

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

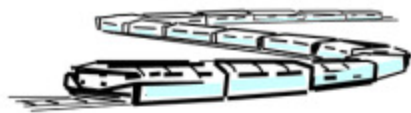
Contracts the bladder & uterus

Causes erection of penis

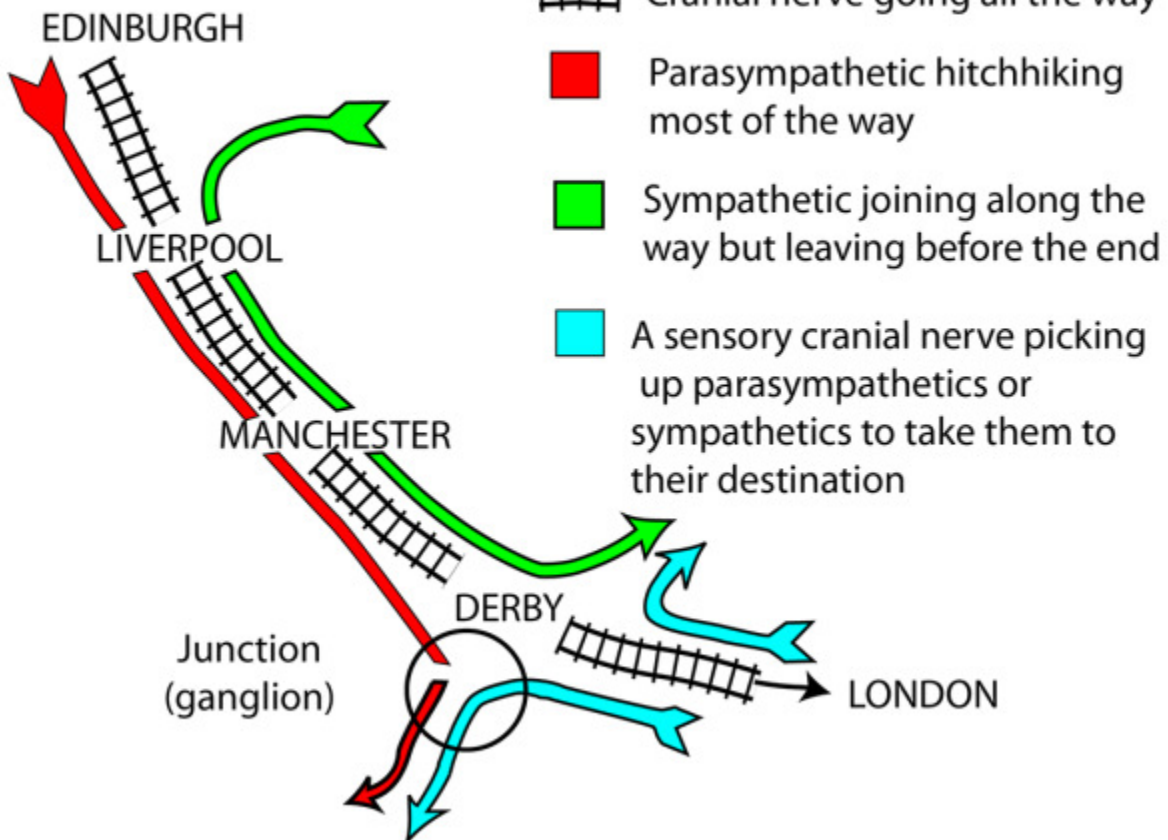
Special in head & neck

Constricts the pupil

