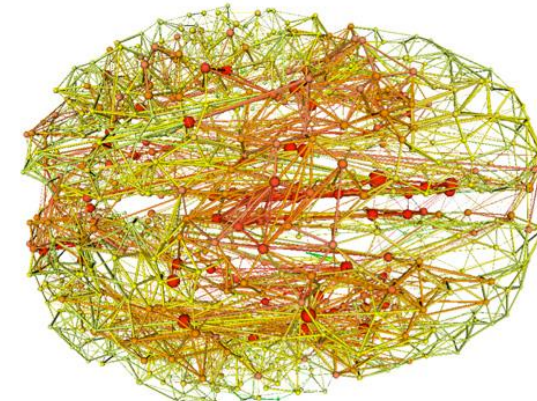
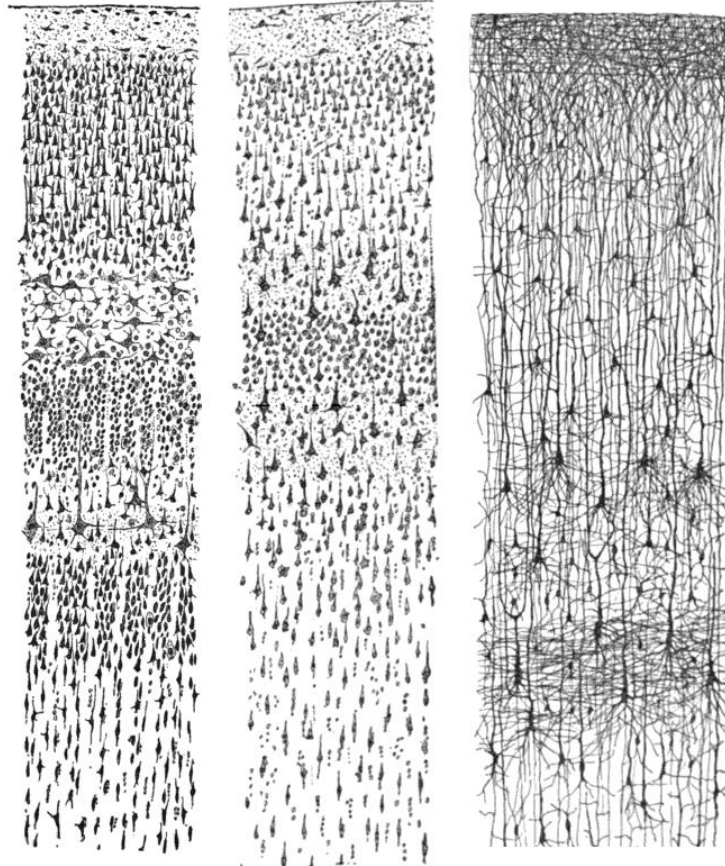
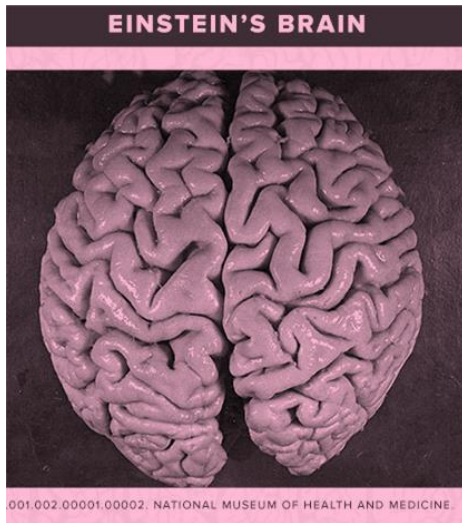


