COMPARISON OF SOMATIC & AUTONOMIC NEURONES
3 TYPES OF GANGLIA

**SENSORY GANGLION** has cell bodies only and NO synapses. Examples:
- Posterior (dorsal) root
- Trigeminal
- Geniculate
- Glossopharyngeal
- Vagal

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**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)
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PARASYMPATHETIC GANGLION has parasympathetic nerves synapsing and both a somatic sensory and a sympathetic nerve passing through it. Examples:
- Ciliary
- Pterygopalatine
- Submandibular
- Otic

SENSORY GANGLION (Trigeminal). Cell bodies but no synapses
There are always sympathetic fibres passing through each of the parasympathetic ganglia. They arise from plexuses on branches of the external or internal carotid arteries. They do not synapse in these parasympathetic ganglia as they have already synapsed in the superior cervical ganglion. They supply vasoconstriction to the end organs and NEVER have special functions such as pupillary dilatation.
PARASYMPATHETIC PATHWAY FOR PUPILLARY CONSTRICION AND ACCOMMODATION

- EWN Brainstem
- Cavernous sinus
- Sup div of III
- Inf div of III
- Ciliary ganglion Synapse of parasympathetic
- Trigeminal ganglion giving off ophthalmic division
- 10-12 short ciliary nerves
  - Postganglionic parasympathetic
  - Branch of nasociliary (sensory)
  - Sympathetic off artery (V/C)

PARASYMPATHETIC CRANIOSACRAL OUTFLOW

- Head and neck
- Heart
- Respiratory system
- Upper intestines
- Liver
- Lower intestines
- Kidneys
- Bladder
- Uterus

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 secral outflow takes over.
Cervical sympathetic ganglia (All branches are postganglionic)

- **Superior**
  - On external carotid artery
  - Into skull via internal carotid artery
- **Middle**
  - On inferior thyroid artery
- **Inferior**
  - On vertebral artery

**Superior cardiac branch**

**Middle cardiac branch**

**Inferior cardiac branch**

**Somatic branches** (Vasomotor, Sudomotor, Pilomotor)

**Visceral branches**

**Vascular branches**