



# Organization of The Nervous System

ملاحظة:

هذا الملف للمراجعة وترتيب المعلومات فقط وليس مرجع للمذاكرة لانه ليست كل المعلومات متضمنة.

Done by  
Lolowah Alghuson

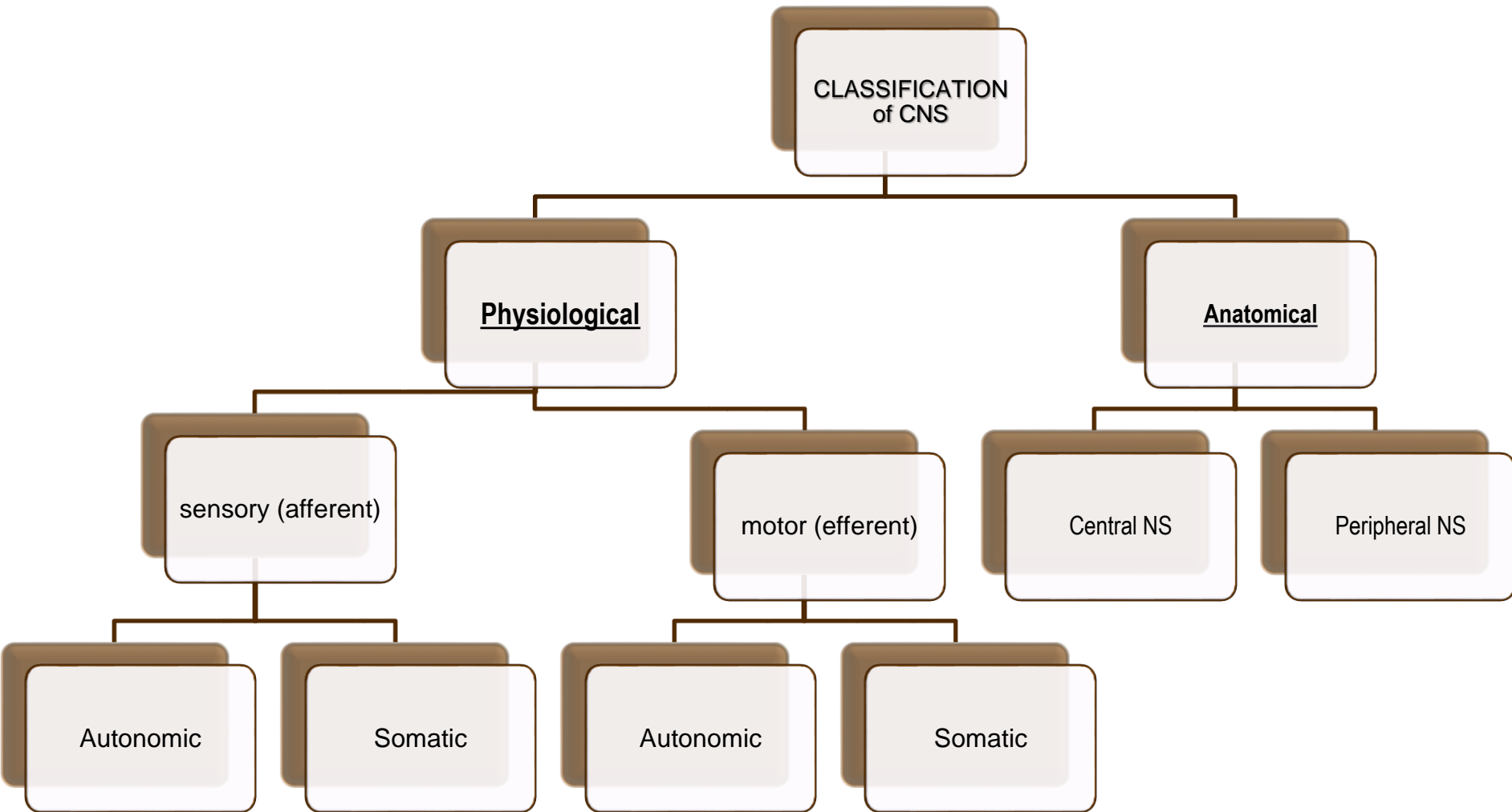
# The nervous system has three functions:

- Collection of sensory input:
- Integration:
- Motor output, or response by activating muscles or glands (effectors).

