

Lec . 5 Biology

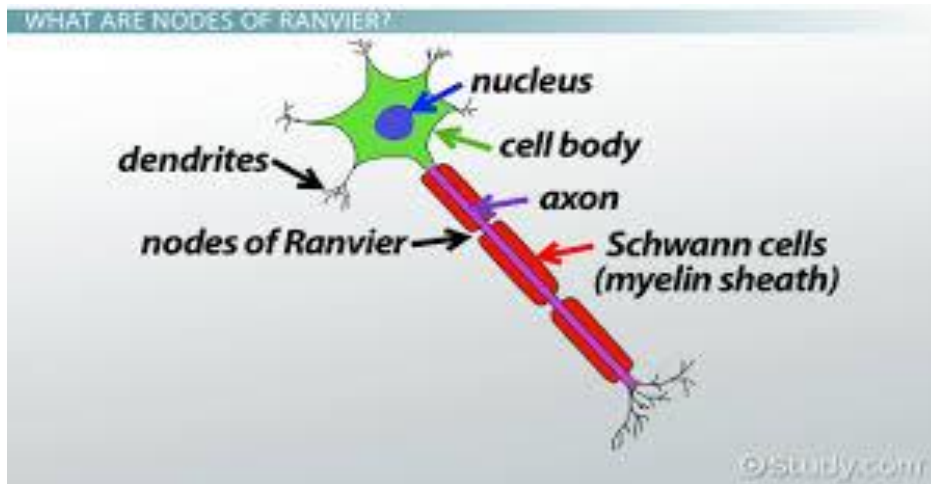
Central Nervous System (CNS)

1 - CNS consist of Brain and spinal cord :

2 – Brain include (Cerebrum , Midbrain , Cerebellum)

3 – Brain housed in cranial cavity with in skull .

4 – Spinal cord housed in spinal or vertebral canal with in vertebrates (start from the base of skull till the end of vertebral canal).



Cells of Nervous System

1 - Neurons(nerve cells) 2 - Glial cells 3 - Schwann cell

1 - Nerve cell : compose , cell body , axon , dendrites .

Cell body of Nerve cell contain : nucleus , mitochondria , Golgi complex

Also contain Nissl granules (rough endoplasmic reticulum and free ribosomes) making protein synthesis .

Axon : It arises from the cell body , first area of axon called axon hillock . Distally the axon branched forming axon terminals . These make synaptic connections with another neurons , contain various transmitter which is released into synapses of neurons .

Axon is insulated (covered) **Schwann cell** facilitates rapid transmission of action potential along the axon .

Dendrites : These processes extend from the body of cell to outward . They transmit signals received from other neurons .

2 - Glial Cells :

A - Astrocytes B – Oligodendrocytes C – Microglia

D - Ependymal cells .

These cells present within brain and spinal cord , supportive cells .

3 - Schwann Cell : It is a cell surround the axon facilitate rapid transmission along the axon .

Node of Ranvier : present in axon .

Meninges :

