

SUMMARY OF AUTONOMIC FUNCTIONS

SYMPATHETIC

EMERGENCY - Fight Flight Fright

HOMEOSTATIC - Temperature regulation

Stimulate sweat glands (SUDOMOTOR)

Erects hairs in skin (PILOMOTOR)

Selectively constricts blood vessels (VASOMOTOR)

SPECIFIC

Stimulates suprarenal gland

Speeds the heart & increases blood pressure

Bronchial dilatation

Inhibits the gut & closes sphincters

Stimulates ejaculation

Special in head & neck

Dilates the pupil

Raises eyelids

SUMMARY OF AUTONOMIC FUNCTIONS

PARASYMPATHETIC

NON - EMERGENCY (at rest)

Stimulates glands (salivary, mucus) to secrete

Slows the heart & minimises blood pressure

Bronchial constriction

Stimulates gut peristalsis & opens sphincters

Contracts the bladder & uterus

Causes erection of penis

Special in head & neck

Constricts the pupil

Accommodates the eye

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 - Accommodates the eye

Sympathetic and parasympathetic often have antagonistic or complementary functions

Sympathetic speeds heart



Parasympathetic slows heart

Sympathetic dilates bronchi



Parasympathetic constricts bronchi

Sympathetic dilates pupil



Parasympathetic constricts pupil

Sympathetic and parasympathetic may have independent functions

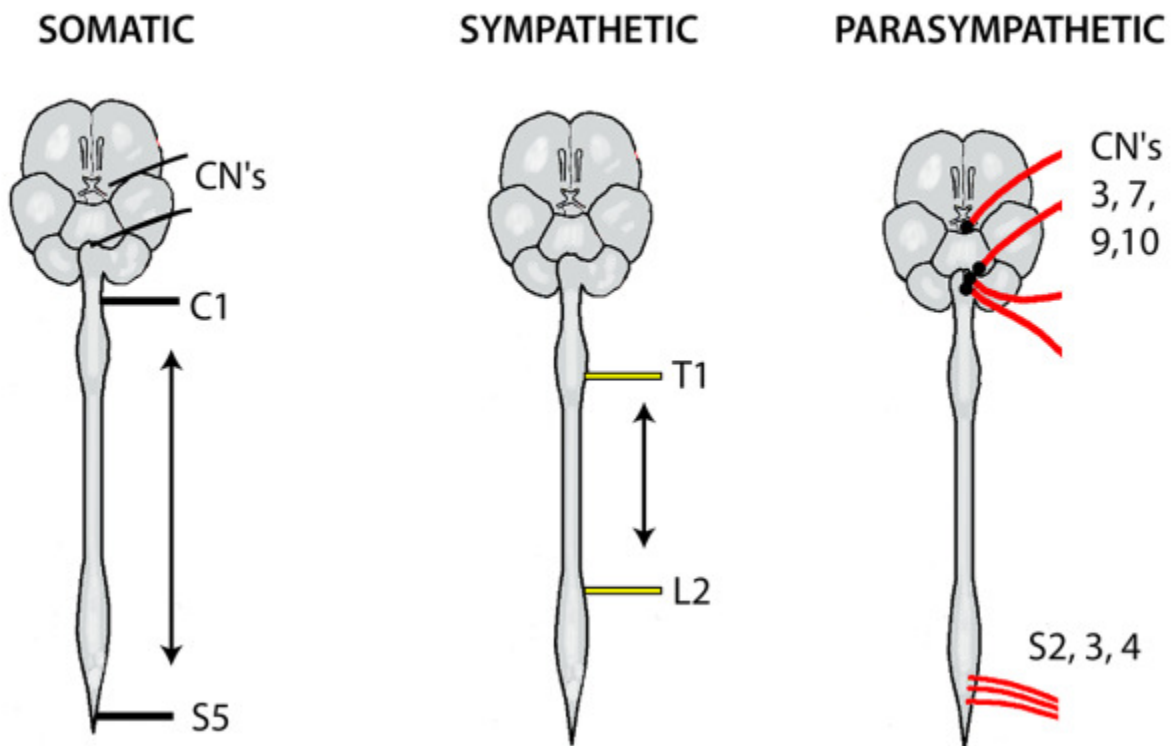
Sympathetic

Stimulates suprarenal gland
Stimulates ejaculation
Raises eyelids

Parasympathetic

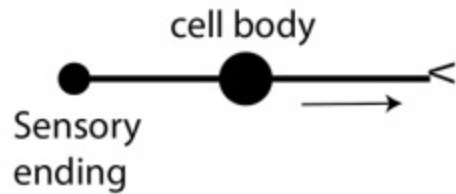
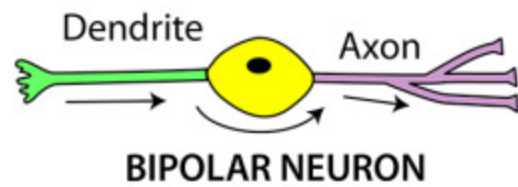
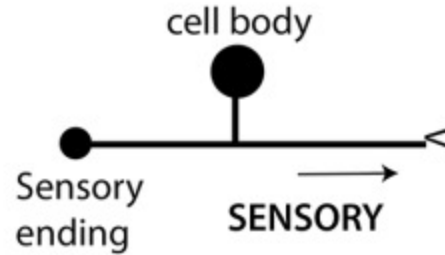
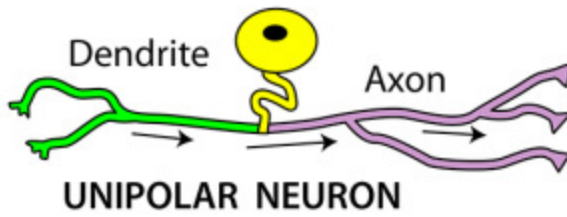
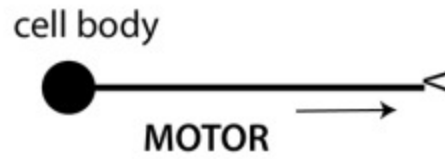
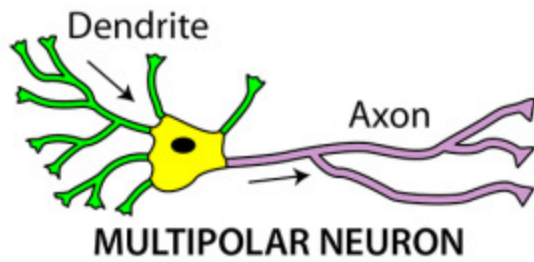
Eye accommodation
Erection of penis