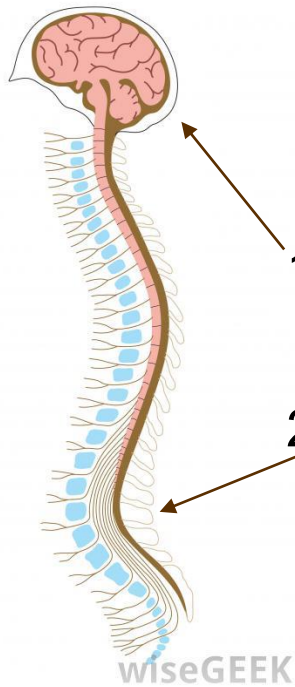
## NEURON:

It is the basic **structural (anatomical), functional and embryological** unit of the nervous system.

# Organization of the CNS:



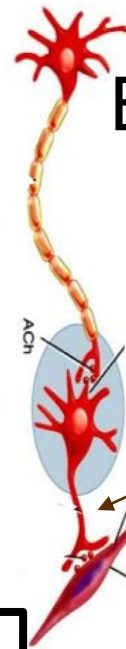
# Structural Organization



A-Central nervous system

1- brain

2- spinal cord



B-Peripheral Nervous System

1- nerve

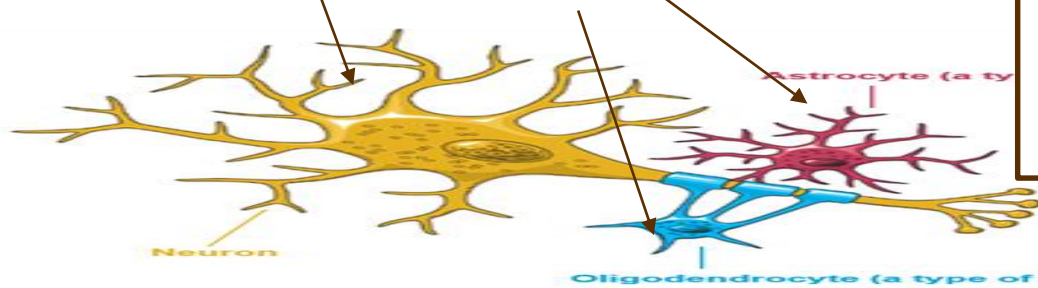
2- ganglion

3-receptor

## Type of CNS cells

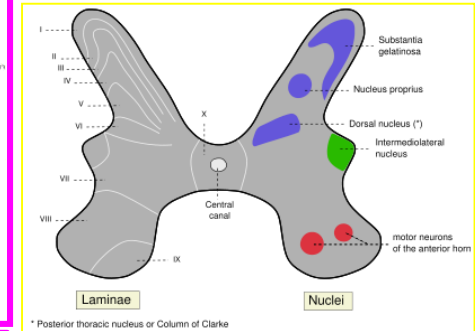
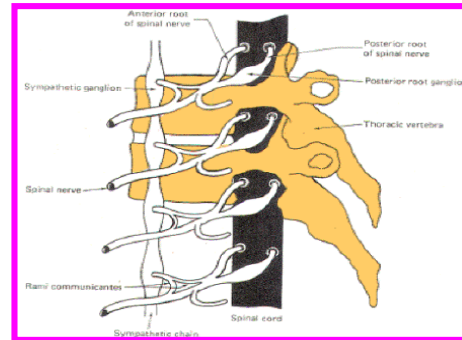
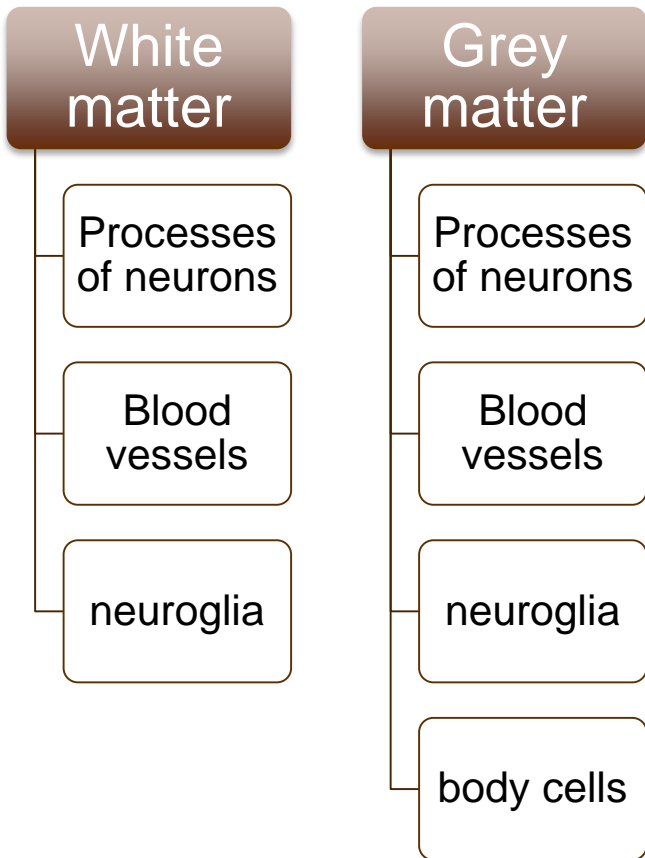
1- neurons