Accommodates the eye



HITCHHIKING PRINCIPLE



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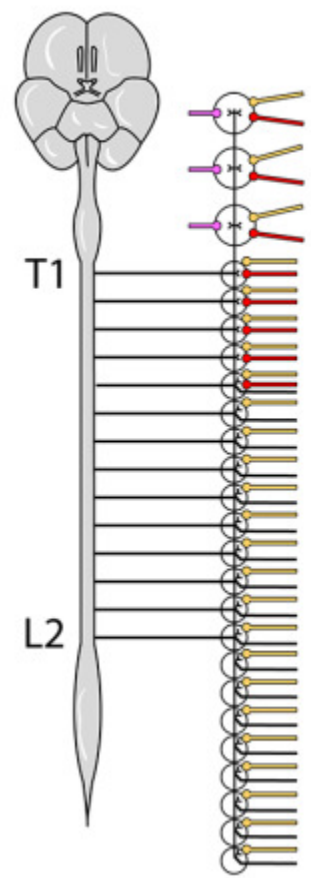
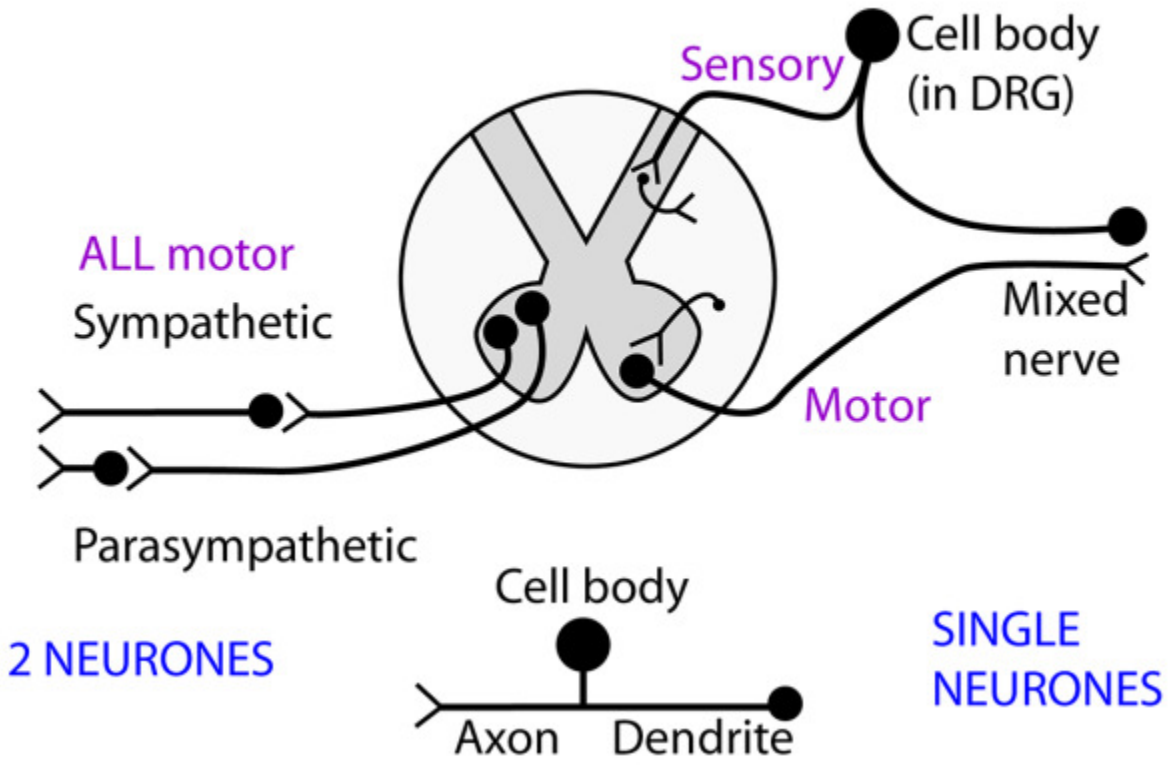
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AUTONOMIC

