Nervous system



Learning objectives

- ✓ Structure and function of:
  - the central nervous system
  - peripheral nervous system
- ✓ What are reflexes
- ✓ Diseases and disorders of nervous system

THE NERVOUS SYSTEM



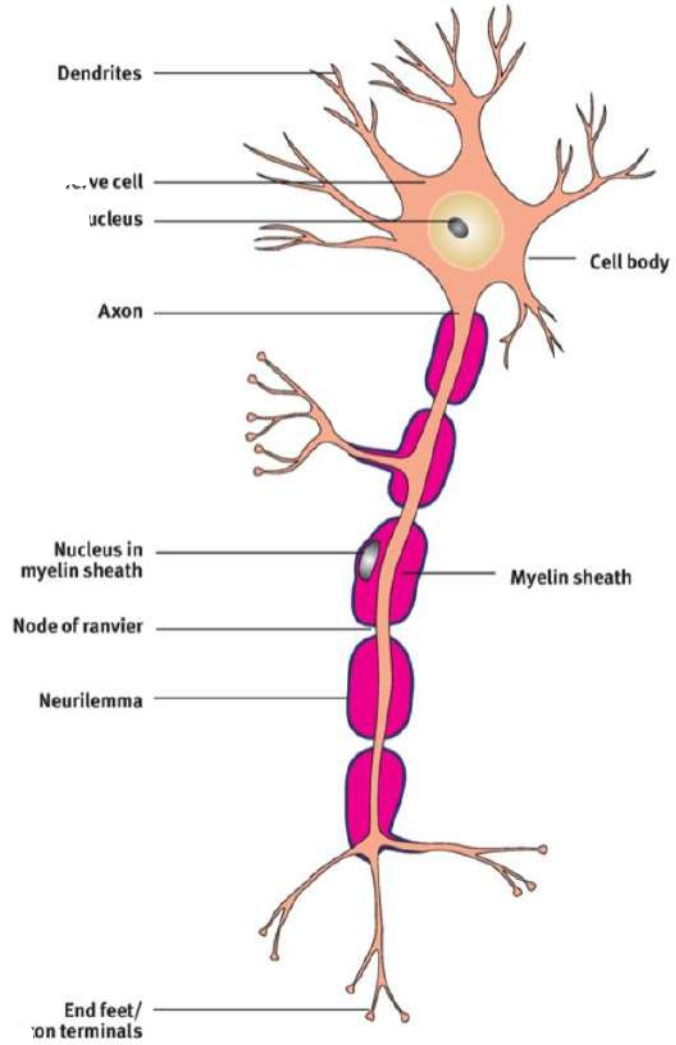
- The Central Nervous system (CNS)
  - Spinal Cord
  - Brain
- Peripheral Nervous System (PNS)
  - Somatic Nervous System
  - Autonomic Nervous System
    - Sympathetic Nervous System
    - Parasympathetic Nervous System