EMERGENCE OF NERVES FROM CNS



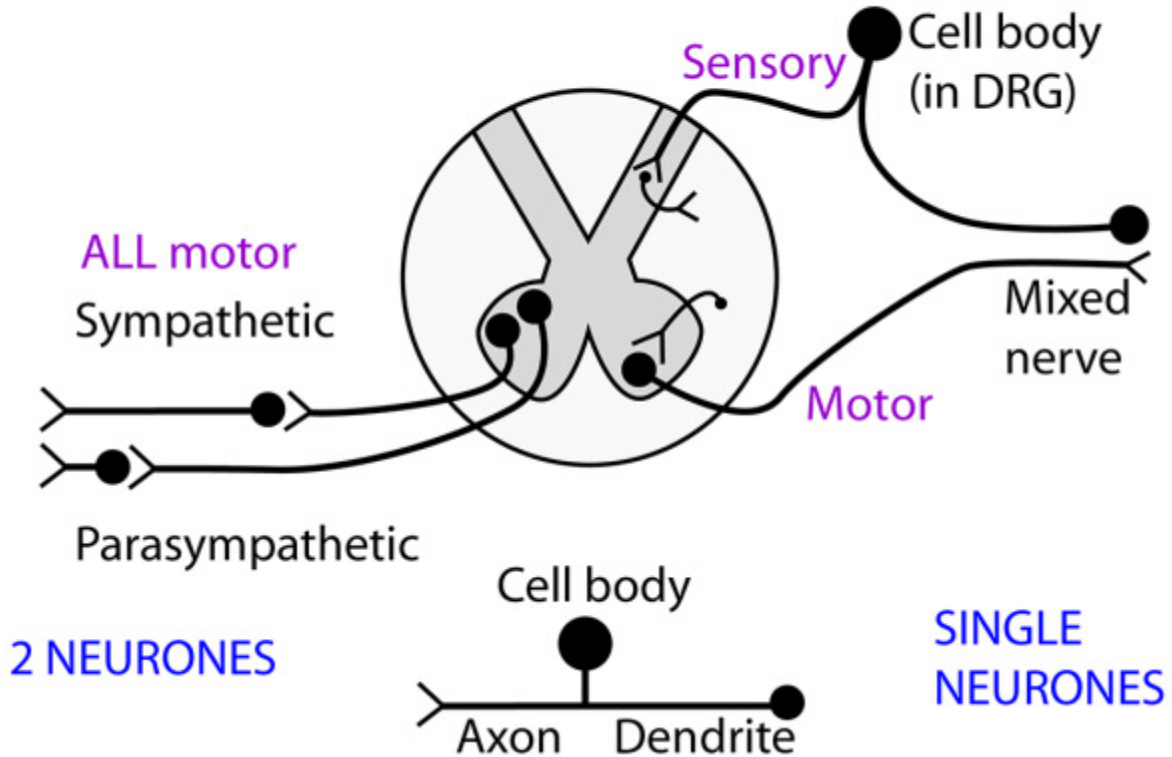
HISTOLOGICAL APPEARANCES