Welcome to Clinical anatomy of the head, neck and neuronal pathways

Lecture #13

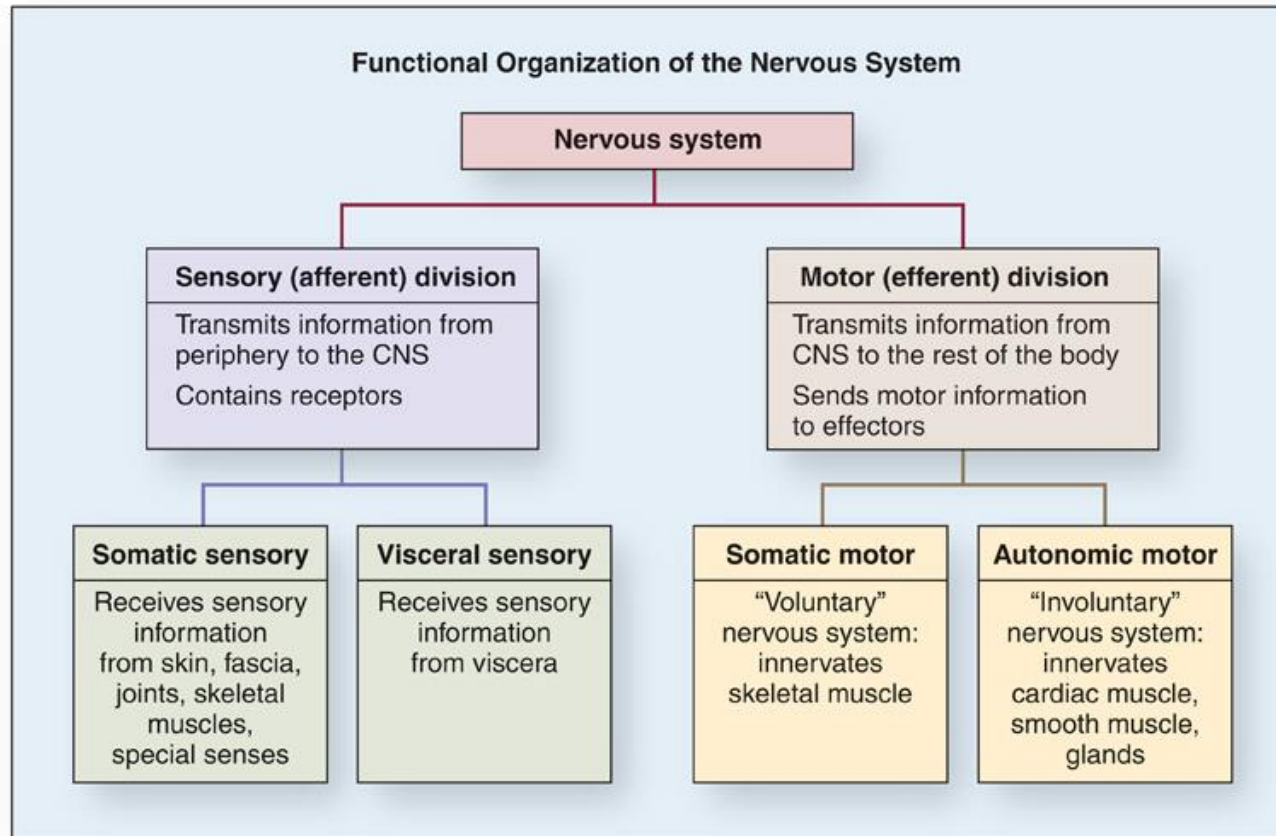


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Spring 2023

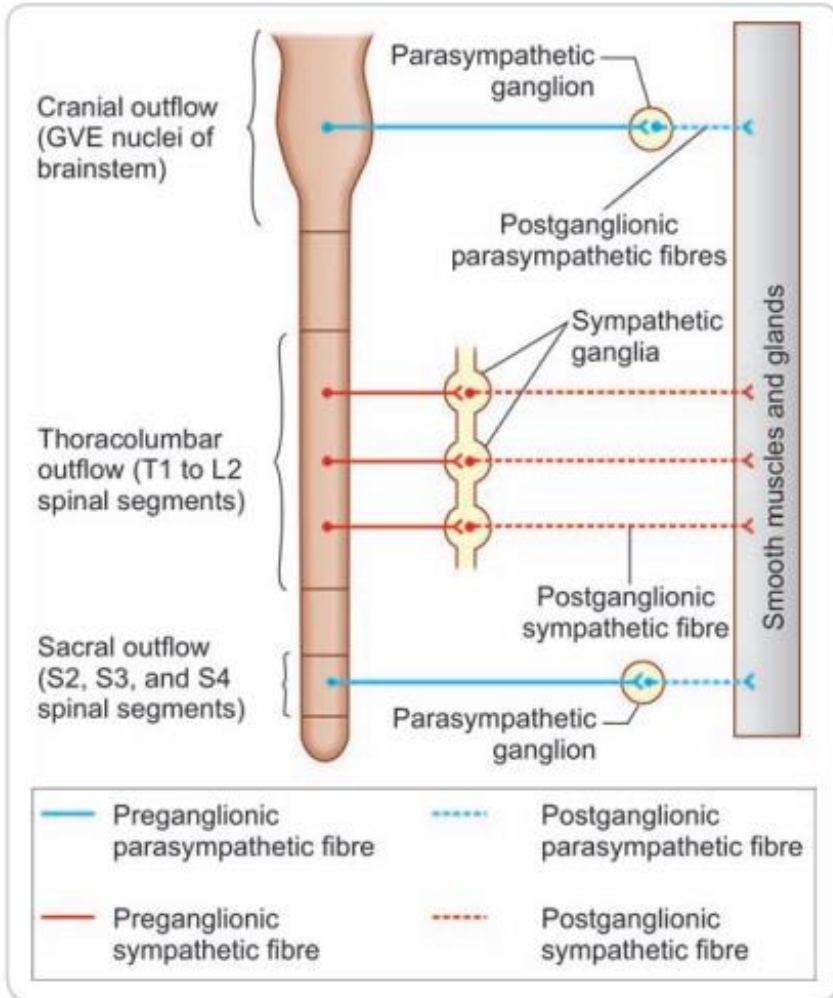
Arrangement and function of the autonomic nervous system



Functions:

- Contraction and relaxation of smooth muscles
- Function of all exocrine glands
- Heart rate
- Some metabolic processes

Autonomic Nervous System



Sympathetic:

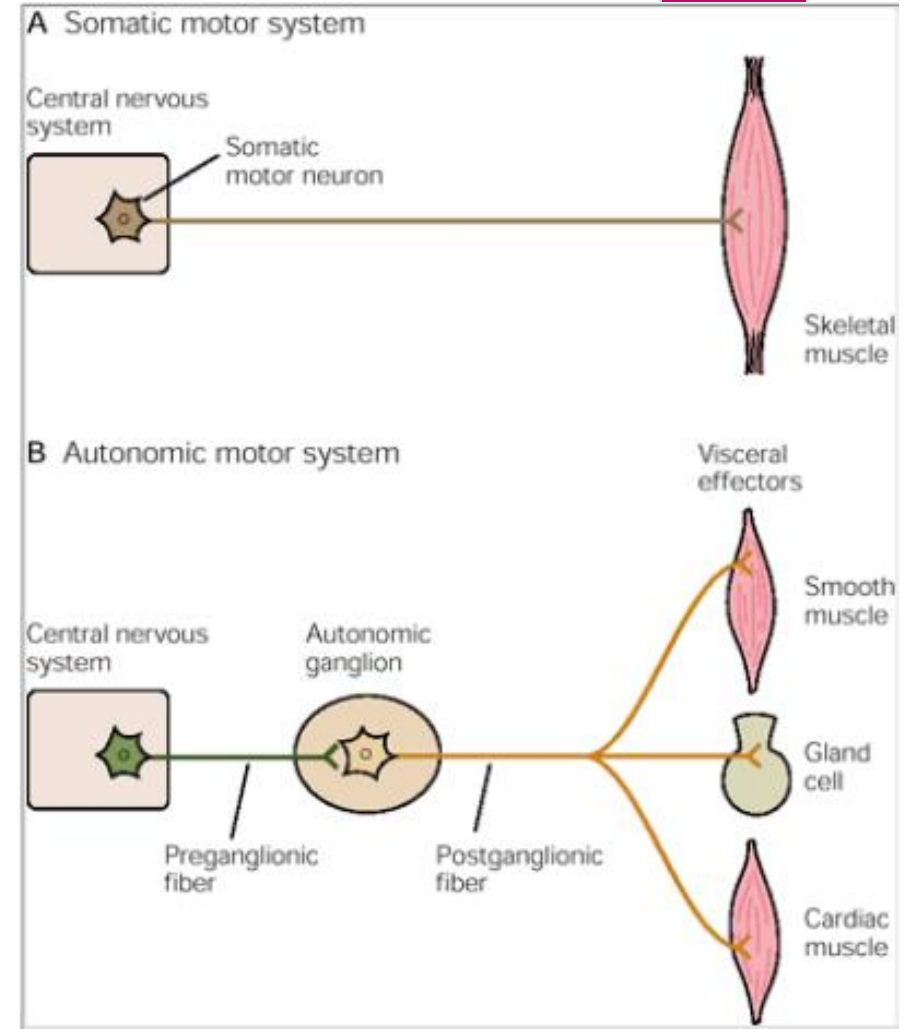
Thoracolumbar outflow

T1-L2

Parasympathetic:

Craniosacral outflow

CN III, VII, IX, X & S2-S4



Autonomic Nervous System

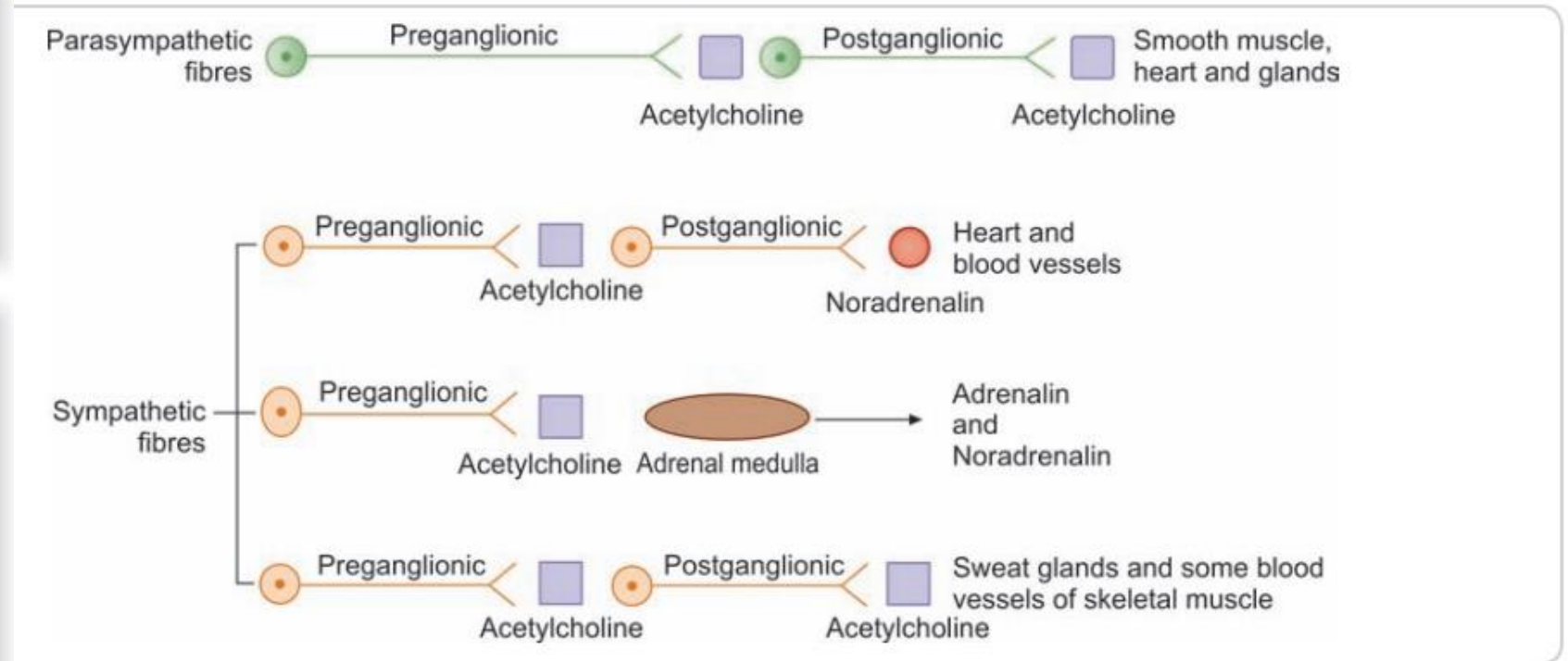
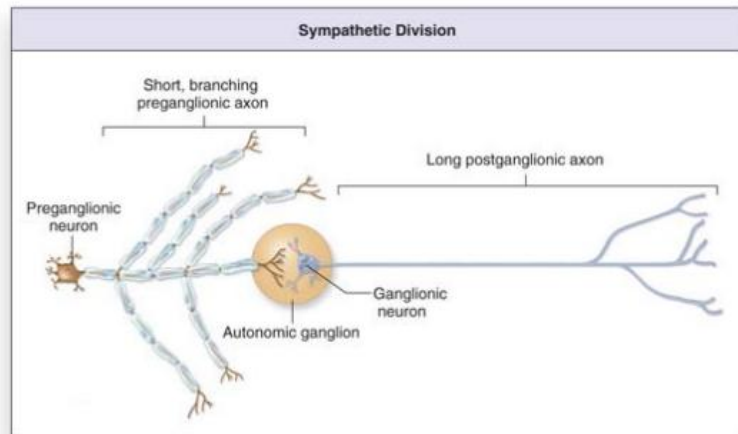
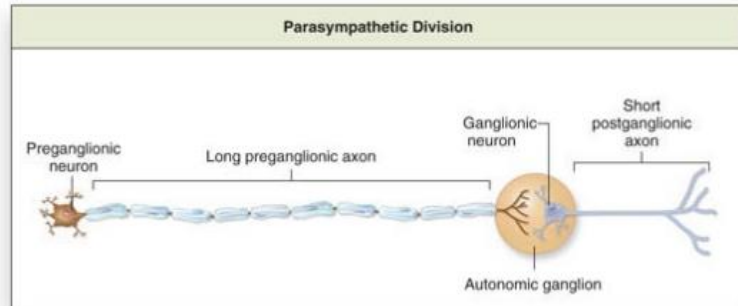


Figure 14.8: Neurotransmitters of autonomic neurons

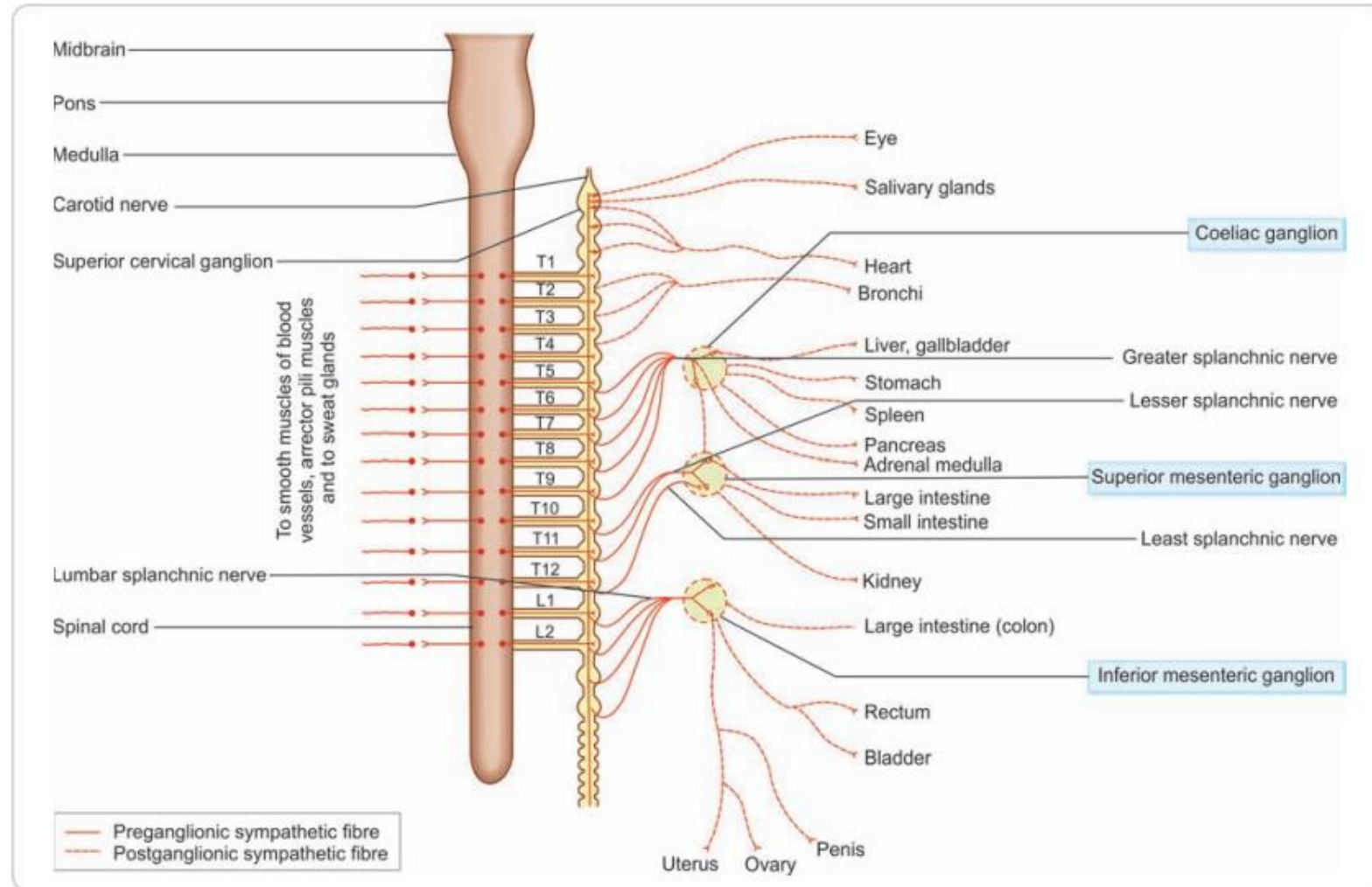
Sympathetic Nervous System

Catabolic reaction (activities that are mobilized during emergency and stress situations)