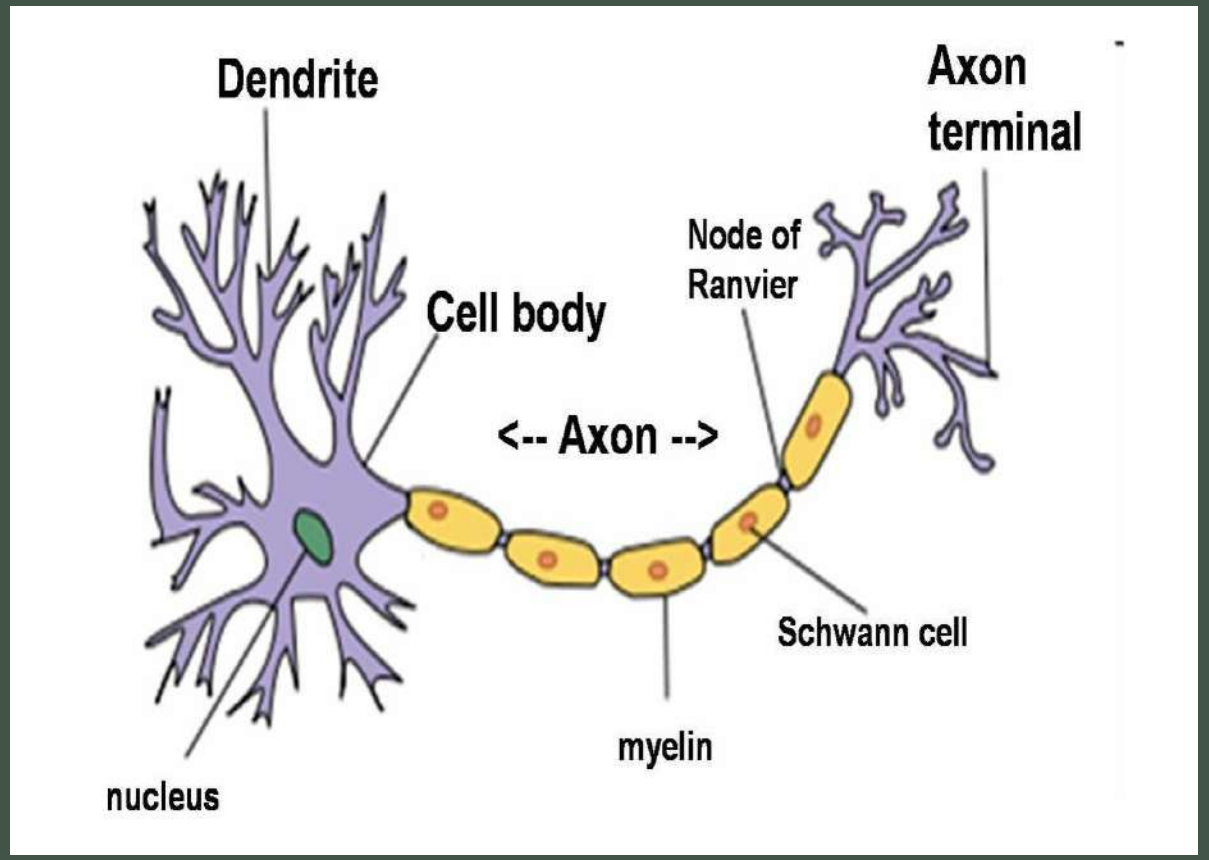


Structure

- Nerve cell is called a **neuron** (80 billion in the brain!)
  - Transmits messages as electrical impulses

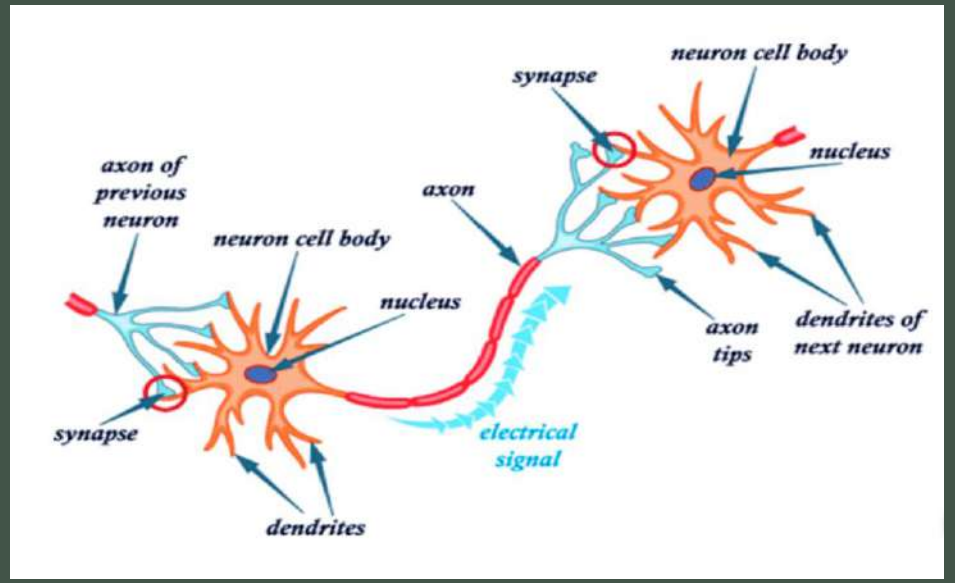
- Nerve tissue is called **neuroglia**
  - Does not transmit a nerve impulse