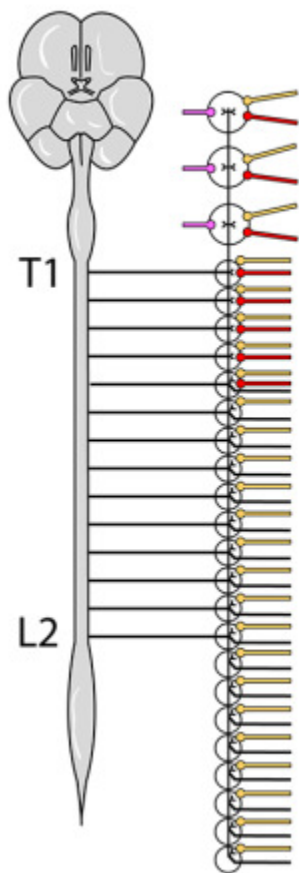
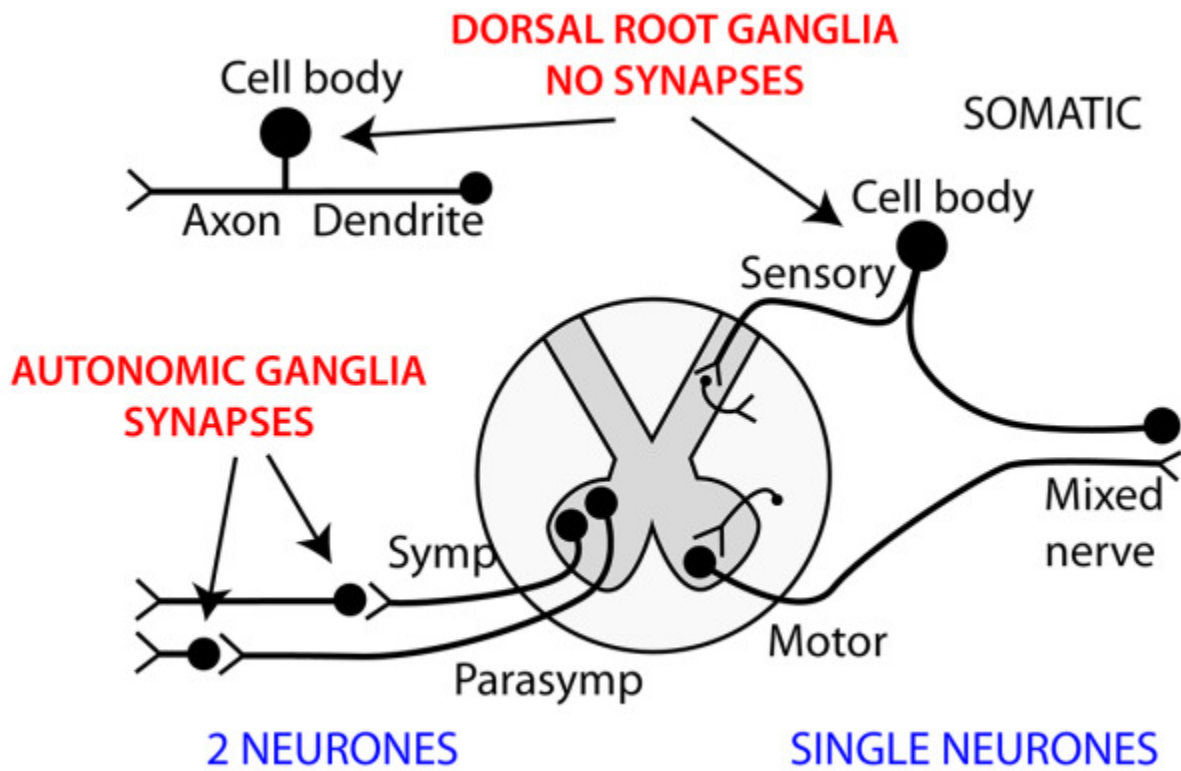
SHORTHAND DRAWINGS