2- supportive glia cells



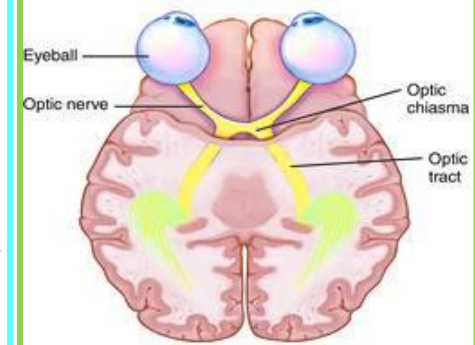
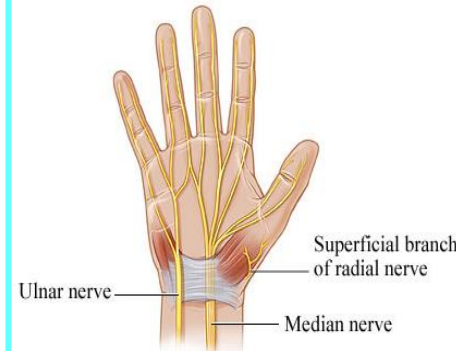
Neuron is the basic structural (anatomical), functional and embryological unit of the nervous system and its main function is to maintaining hemostasis

# Nervous tissue is organized as:



**Ganglion** = A group of neurons **outside** the CNS

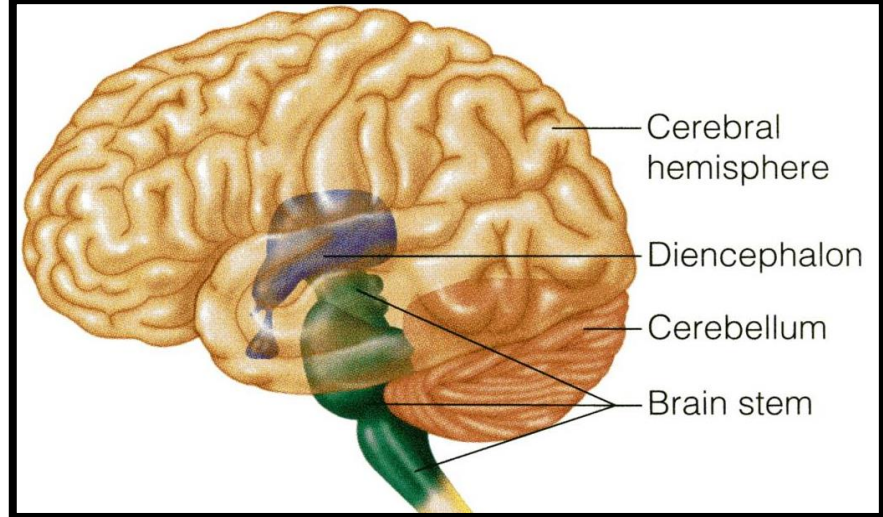
**Nucleus** = A group of neurons **within** the CNS



