Cosmo School

Lecture Sheet: 03

Science (Chapter-10: Co-ordination)

Class: X

Name of the student: .....Date: 19/10/2020

Nervous Tissue:

The tissue that can receive stimulus from the environment and can transmit according to make an appropriate response, is nervous tissue.

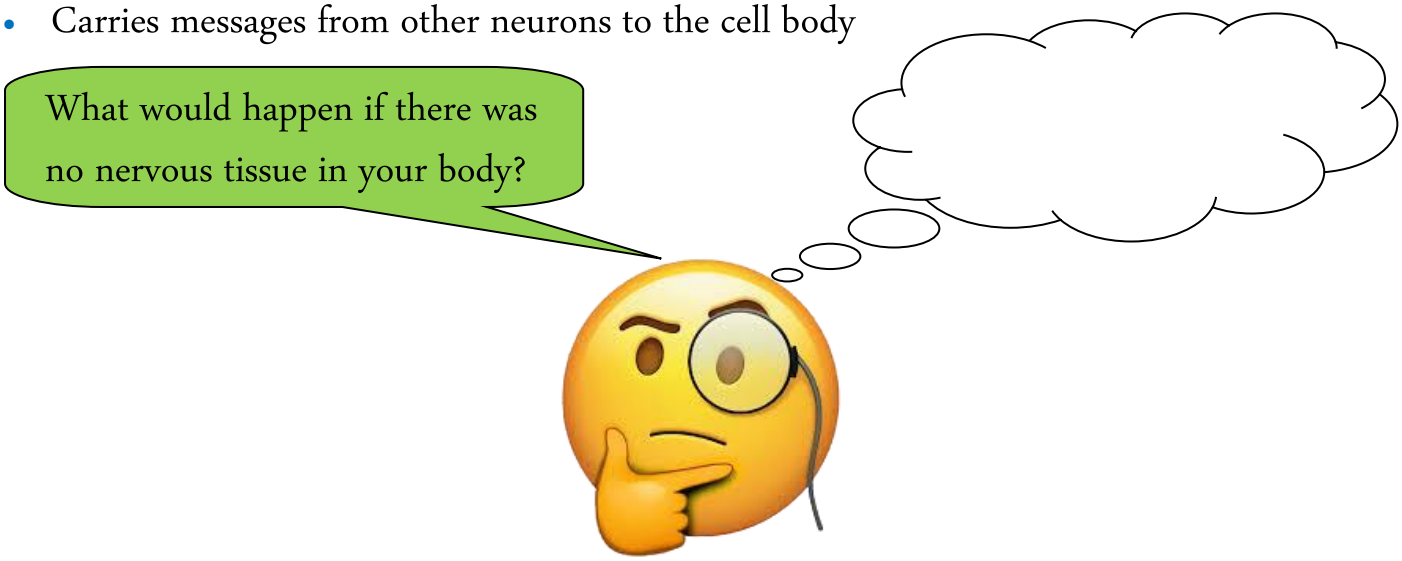
Nervous tissue consists of two cells: nerve cells or neurons and glial cells

Characteristics of Nervous Tissue

- Nervous tissue makes up for the CNS (Central Nervous System) and PNS (Peripheral Nervous System) of the nervous system
- Contains two distinct cells – neurons and glial cells
- It consists of the dendrites, cell body, axon and nerve endings.
- Neurons secrete chemical neurotransmitters which are responsible for stimulating other neurons as a result of a stimuli
- Presence of specialization at axonal terminals called synapsis
- Nerve cells live long, cannot be divided and replaced (except memory cells)

Function of Nervous Tissue

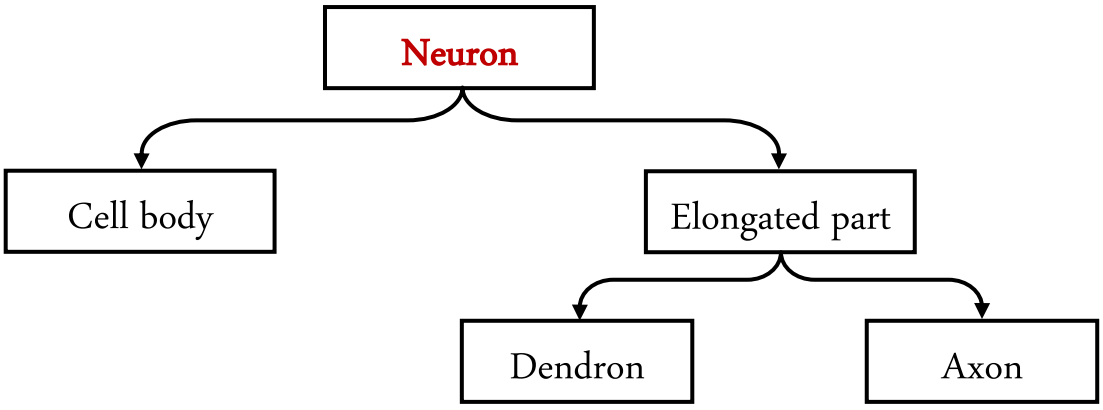
- Neurons generate and carry out nerve impulses. They produce electrical signals that are transmitted across distances, they do so by secreting chemical neurotransmitters.
- Responds to stimuli
- Carries out communication and integration
- Provides electrical insulations to nerve cells and removes debris
- Carries messages from other neurons to the cell body

