

Structure of Nervous Tissue

- It is formed of 2 types of cells :

1. Neurons : The neuron is the anatomical, embryological & functional unit of the nervous tissue. It is capable of the transmission of nerve impulses.

2. Neuroglia cells : They help in nutrition, support & protection of the neurons. They are unable for the transmission of nerve impulses.

The Neuron (Nerve Cell)

- It is formed of :

1. Cell body : contains the nucleus.

2. Processes :

a. axon (nerve fiber) : a single long process which carries nerve impulse away from cell body.

b. Dendrites : short multiple processes which carry nerve impulses towards cell body.

Important Definitions

1. Nucleus : a group of cell bodies in CNS.

2. Ganglion : a group of cell bodies in PNS.

3. Tract : a group of nerve fibers in CNS.

4. Nerve : a group of nerve fibers in PNS.

5. Synapse : it is the site of contact between the axon of one neuron & the dendrites of another neuron. It is also the where a nerve impulse passes from one neuron to another neuron.

6. Grey matter : formed of cell bodies + neuroglia cells.

7. White matter : formed of nerve fibers + neuroglia cells.

8. Meninges : these are the 3 membranes which cover the brain & spinal cord. These are from outside inwards; **a. dura matter**, **b. arachnoid matter** & **c. pia matter**.

Between dura & arachnoid matter lies subarachnoid space which contains **cerebro-spinal fluid (CSF)**.

The Nervous system is formed of:

- 1. Central nervous system (CNS) :** includes the brain & spinal cord.
- 2. Peripheral nervous system (PNS) :** supplies somatic structures
 - 12 pairs of cranial nerves and the sensory ganglia related.
 - 31 pairs of spinal nerves and the dorsal root ganglia.
- 3. Autonomic nervous system (ANS) :** is formed of the sympathetic and parasympathetic systems.
The ANS supplies the smooth muscles, heart and glands.

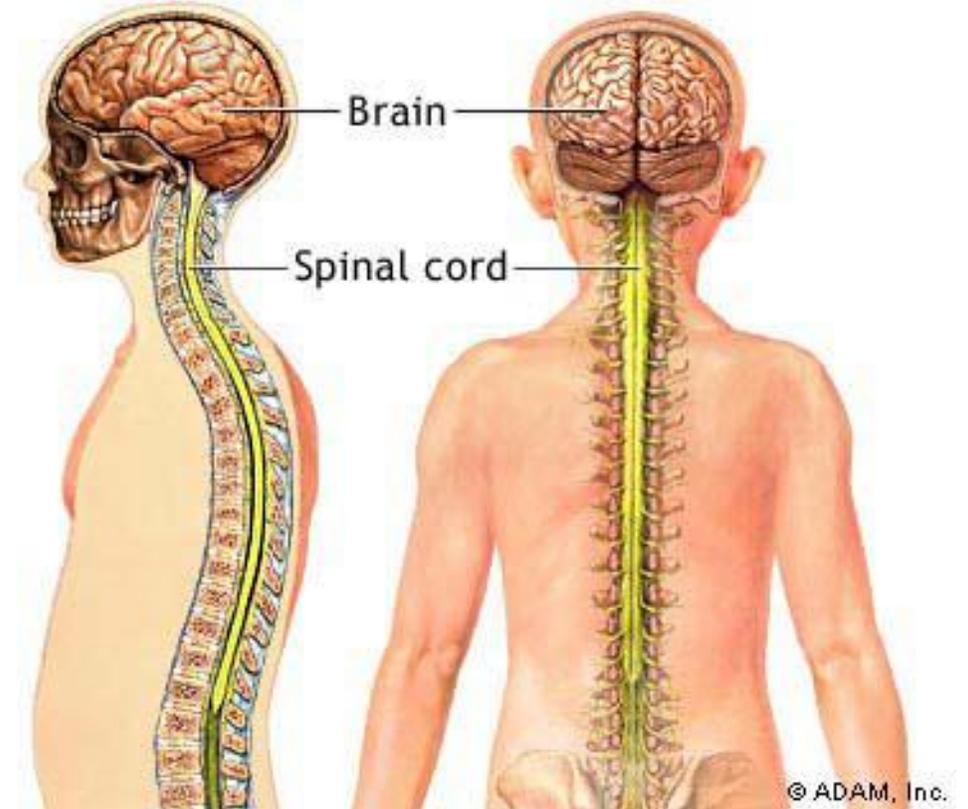
Central nervous system (CNS)

