

PNS II

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Cranial nerves – fibre types

- Somatomotor
- Visceromotor – always parasympathetic in cranial nerves!
- Viscerosensitive
 - +special viscerosensitive – taste
- Somatosensitive
- Special sensitive – olfaction, vision, hearing, equilibrium sense

Cranial nerves – nuclei in brain stem

Cranial nerve-brain stem nuclei can be divided in the same types as the fibres in cranial nerves, leading from or to those nuclei. However, efferent fibres from one nucleus sometimes pass to more than one cranial nerves, and similarly, afferent fibres from more cranial nerves sometimes diverge to one brain stem nucleus.

N. olfactorius

- Special sensitivity - olfaction

N. opticus

- Special sensitivity - vision
- Optic nerve is in fact not a peripheral nerve, but a protrusion of the brain – this is clinically significant when dealing with pathologies of optic nerve – it behaves more like a part of the brain and not like a peripheral nerve.

N. oculomotorius

- Somatomotor
- Visceromotor – parasympathetic – mediating accommodation for near vision and constriction of eye pupil (myosis) – clinically extremely important. (Enlargement of pupil – mydriasis – is mediated by sympathetic nervous system, accommodation for far vision is achieved automatically, when parasympathetic innervation is deactivated).

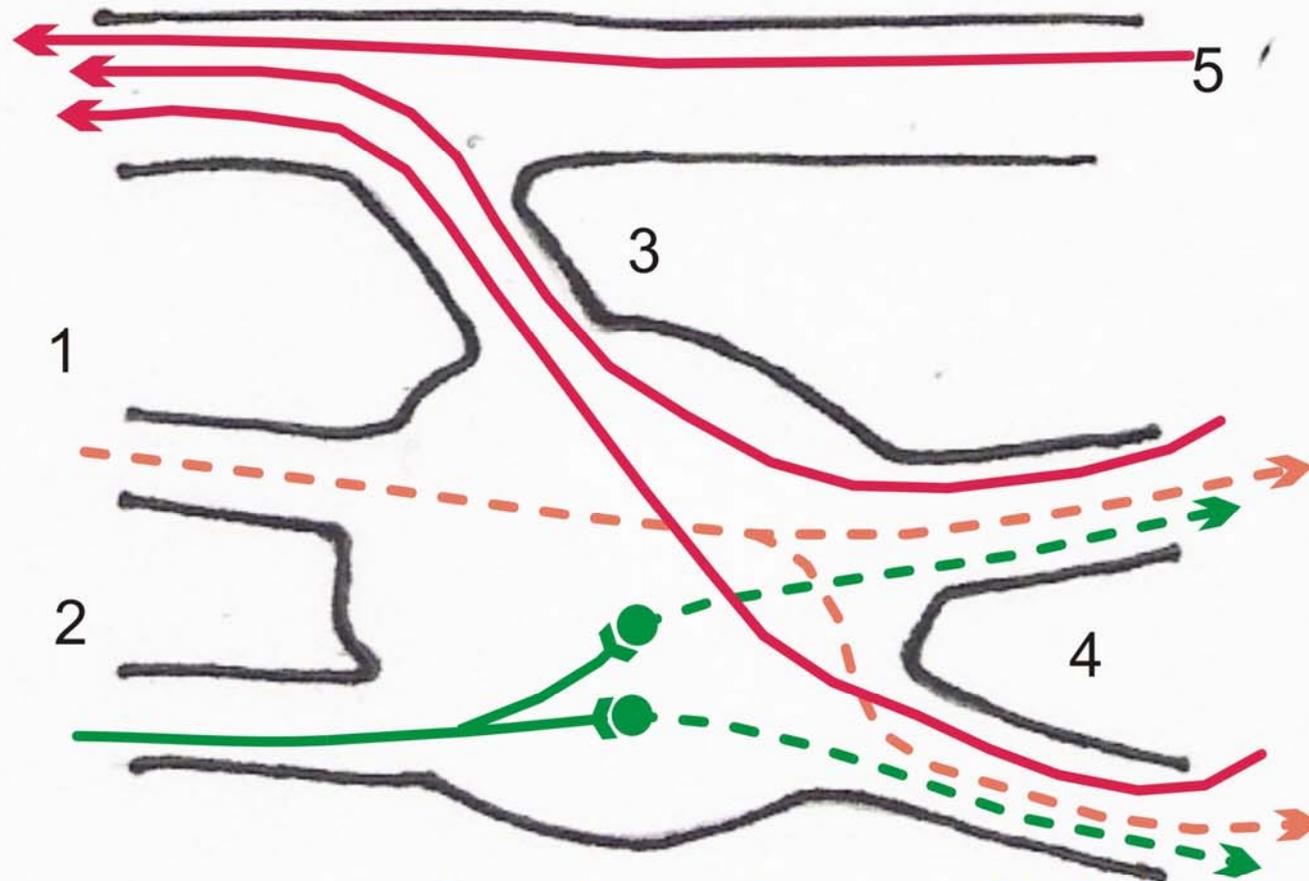
N. trochlearis

- Somatomotor

N. trigeminus

- Somatosensitive
- Somatomotor
- There are also parasympathetic and afferent taste fibres joining the trigeminal nerve in periphery, but they come initially from other cranial nerves and leave / enter the brain stem with those nerves and not with the trigeminus.

General schema of the cranial parasympathetic ganglion (e.g. here **ciliary ganglion**)



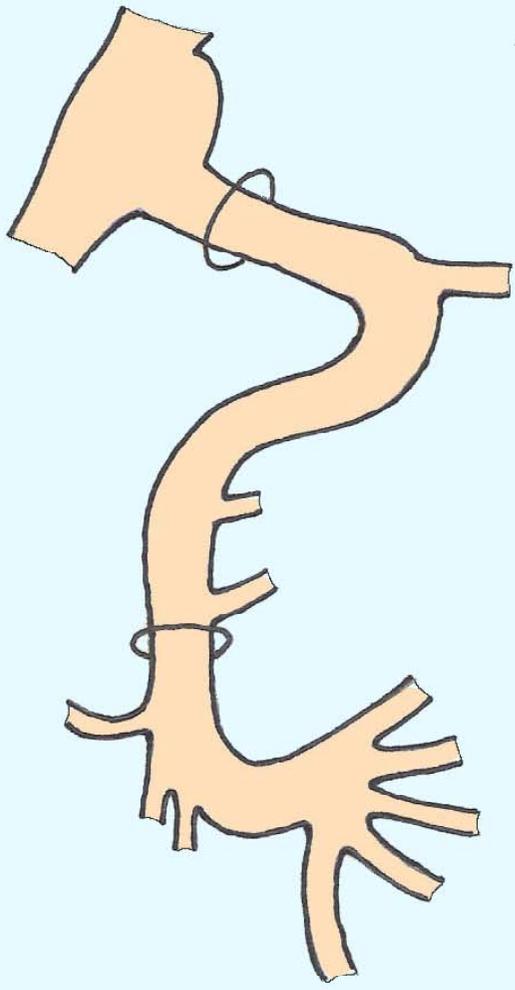
- 1 - sympathetic root (here from plexus ophthalmicus)
- 2 - parasympathetic root (here from n. oculomotorius)
- 3 - sensory root (here to n. nasociliaris)
- 4 - efferent branches (here nn. ciliares breves)
- 5 - branch from n. trigeminus (here n. nasociliaris)