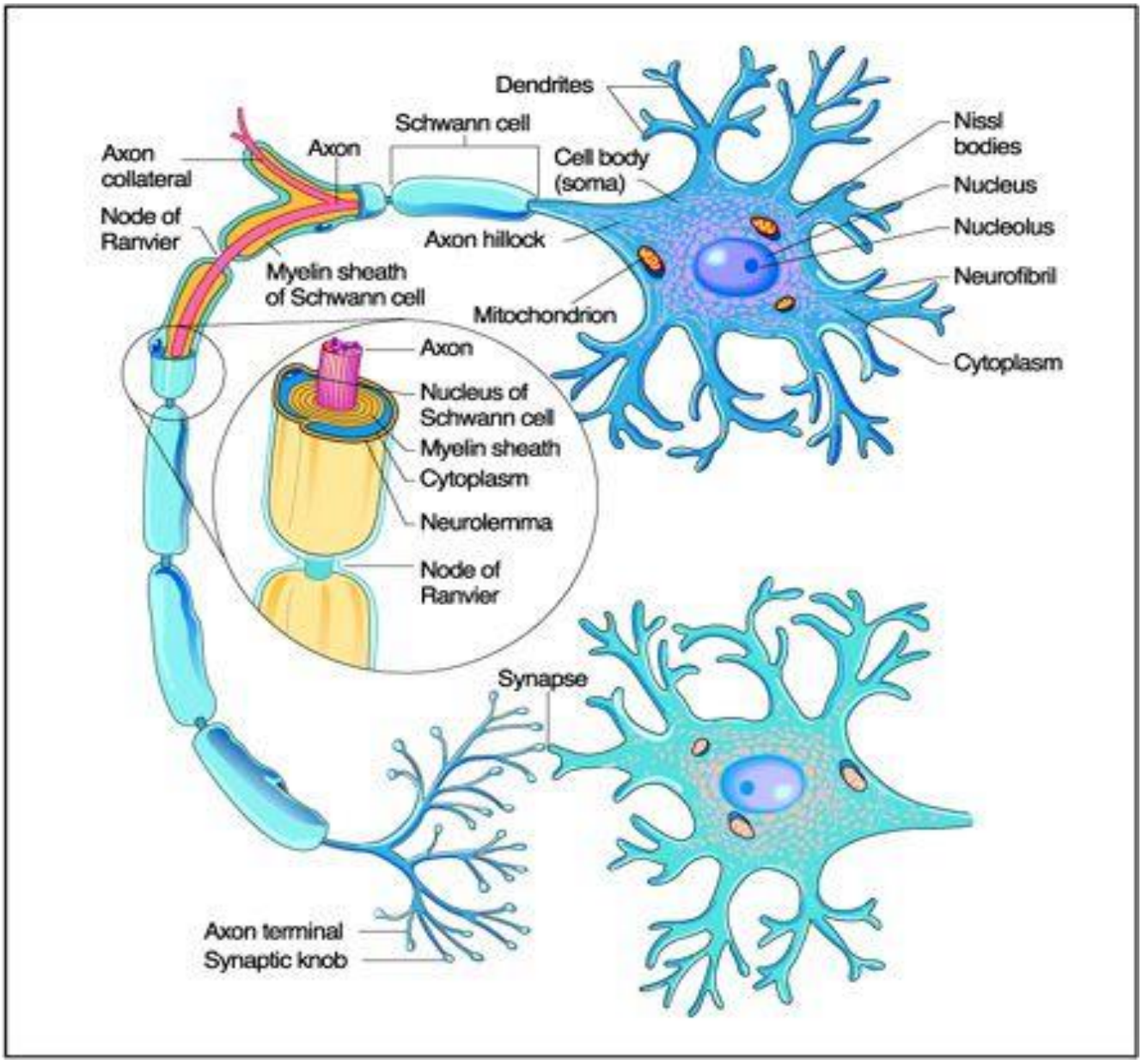


Neuron:

Neurons are the fundamental unit of the nervous system specialized to transmit information to different parts of the body.

