

وسهلا

أهلا

يُمنع أخذ السلايدات بدون  
إذن المحرر واي اجراء  
يخالف ذلك يقع تحت  
طائلة المسؤولية القانونية



# الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

رئيس قسم التشريح و الأنسجة و الأجنة - كلية الطب - جامعة مؤتة - الأردن

دكتورة من جامعة كولونيا المانيا

جروب الفيس د. يوسف حسين (استاذ التشريح)

اليوتيوب د. يوسف حسين

Prof. Dr. Youssef Hussein Anatomy - YouTube

[https://www.youtube.com/channel/UCVSNqbibj9UWYaJdd\\_cn0PQ](https://www.youtube.com/channel/UCVSNqbibj9UWYaJdd_cn0PQ)

الڤوتڤوب د. ڤوسف حسڤن

# Introduction of Nervous System

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## \* Parts of the Nervous System

### 1- Central Nervous System (CNS);

a. Brain.

B. Spinal cord.

### 2- Peripheral Nervous System (PNS)

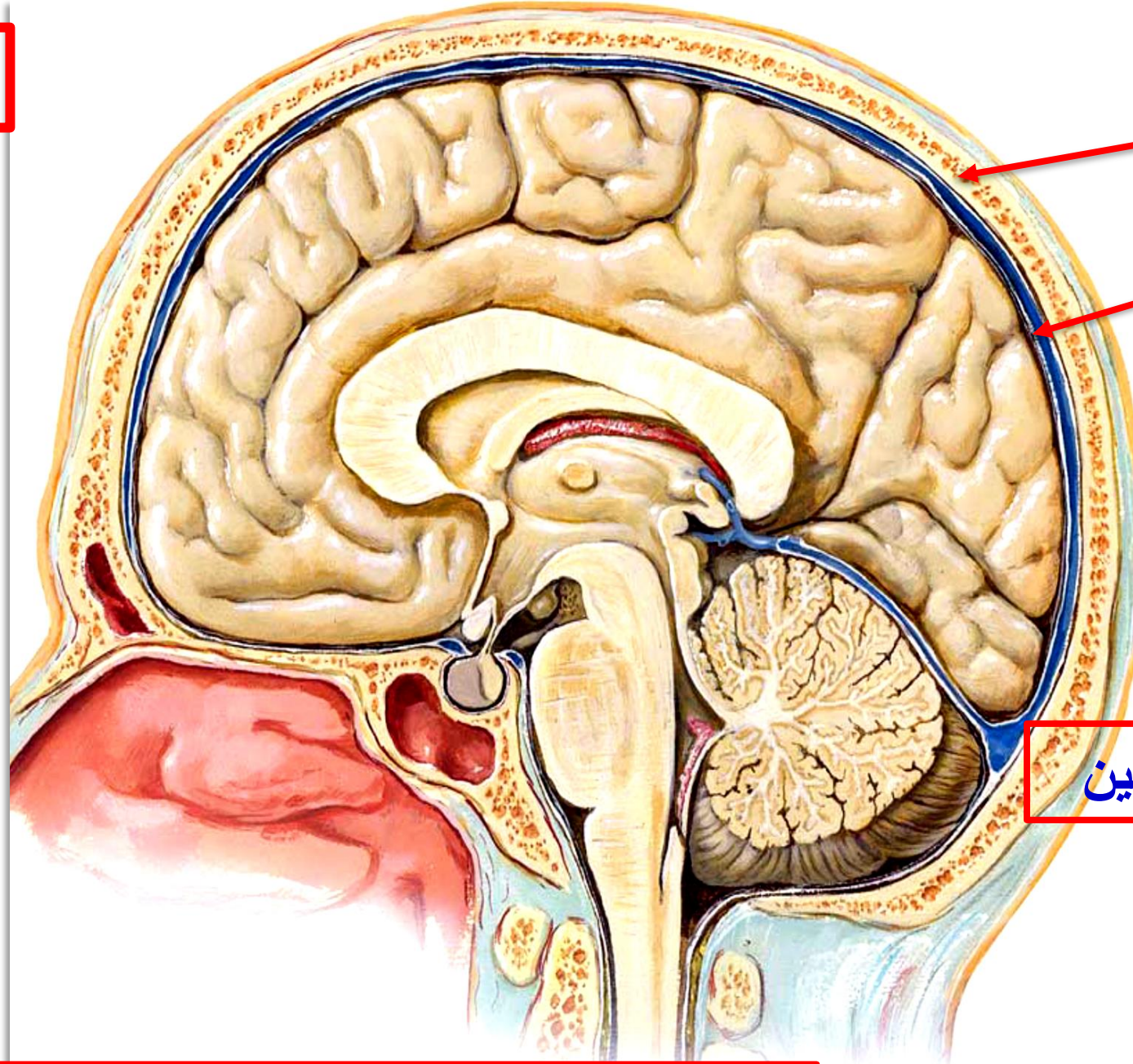
a. Cranial nerves (12 pairs)

b. Spinal nerves (31 pairs)

c. Autonomic nervous system (sympathetic & parasympathetic)

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# Brain



Skull

3 Layers of  
Meninges

Dura matter

Arachnoid matter

Pia matter

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# Brain

Sulcus

Gyrus

Brain stem  
(Midbrain)

Brain stem  
(Pons)

Brain stem  
(Medulla oblongata)