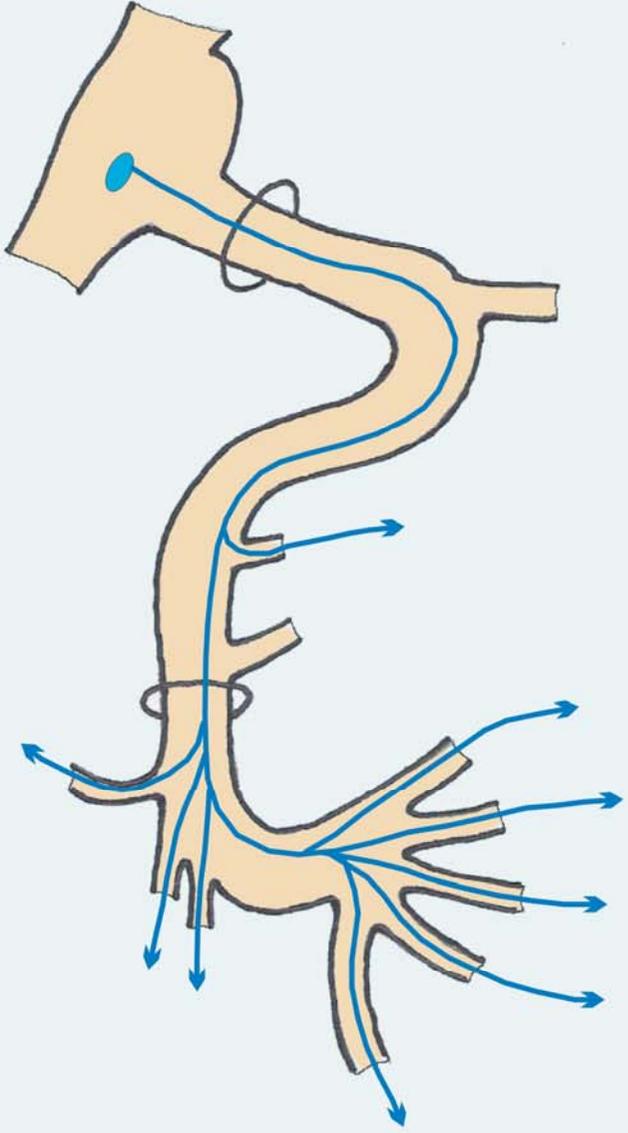
N. abducens

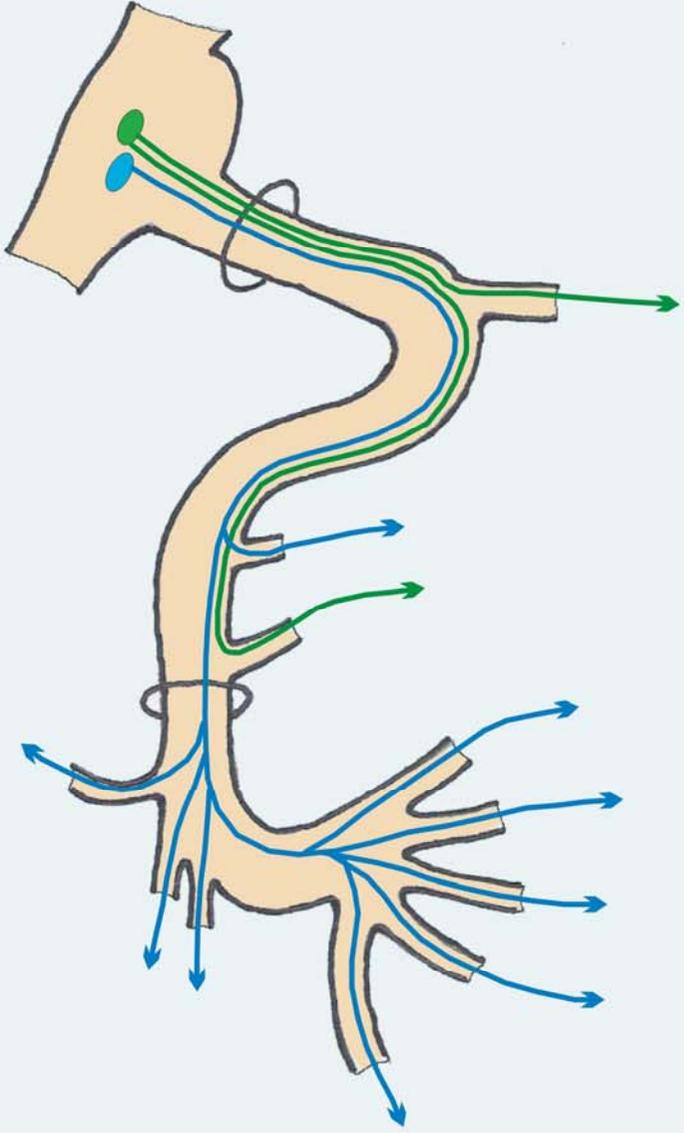
- Somatomotorika