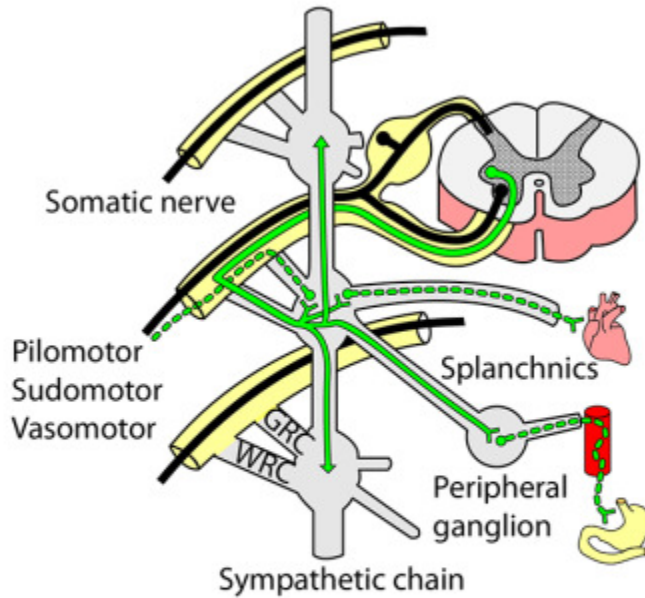
SOMATIC



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

CENTRAL SYMPATHETIC CONNECTIONS



RULE FOR SYNAPSING

All sympathetic nerves synapse before leaving the chain unless destined for GUT or ADRENAL