AUTONOMIC

SOMATIC





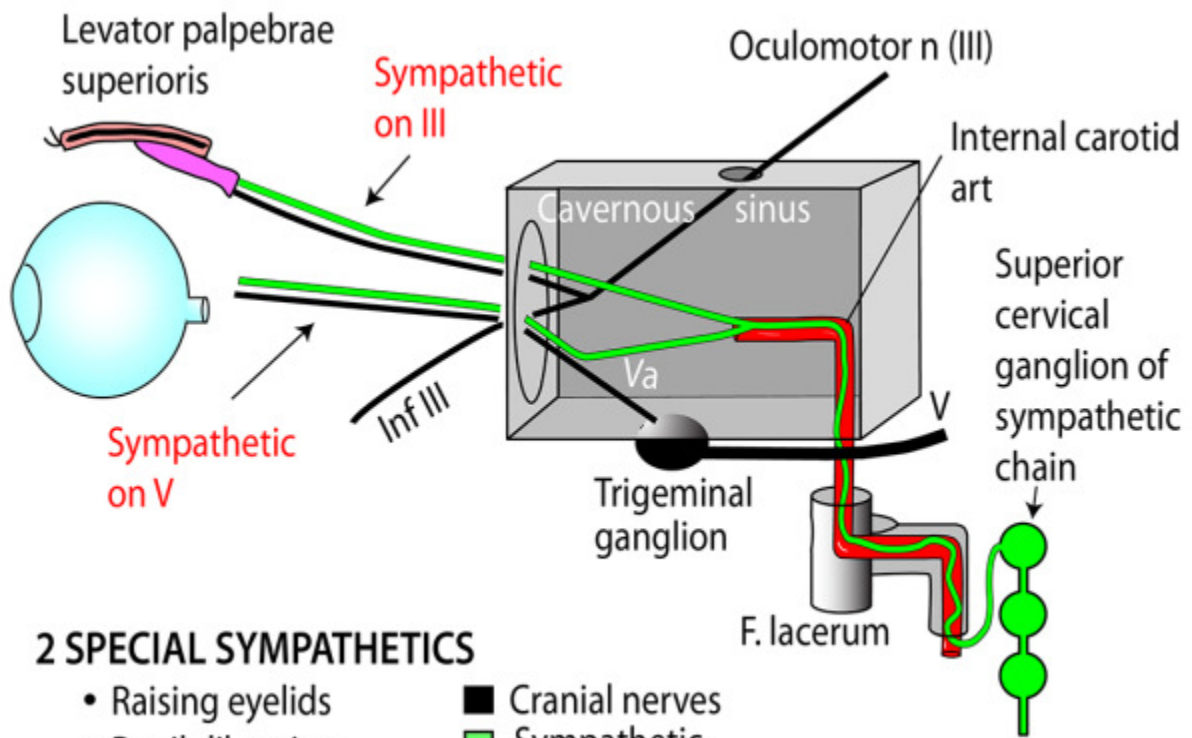
SYMPATHETIC DISTRIBUTION BEYOND CHAIN

Homeostatic (skin): sudo-, pilo-, vaso-
motor on spinal & cranial nerves

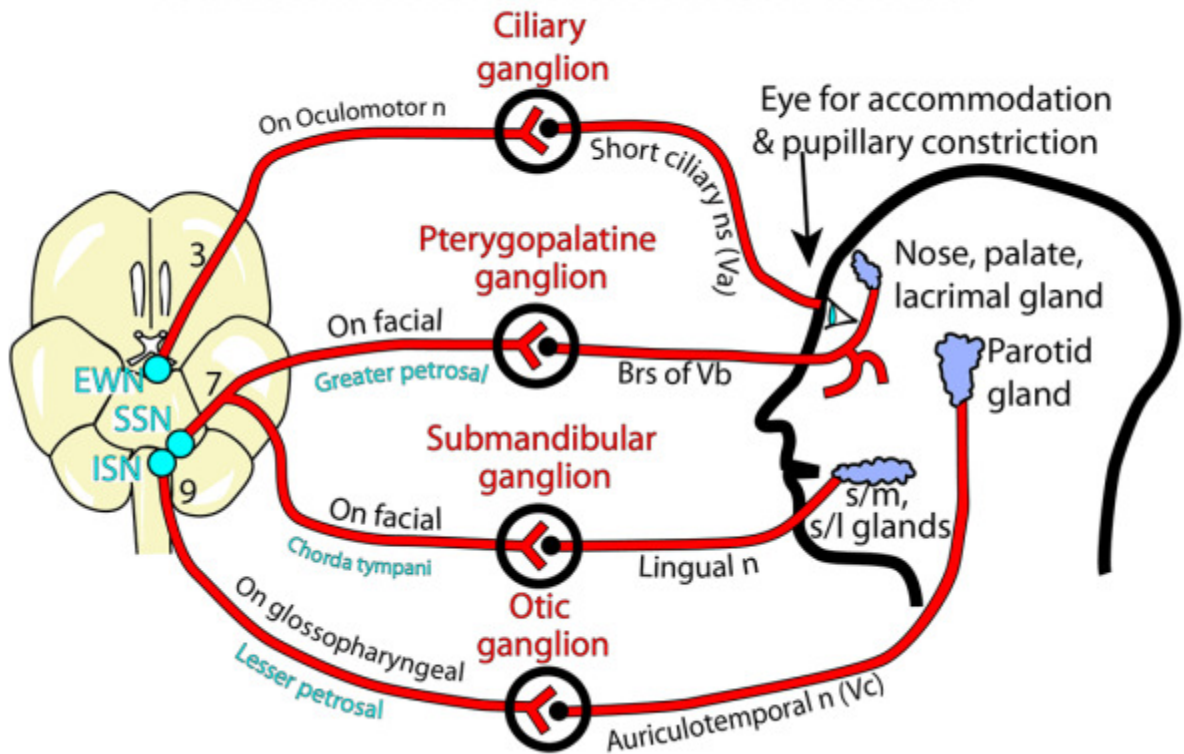
Homeostatic (other): vasomotor only,
on any convenient nerve or vessel

