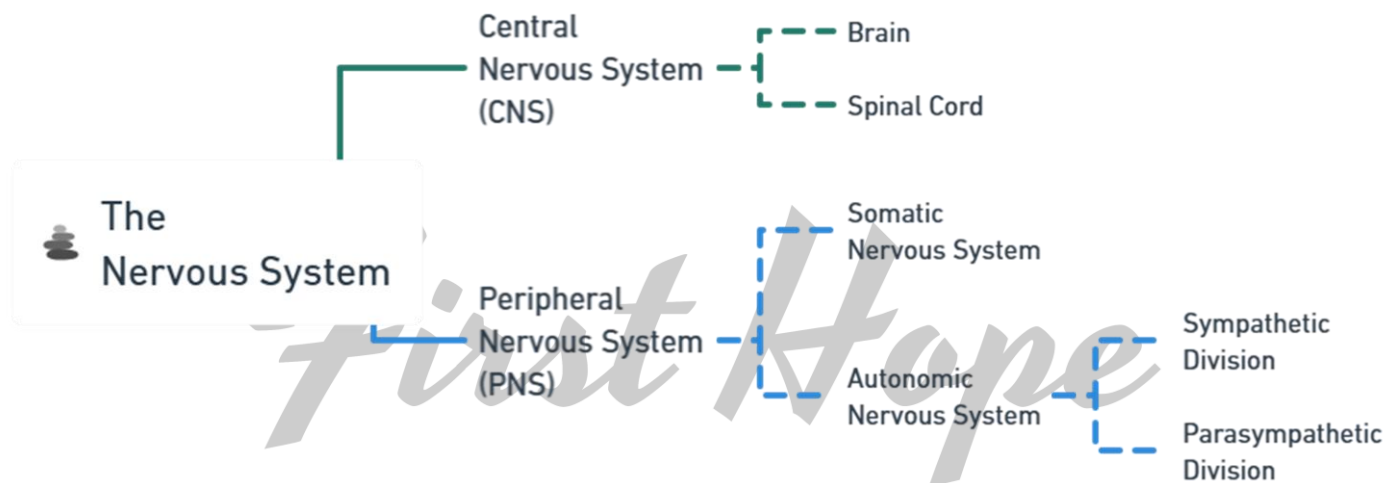


Drugs acting on Autonomic Nervous System

The Nervous System: An Overview

- The nervous system is a complex network of nerves and cells, known as neurons, that transmit signals between different parts of the body.
- It essentially functions as the body's electrical wiring.
- The nervous system is divided into two main components:
 1. **Central Nervous System (CNS)**
 2. **Peripheral Nervous System (PNS)**
- This system is fundamental to everything the body does, from sensing heat and light to controlling muscle movements.



Central Nervous System (CNS)

- The central nervous system comprises the **brain** and **spinal cord**, acting as the processing center for the nervous system.
- It interprets incoming sensory information and issues instructions.

A. Brain

- The brain is the most complex organ in the body.
- It controls various functions, including thought, memory, emotion, touch, motor skills, vision, breathing, temperature regulation, and hunger.

B. Spinal Cord

- The spinal cord is a long, thin, tubular structure made of nervous tissue and support cells that extend from the brain.
- It connects the brain with the rest of the body, transmitting signals for movement, sensation, and reflex actions.

Peripheral Nervous System (PNS)

- The peripheral nervous system consists of the **nerves and ganglia** outside the brain and spinal cord.
- It connects the CNS to the rest of the body.
- **The PNS is divided into two main parts:**

A. Somatic Nervous System

- Controls voluntary movements.
- Composed of nerves that connect the brain and spinal cord to muscles and sensory receptors in the skin.

