



SNS COLLEGE OF TECHNOLOGY

(AN AUTONOMOUS INSTITUTION)

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INSTITUTE

Department of Biomedical Engineering

Vision Title 2

Vision Title 3

Course Name: 21BMT201 Anatomy & Physiology

I Year : II Semester

Unit 5- Nervous System and Special senses

Topic : Nervous System

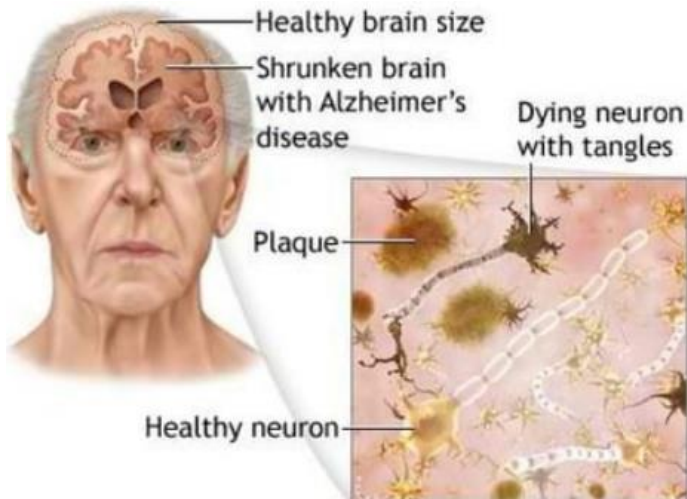
EMPATHY !!!



Epilepsy



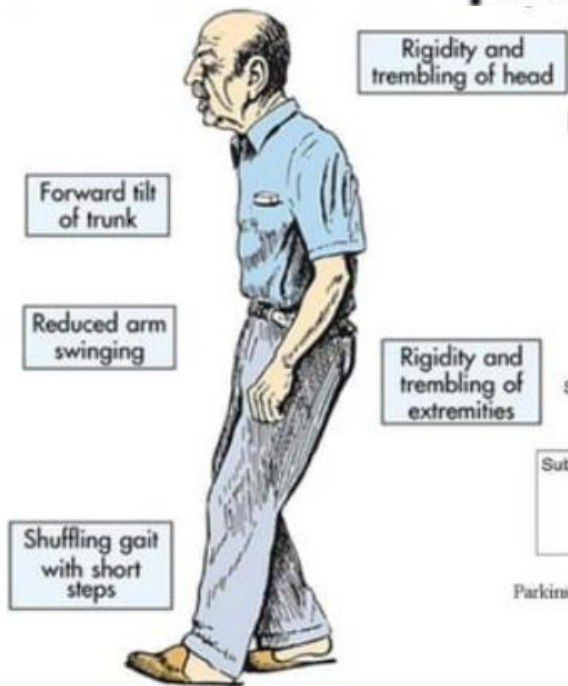
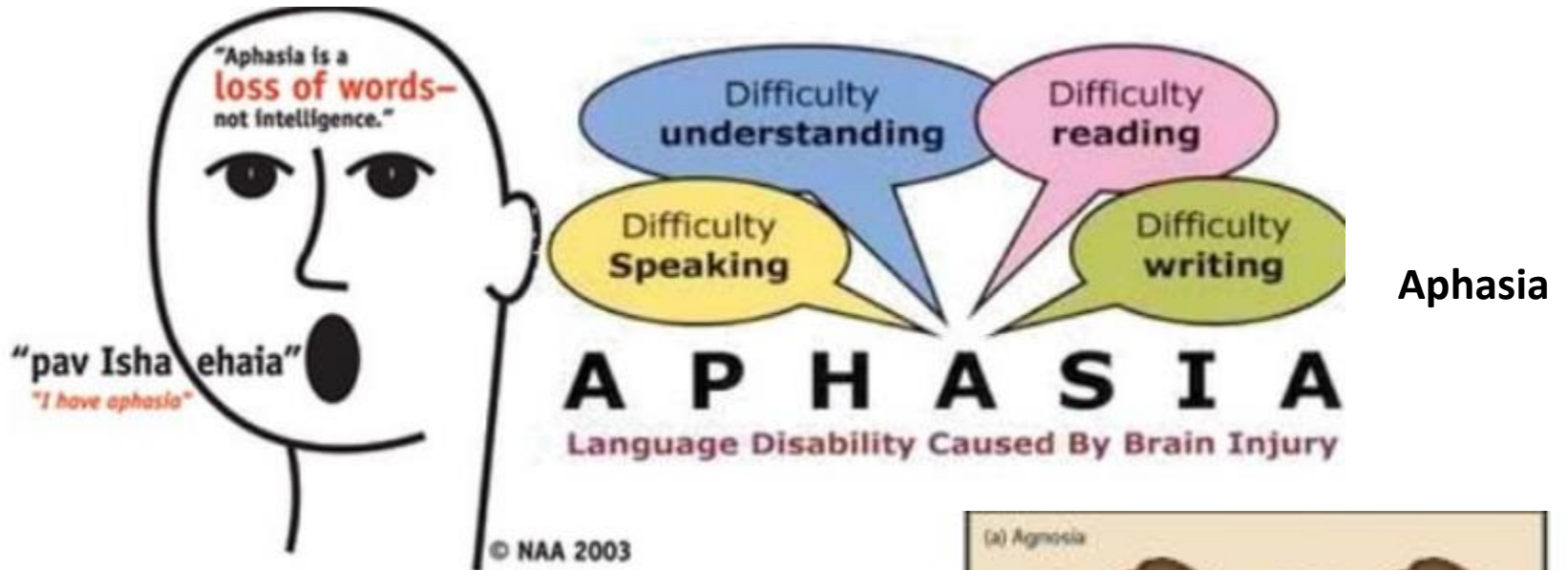
migraine