**Nerve** = A group of nerve fibers (axons) **outside** the CNS

**Tract** = A group of nerve fibers (axons) **within** the CNS

# PARTS OF THE BRAIN



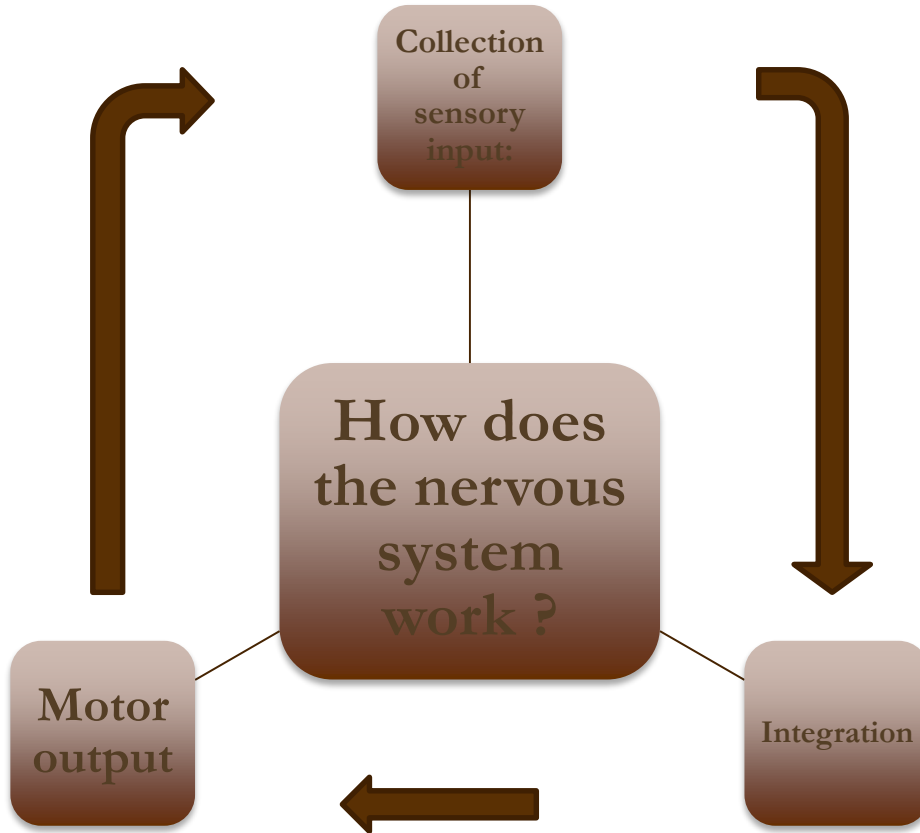
**The brain**  
**composed of 4**  
**parts:**

**Cerebral hemispheres**

**Diencephalon**

**Cerebellum**

**Brain stem**



# CEREBRAL HEMISPHERES

The largest part of the brain.

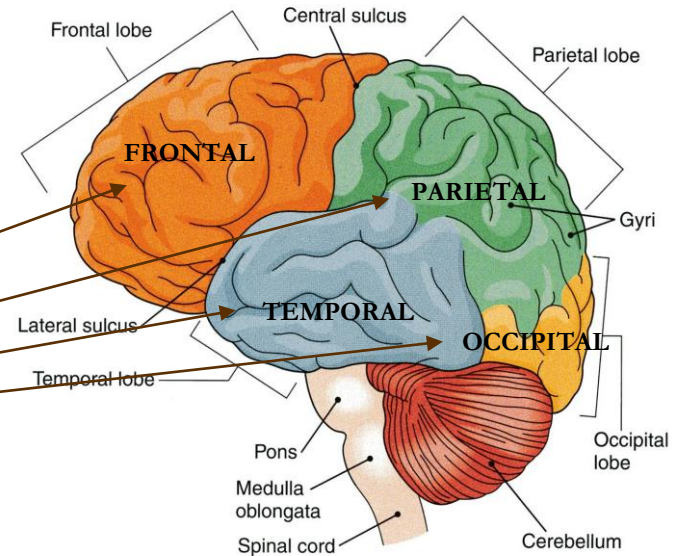
They have elevations, called gyri.

Gyri are separated by depressions called sulci.

The outer layer of hemisphere is the gray matter or cortex

Deeper is located the white matter, or medulla, composed of bundles of nerve fibers, carrying impulses to and from the cortex

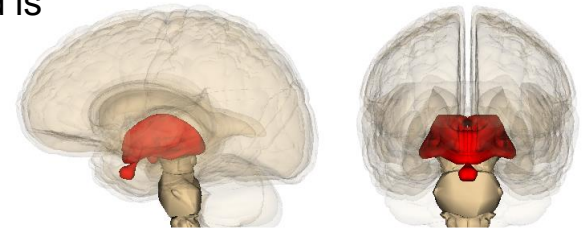
Each hemisphere is divided into



# DIENCEPHALON

The diencephalon is located between the 2 cerebral hemispheres and is linked to them and to the brainstem.

The major structures of the diencephalon are the Thalamus, Hypothalamus, Subthalamus and Epithalamus.