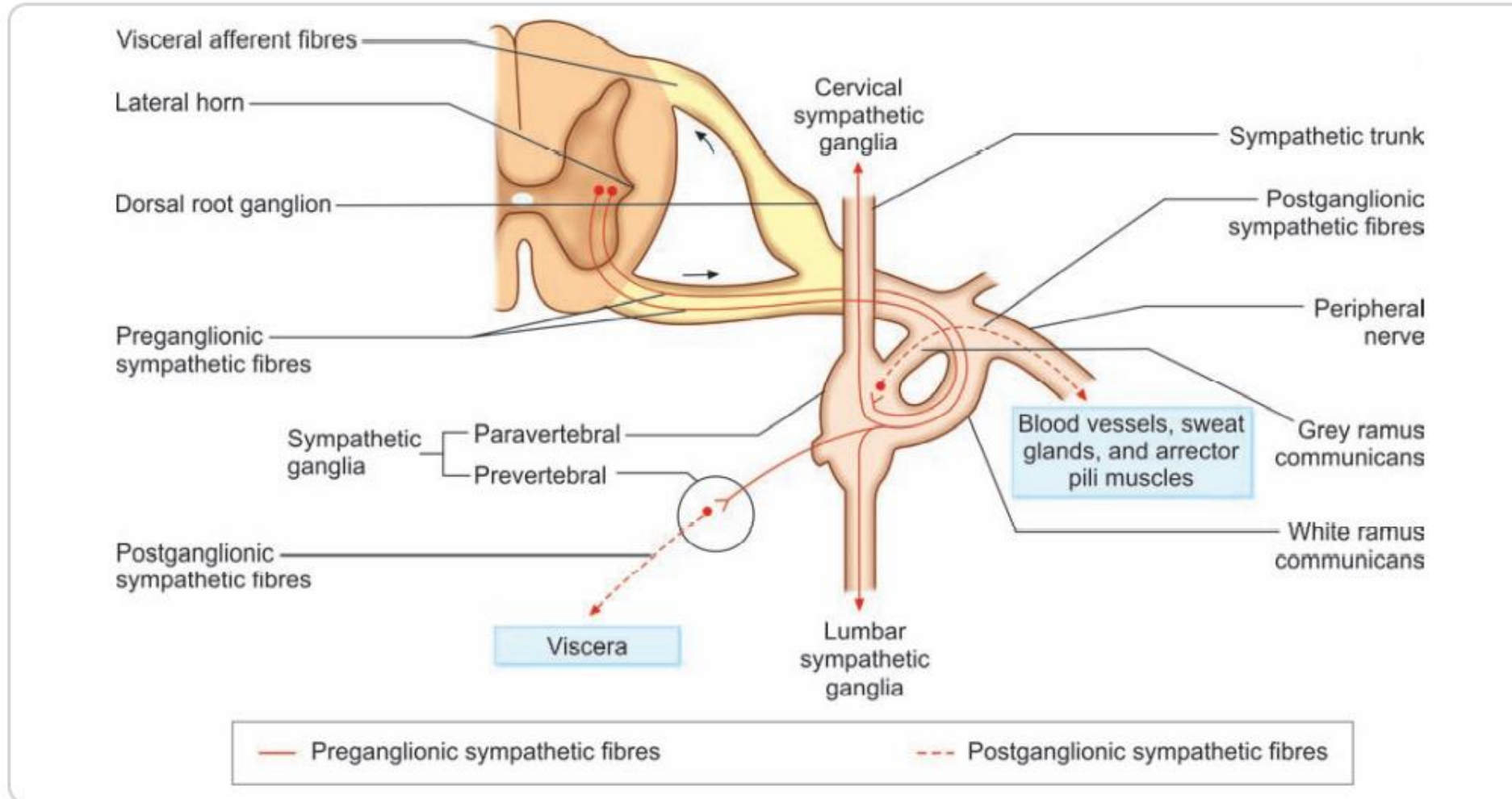
Generalized reaction of body

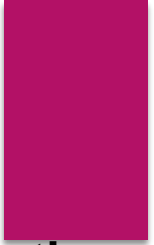
- Coronary artery
- Increase heart rate
- Bronchodilation
- Mydriasis
- Sweat secretion
- Glycemia

Fight or Flight



Anatomical Organization of the Sympathetic Preganglionic and Postganglionic Axons