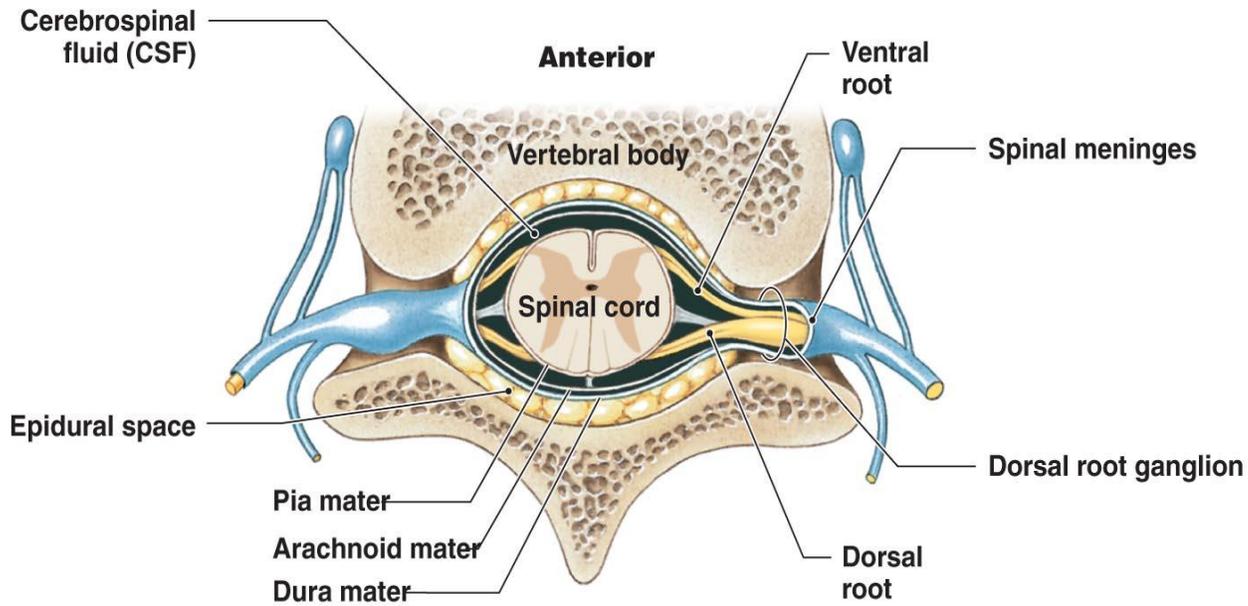
-It is the part of the nervous system which is protected by bones and bathed in cerebrospinal fluid (C.S.F.) .

a) The **brain** is protected by the skull.

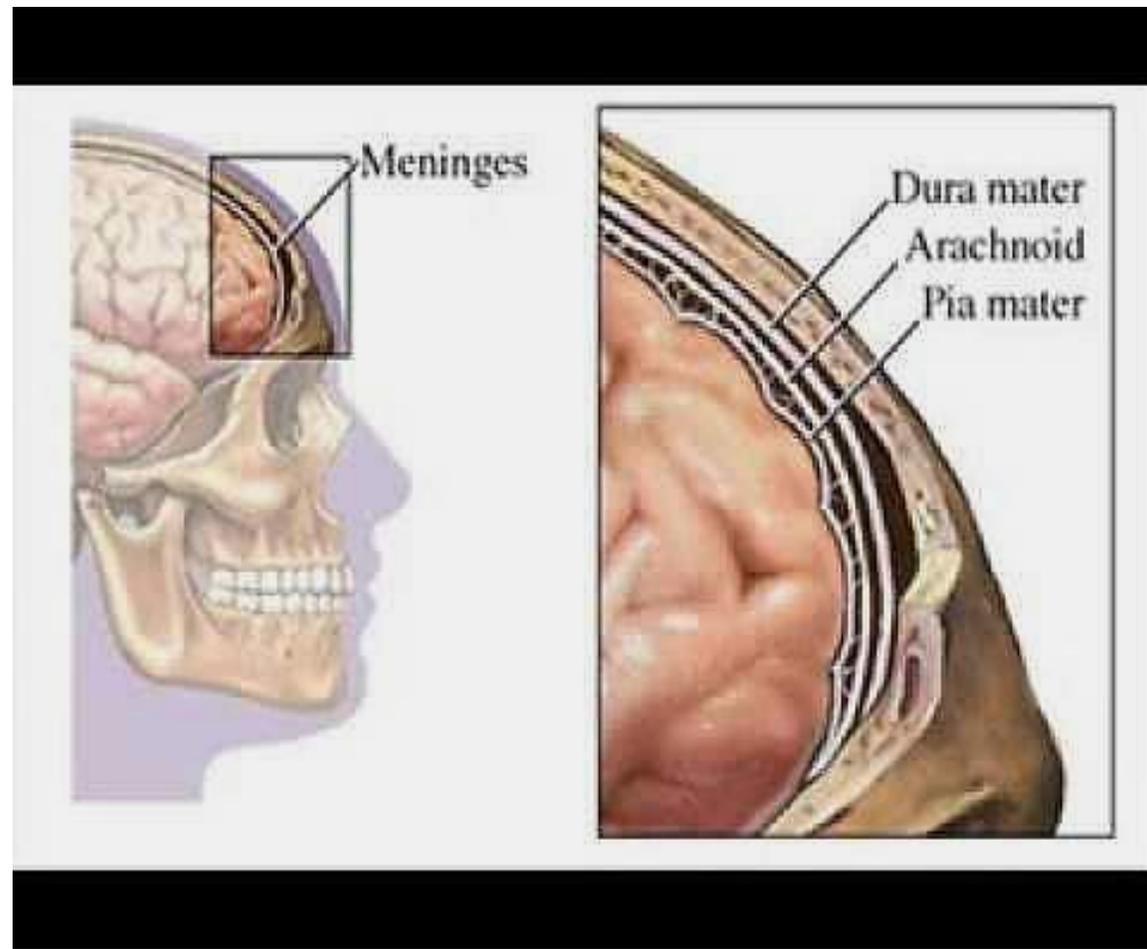
b) The **spinal cord** is protected by the vertebral canal.