# Brain stem

It is connected to the cerebellum with 3 paired peduncles

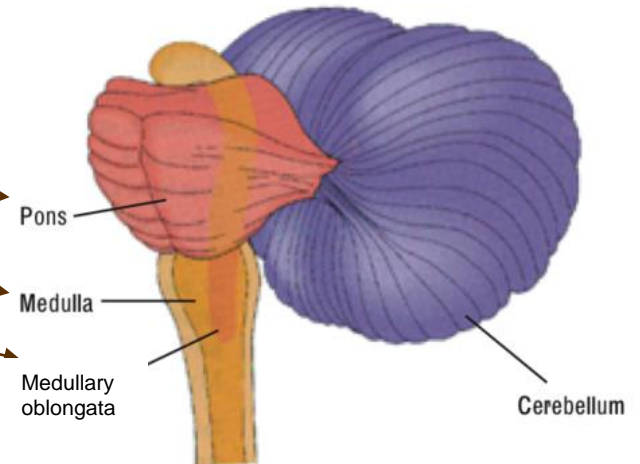
Superior, middle and inferior

Composed of :

# cerebellum

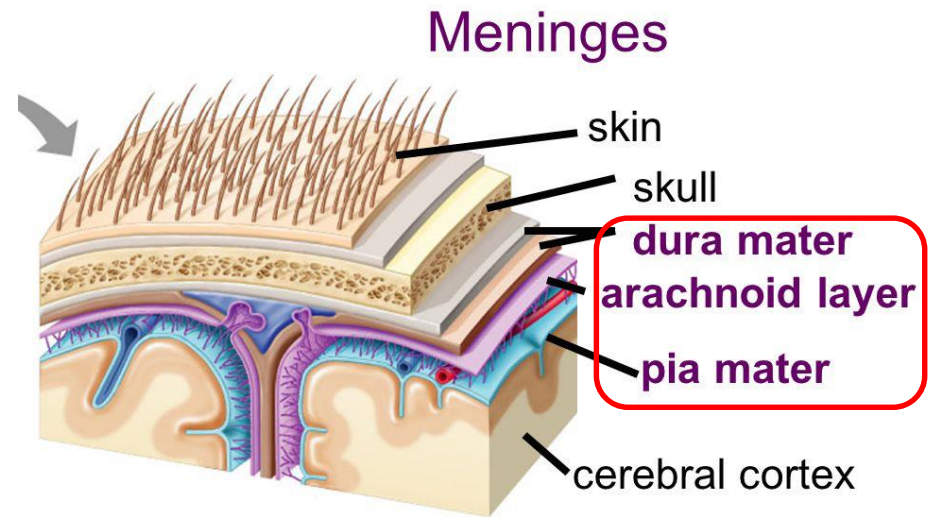
It has 2 cerebellar hemispheres with convoluted surface.

It has an outer cortex of gray matter and an inner region of white matter. It provides precise coordination for body movements and helps maintain equilibrium.



# meninges

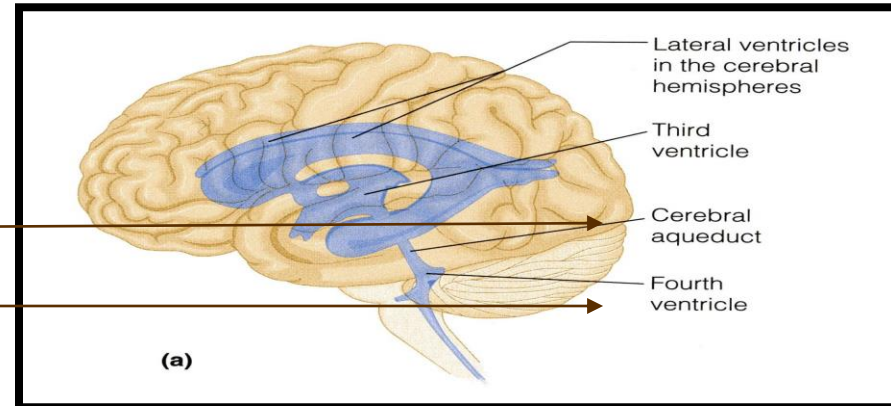
There are three connective tissue membranes invest the brain and the spinal cord Which are:



# BRAIN VENTRICLES

Brain is bathed by the cerebrospinal fluid (CSF). Inside the brain, there are 4 ventricles filled with CSF.

**N.B. Cerebral aqueduct:** connects the 3rd to the 4th ventricle.



## ➤ 2 lateral ventricles:

One in each hemispheres.

## ➤ 3<sup>rd</sup> ventricle:

in the Diencephalon.

## ➤ 4<sup>th</sup> ventricle:

between Pons, Medulla oblongata & Cerebellum.