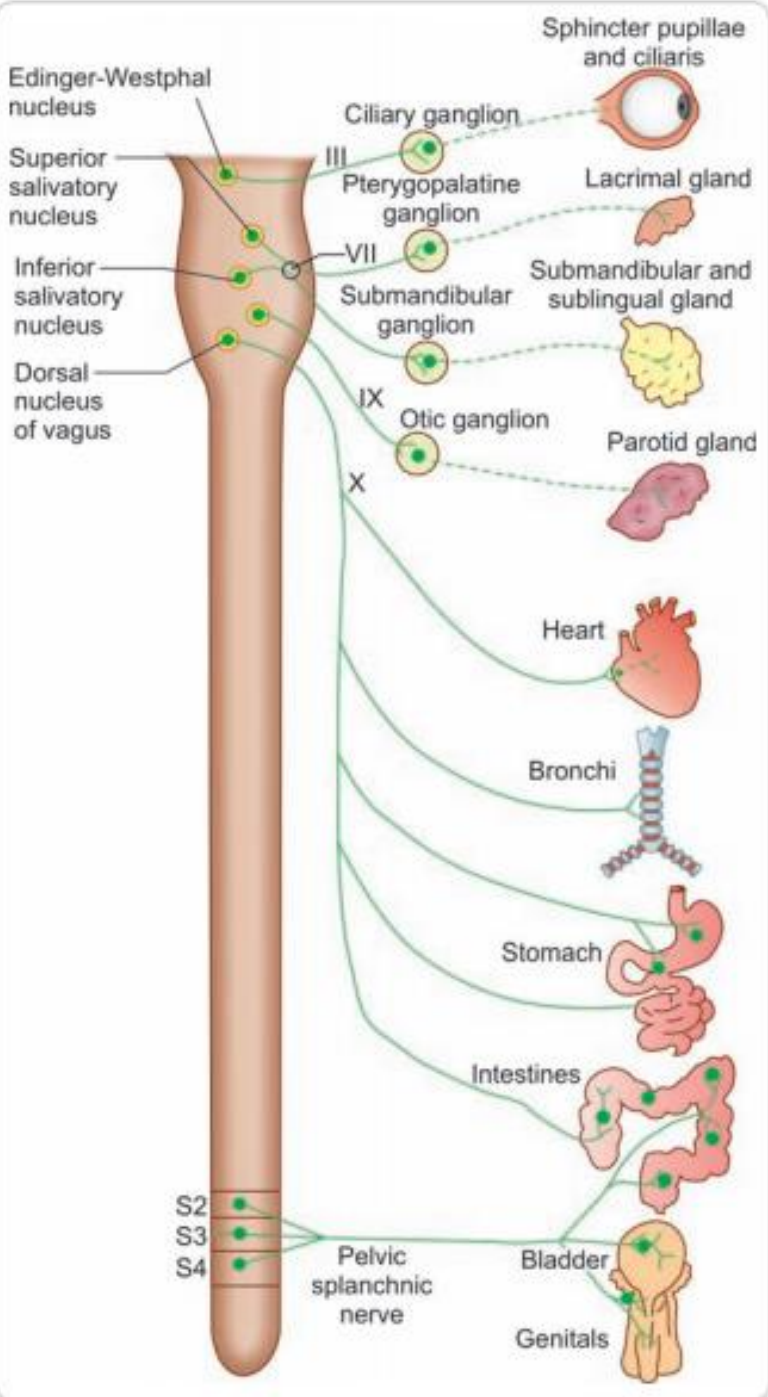
Parasympathetic Nervous System

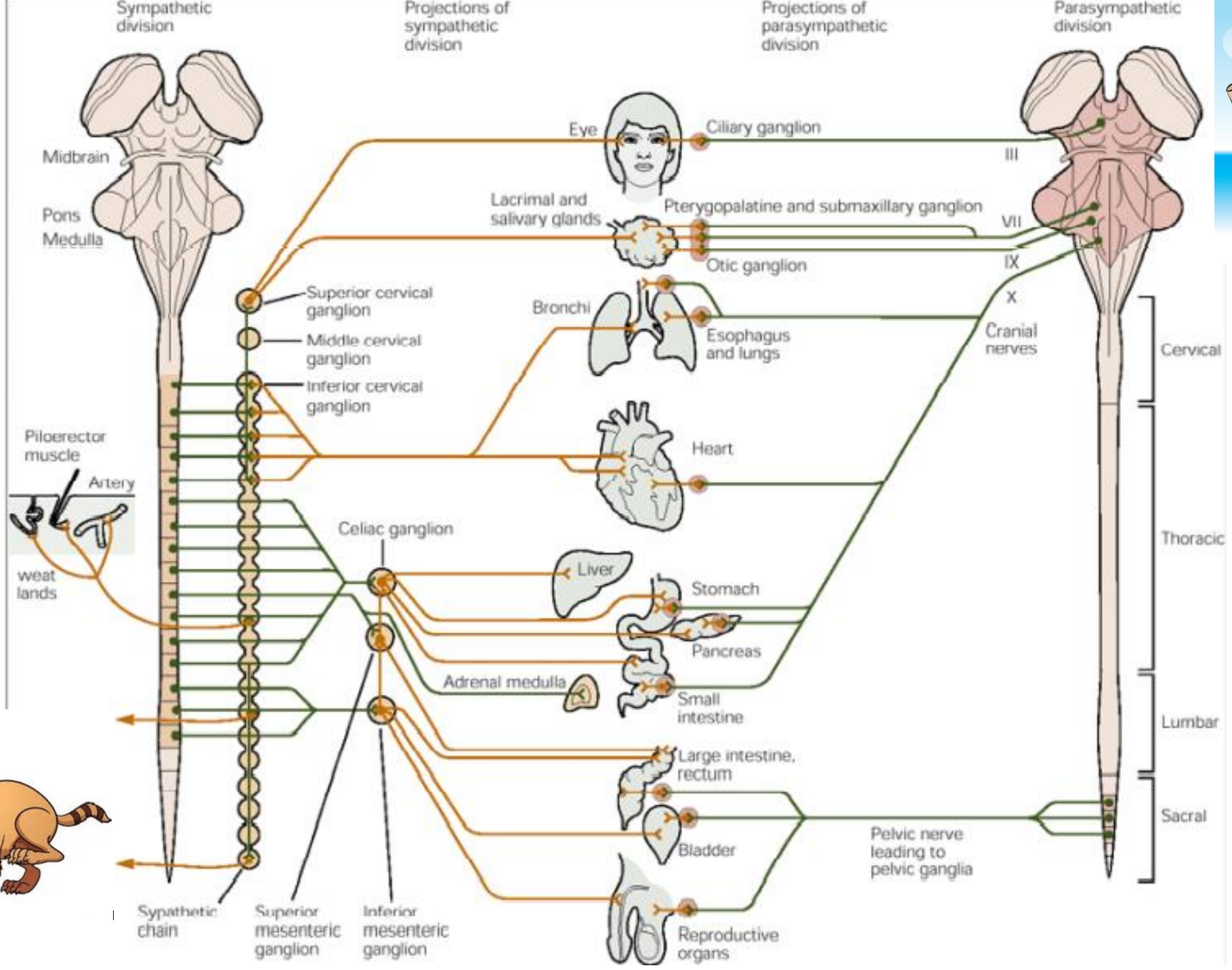
Anabolic reactions (activities associated with conservation and restoration of body resources)

Rest and Digest

Localized reaction of body

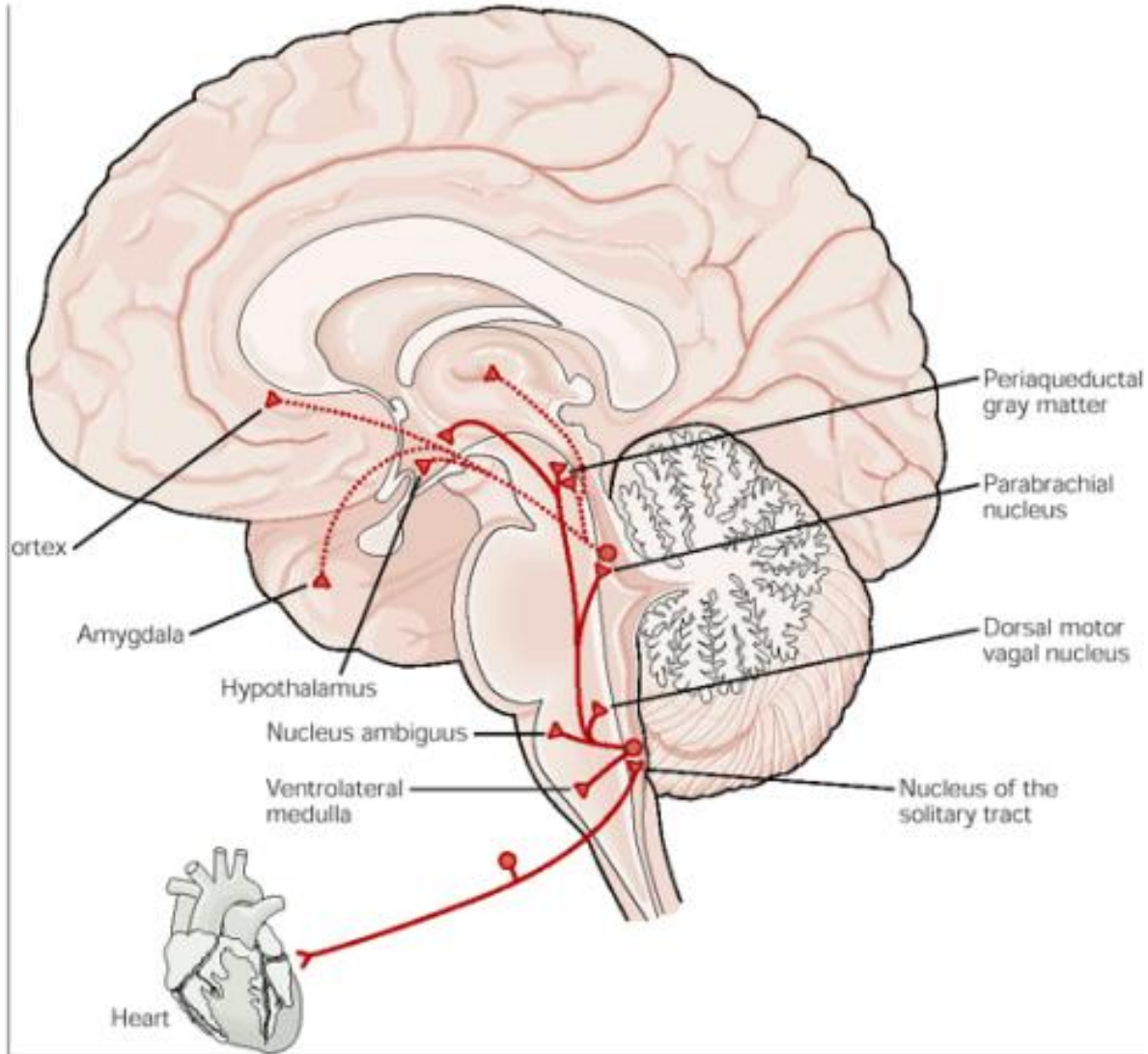
- Decrease heart rate
- Bronchoconstriction
- GIT activation
- Miosis