Every person's body contains billions of nerve cells (neurons). There are about 100 billion in the brain and 13.5 million in the spinal cord.





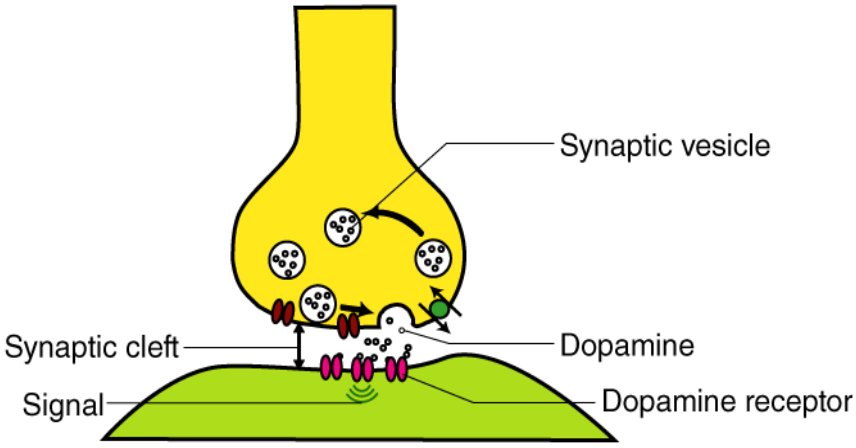
Synapse

It is the chemical junction between the terminal of one neuron and dendrites of another neuron.

At most synapses and junctions, information is transmitted in the form of chemical messengers called **neurotransmitters**.

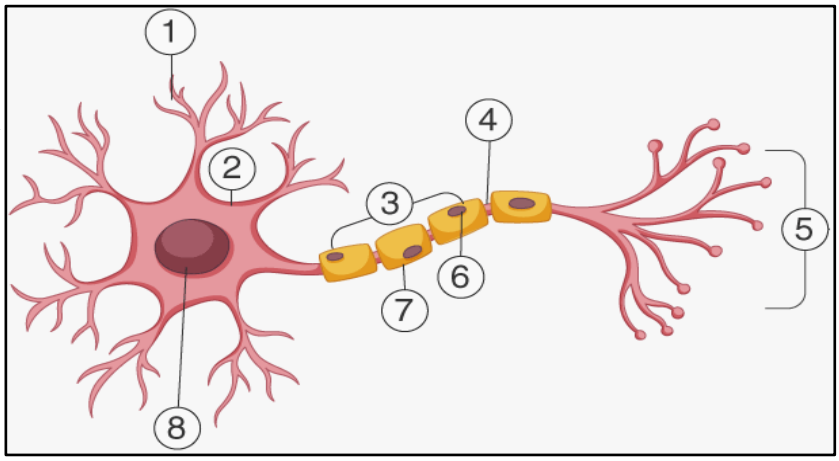
Neurotransmitter

Neurotransmitter is a type of chemical messenger that transmits signals across a chemical synapse, from one neuron to another.



Q. Select the names of the parts of the neuron from the box on the right and write next to the number.

Nucleus, Axon, Soma, Node of Ranvier, Dendrite, Axon Terminal, Myelin Sheath, Schwann Cell



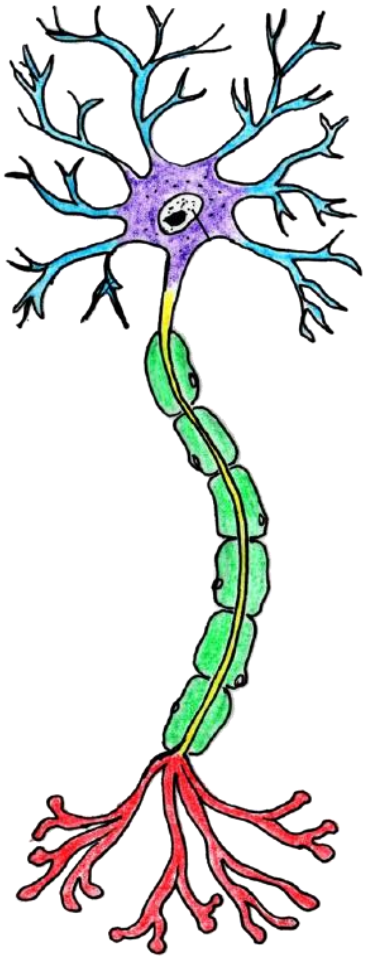
(1) ..... (5) .....