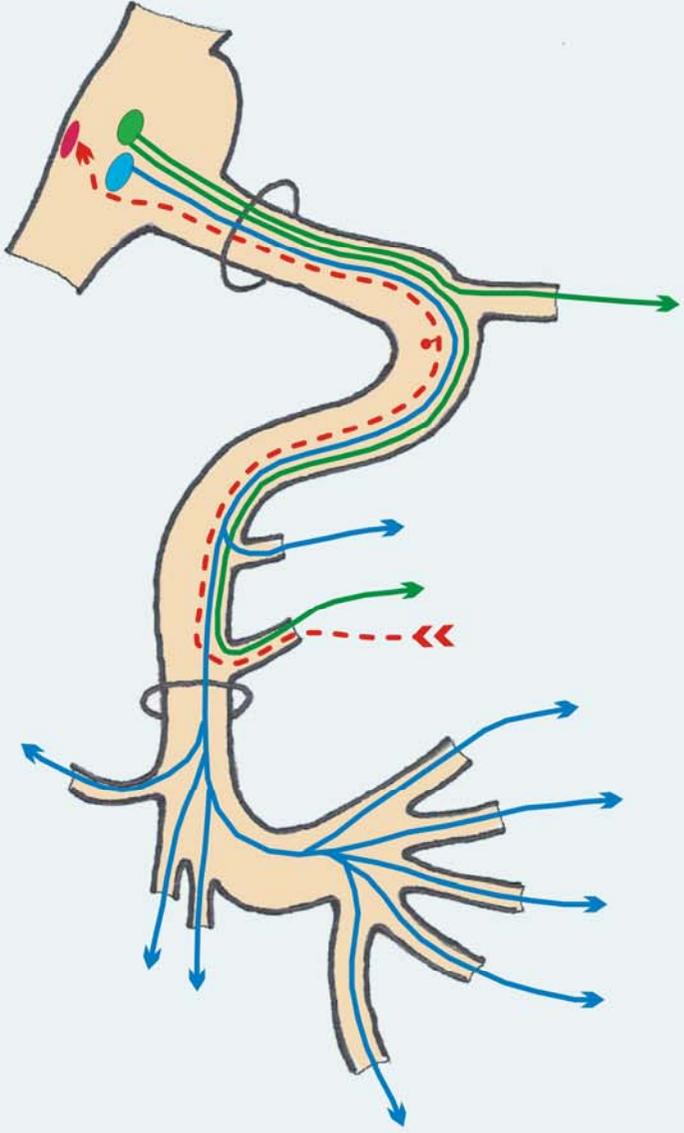
N. facialis

- Somatomotorika
- Visceromotorika
- Viscerosensitivita- chut'
- Somatosensitivita