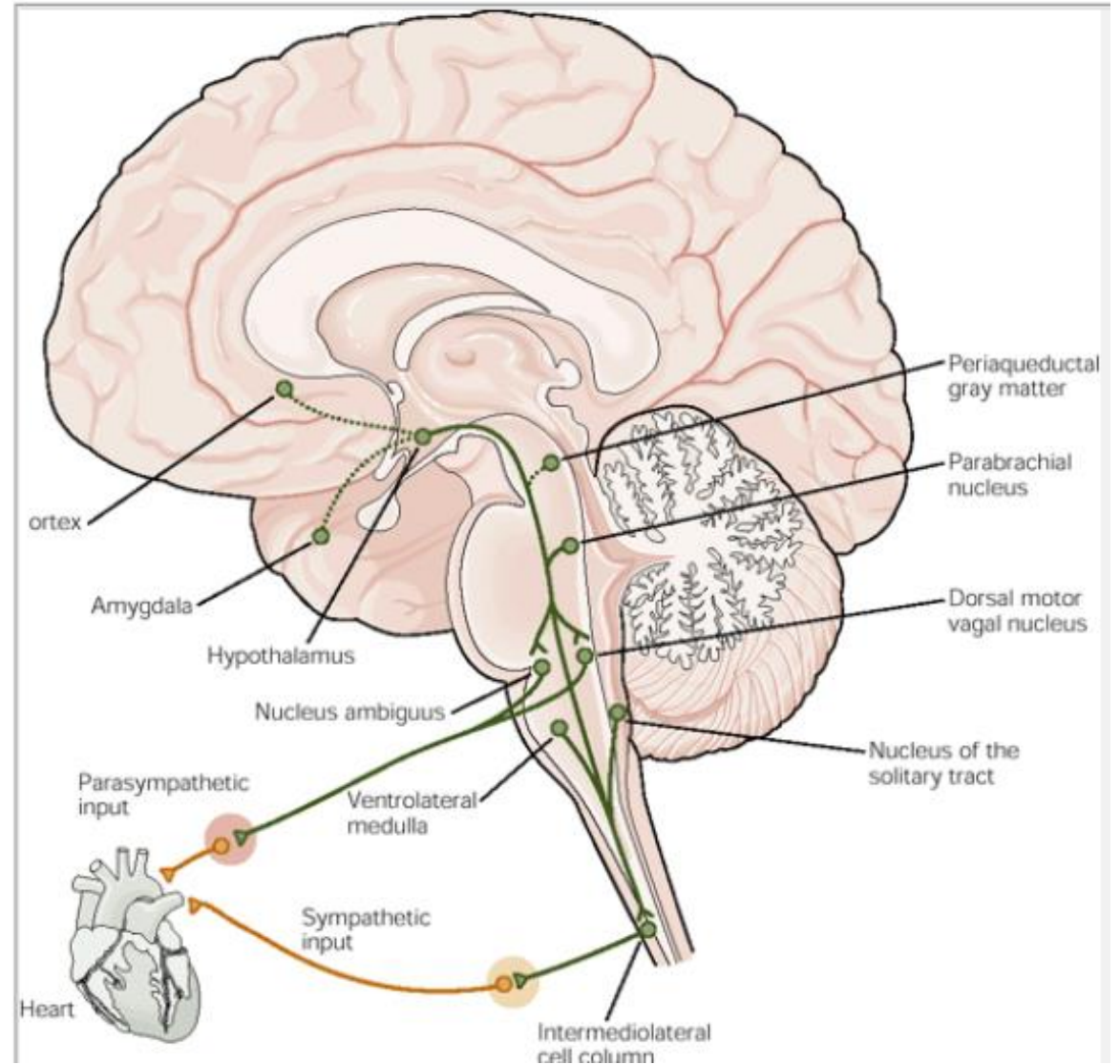


Central parts of Autonomic Nervous System

Pathways distributing visceral sensory information in the brain

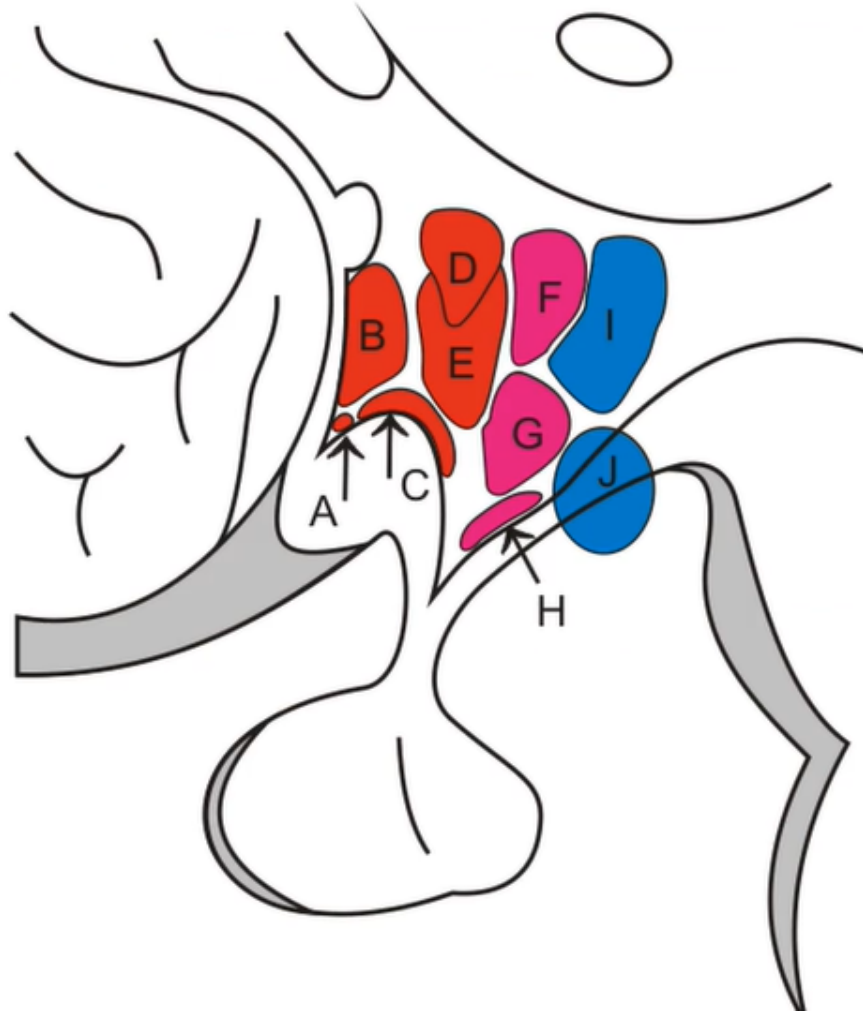


Pathways that control autonomic responses



Central parts of Autonomic Nervous System

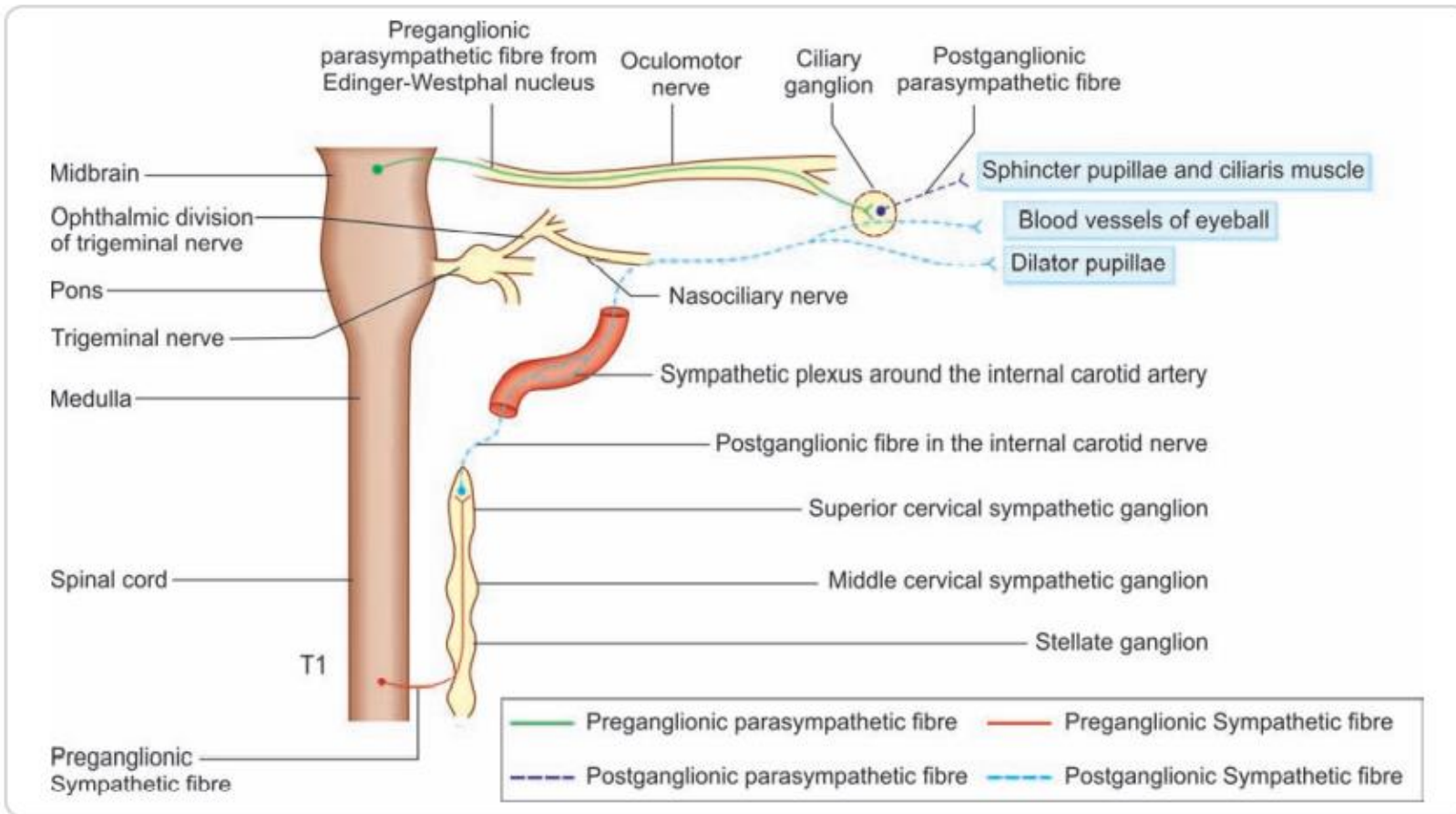
Hypothalamus (subsystem of limbic brain = visceral brain)