Parts of the neuron:

- Cell body
- Dendrites: short, transmit the impulse
- Axon: long, transmits nerve impulse away from cell's body
- Myelin sheath
- Neurilemma
- Nodes of Ranvier
- End feet/axon terminals
- Synapse

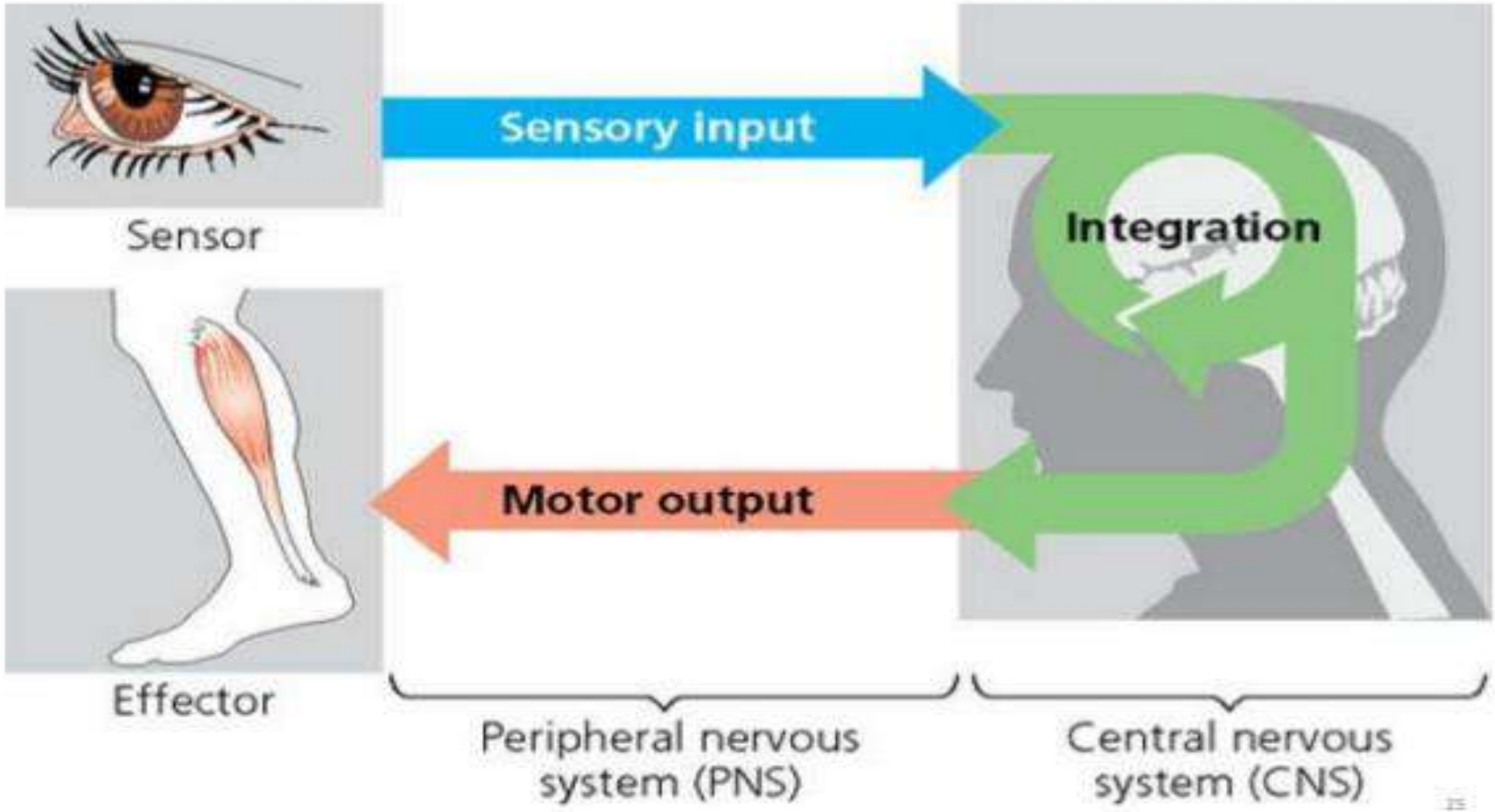


Types & function of nerves

- **Motor / efferent** – **from** brain / spinal cord **to** muscles / glands
- **Sensory / afferent** – **from** the body **to** the brain