Cerebrum

Cerebral hemisphere

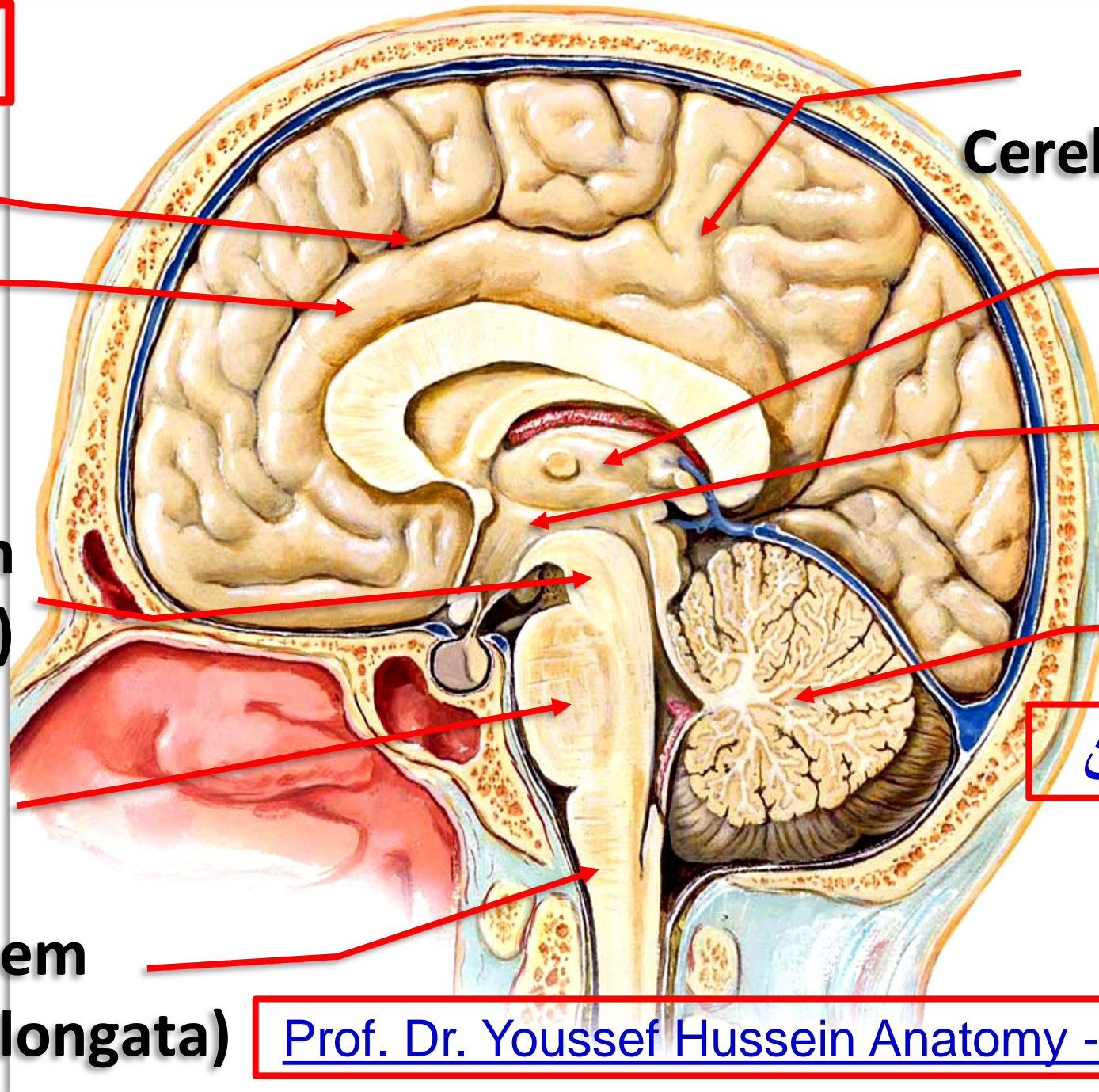
Diencephalon  
(Thalamus)

Diencephalon  
(Hypothalamus)

Cerebellum

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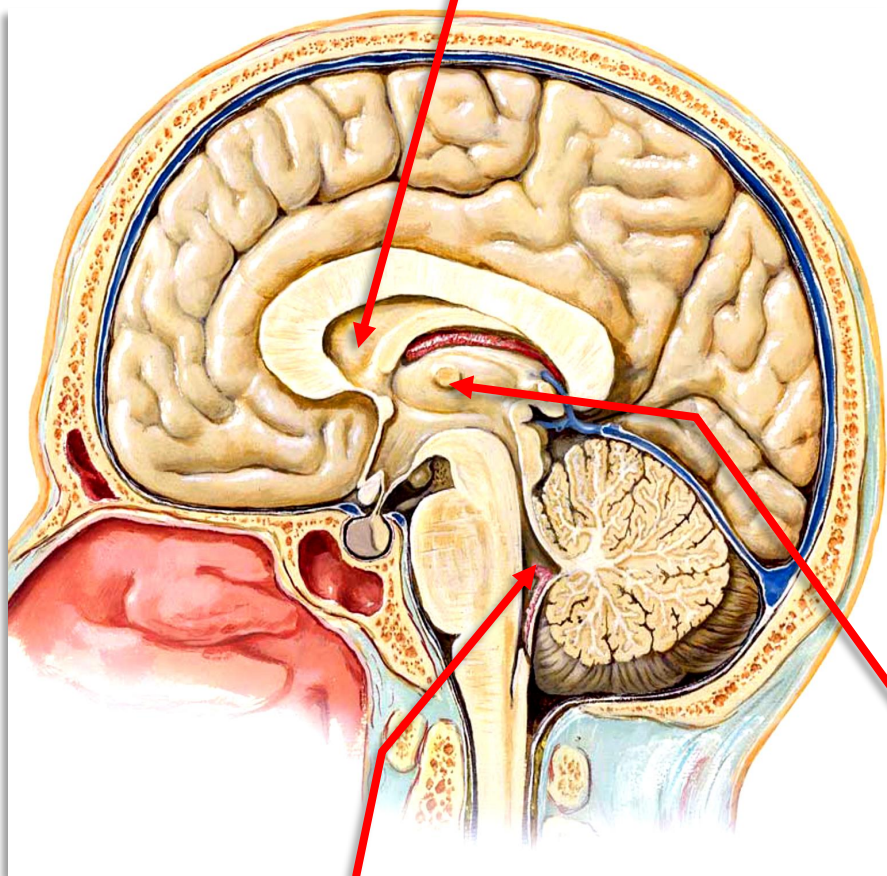
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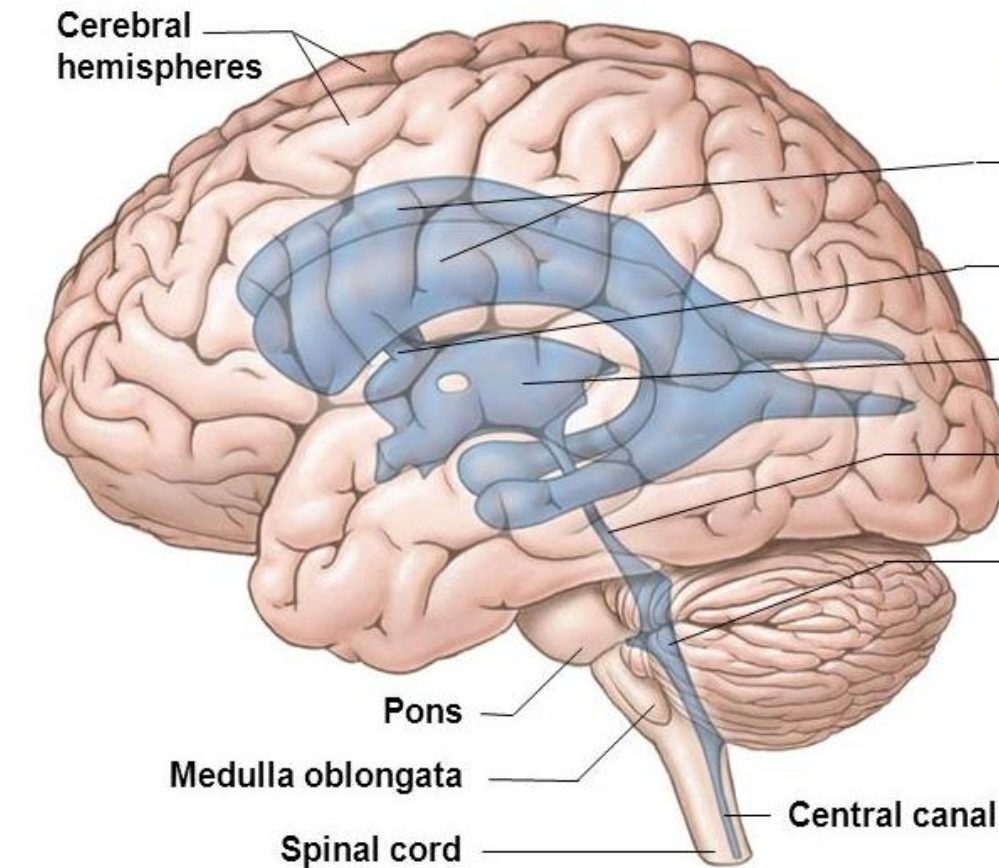
# Ventricular system (lateral view)