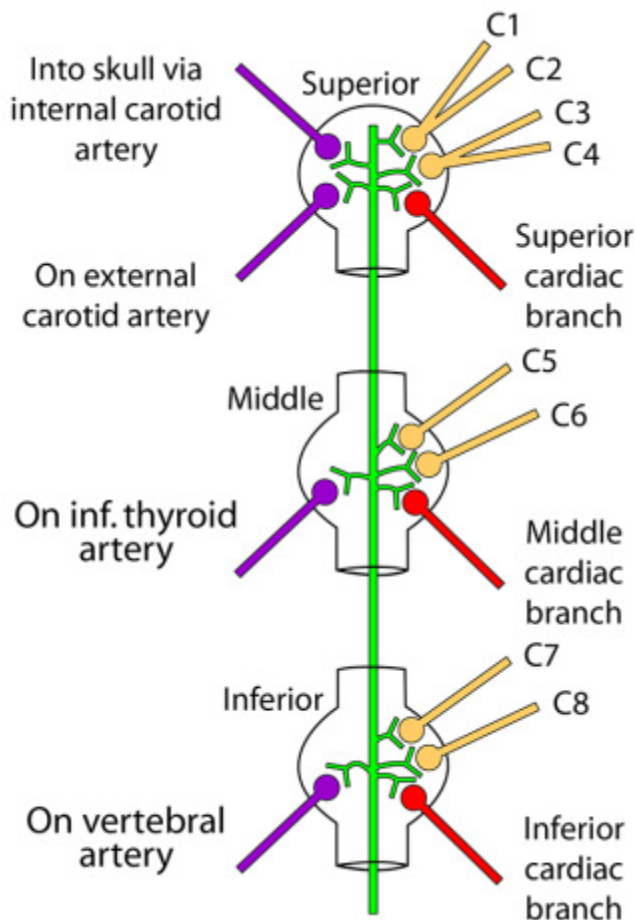
GRC = Grey ramus communicans

WRC = White ramus communicans

— = Somatic nerves

--- = Postganglionic sympathetic nerves

— = Preganglionic sympathetic nerves

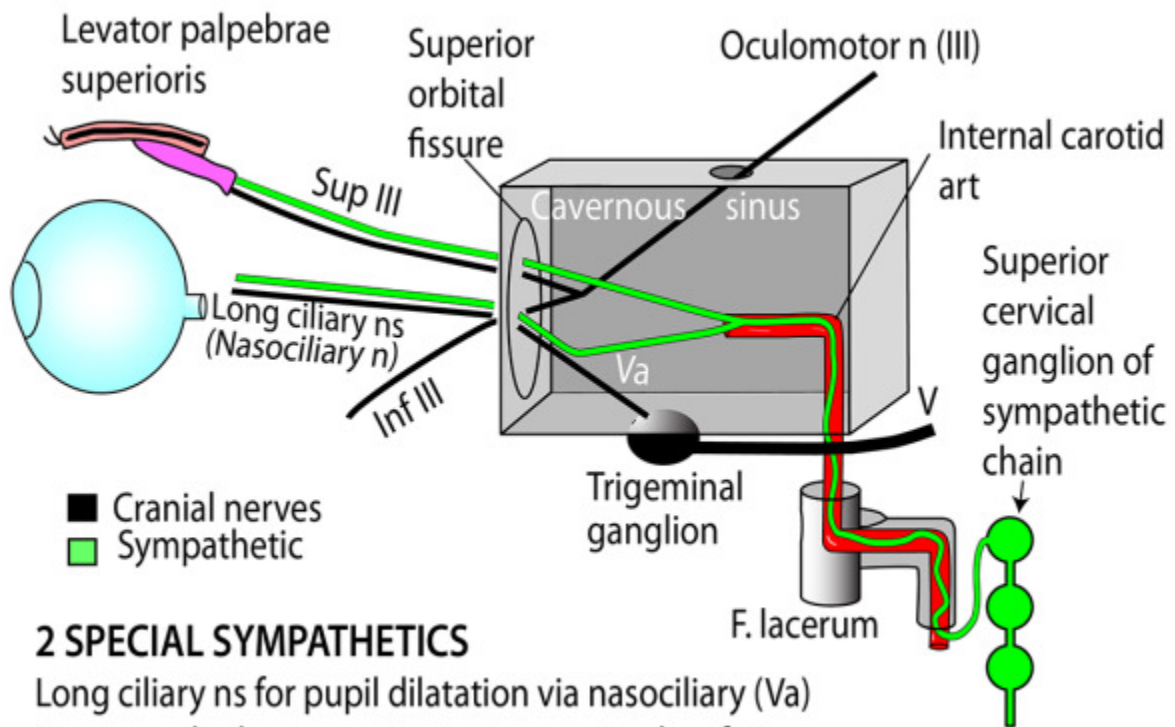


Cervical sympathetic ganglia (All branches are postganglionic)

Orange box: Somatic branches (Vasomotor, Sudomotor, Pilomotor)

Red box: Visceral branches

Purple box: Vascular branches

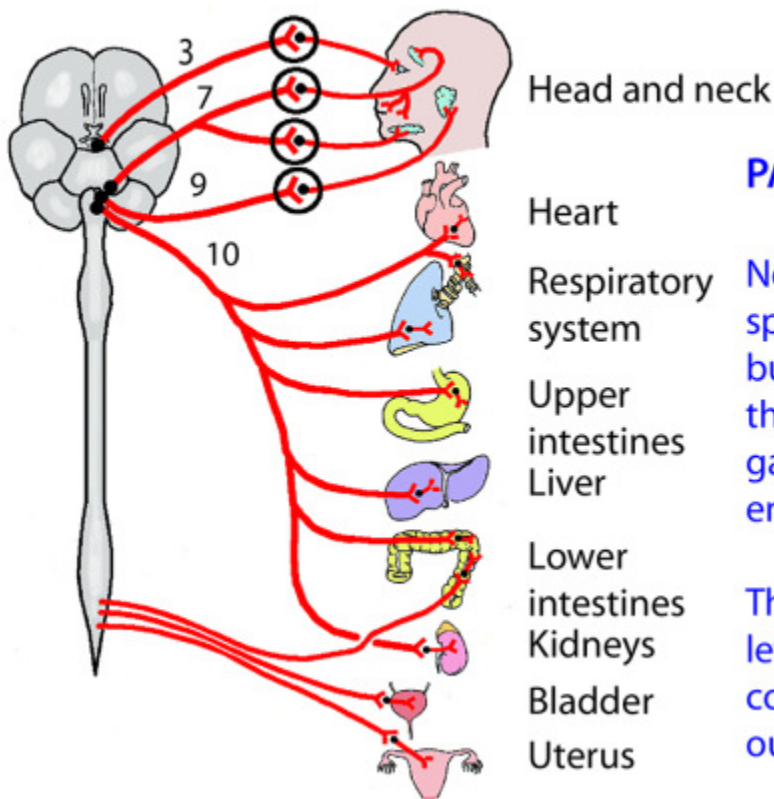


2 SPECIAL SYMPATHETICS

Long ciliary ns for pupil dilatation via nasociliary (Va)