- **Mixed** – carry both sensory and motor messages. Found in brain, spinal cord, cranial, spinal nerves

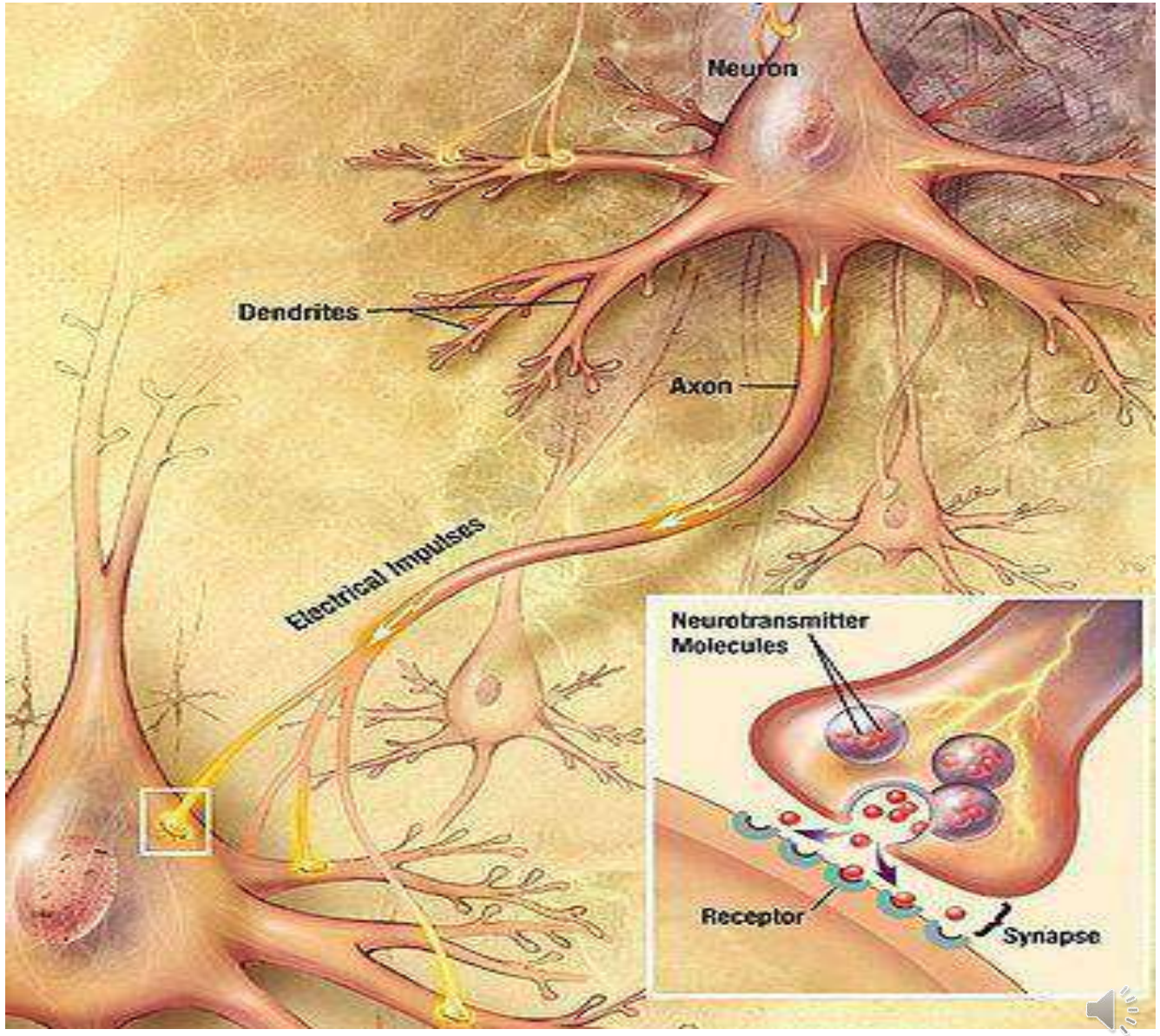
- **White matter** – myelinated nerve fibres found on inside of the brain and outside of spinal cord
- **Grey matter** – unmyelinated fibres found outside of brain and inside spinal cord
- **Ganglia:** structure containing a number of neuron