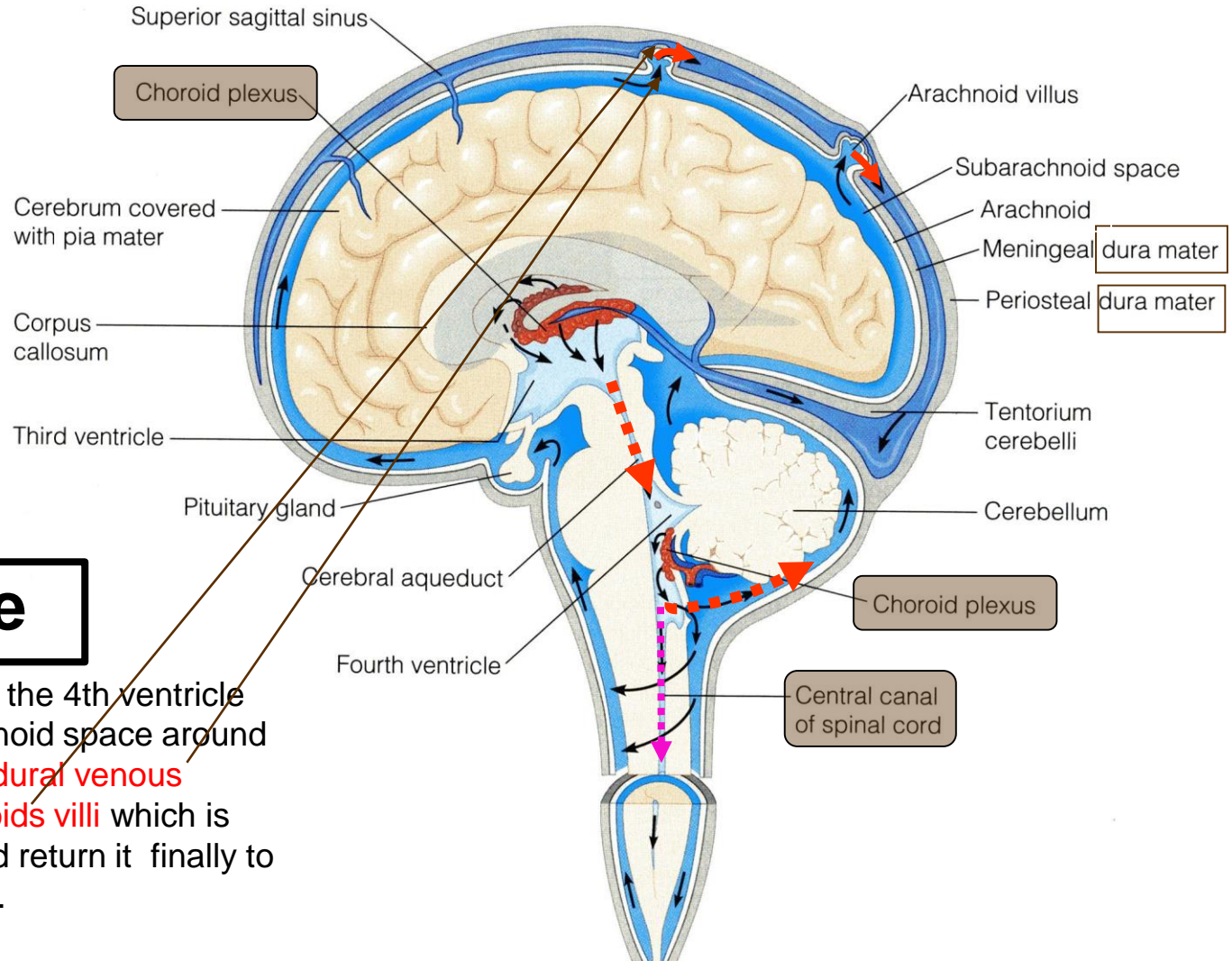
**N.B. Cerebral aqueduct:** connects the 3<sup>rd</sup> to the 4<sup>th</sup> ventricle.



# CEREBROSPINAL FLUID

CSF is constantly produced by the choroid plexuses inside the ventricle. Inside the brain, CSF flows from the lateral ventricles to the 3rd and 4th ventricles

From the 4th ventricle, part of the CSF flows down in the central canal of the spinal cord.



## CSF drainage

Most of the CSF drains from the 4th ventricle to distribute in the subarachnoid space around the brain and returns to the **dural venous** sinuses through the **arachnoids villi** which absorb cerebrospinal fluid and return it finally to the dural venous circulation.