Levator palpebrae superioris via superior div of III

PARASYMPATHETIC CRANIOSACRAL OUTFLOW

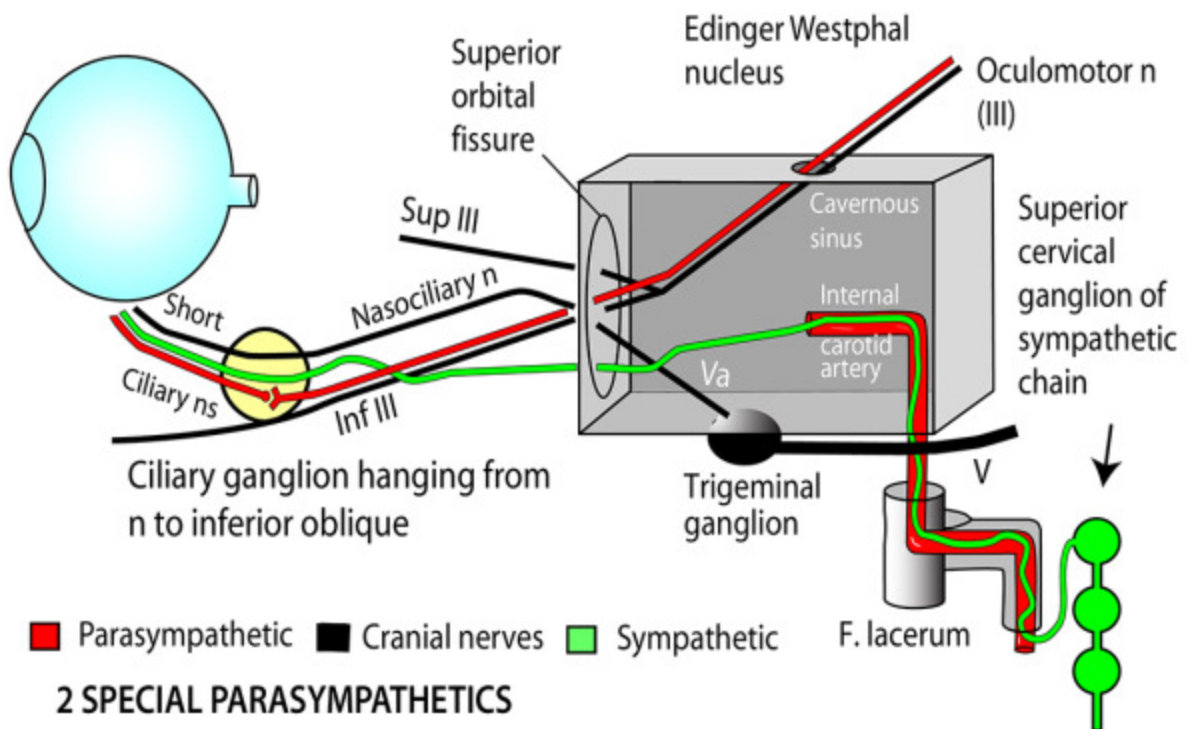
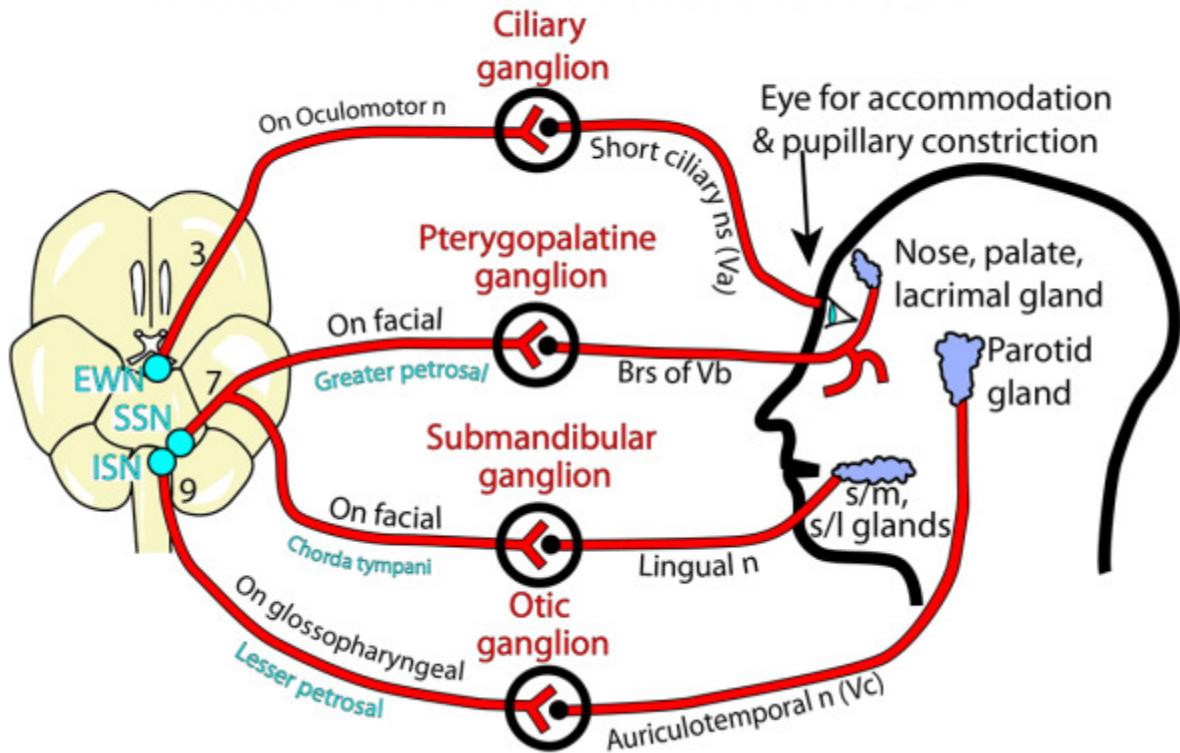