Alzheimer



Cerebral Palsy



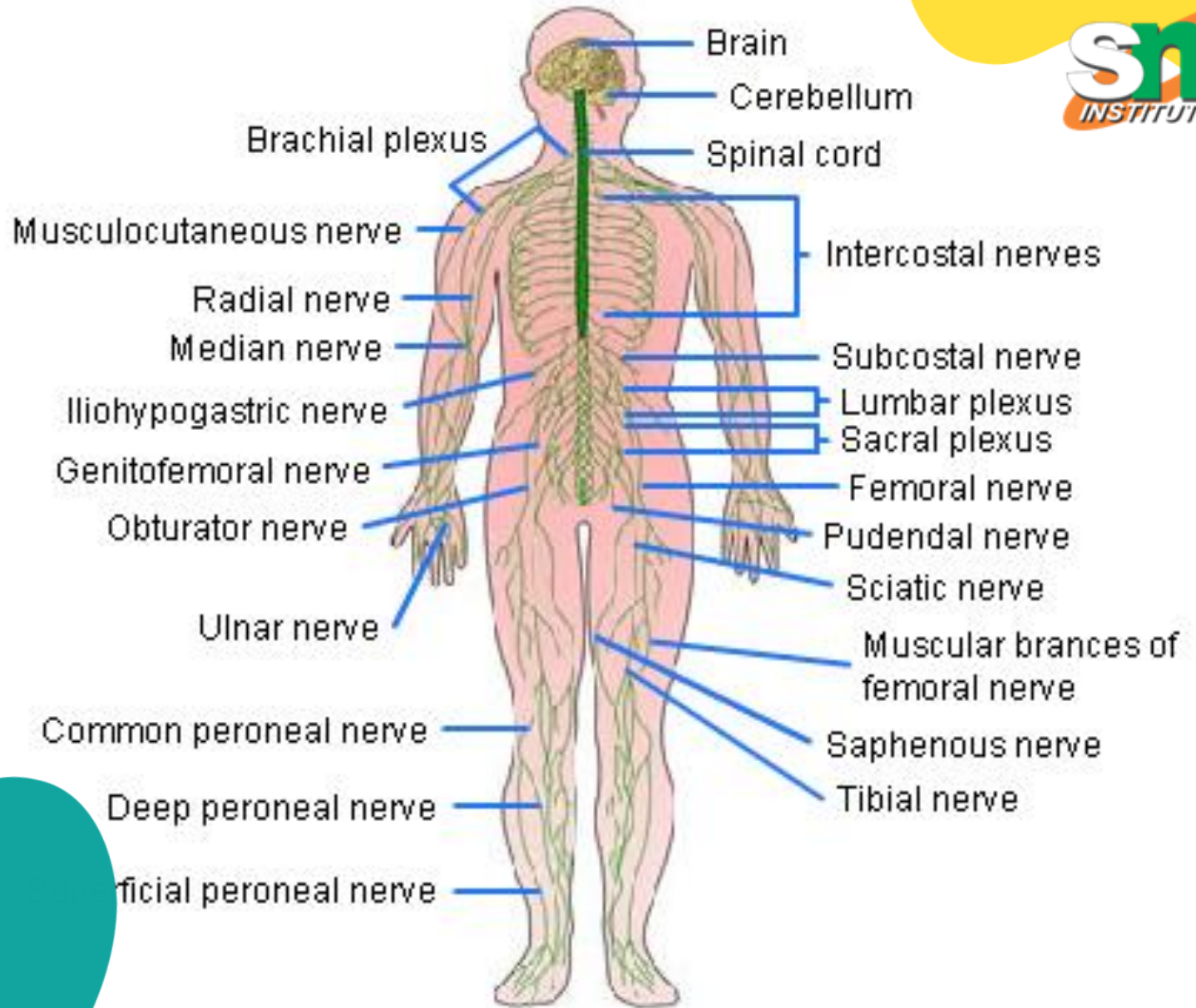
Alzheimer's Disease

Agnosia



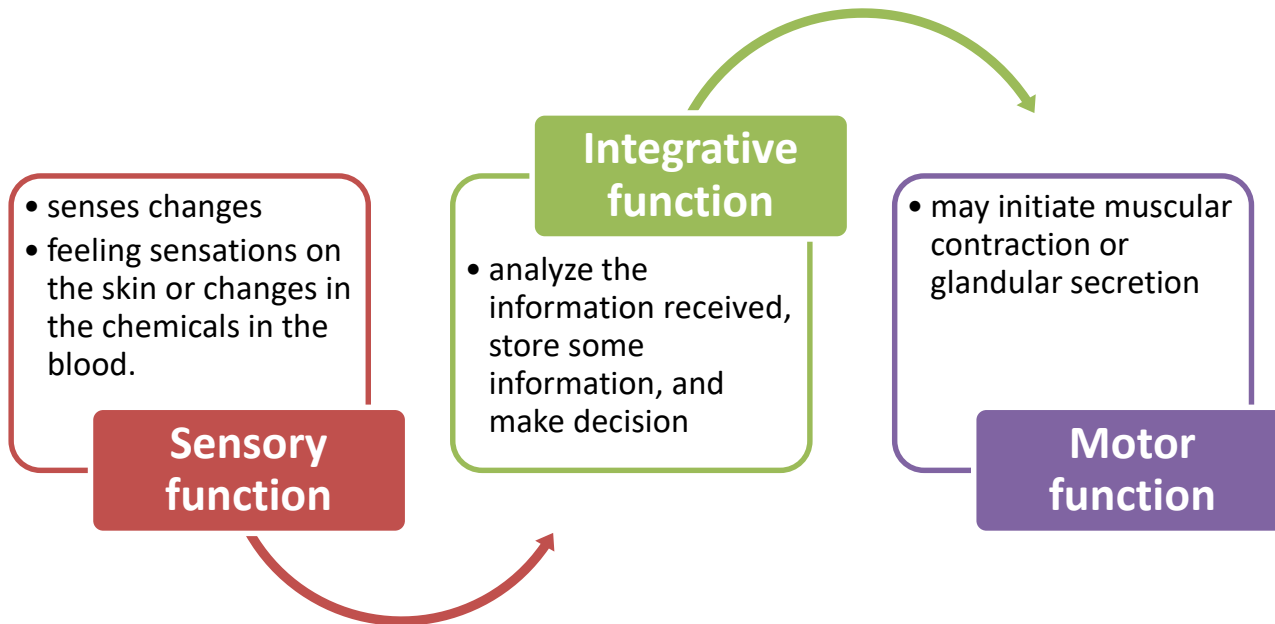
Nervous System

- **Nervous system** → maintaining **homeostasis** within the body - maintaining all systems within their normal physiological limits in order to maintain health.
- The nervous system does this by sending electrical signals called **action potentials** to tissues and organs in the body. The nervous system has three basic functions:
 - **Sensory function:**
We obtain information
 - **Integrative function:**
We decide what to do with the information
 - **Motor function:**
We create an action