Specific (to organs)

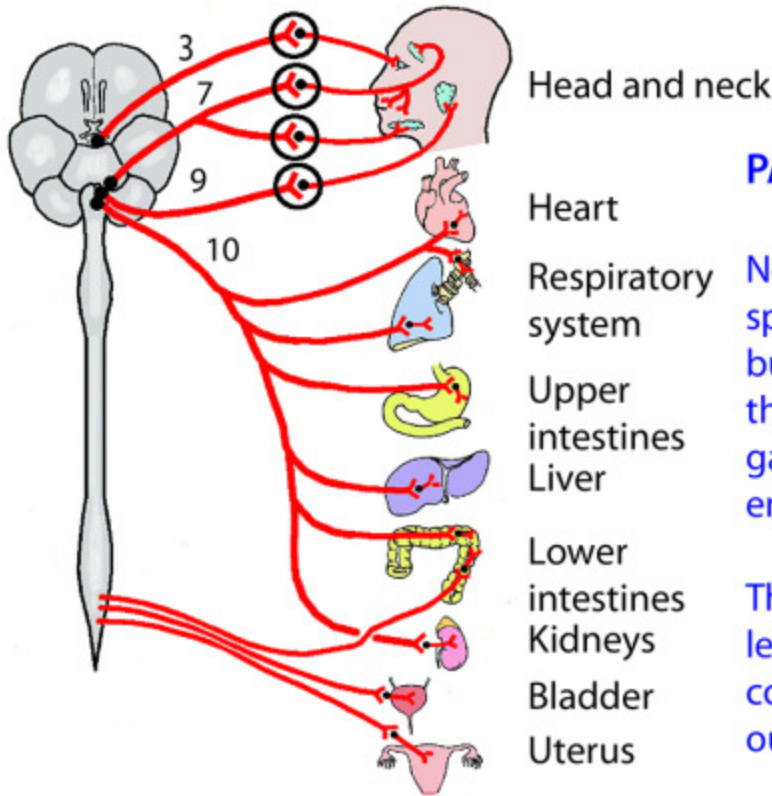
- Direct to heart & lungs
- Splanchnics to gut, adrenals, genitals
- Superior cervical ganglion to head



