

PERIPHERAL NERVOUS SYSTEM – Textbook and Lecture Slides

The **peripheral nervous system (PNS)** includes the **cranial nerves** (nerves that extend from the brain), **spinal nerves** (nerves that extend from the spinal cord) and **ganglia** (clusters of neuron cell bodies located outside the CNS).

On a wet specimen nerves will have a dull appearance, arteries will be round and veins will be flat.

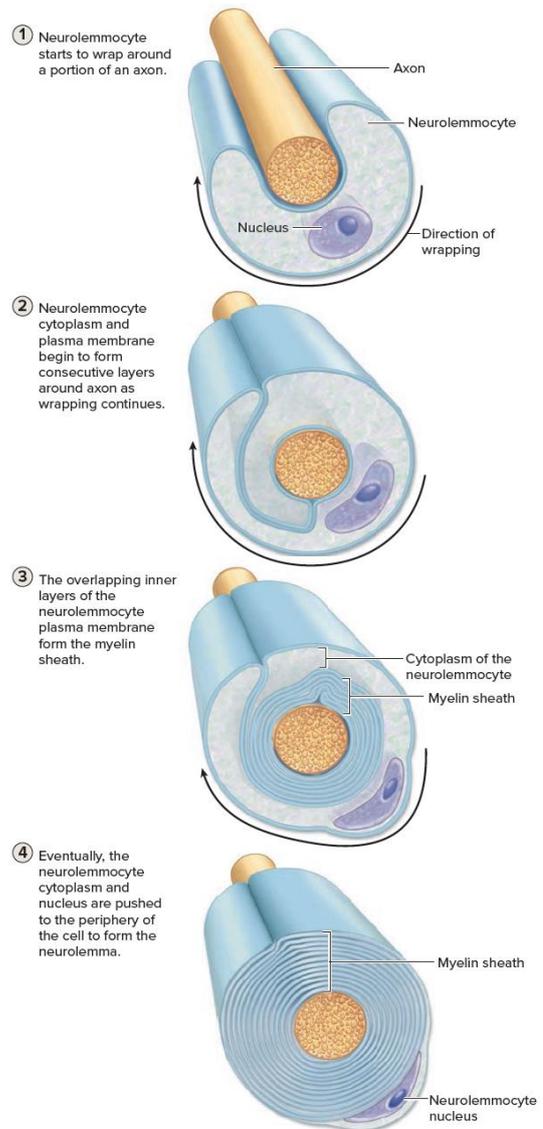
MYELINATION OF AXONS

The main activity of axons is nerve impulse conduction. A **nerve impulse** or action potential is a rapid movement of an electrical charge along an axon's plasma membrane. Neurons possess the ability to respond to a stimulus and generate a nerve impulse. The impulse travels along the axon to stimulate either another neuron, muscle cell or gland. The speed the impulse travels along an axon is affected by a process called myelination, which allows for faster propagation of action potentials.

Myelination is the process by which part of an axon is wrapped with a myelin sheath, the insulating covering around axon consisting of concentric layers of myelin. In the PNS a myelin sheath forms from neurolemmocytes. Myelin mainly consists of the plasma membranes of these glial cells and contains a large proportion of fats and a lesser amount of proteins. The high lipid content of the myelin sheath gives the axon a distinct, glossy-white appearance and serves to effectively insulate it.