PARASYMPATHETIC

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 CONNECTIONS IN HEAD

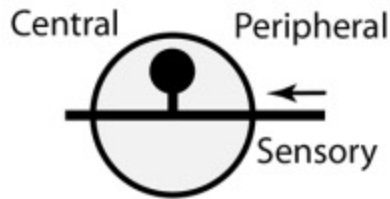


■ Parasympathetic ■ Cranial nerves ■ Sympathetic

2 SPECIAL PARASYMPATHETICS

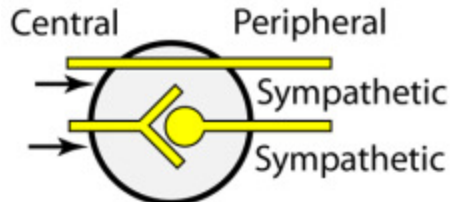
- * Short ciliary ns for pupil constriction via inferior div of III
- * Short ciliary ns for accommodation via inferior div of III

TYPES OF GANGLIA



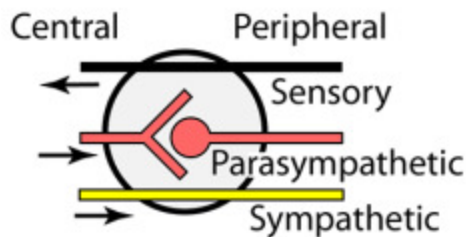
SENSORY GANGLION has cell bodies only and NO synapses Examples:

- 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