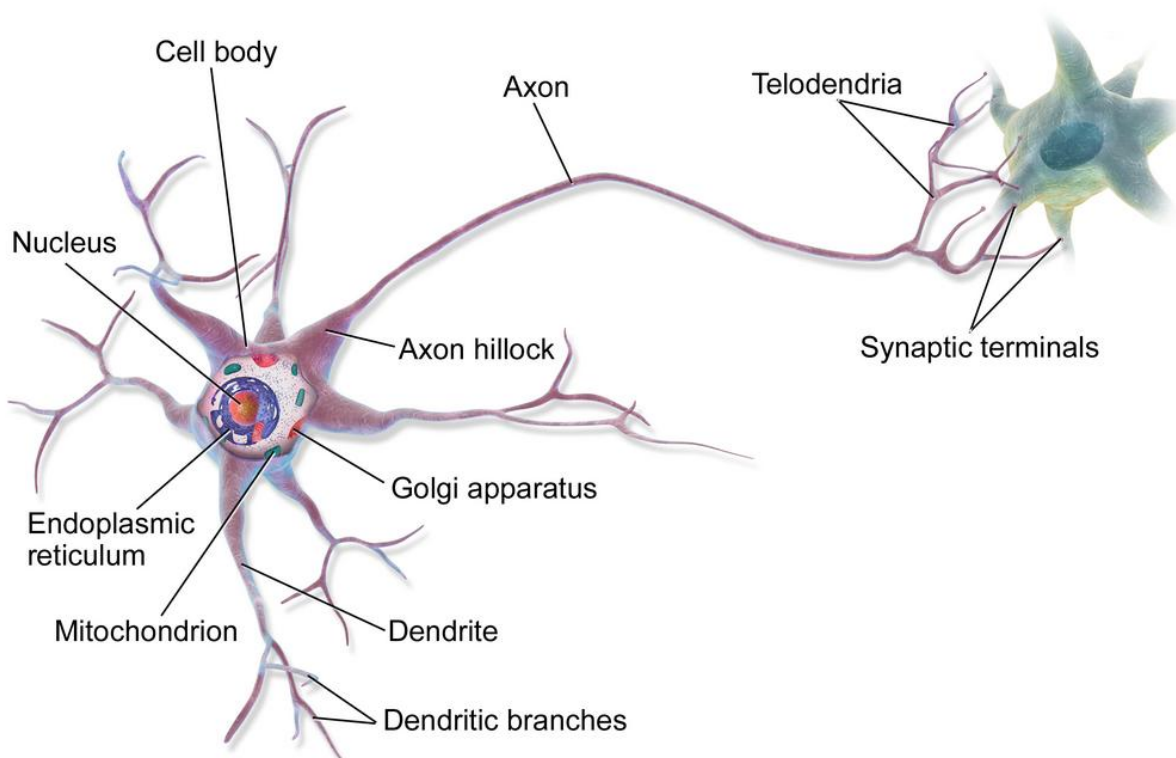
B. Autonomic Nervous System

- Controls involuntary body functions.
- It is further divided into two subdivisions:
 1. **Sympathetic Division:** Prepares the body for stressful or emergency situations ("fight or flight").
 2. **Parasympathetic Division:** Controls body processes during normal conditions (rest and digestion).

Neurons and Synapses

Neurons

- Neurons are the fundamental units of the brain and nervous system.
- They are specialized cells that transmit information through electrical and chemical signals.



- A neuron consists of:
 - **Dendrites** (receive signals)
 - **Cell body (Soma)** (processes signals)
 - **Axon** (sends signals)
 - **Axon terminals** (release neurotransmitters)

Synapse

- A **synapse** is the junction between two neurons where communication occurs.
- It consists of:
 1. **Presynaptic neuron** – Sends the signal.
 2. **Synaptic cleft** – The gap between neurons.
 3. **Postsynaptic neuron** – Receives the signal.

Types

1. **Chemical Synapses** – Use neurotransmitters like dopamine and serotonin.
2. **Electrical Synapses** – Direct, faster connections via gap junctions.

How They Work Together

1. A neuron receives a signal.
2. The signal travels down the axon.
3. Neurotransmitters are released into the synapse.
4. The next neuron receives and processes the signal.

Functions of the Nervous System

The nervous system performs three primary functions:

1. Sensory Function

- Sensory nerves gather information from both inside the body and the external environment.
- This information is then transmitted to the central nervous system.

2. Integrative Function

- The brain processes sensory information, leading to sensations, thought processes, and memory formation.

3. Motor Function

- Motor nerves carry information from the central nervous system to muscles and glands, enabling them to function.



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