PARASYMPATHETIC CONNECTIONS IN HEAD



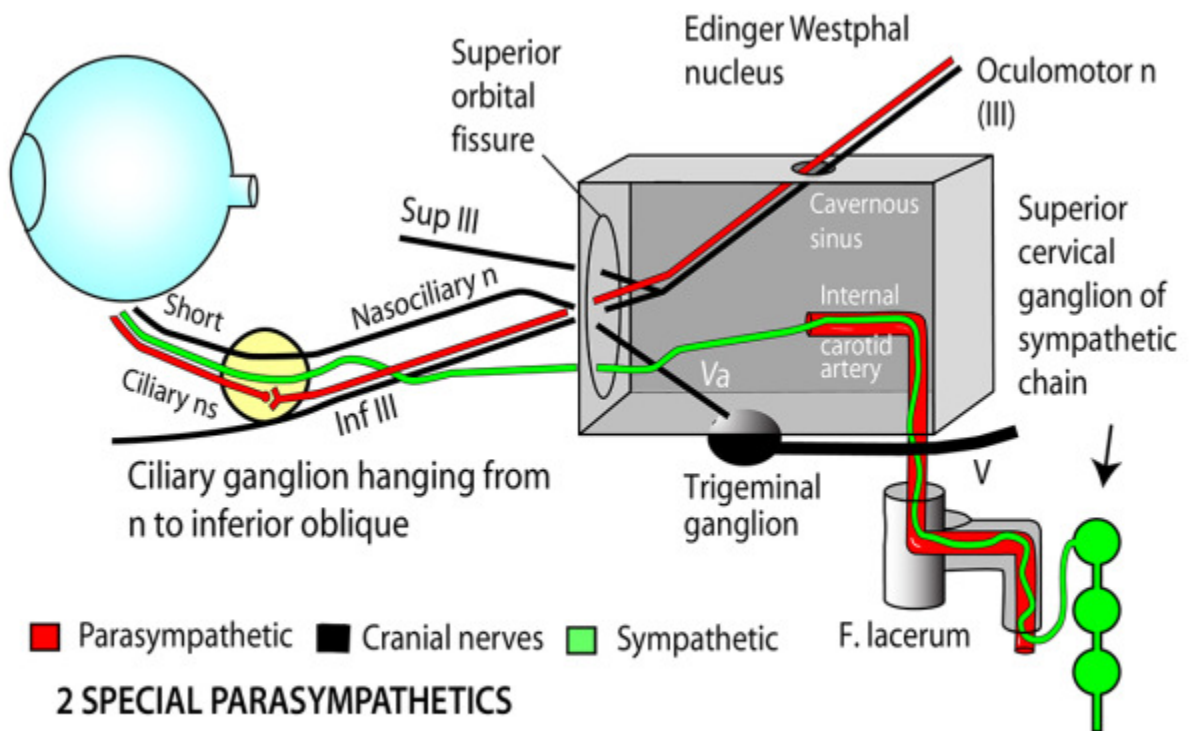
PARASYMPATHETIC CRANIOSACRAL OUTFLOW



PARASYMPATHETIC

Note that there are 4 specific ganglia in the head but in the rest of the body there are small peripheral ganglia on or near the end-organs.

The vagus reaches to the left side of the transverse colon and then the sacral outflow takes over



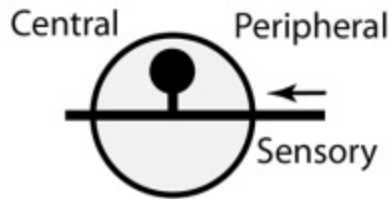
■ Parasympathetic ■ Cranial nerves ■ Sympathetic

2 SPECIAL PARASYMPATHETICS

* Short ciliary ns for pupil constriction via inferior div of III

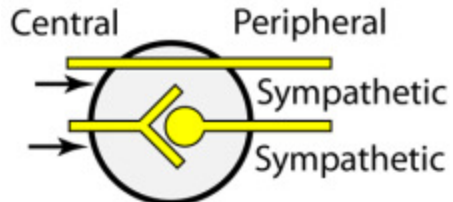
* Short ciliary ns for accommodation via inferior div of III

TYPES OF GANGLIA



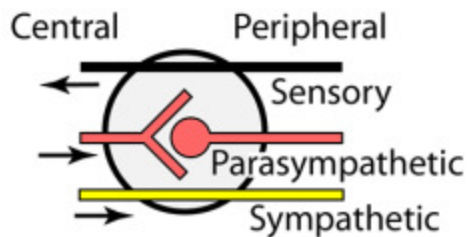
SENSORY GANGLION has cell bodies only and NO synapses Examples:

- Posterior (dorsal) root
- Trigeminal ● Glossopharyngeal
- Geniculate ● Vagal



SYMPATHETIC GANGLION has either a synapse or a fibre passing through it to synapse later. Examples:

- Sympathetic chain
- Sympathetic peripheral ganglia (coeliac, renal, superior mesenteric)



PARASYMPATHETIC GANGLION has parasympathetic nerves synapsing and both a somatic sensory and a sympathetic nerve passing through it. Examples:

- Ciliary
- Ptergopalatine
- Submandibular
- Otic