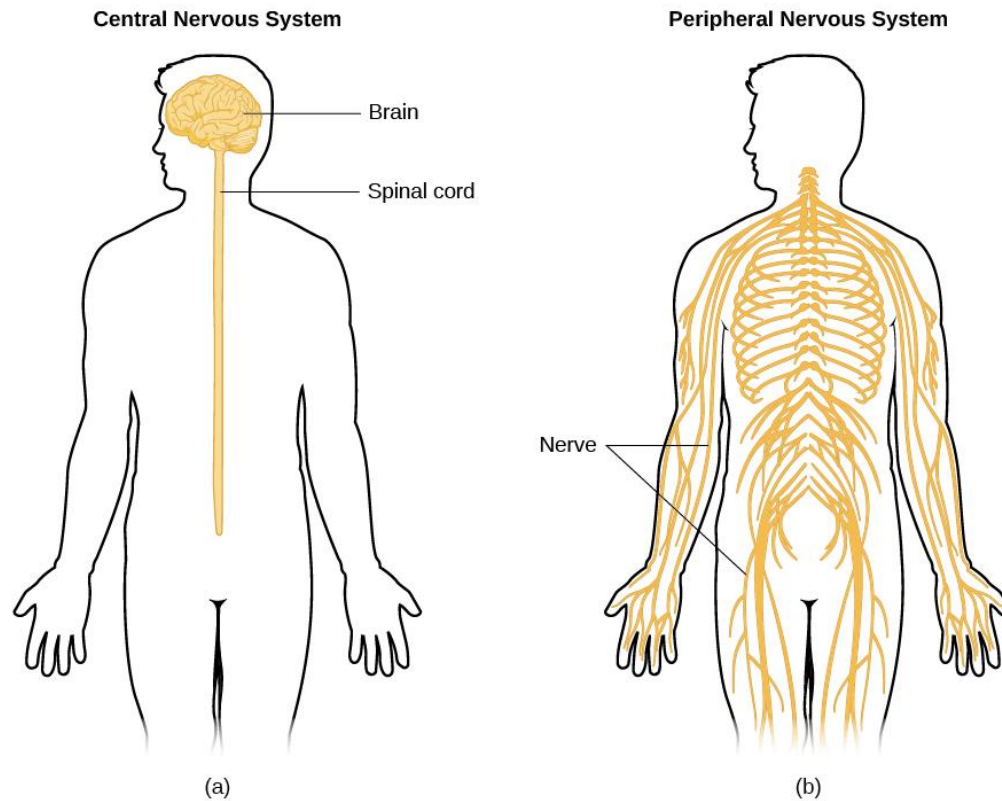
How does Nervous System Works





Organisation of the nervous system

nervous system has two main divisions: the **Central Nervous System (CNS)** and the **Peripheral Nervous System (PNS)**.



central nervous system

- It forms and stores memories, sensory information, generates emotions and thoughts and stimulating most of the muscular contractions and glandular secretions that take place.
- brain and spinal cord form a **central 'axis'** in the body from which nerves run outwards to all parts of the body, connecting the central nervous system to sensory receptors, glands and muscles.
- Nerves arise in pairs (left and right sides) from the brain (cranial nerves) and from the spine (spinal nerves).
- **There are 12 pairs of cranial nerves and 31 pairs of spinal nerves.**

- Sensory receptors → Nerve cells (neurones) in the PNS → CNS. These neurones are called afferent or sensory neurones.
- CNS → Motor or efferent neurones → muscles and glands via Motor an efferent nerve.



Smell



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Sensory organ: Nose
Sensory receptor: Chemoreceptors

Sight



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Sensory organ: Eyes
Sensory receptor: Rods and cones

Sound



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Sensory organ: Ear
Sensory receptor: Hair cells in ears

Touch



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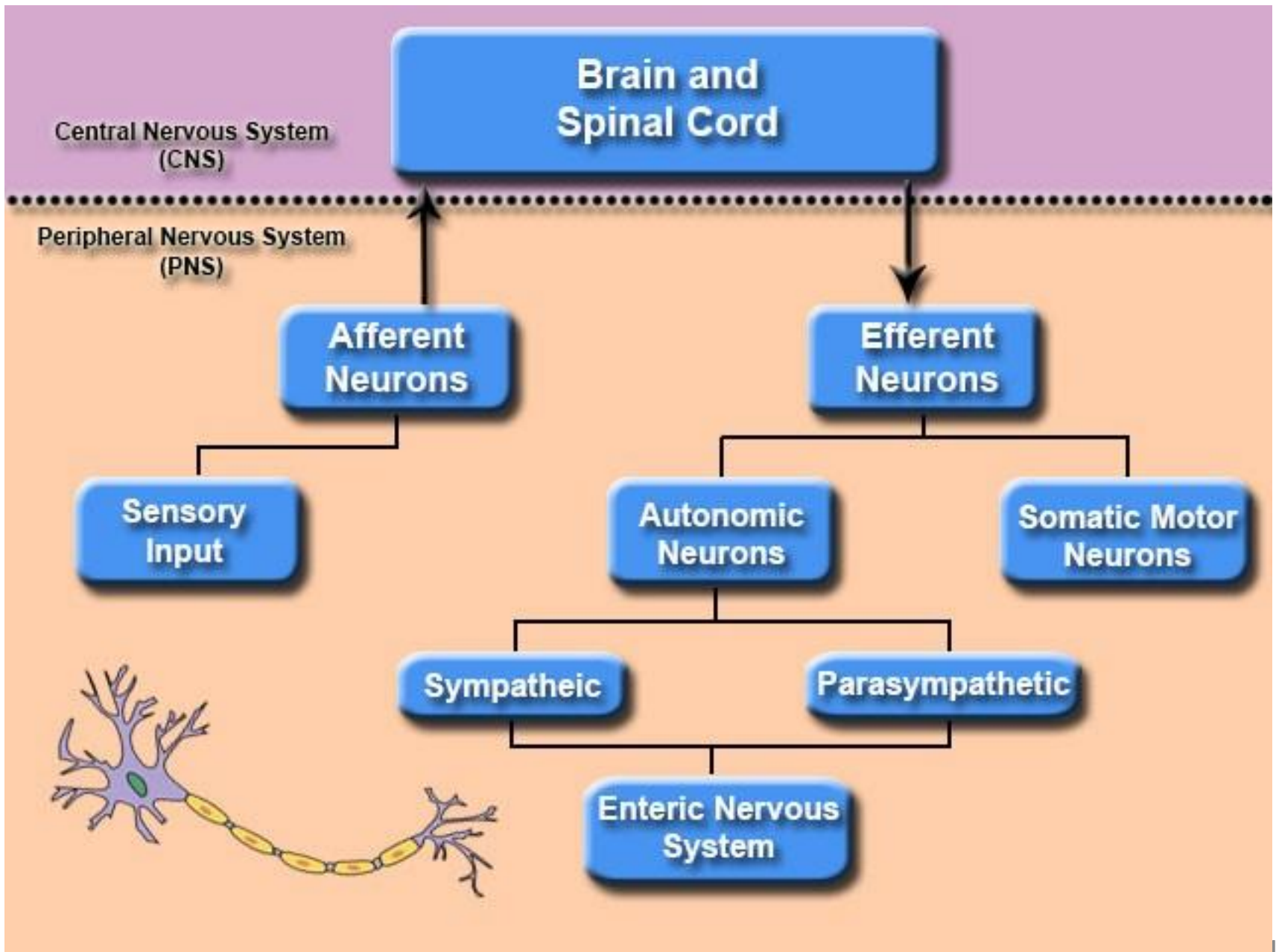
Sensory organ: Skin
Sensory receptor: Pain cells