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Lateral Ventricle



4th Ventricle



3rd Ventricle

## Ventricles of the Brain

Lateral ventricle

Interventricular foramen

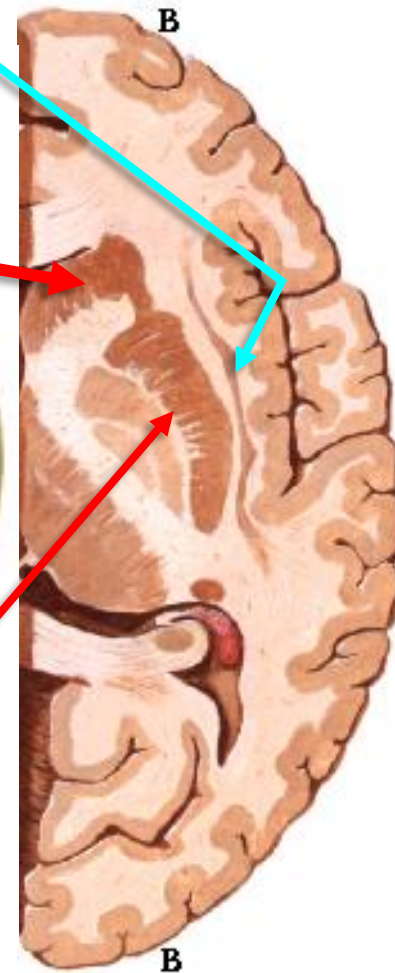
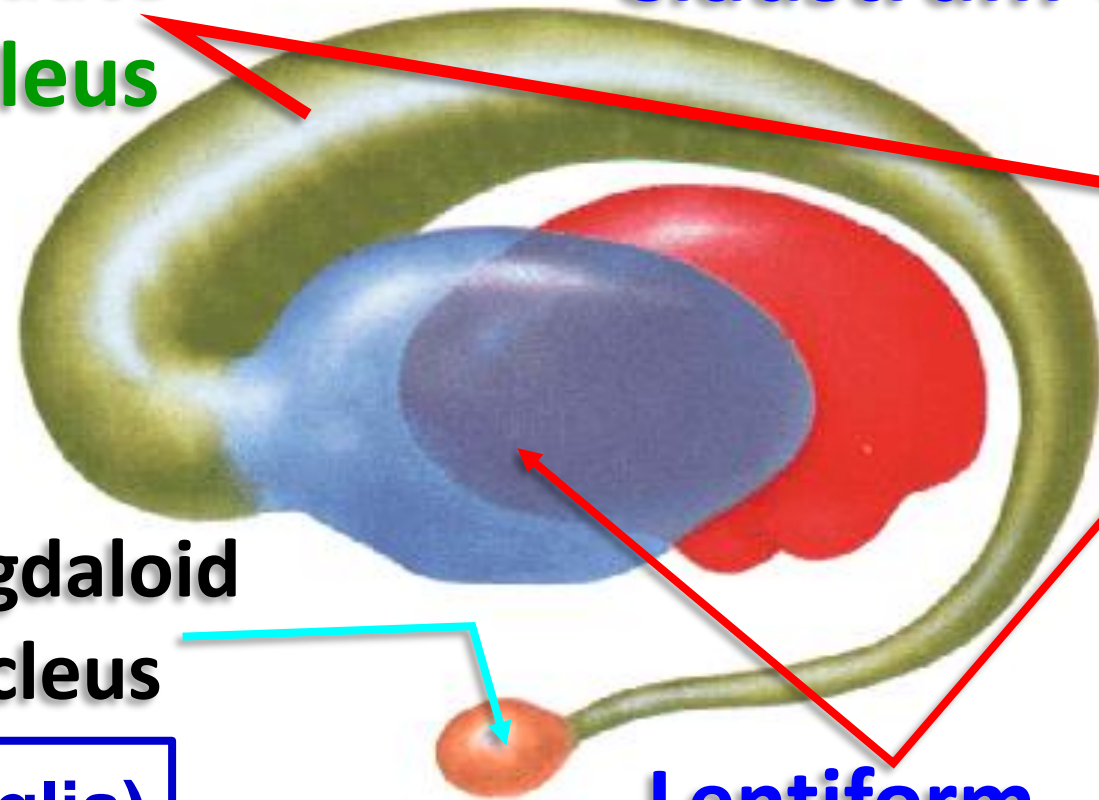
Third ventricle

