"Oculomotor Nerve (Cranial Nerve III)"

- Function: Entirely motor; controls eye movements, eyelid elevation, and pupil constriction.

"Oculomotor Nerve Nuclei"

1) Main Motor Nucleus:

- Location: Anterior gray matter surrounding the cerebral aqueduct in the midbrain, at the level of the superior colliculus.

- Function: Supplies all extrinsic eye muscles except the superior oblique and lateral rectus.

》 Fiber Connections:

- Corticonuclear fibers: From both cerebral hemispheres.

- Tectobulbar fibers: From the superior colliculus, receiving input from the visual cortex.

- Medial longitudinal fasciculus: Connects with nuclei of the fourth, sixth, and eighth cranial nerves, coordinating eye movements.

2) Accessory Parasympathetic Nucleus (Edinger-Westphal Nucleus):

- Location: Posterior to the main motor nucleus.

- Function: Supplies parasympathetic fibers to the constrictor pupillae and ciliary muscles.

》 Pathway:

- Preganglionic Fibers: Travel with the oculomotor nerve to the ciliary ganglion in the orbit.

- Postganglionic Fibers: Pass through the short ciliary nerves to the iris and ciliary muscles.

- Connections: Receives corticonuclear fibers for the accommodation reflex and fibers from the pretectal nucleus for direct and consensual light reflexes.

"Course of the Oculomotor Nerve"

- Emergence: From the anterior surface of the midbrain.

》 Pathway:

- Travels between the posterior cerebral and superior cerebellar arteries.

- Enters the middle cranial fossa within the lateral wall of the cavernous sinus.

- Divides into superior and inferior rami which enter the orbit via the superior orbital fissure.

"Muscles Supplied by the Oculomotor Nerve"

1) Extrinsic Eye Muscles:

- Levator Palpebrae Superioris: Elevates the upper eyelid.

- Superior, Medial, and Inferior Rectus: Controls eye movements upward, downward, and medially.

- Inferior Oblique: Assists in upward and outward eye movement.

2) Intrinsic Eye Muscles (via the ciliary ganglion and short ciliary nerves):

- Constrictor Pupillae: Constricts the pupil.
- Ciliary Muscles: Adjusts lens thickness for accommodation.

- Overall Responsibilities: Eye movement, upper eyelid elevation, pupil constriction, and lens accommodation.