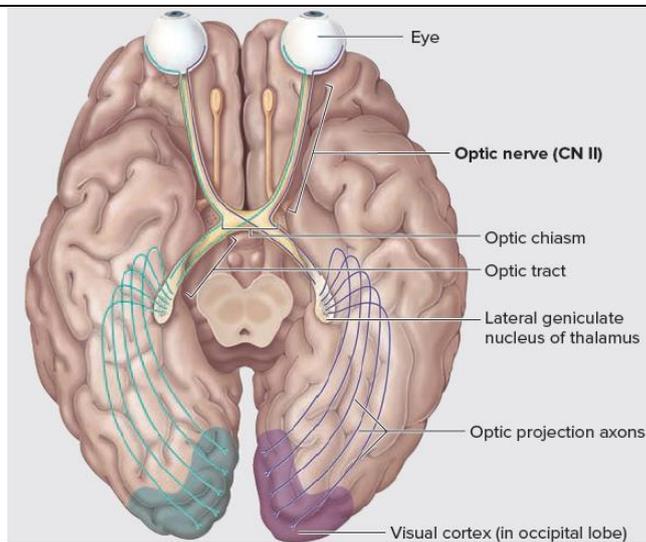
CRANIAL NERVES

There are 12 pairs of cranial nerves. They originate on the inferior surface of the brain. The pairs are numbered according to their positions beginning with most anteriorly places.

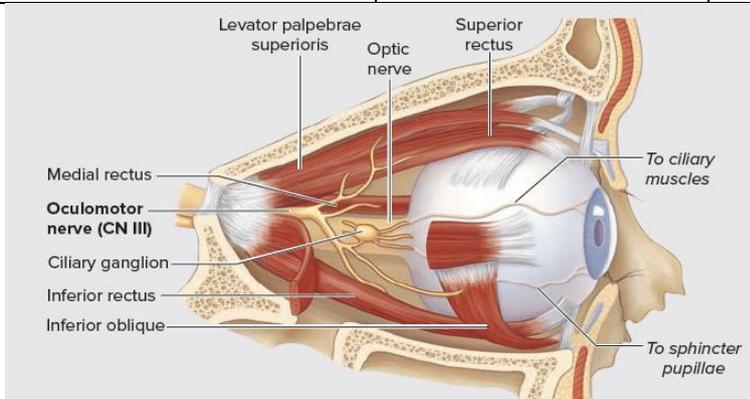


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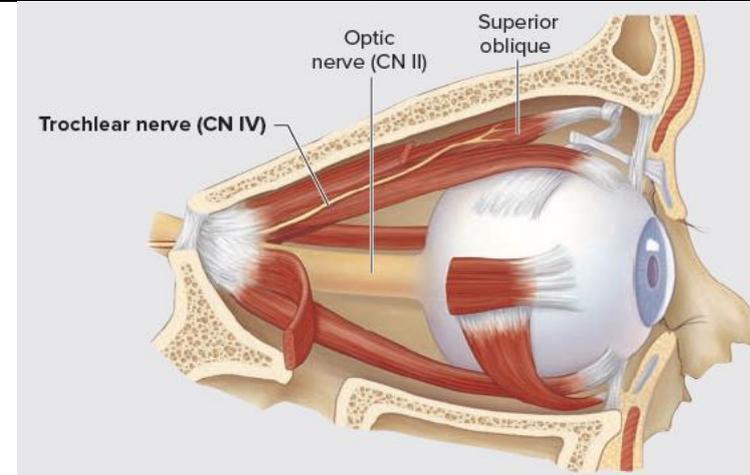
Cranial Nerve	Sensory Functions	Somatic Motor Functions	Parasympathetic Motor (Autonomic) Functions
I Olfactory	Olfaction (smell)	None	None
II Optic	Vision	None	None



III Oculomotor	None	Medial, superior and inferior rectus and inferior oblique, levator palpebrae superioris muscle	Innervates sphincter pupillae muscle in eye to make pupil constrict, contracts ciliary muscles to make lens of eye more rounded (for near vision)
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IV Trochlear	None	Superior oblique	None
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V Trigeminal	General sensory from anterior scalp, nasal cavity, nasopharynx, entire face, most of the oral cavity, teeth, anterior two-thirds of tongue, part of the auricle of ear, meninges	Muscles of mastication (temporalis, masseter, medial and lateral pterygoid), mylohyoid, digastric (anterior belly), tensor tympani, tensor veli palatini	None
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