(2) ..... (6) .....

(3) ..... (7) .....

(4) ..... (8) .....

Q. In the picture below, identify and write the different parts of the neuron.

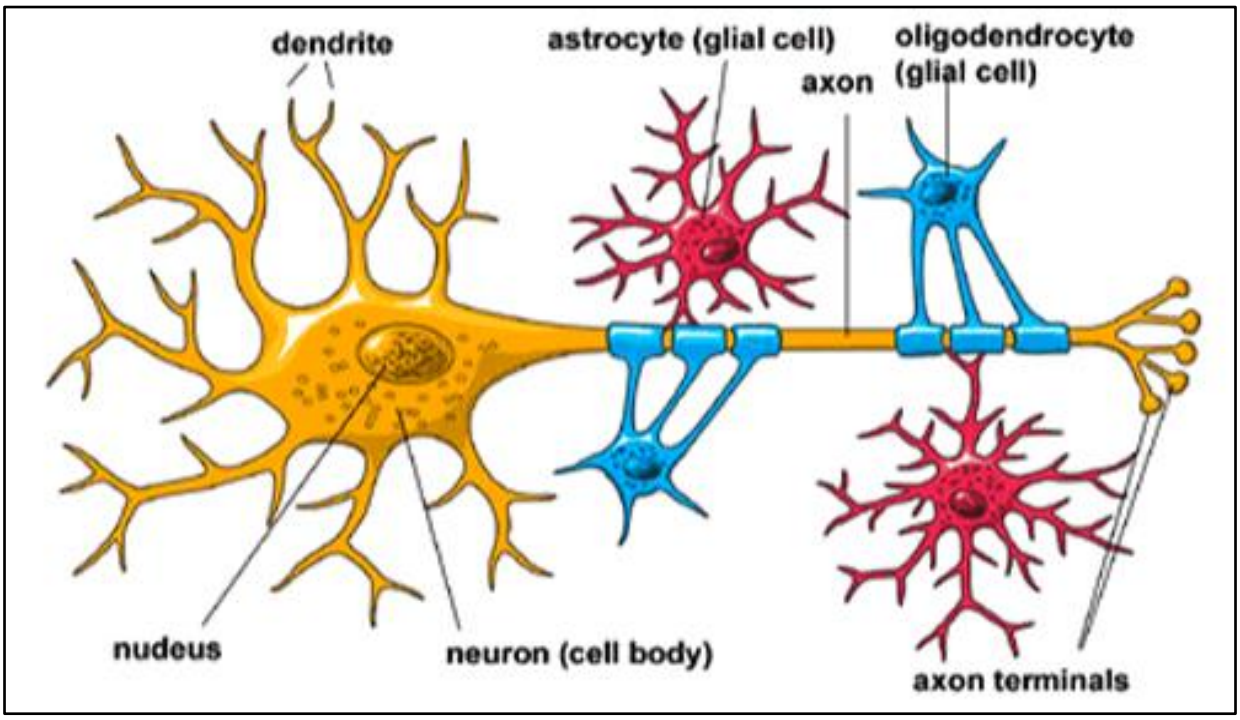


Q. Describe the structure of a neuron.

Glial Cell:

Glia, also called **glial cells** or **neuroglia** are non-neuronal cells that support and protect the neurons.

- Nissl's granules and axon are absent
- Around 5-10 times more than the neurons in higher vertebrates
- The number decreases with age
- Smaller than neurons
- Supplies nutrients to neurons
- There are **three types** of glial cells in the mature central nervous system, such as— 1) Astrocytes, 2) Oligodendrocytes, and 3) Microglial cells



Functions of Glial Cell:

1) Some glial cells function primarily as the physical support for neurons.
2) Others provide nutrients to neurons and regulate the extracellular fluid of the brain, especially surrounding neurons and their synapses.
3) During early embryogenesis, glial cells direct the migration of neurons and produce molecules that modify the growth of axons and dendrites.
4) Some glial cells display regional diversity in the CNS and their functions may vary between the CNS regions.

Q. Write five differences between neuron and neuroglia.

Neuron	Neuroglia