-CNS can not regenerate if injured





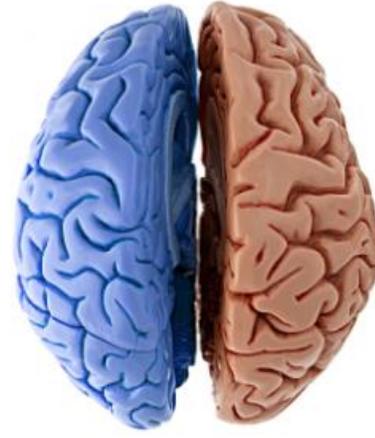
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The brain and the spinal cord are surrounded by three covering membranes called the meninges (**pia, arachnoid and dura matter**)

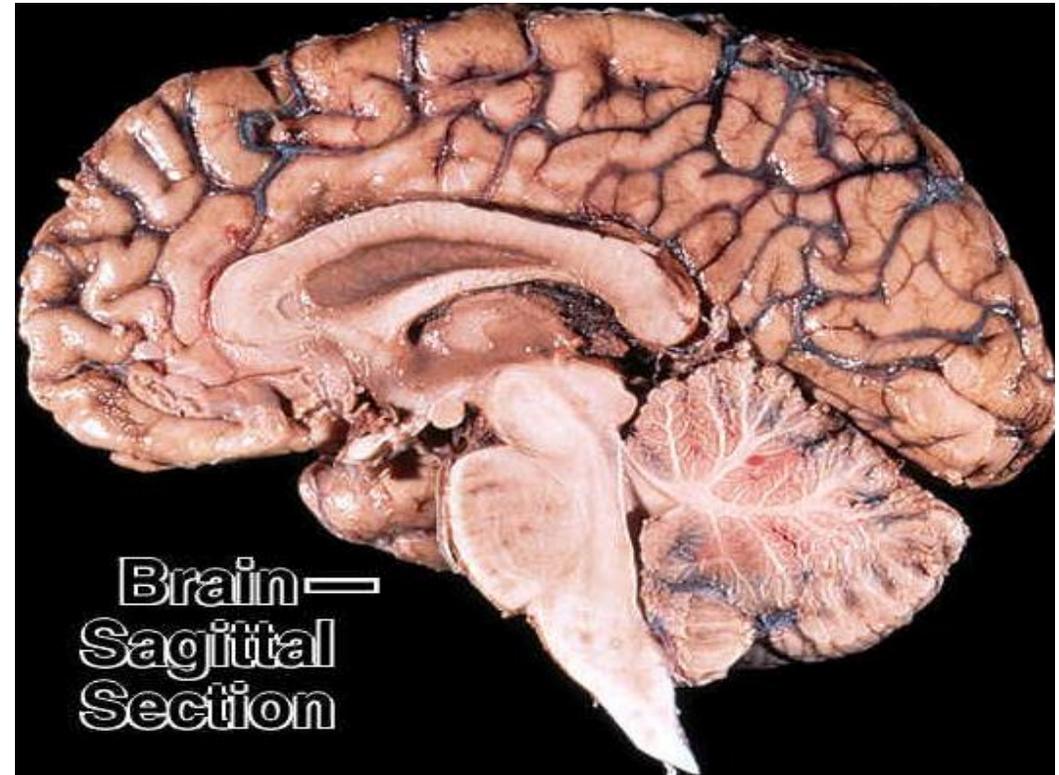
Subdivisions of the brain :

1. **Cerebrum:** formed of the 2 cerebral hemispheres and the diencephalon.



2. **Brain stem:** formed of midbrain, pons and medulla oblongata.

3. **Cerebellum.**



In cross section

The brain shows:

- Grey matter:** dark areas which contain the cell bodies. The grey matter on the surface of the cerebrum is called the cerebral cortex.
- White matter:** light areas which contain nerve fibers (axons).