Aqueduct of midbrain

Fourth ventricle

**Caudate Nucleus**

**Clastrum**



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**Amygdaloid**

**Grey Matter Nucleus**

**Basal Nuclei (Ganglia)**

- 1- Caudate Nucleus
- 2- Lentiform Nucleus
- 3- Amygdaloid Body
- 4- Clastrum

**Lentiform Nucleus**

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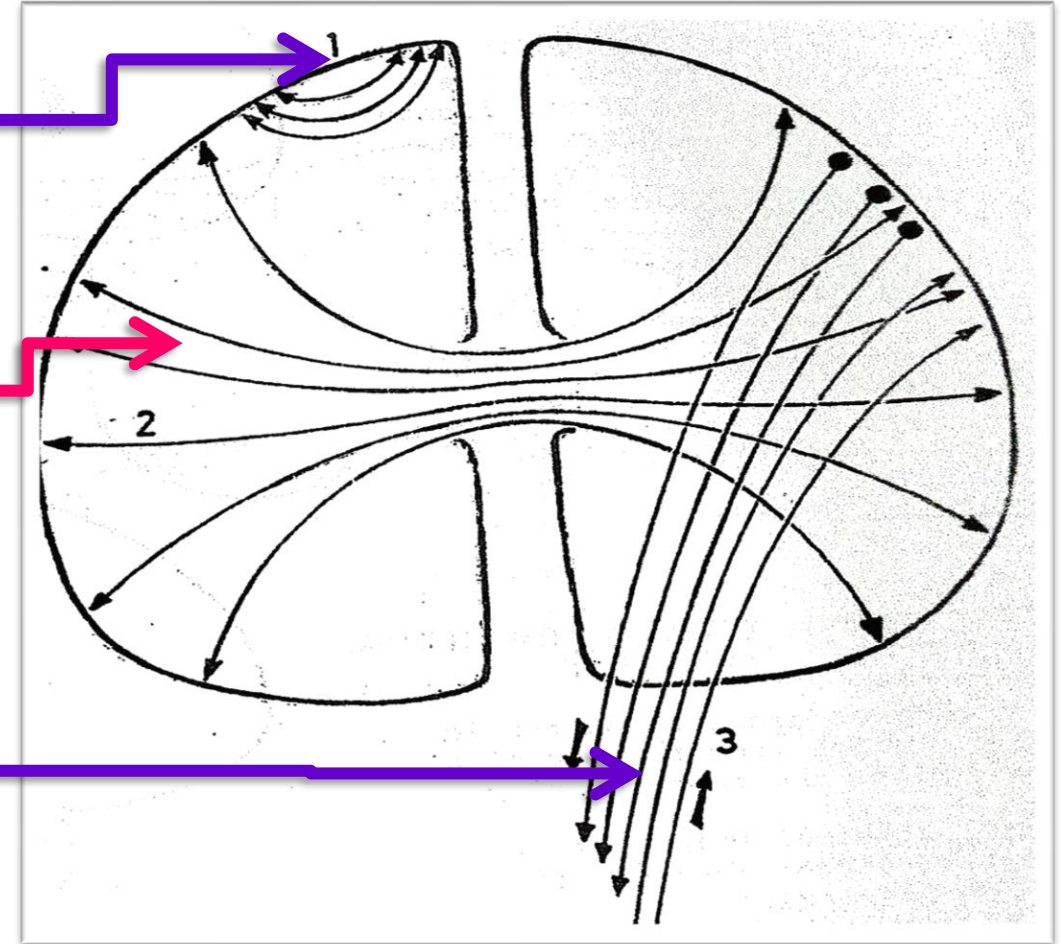
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# The white matter classified into three groups

**(1) Association fibers** connect two parts of the cerebral cortex in the same hemisphere.

**(2) Commissural fibers** connect parts of cerebral cortex of one hemisphere with the **same** part on **opposite** side.

**(3) Projection fibers** are the afferent (**Ascending**) and efferent (**Descending**) fibres of the cerebral cortex which pass through the **internal capsule** and connect the cerebral cortex with subcortical and lower centers.





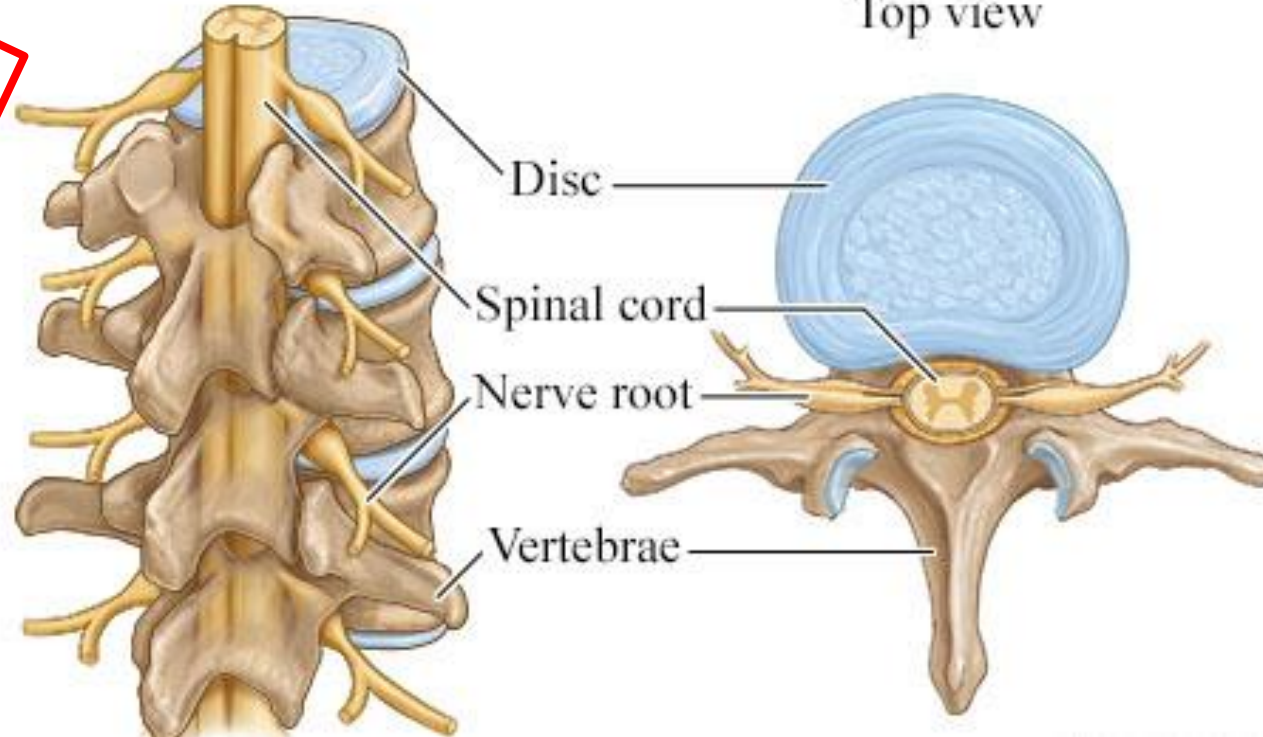
# Position of the spinal cord

in the vertebral canal of the vertebral column

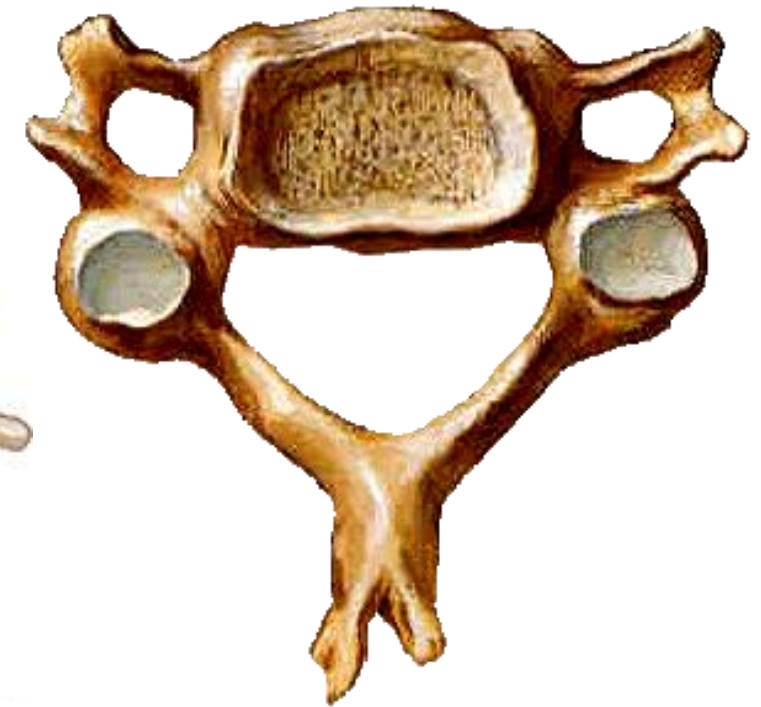
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Back view

