colliculus of the midbrain (tectum of the [midbrain](#))

The origin of the Tectospinal tract is in the superior colliculus of the [midbrain](#). As this area receives information regarding visual input, this tract is primarily responsible for mediating [reflex](#) responses to visual stimuli. ^[1] The tectospinal tract is named after the tectum, meaning roof. The tectum can be interpreted as the 'roof' of the fourth ventricle. The fourth ventricle is made up of the superior and inferior colliculi.^[2]

Passes ventromedially around the periaqueductal grey matter. Terminates in the medial part of the anterior gray horn of cervical and upper thoracic segments within laminae

course

Termination



The majority of the tectospinal tract fibers terminate in the upper cervical segments. These fibers are believed to play a role in the execution of certain spinal reflexes (e.g., head turning) to visual and auditory stimuli.

The tectospinal tract arises from neurons in deep layers of the superior colliculus, decussates in the dorsal tegmental decussation, descends contralaterally near the midline, and terminates directly and indirectly on alpha- and gamma LMNs in the cervical spinal cord associated with head and neck

functions

In humans, the **tectospinal tract** (or **colliculospinal tract**) is a [nerve tract](#) that coordinates head and eye movements. This tract is part of the [extrapyramidal system](#) and connects the [midbrain tectum](#), and [cervical regions](#) of the [spinal cord](#).^[1]

It is responsible for motor impulses that arise from one side of the midbrain to muscles on the **opposite side of the body** (contralateral). The function of the tectospinal tract is to mediate reflex postural movements of the head in response to visual and auditory stimuli.

The portion of the midbrain from where this tract originates is the [superior colliculus](#), which receives afferents from the visual nuclei (primarily the [oculomotor nuclei complex](#)), then projects to the [contralateral](#) (decussating dorsal to the mesencephalic duct) and ipsilateral portion of the first cervical [neuromeres](#) of the [spinal cord](#), the oculomotor and trochlear nuclei in the midbrain and the abducens nucleus in the caudal portion of the pons.

The tract descends to the [cervical spinal cord](#) to terminate in [Rexed laminae](#) VI, VII, and VIII to coordinate [head](#), [neck](#), and [eye](#) movements, primarily in response to visual stimuli

Effects of lesion

Both the superior and inferior colliculi arise from the tectum, which forms from the mesencephalon during development. Expression of transcription factors Engrailed 1 and Engrailed 2 have involvement in the positioning of the mesencephalon during the development of vertebrates. In mouse models, research has found that if Engrailed 2 is knocked out, mice fail to develop both colliculi and the cerebellum. Mice that had Engrailed 1 knocked out had a reduction in the size of both the cerebellum and colliculi. A study determined that Engrailed 1 and Engrailed 2 must work in tandem for correct mesencephalon development to occur.^[7] Researchers also discovered that Pax6 and both the engrailed transcription factors have a reciprocal interaction with one another. They determined that as one transcription factor increases, the other decreases, and vice versa. They are both needed to determine the

diencephalon and mesencephalon boundaries during development