**Cranial nerves regulating eye movements, accomodation and involved in eye-protection**

**Cranial nerve III: Oculomotor nerve**The Nervus oculomotorius, as its name suggests, controls most of the eye movement. It consists of a somatomotoric part which innervates most (four) of the six external eye muscles (m. obliqus bulbi inferior, m. rectus bulbi superior, m. rectus bulbi medialis, m. rectus bulbi inferior) and a parasympathetic which innervates the internal smooth muscle responsible for the adaptation of the eye (m. ciliaris). The somatomotoric nucleus originates from the mesencephalon, the parasympathetic nuclei, called Edinger-Westphal nucleus is located dorsal from the somatomororic nucleus.
The oculomotor nerve emerges from the mesencephalon, traverses between the superior cerebellar and the posterior cerebral arteries. After passing the lateral side of the sinus cavernosus it enters the eye socket then divides into two branches, ramus superior and ramus inferior.
The dysfunction of this nerve causes oculomotor palsy which affects normal movement the eye and eyelid, also results in pupil dialation, and double vision.

**Cranial nerve IV: Trochlear nerve**Nervus Trochlearis is a motor nerve and innervates only one eye muscle, m. obliquus bulbi superior. In point of numbers of axons this one is the thinnest of these nerves. The somatomotoric nucleus originates in the mesencephalon.
This is the only nerve exiting from the dorsal side of the brain stem. It also passes between the superior cerebellar and the posterior cerebral arteries and traverses the sinus cavernosus, joins cranial nerve III and cranial nerve VI, then enters the eye socket, affecting the aforementioned muscle.
The function of the trochlear nerve is downward and inward movement of the eye, therefore its dysfunction causes loss of these abilities.

**Cranial nerve V: Trigeminal nerve**Nervus trigeminus has 3 major branches. V1 (opthalamic nerve) and V2 (maxillary nerve) are purely sensory, V3 (mandibular nerve) supllies motor and sensory functions. V1 carries information from the muscles around the eye, the upper uplid, the forehead, the cornea and the conjuctiva, the V2 from the lower eyelid. The nerve originates from pons with a small motoric and a bigger sensory root. They exit from the pons.
A well known dysfunction of the nerve is trigeminal neuralgia but it affects the lower part of the face, such as the nose and the jaw.

**Cranial nerve VI: Abducens nerve**Like nervus trochlearis, nervus abducens is also a motor nerve that innervates one muscle (m. rectus bulbi lateralis), therefore contolling sideway movements of the eye.
The abducens nerve exits the brainstem at the intersection of the pons and the medulla. After running upwards the pons and the clivus it exits the dura and enters the cavernous sinus where it passas the internal cartoid artery – then finally entering the eye socket.

**Sources:**Szentágothai János - Réthelyi Miklós: Funkcionális anatómia (Medicina Kiadó 2006)
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