Ncll. hypothalamici ant.
control parasympaticus
(fasciculus longitudinalis dorsalis)

Ncll. hypothalamici medii
Control the sympaticus
(over RF, tr. tegmentalis centralis)

Innervation of the Eye



The sphincter pupillae is supplied by parasympathetic nerves.

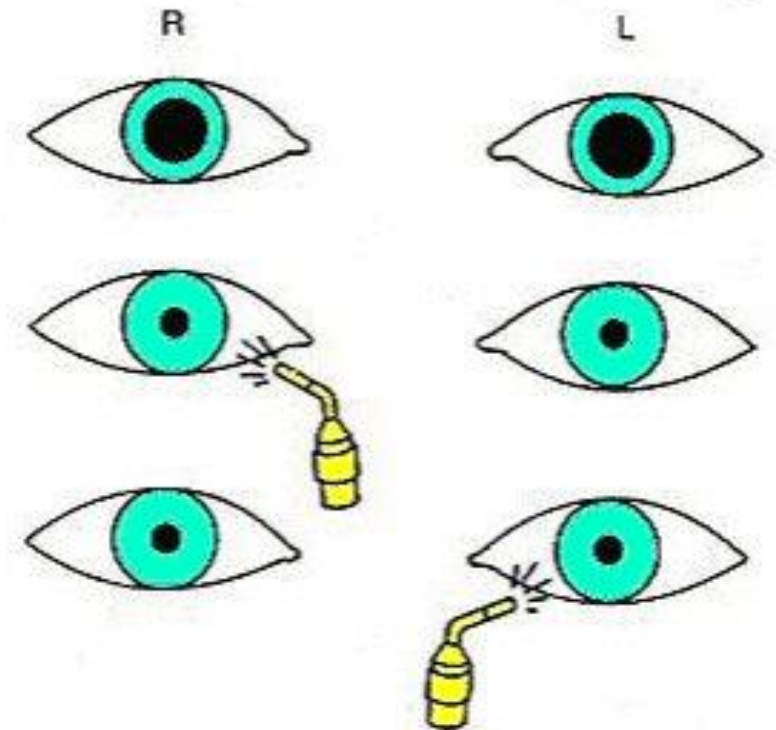
The dilator pupillae is supplied by sympathetic nerves.



