12.5C: Optic (II) Nerve

The optic nerve (cranial nerve II) receives visual information from photoreceptors in the retina and transmits it to the brain.

Learning Objectives

- Describe the optic nerve (cranial nerve II)

Key Points

- The optic nerve is considered part of the central nervous system. The myelin on the optic nerve is produced by oligodendrocytes rather than Schwann cells and it is encased in the meningeal layers instead of the standard endoneurium, perineurium, and epineurium of the peripheral nervous system.
- The optic nerve travels through the optic canal, partially decussates in the optic chiasm, and terminates in the lateral geniculate nucleus where information is transmitted to the visual cortex.
- The axons responsible for reflexive eye movements terminate in the pretectal nucleus.

Key Terms

- **oligodendrocyte**: A type of neuroglia that provides support and insulation to axons in the central nervous system.
- **retina**: The thin layer of cells at the back of the eyeball where light is converted into neural signals sent to the brain.
- **optic nerve**: Either of a pair of nerves that carry visual information from the retina to the brain.
- **visual cortex**: The visual cortex of the brain is the part of the cerebral cortex responsible for processing visual information. It is located in the occipital lobe, in the back of the brain.
• **pretectal nucleus**: This mediates behavioral responses to acute changes in ambient light, such as the pupillary light reflex and the optokinetic reflex.

The optic nerve is also known as cranial nerve II. It transmits visual information from the retina to the brain.

Each human optic nerve contains between 770,000 and 1.7 million nerve fibers. The eye’s blind spot is a result of the absence of photoreceptors in the area of the retina where the optic nerve leaves the eye.
accommodation reflex refers to the swelling of the lens of the eye that occurs when one looks at a near object, as in reading.