Taste



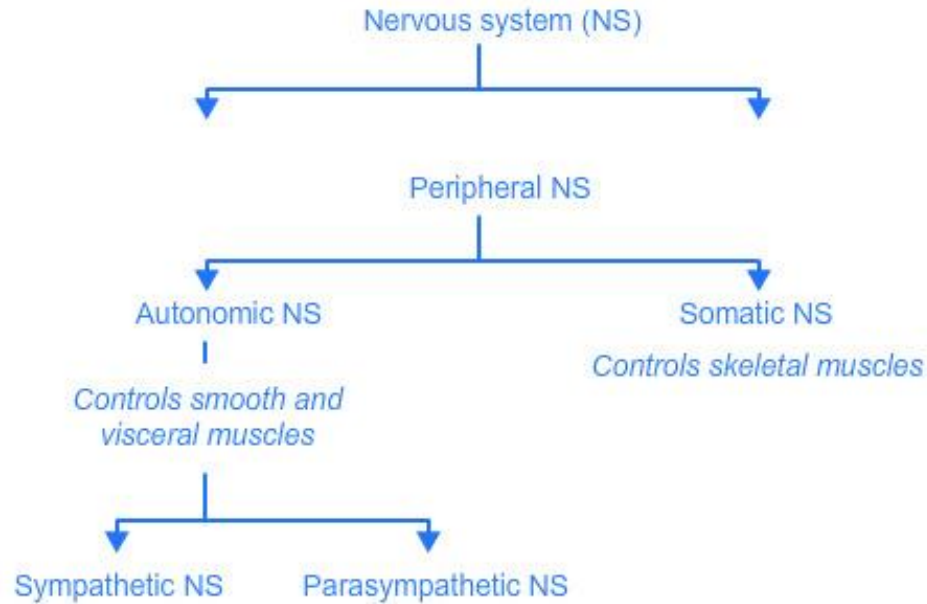
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Sensory organ: Tongue
Sensory receptor: Chemoreceptors





Peripheral nervous system



autonomic (involuntary) nervous system

- **involuntary homeostasis**, unconsciously controlled,
- Sensory (afferent) neurones & efferent (motor) nerve cells
- **glands, cardiac and smooth muscle**
- changes in rate and strength of heartbeat, vasoconstriction and vasodilation of blood vessels, or stimulation and depression of glandular secretions.

somatic (voluntary) nervous system

- **voluntary movement**. consciously controlled,
- Sensory (afferent) neurones & efferent (motor) nerve cells
- **skeletal muscles**
- Movements of the skeletal muscles