Top view



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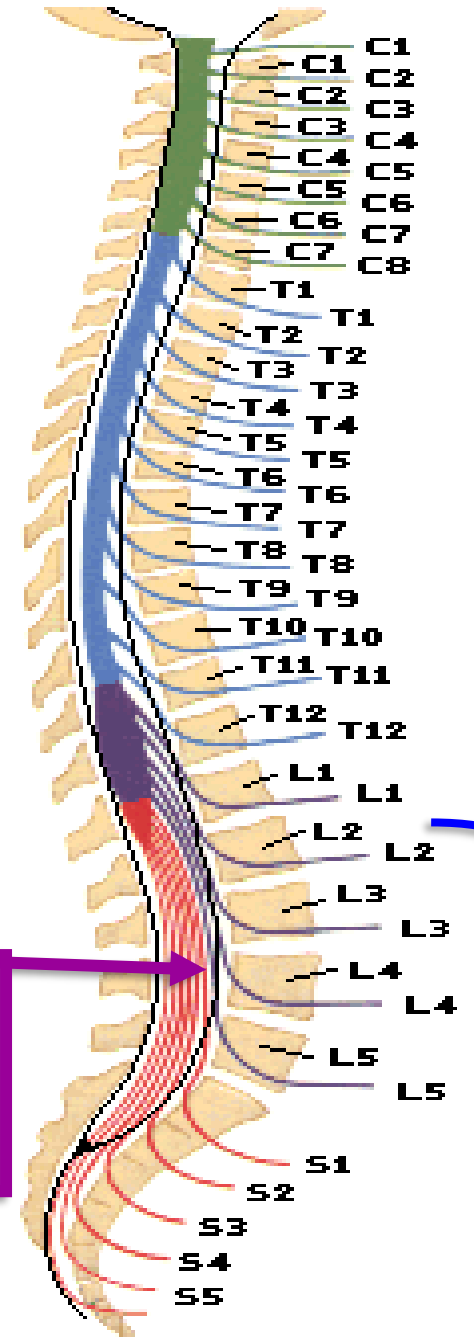
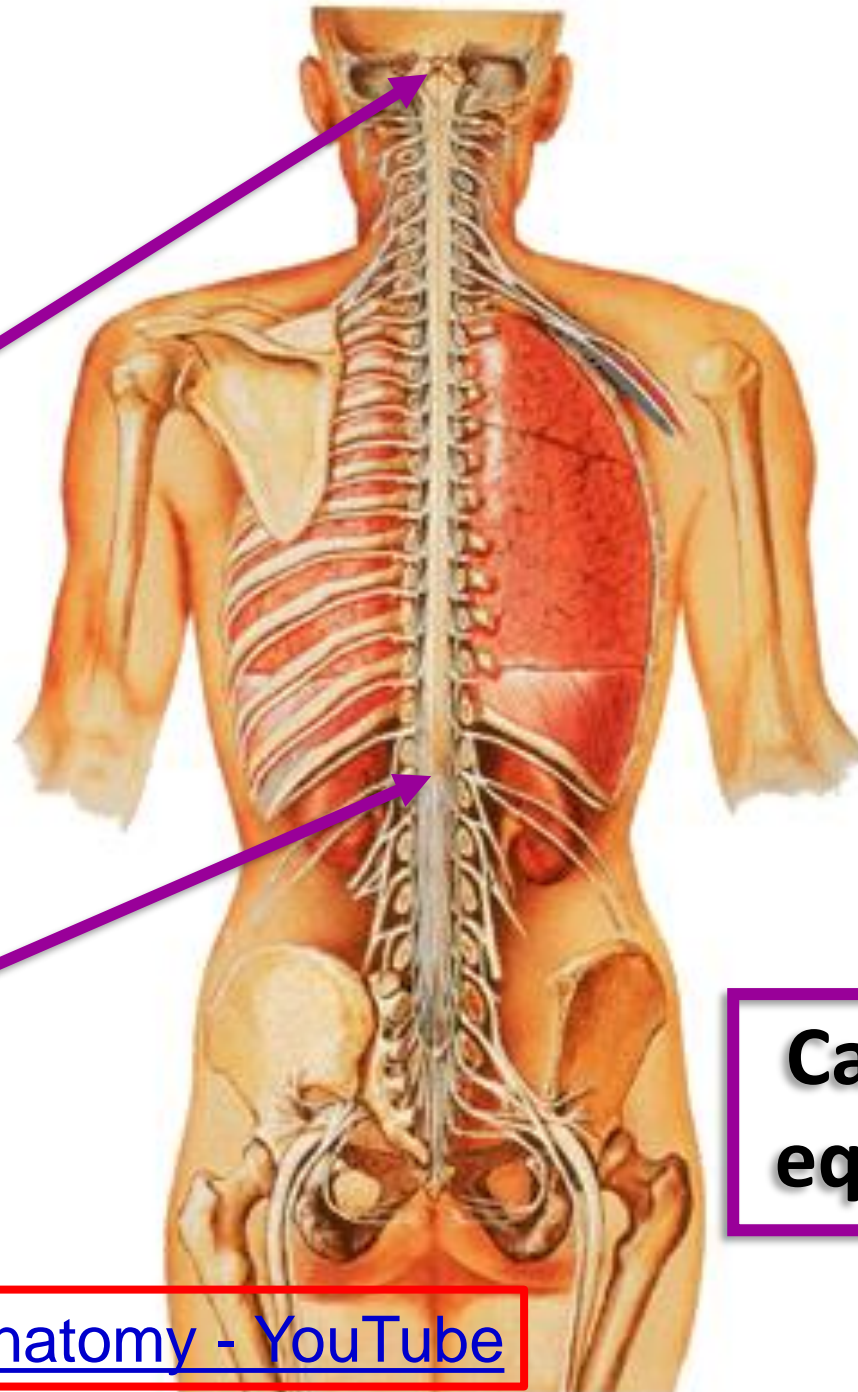


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**Begin:** Just below the foramen magnum as a continuation of medulla oblongata