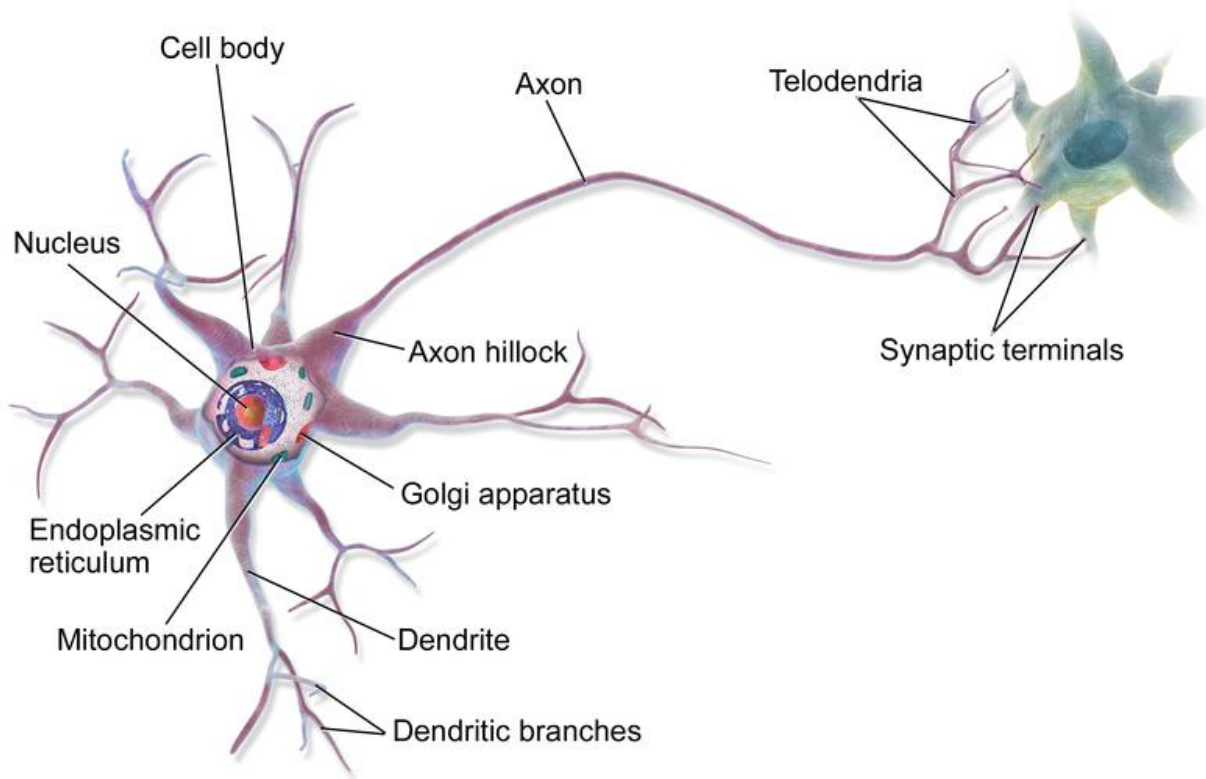
Three layers protect brain and spinal cord (barrier) from neurotoxic (drugs and chemicals) commonly found in food :

1 - Dura mater : (tough mother) sac like , outer layer , lined skull and vertebratae , fibroelastic layer , without blood vessels .

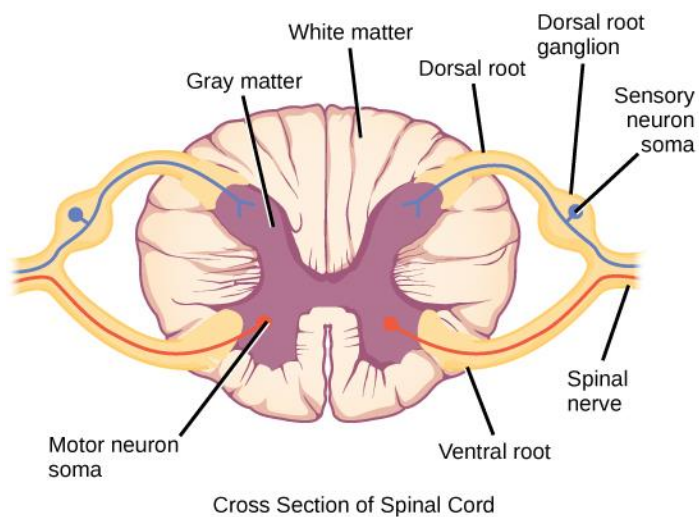
2 - Arachnoid mater : Middle layer , so named arachnoid because the membrane like spider web . Arachnoid barrier layer , it is a cushions of the CNS .

3 - Pia mater : (Tender mother) it is very delicate membrane , it envelope firmly adhere to the surface of the brain and spinal cord . Pia mater is pierced by blood vessels and its capillaries nourish the brain and spinal cord by diffusion

Synapses : Communication between two nerve cells .



Nerve cell (Neuron)



spinal cord

Cross section of

Synapses : Communication between two nerve cells .

White matter and gray matter in brain :



White matter and gray matter in spinal cord

Cross section of brain and spinal cord appear two colors :

Grey matter : is a major component of CNS consist of neuronal cell bodies , .

White matter : White color due to whiteness of myelin sheath .

Quiz : Write 10 points about Circulatory System (Heart and Blood Vessels ?