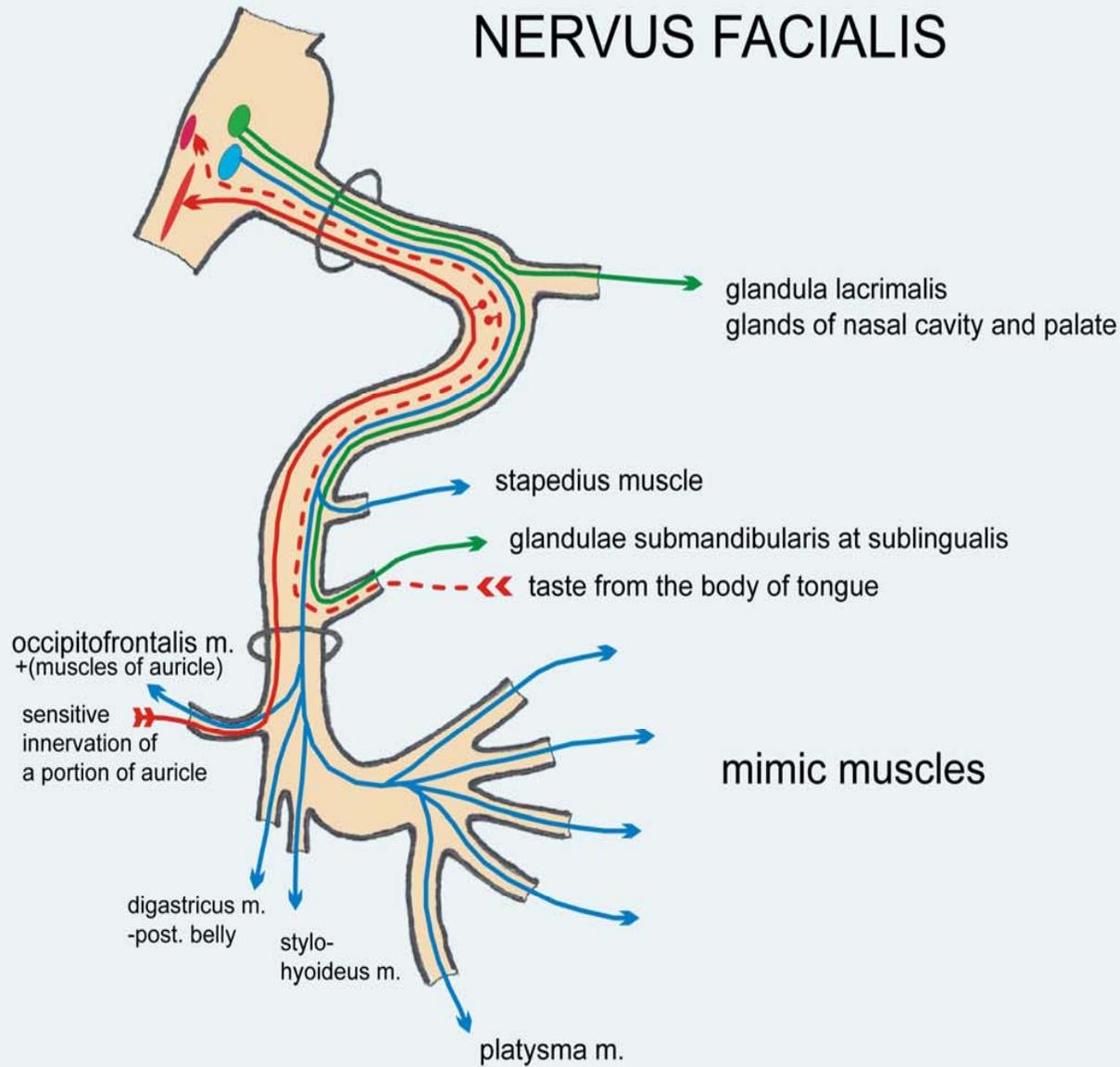








NERVUS FACIALIS



Review of parasympathetic innervation of organs

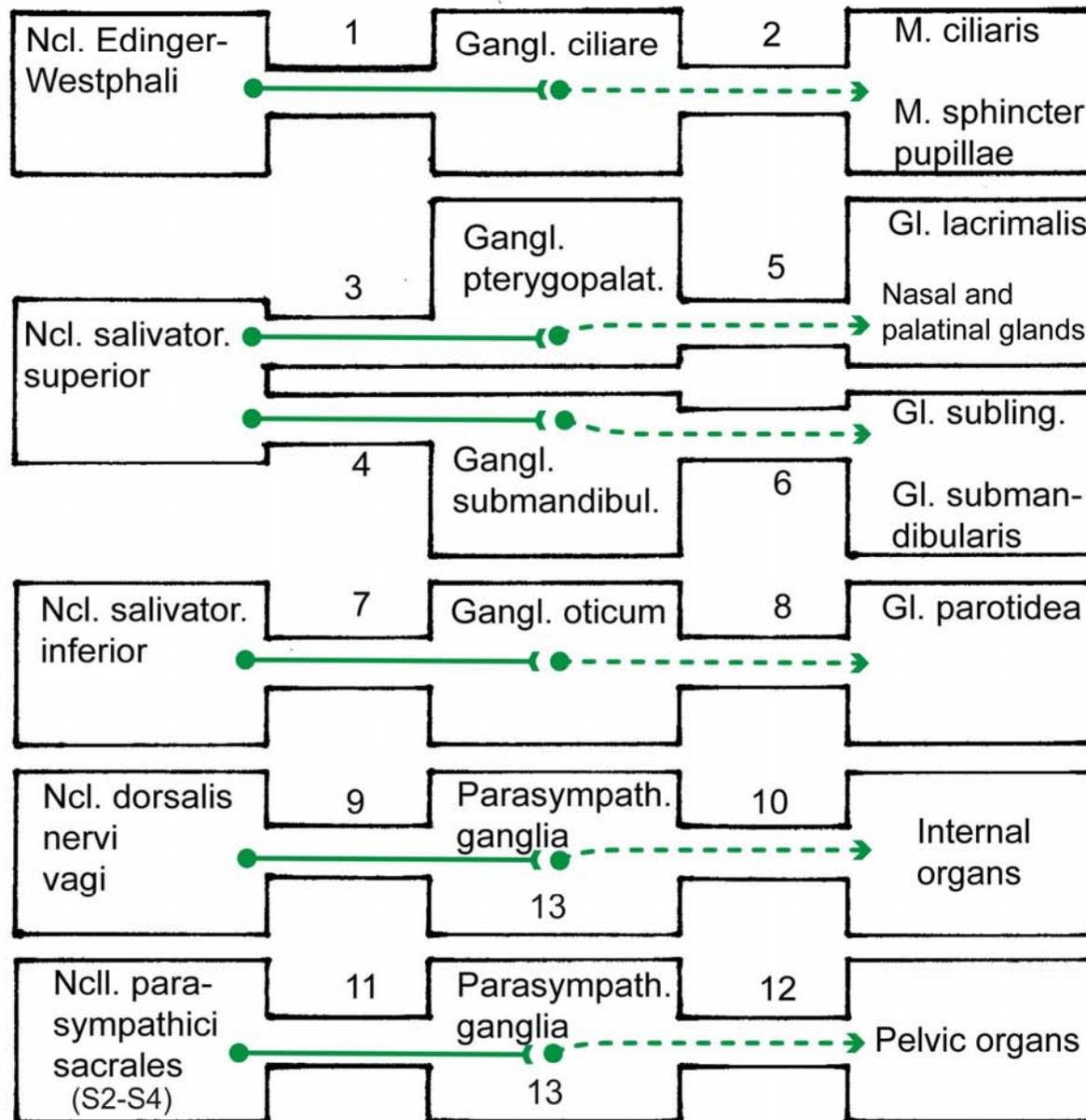


Fig. modified from Zilles, Rehkämper: Funktionelle Neuroanatomie; Springer Verlag, 1993

N. vestibulochochlearis

- Special sensitivity – hearing and positional (equilibrium) sense.