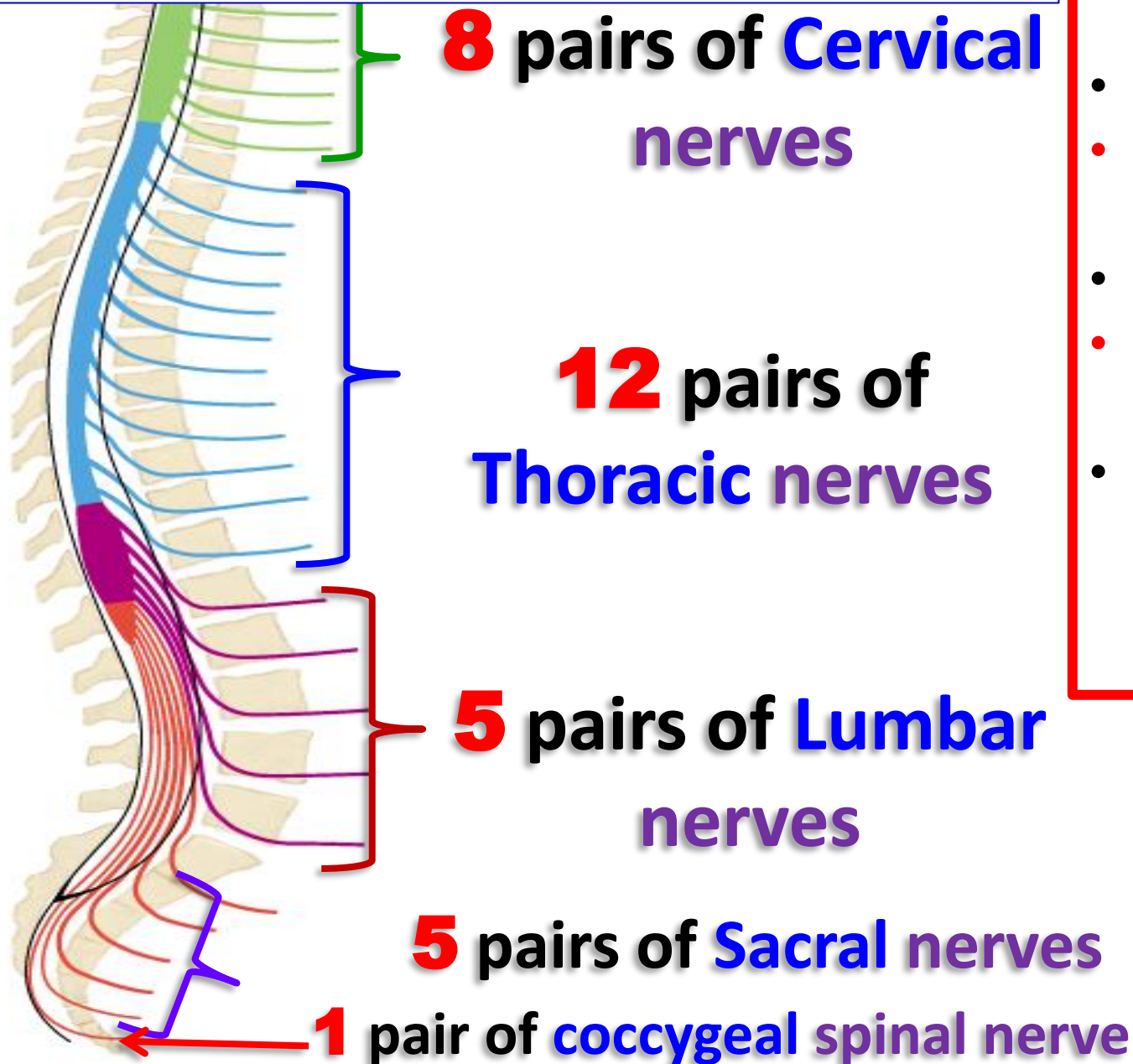
**End:** **adult;** at the level of intervertebral disc of **L1/L2.** below this level, form a bundle called **Cauda Equina**

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Cauda equina

## 31 Spinal Cord Segments & Nerves

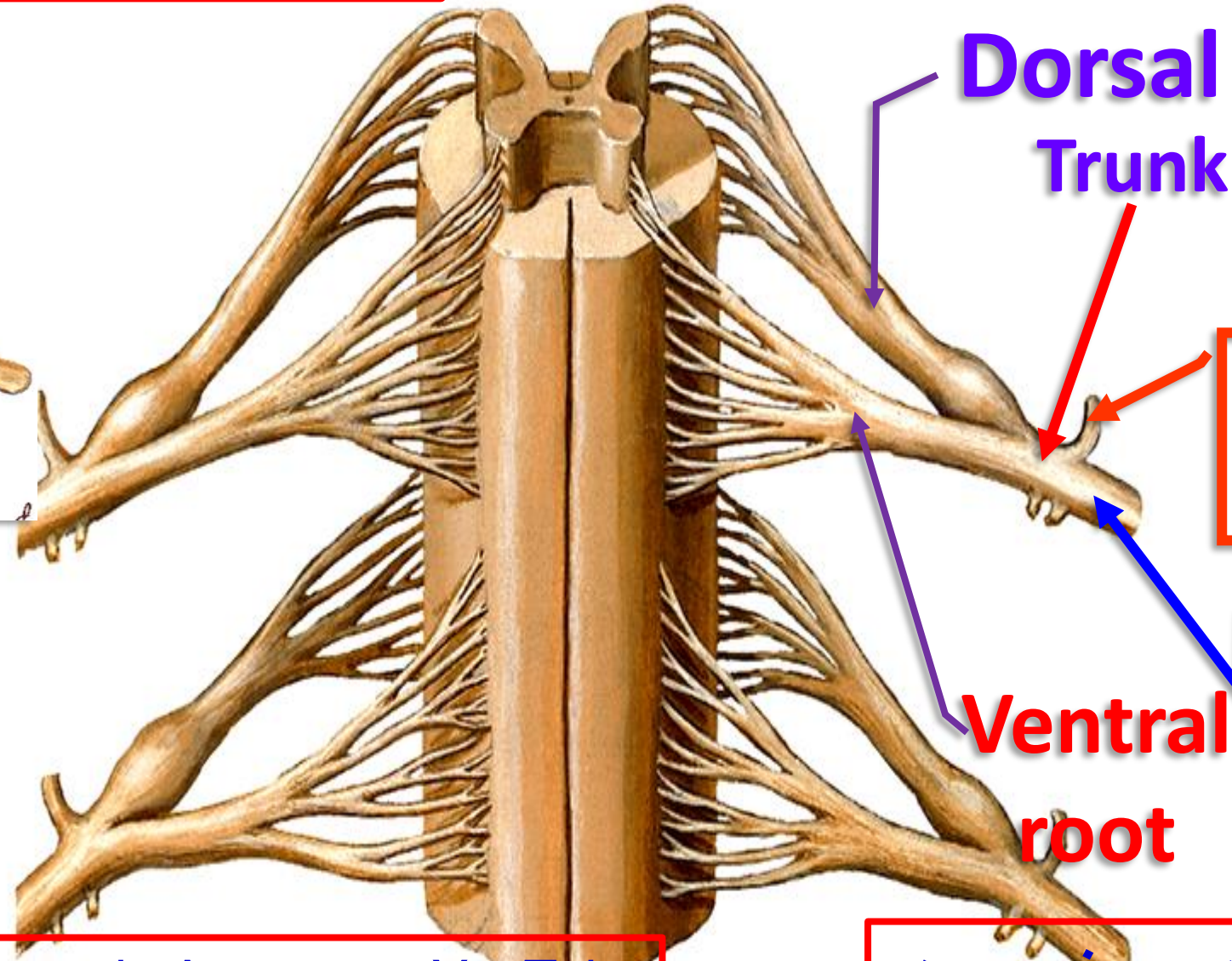
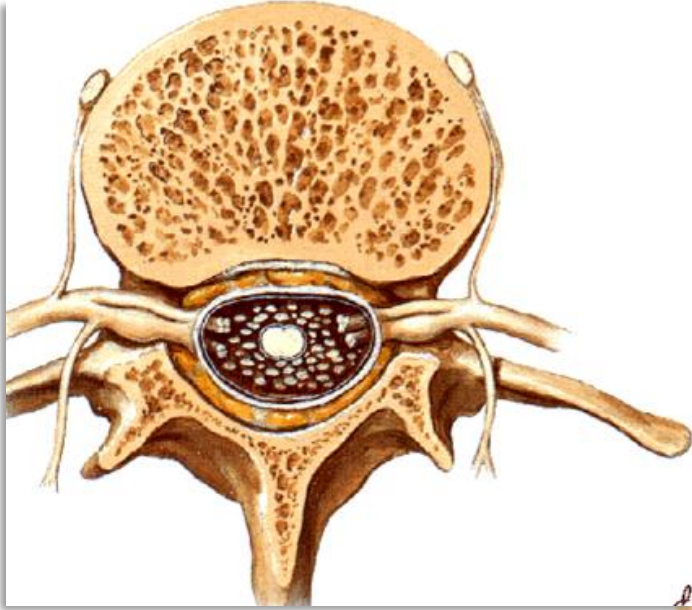