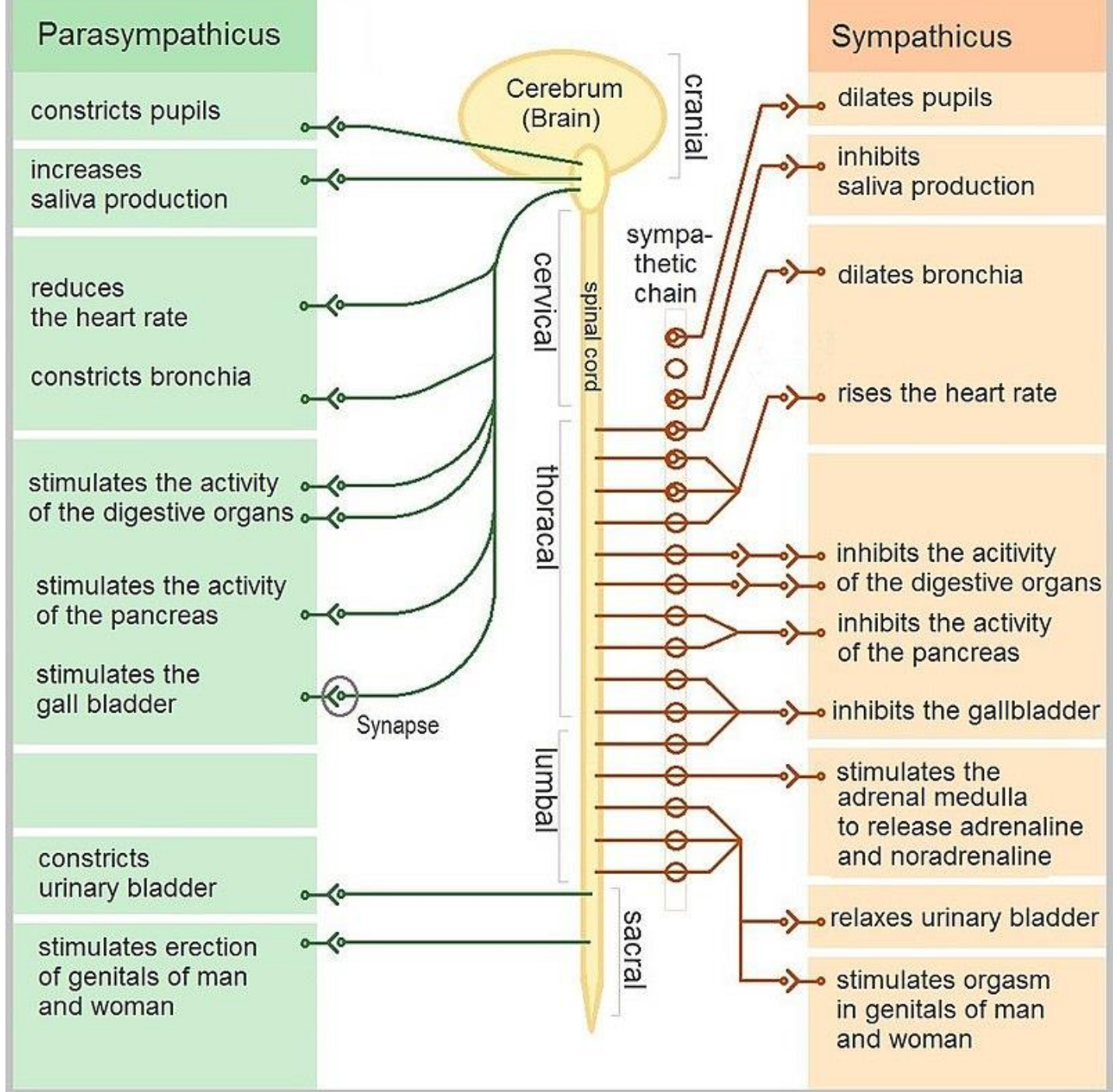
Sympathetic

- Prepares the body for emergency situations
- Involves energy expenditure
- At rest, it counteracts (balances) the PNS
- During stress, it dominates the PNS
- Exercise, fear or anger stimulate this system