N. glossopharygeus

- Somatomotor
- Visceromotor
- Viscerosensitive and also special viscerosensitivity - taste
- Somatosensitive

N. vagus

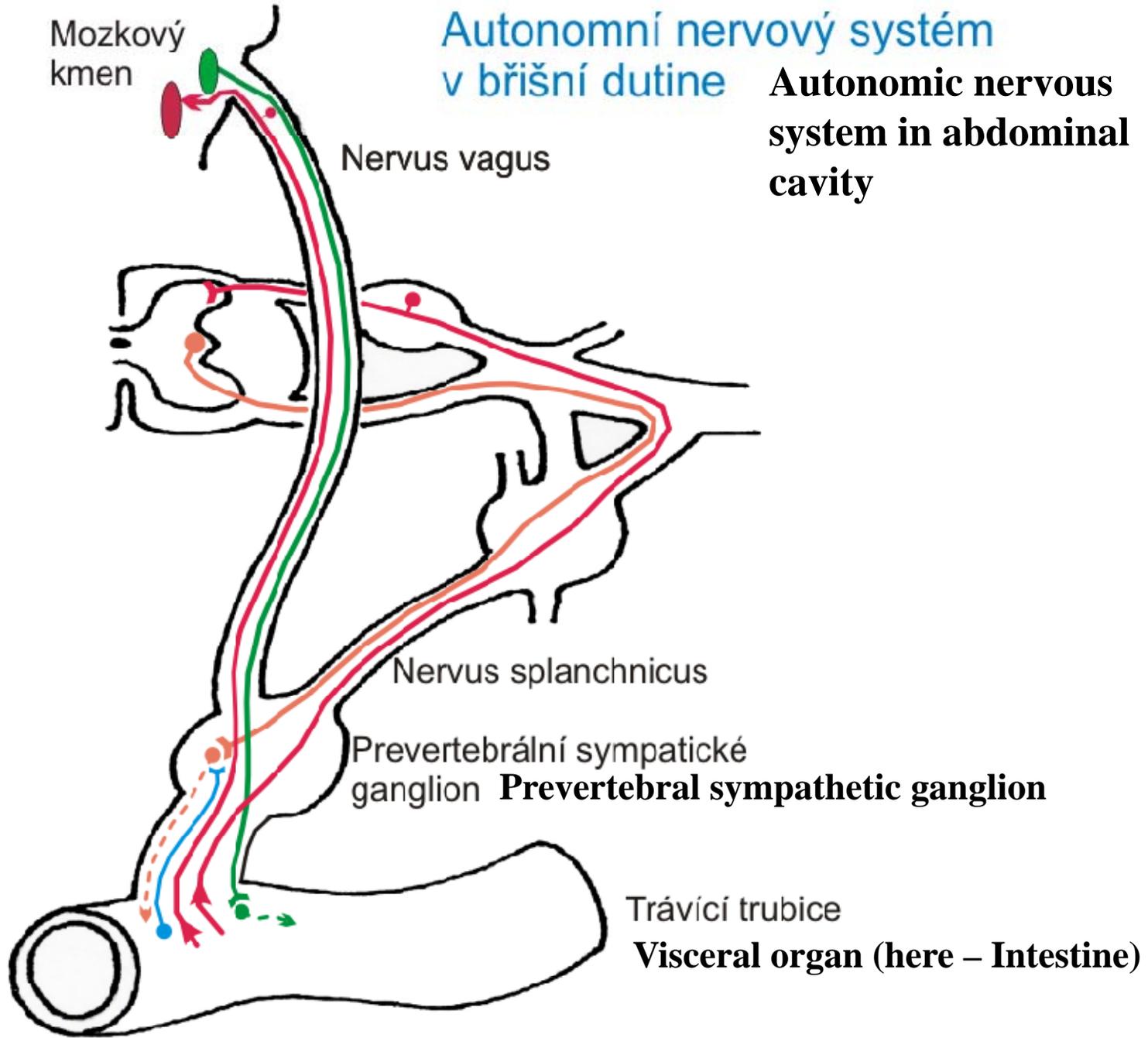
- Somatomotor
- Visceromotor
- Viscerosensitive and also special viscerosensitivity- taste
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**Brain
Stem**