The Spinal cord is made up of outer layer of **white matter** and an inner layer of **grey matter** (H-shaped). through which runs the central canal.



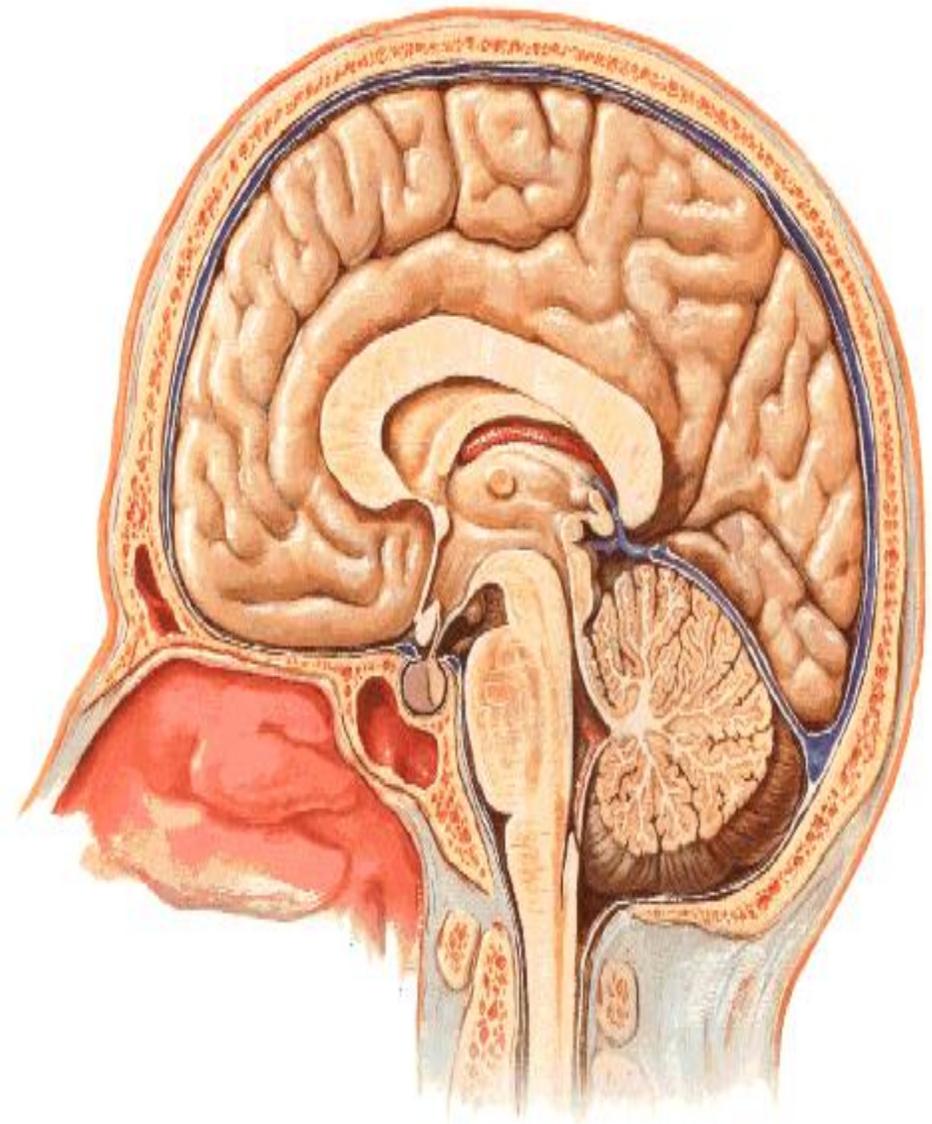
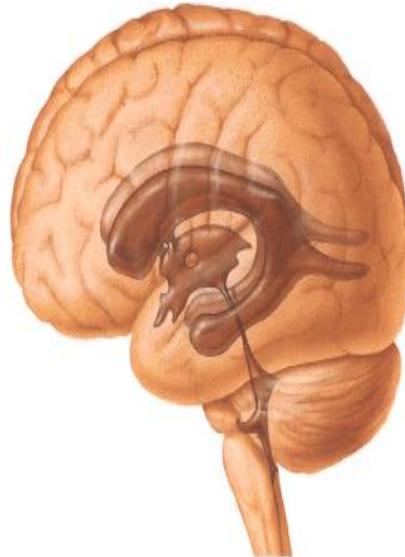
BRAIN

● The brain is formed of :

1. Cerebrum → formed of 2 cerebral hemispheres with diencephalon (interbrain) in between.

2. Brain stem: Which is formed of : midbrain, pons & medulla oblongata; from above downwards.

3. Cerebellum.





Thank You
Thank You
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