Parasympathetic

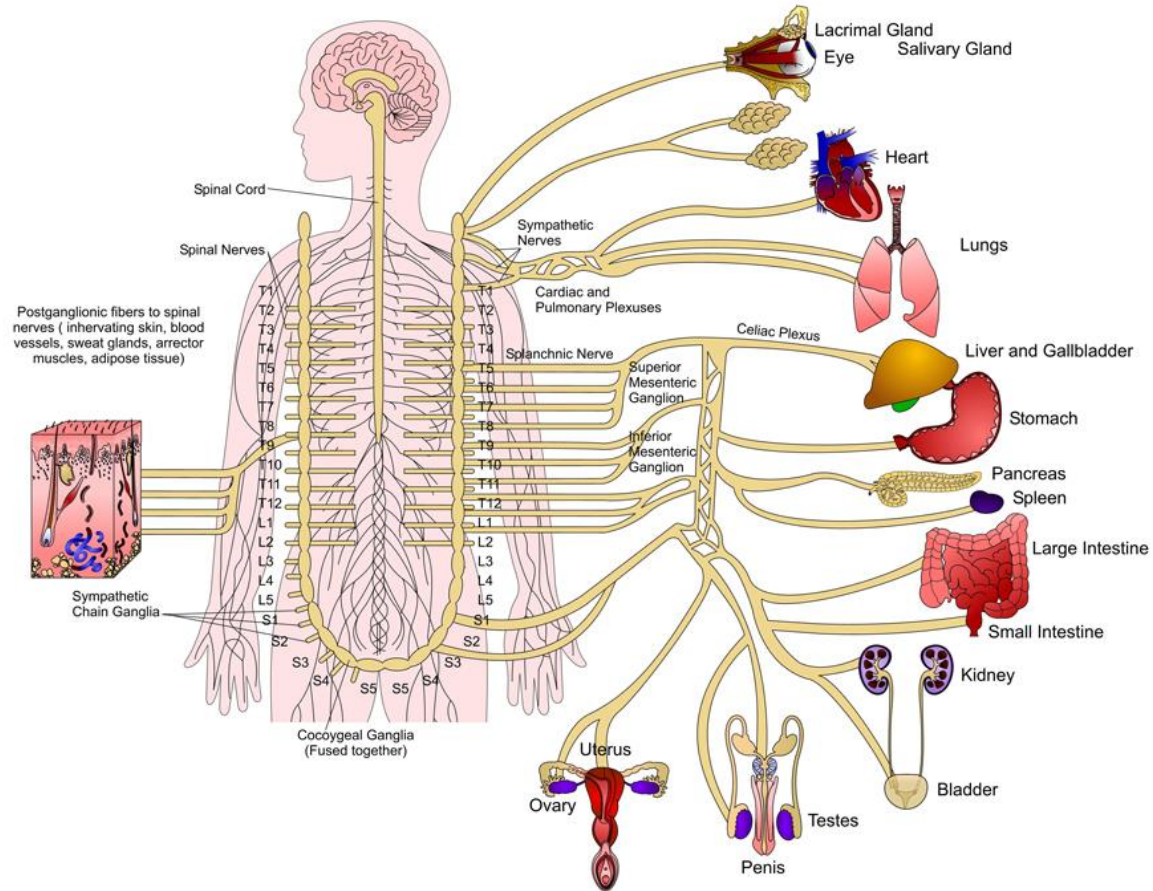
- Balances stimulation from the sympathetic nervous system
- Regulates activities that conserve and restore energy during rest
- The PNS governs responses such as salivation, tear flow, urination, digestion and defecation.

Autonomic Nervous System has two divisions: **sympathetic and parasympathetic divisions.**