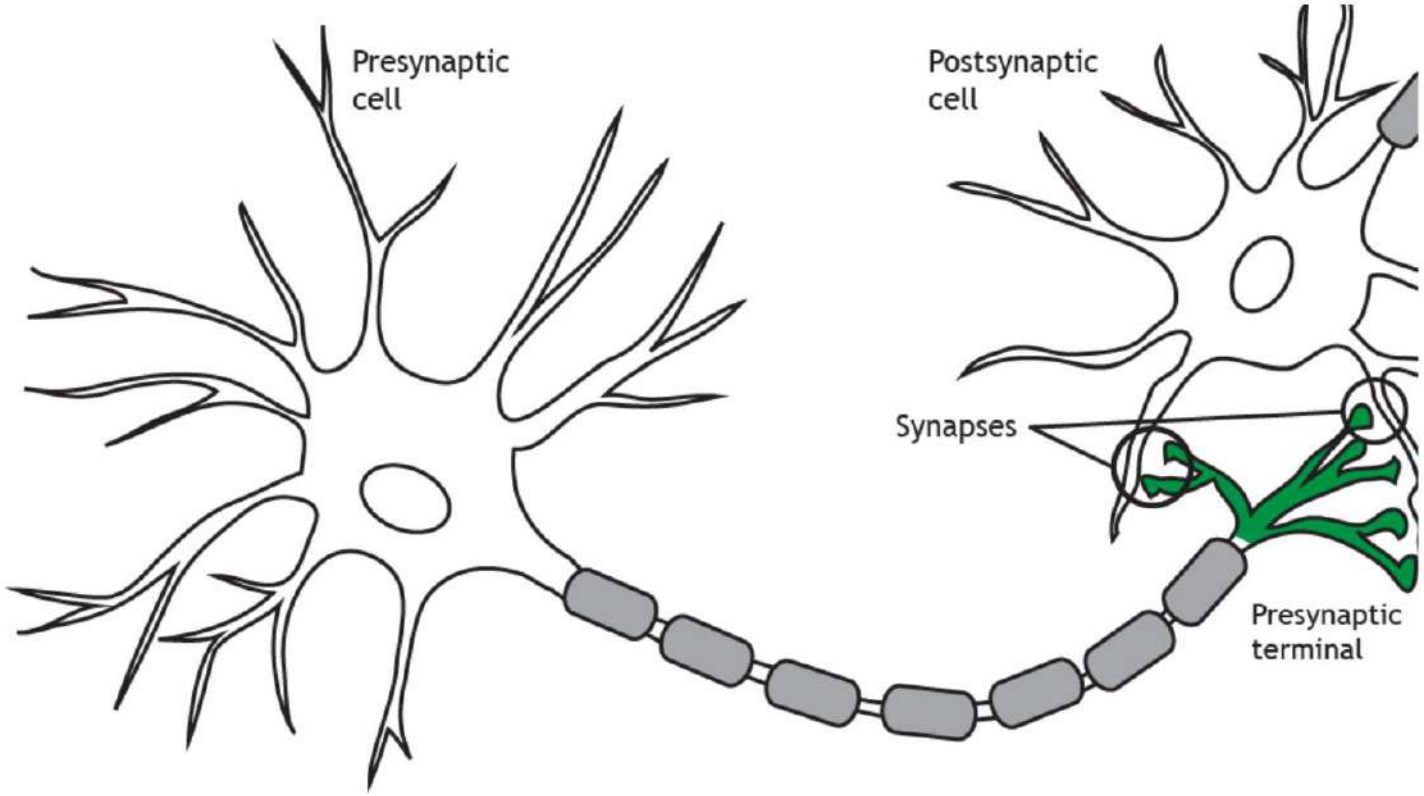
Stages in the processing of information by Nervous System