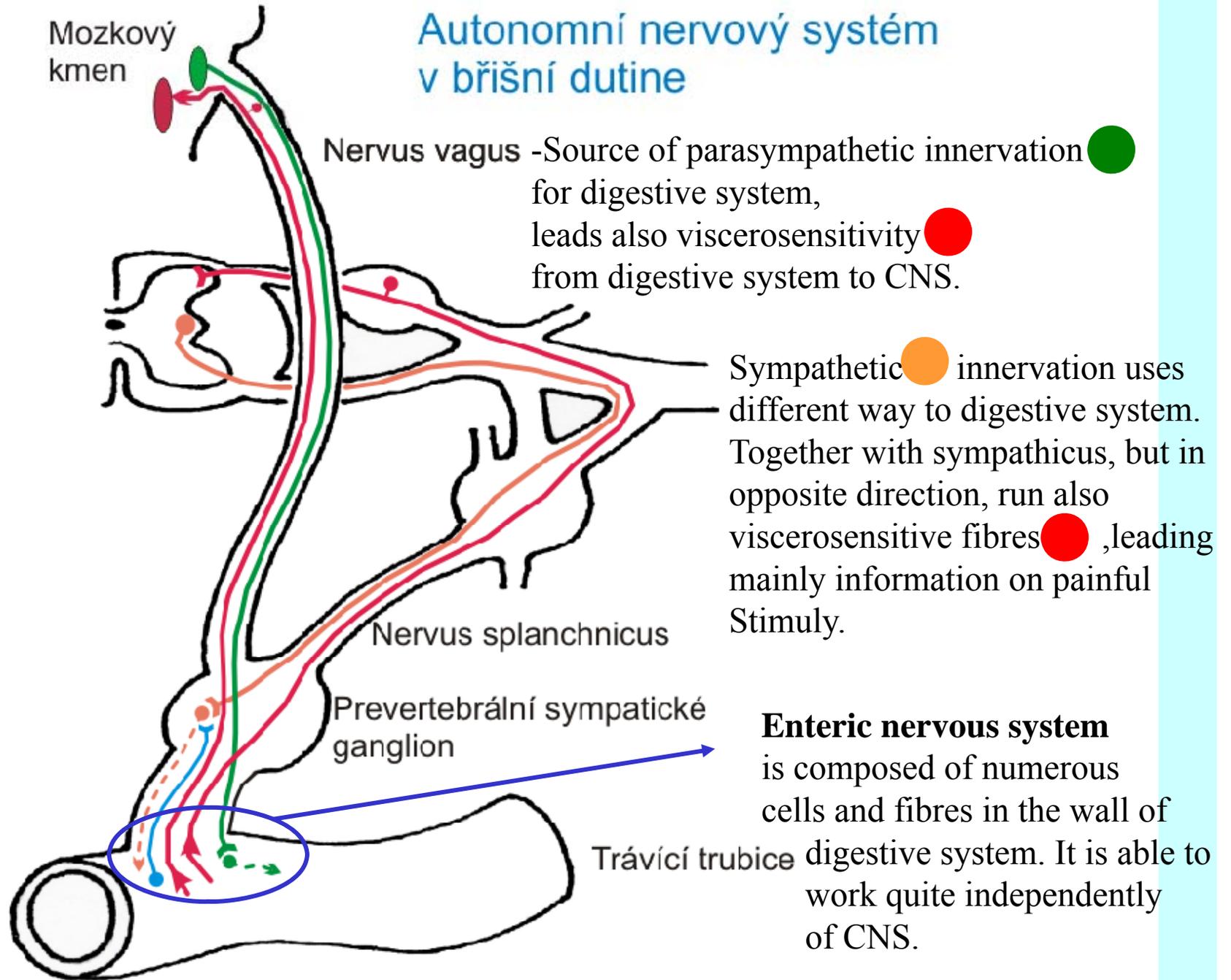
Mozkový
kmen

Autonomní nervový systém v břišní dutině

**Autonomic nervous
system in abdominal
cavity**



Autonomní nervový systém v břišní dutině



N. accessorius

- Somatomotor

N. hypoglossus

- Somatomotor