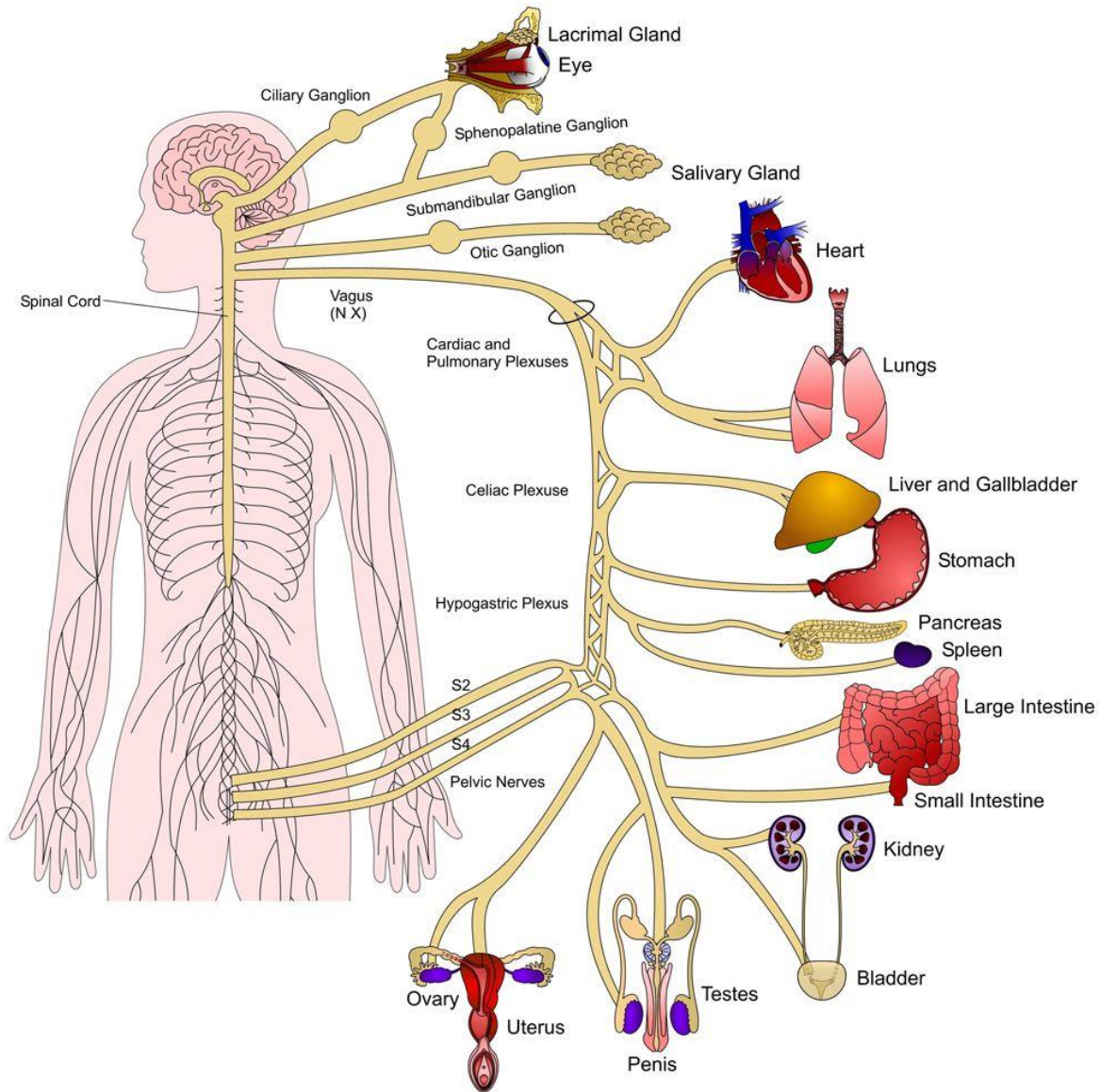


sympathetic nervous system





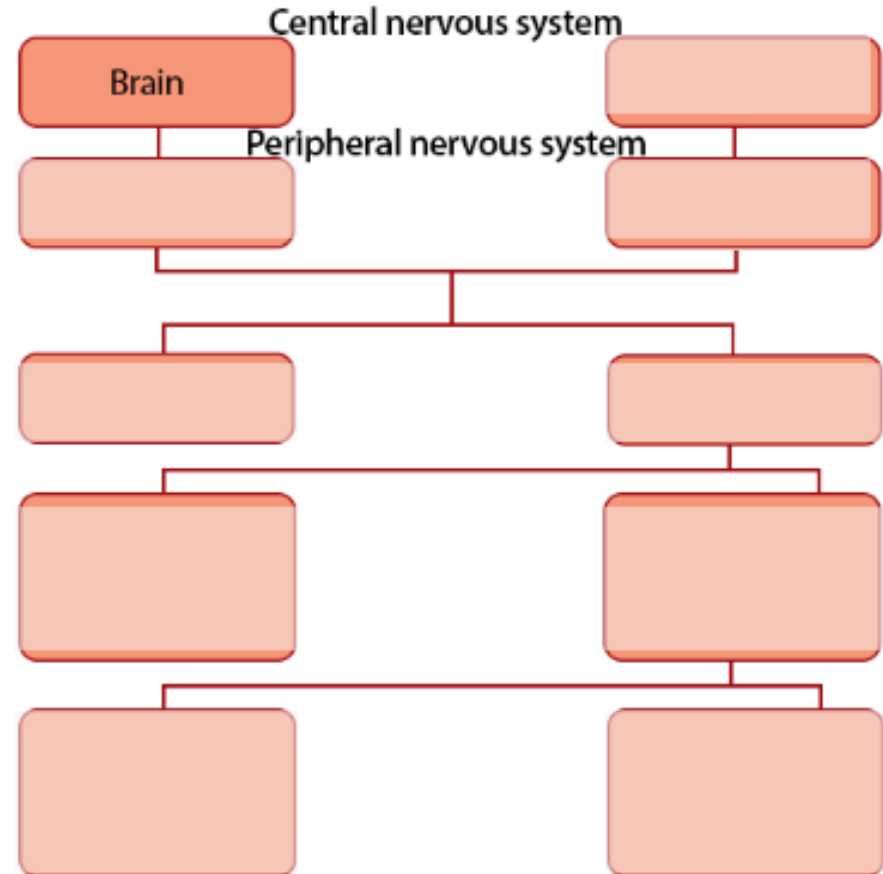
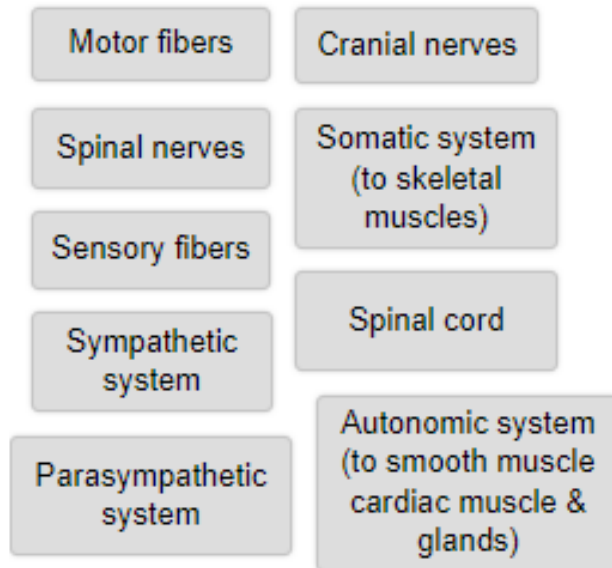
Parasympathetic nervous system





Quiz

Organisation of mammalian nervous system



Organisation of the mammalian nervous system