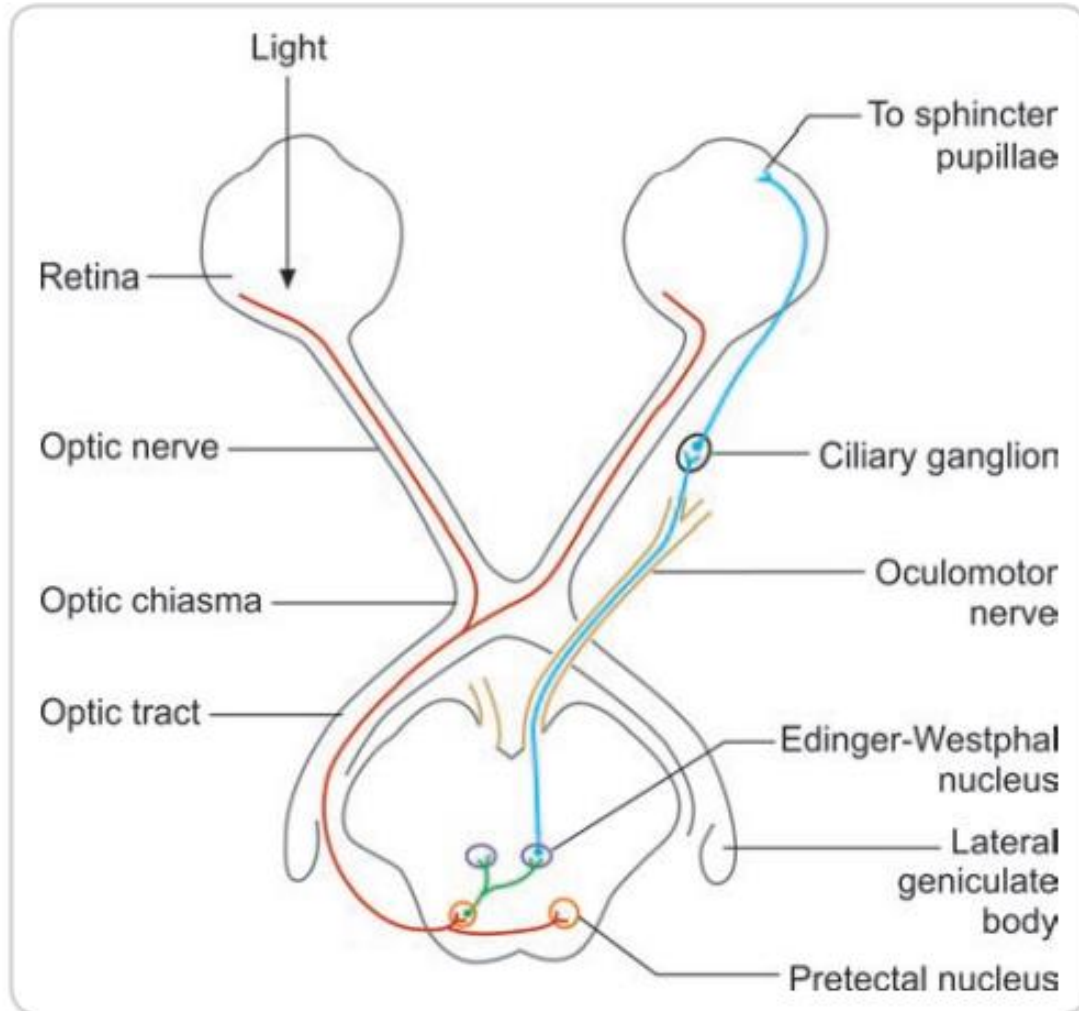
Pupillary Light Reflex

A reflex that controls the diameter of the pupil, in response to the intensity of light (luminance) that falls on the retina of the eye

- **mydriasis:** dilation of the pupil
- **miosis:** constriction of the pupil
 - direct response
 - consensual response
 - anisocoria



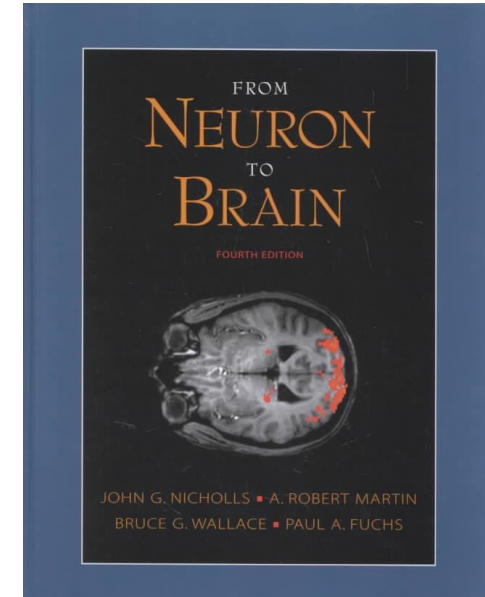
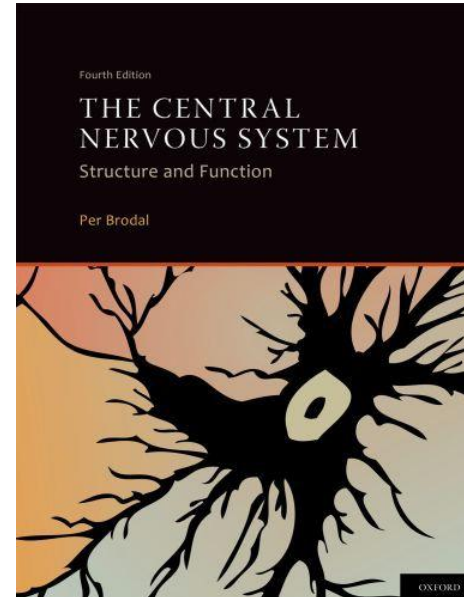
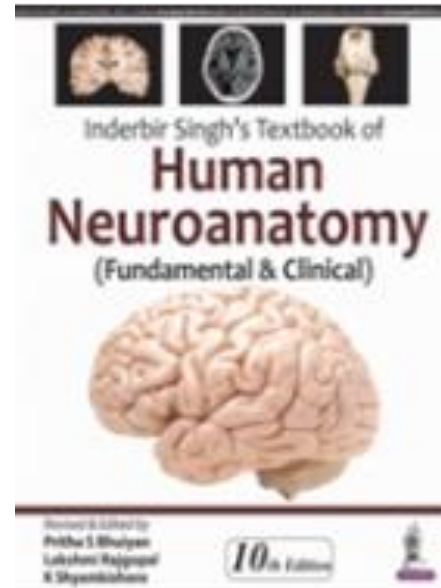
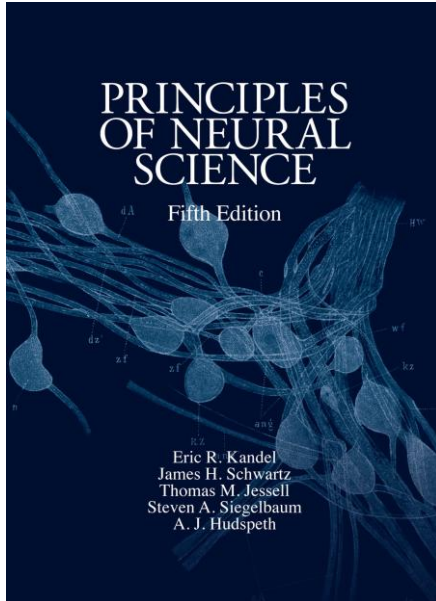
Accommodation Reflex



- Changing the radius of curvature of the lens to focus the world on the retina.
- Accommodation reflex involves convergence (voluntary), pupillary constriction and accommodation (involuntary).

Edinger-Westphal nuclei → oculomotor nerve → ciliary ganglion → short ciliary nerves → sphincter pupillae and ciliaris

Reading list



Thank you very much for your attention