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- Number of vertebral columns (33 Vertebrae)
- 7 cervical vertebra العنقية
- 12 Thoracic vertebra الصدرية
- 5 Lumbar vertebra القطنية
- 5 Sacral vertebra, fused العجزية
- 3-5 Coccygeal vertebra, fused العصصية  
(Most commonly 4)

- **Parts of the spinal nerves**

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**Dorsal ramus**

**Ventral ramus**

- **Parts of the spinal nerves**

- Spinal nerves are **31 pairs** corresponding in number to **31 spinal cord segments**.

- Each spinal nerve arises by **2 roots in the vertebral canal**,

- a- **Ventral root (Efferent صادر)**: carries **motor**.

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- b- **Dorsal root (Afferent وارد)**: is purely **sensory**.

- The 2 roots unite together at the **intervertebral foramen** to form the **trunk** of the spinal nerve (mixed of sensory and motor fibers).

- Just outside the intervertebral foramen, the trunk divides into ventral **ramus (mixed)** and dorsal **ramus (mixed)**.

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- **Most of the ventral rami form network called plexuses as.**

- a- **Cervical plexus**, supplies the muscles & skin of the neck and diaphragm.

- b- **Brachial plexus**, supplies the muscles & skin of the upper limb.

- c- **Lumbar & sacral plexuses** supply the skin & muscles of the lower limb.

- d. **Coccygeal plexus** supply skin over the coccyx and around the anus.

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# Meninges

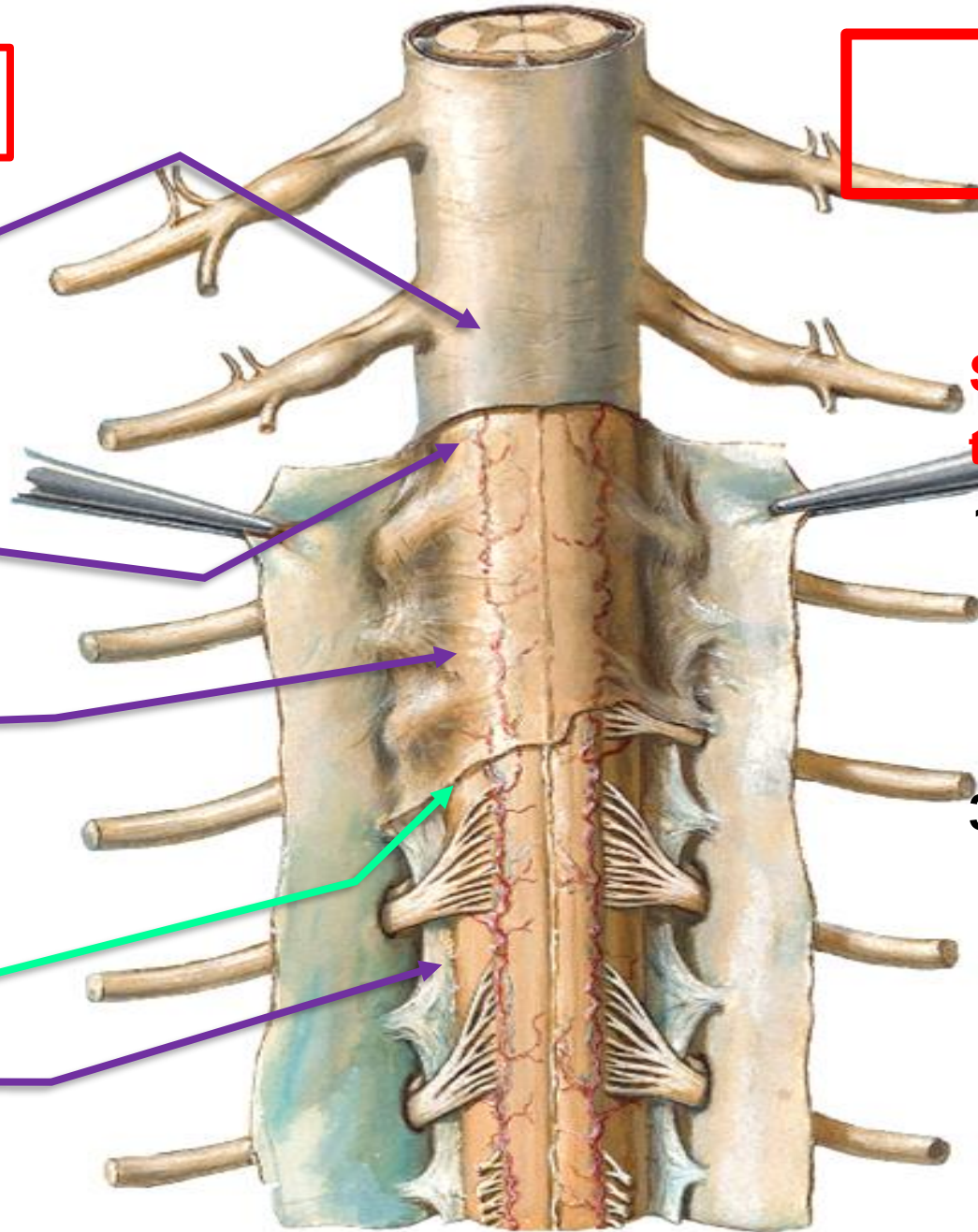
**Dura matter**  
(Outer layer)

**Subdural space**

**Arachnoid matter**  
(Middle layer)

**Subarachnoid space**

**Pia matter**  
(Inner layer)



**Subarachnoid space**  
that contains;

- 1-Cerebrospinal fluid (CSF).
- 2- Blood vessels of the spinal cord.
- 3- Roots of the spinal nerves.