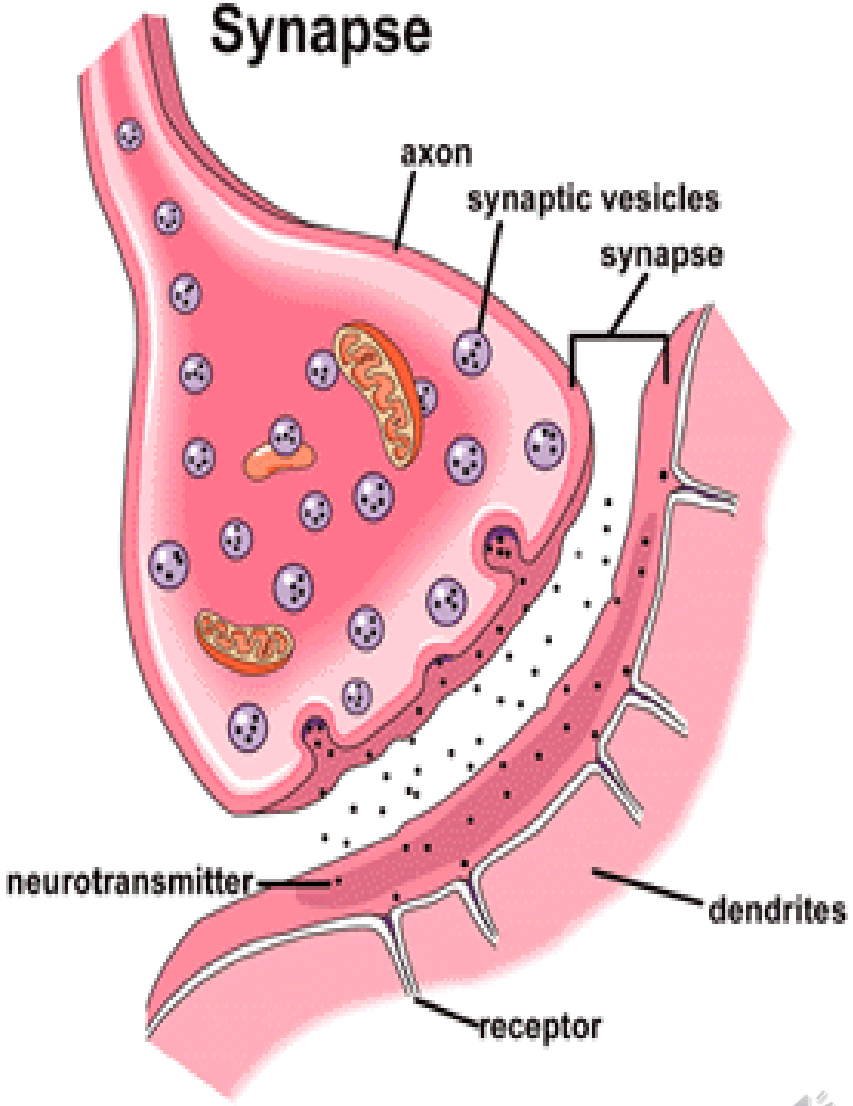


Transmission of a nerve impulse

- Travels from axon –> synapse -> dendrite
- Electrical transmission:
  - Sodium (Na+): extracellular
  - Potassium (K+): intracellular
- Chemical transmission:
  - Neurotransmitter:
  - Acetylcholine
  - Dopamine
  - Noradrenaline




Presynaptic cell
Postsynaptic cell
Synapses
Presynaptic terminal


Synapse
axon
synaptic vesicles
synapse
neurotransmitter
dendrites
receptor

Test your knowledge



What is the function of the nervous system?

What are the parts of the neuron ?

What is synapse and its function?