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**SYMPATHETIC AND PARASYMPATHETIC
NERVE SUPPLY TO IRIS MUSCLES**



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SYMPATHETIC AND PARASYMPATHETIC NERVE SUPPLY TO IRIS MUSCLES

Pupillary diameter, or more precisely iris size, is controlled by two muscles:

- The *sphincter pupillae*, which is primarily under the control of the *parasympathetic* nervous system.
- The *dilator pupillae*, which is primarily under the control of the *sympathetic* nervous system.



SYMPATHETIC AND PARASYMPATHETIC PATHWAYS

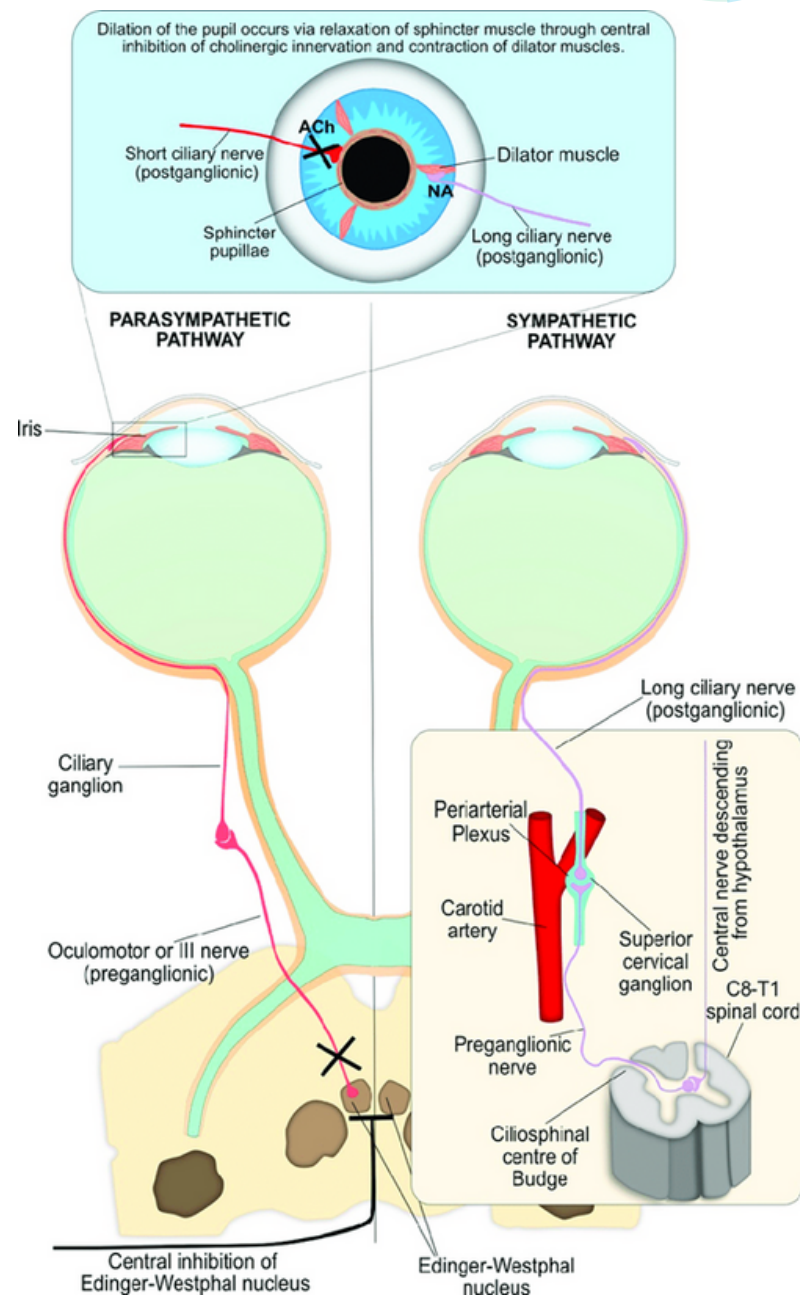
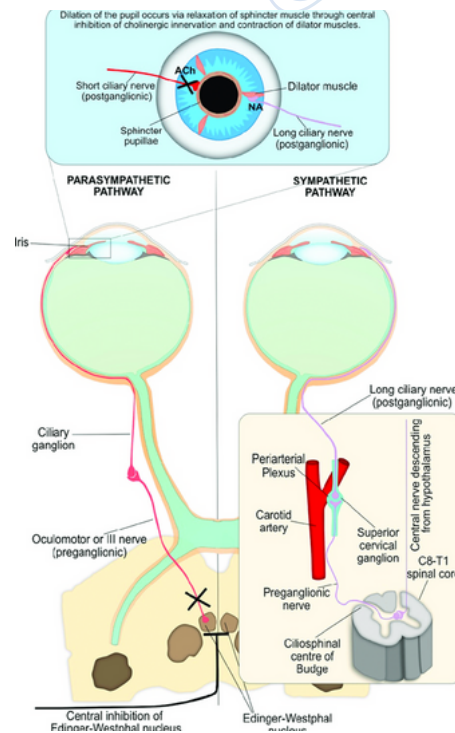




IMAGE DESCRIPTION



- *Illustration depicting sympathetic and parasympathetic pathways.*
- *Iris dilator muscle widens the pupil, controlled by sympathetic nerves, enhancing light entry for vision.*
- *Smooth muscle in the eye, the iris dilator widens the pupil for increased light.*
- *Myoepithelial cells within the iris dilator muscle contract, causing pupil dilation.*
- *Originating at outer iris margins, it inserts into inner margins, regulating pupil size.*
- *Contrasting the sphincter muscle, the iris dilator enlarges the pupil for visual adaptation.*





SYMPATHETIC NERVE SUPPLY

- *Innervation by cervical ganglion induces **mydriasis**, enlarging pupils in the "fight or flight" response.*
- *Radial muscle activation increases alertness during stress, preparing the body for potential danger.*
- *Dilator pupillae receives postganglionic sympathetic nerves for pupil dilation (mydriasis).*
- *Sympathetic pathways play a crucial role in adjusting pupil size based on environmental conditions.*
- *Sympathetic nerves from the cervical ganglion prepare the eye for heightened visual responsiveness to threats.*





PARASYMPATHETIC NERVE SUPPLY

- *Ciliary ganglion controls miosis, causing the circular muscle to contract and pupils to constrict.*
- *Constrictor pupillae activated by parasympathetic postganglionic nerves, associated with the "rest and digest" response.*
- *Edinger-Westphal nucleus connection ensures precise regulation of pupil size for various visual tasks.*
- *Parasympathetic pathways helps in maintaining visual function and adaptation to environmental demands.*
- *Parasympathetic nerves from the ciliary ganglion play a important role innear vision and accommodation.*





FUNCTIONAL COORDINATION

- *Sympathetic-parasympathetic balance is essential for precise control of pupil size in varying conditions.*
- *The Coordination between sympathetic and parasympathetic systems adjusts pupil size according to light levels.*
- *Neural coordination ensures adaptive responsiveness, optimizing visual function for different environmental demands.*
- *Functional synergy between sympathetic and parasympathetic inputs maintains dynamic regulation of the iris muscles.*
- *Coordinated neural responses govern pupil reactions, facilitating optimal vision and visual adaptation to diverse stimuli.*





MCQ

Question:

Which nervous system stimulates the iris dilator muscle for pupil dilation?

- a) Parasympathetic nervous system*
- b) Sympathetic nervous system*
- c) Both systems simultaneously*
- d) None of the above*

Answer: b) Sympathetic nervous system