1st Olfactory Nerve

2nd Optic Nerve

3rd oculomotor

4th Trochlear

5th Trigeminal

6th Abducent

7th Facial

8th

Vestibulocochlear

12th Hypoglossal

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M B

Pons

M O

• Cranial Nerves:

\* They are 12 pairs.

• According to their function,

1- Sensory (1, 2, 8)

2- Motor (3, 4, 6, 11, 12)

3- Mixed (10, 9, 7, 5)

4- Parasympathetic 10, 9, 7, 3

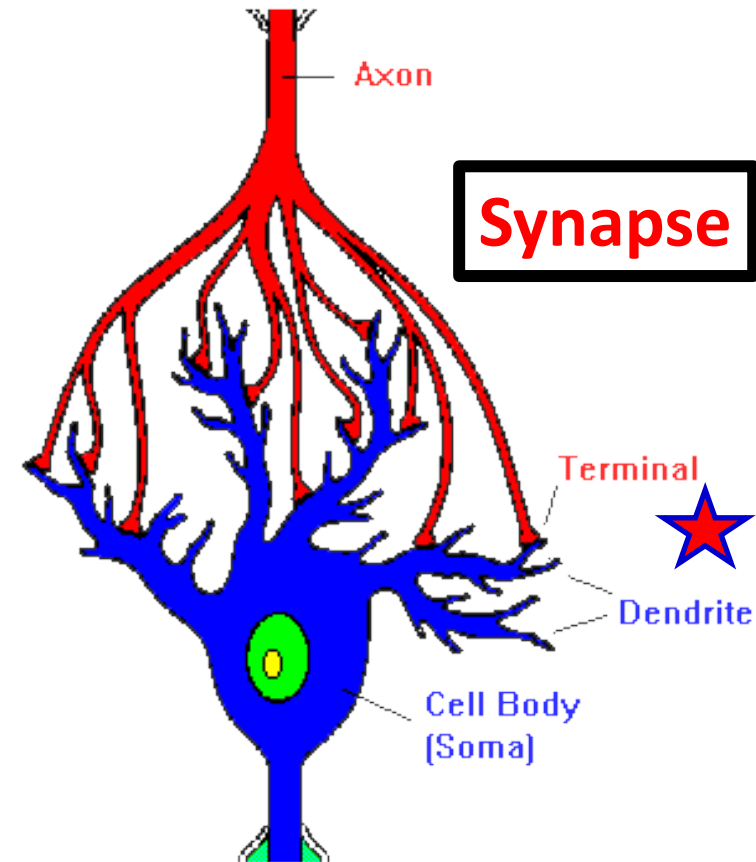
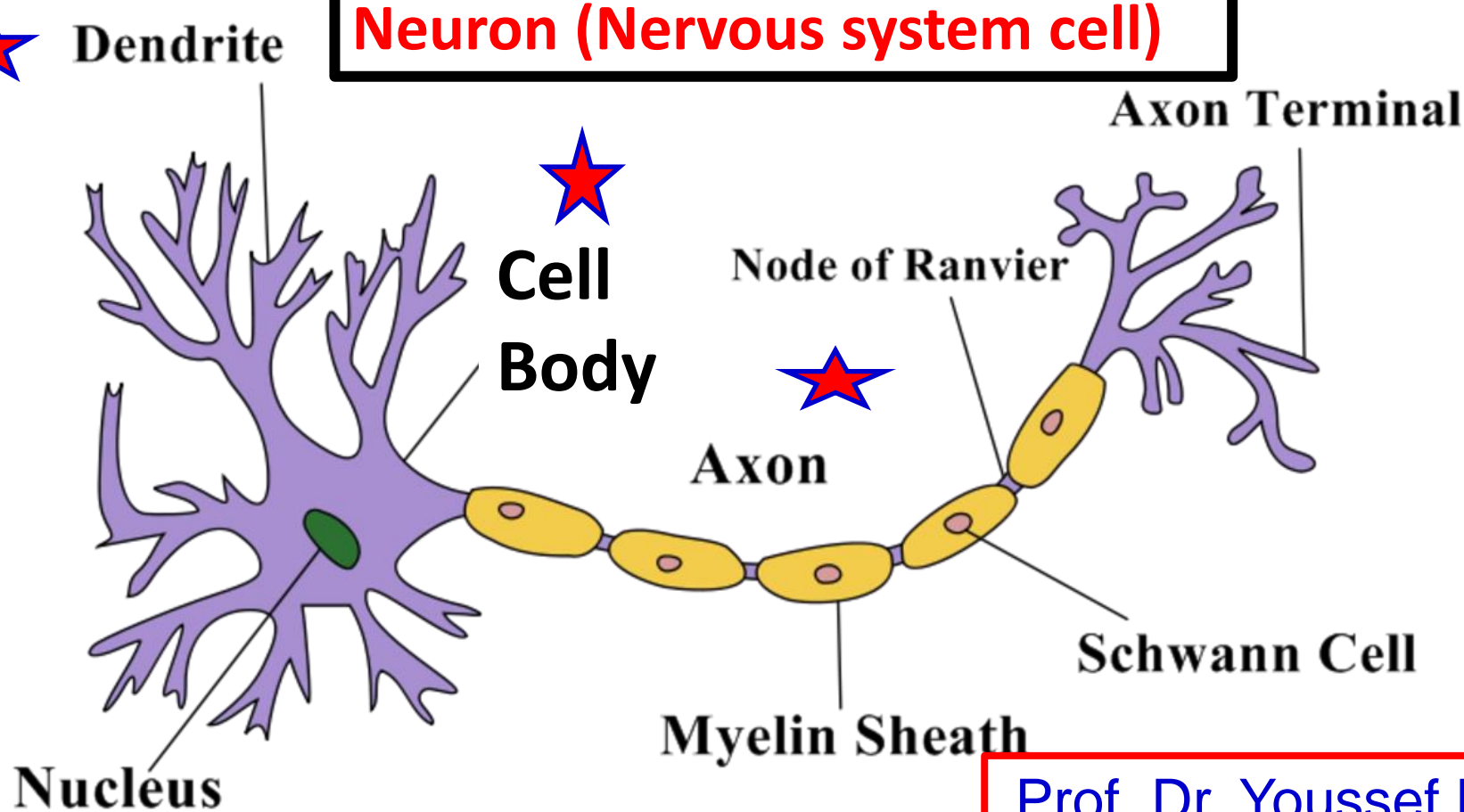
9th Glossopharyngeal

10th Vagus

11th Accessory

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# Neuron (Nervous system cell)



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• It is the structural and functional unit of the nervous system, It is composed of

1- Cell body (Soma)

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2- Dendrites (branched and carry impulse to the cell body)

3- Axon (single and carry impulse away from the cell body).



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Thank You

Questions

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