

Practical Histology

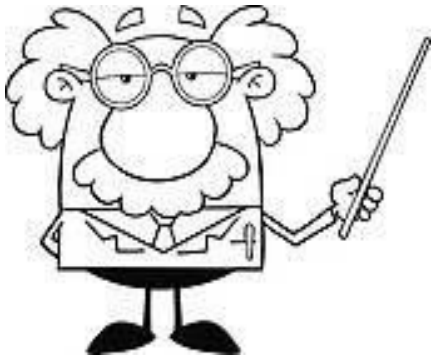
Neuropsychiatry Block

- Contents:
 1. Cervical, thoracic, & lumbar spinal cord.
 2. Ascending & descending tracts.
 3. Unipolar, bipolar, pseudo-unipolar neurons.

وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ

Things you need to know before the exam :

- The pictures in the exam will be the same as the ones included in the slides.
- Don't try to take short cuts during the exam so avoid using abbreviations so you don't lose marks.
- Please keep in mind that this work is done by students , so if there are any mistakes please inform us.
- This work is not by any means a reference.
- Please study hard and don't worry the exam will be easy!!

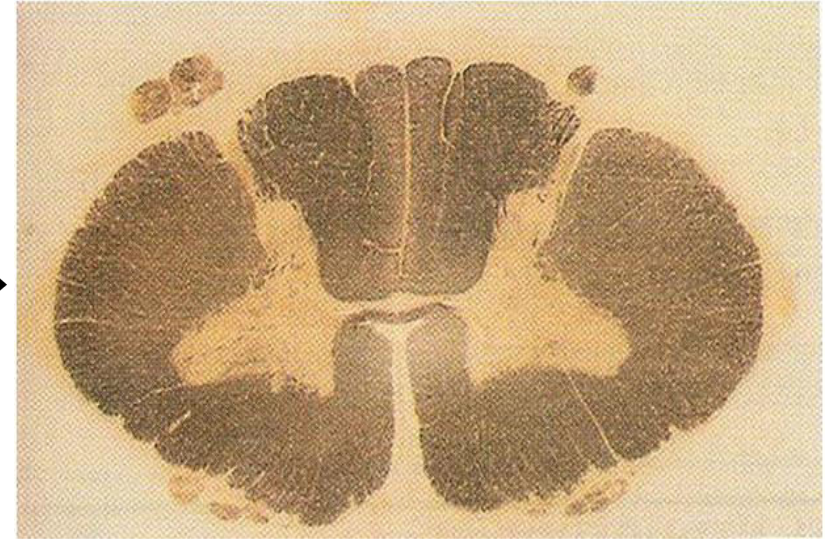
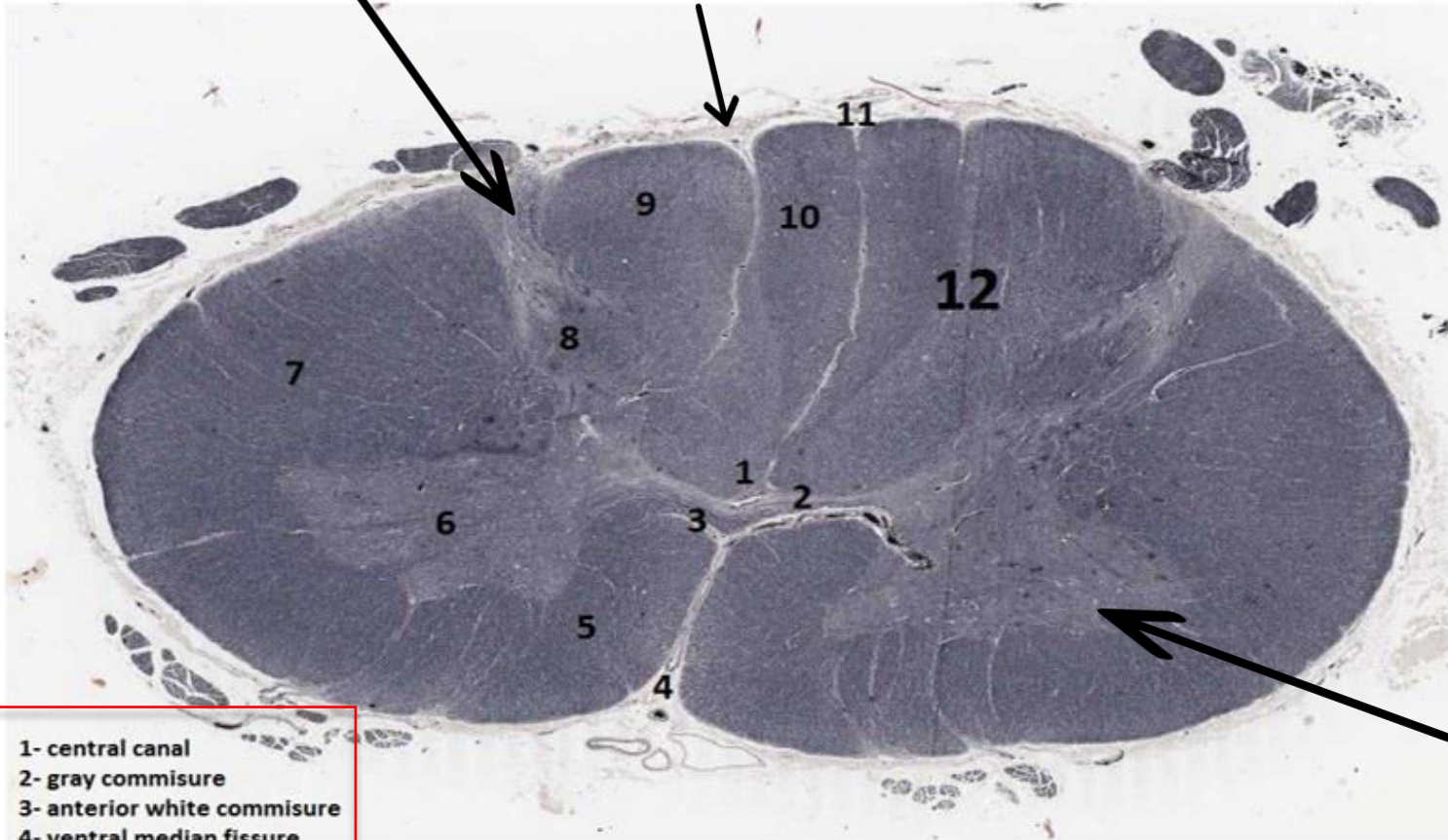


Cervical Spinal cord

Posterolateral sulcus

Posterior intermediate sulcus

separates gracile tract from cuneate tract



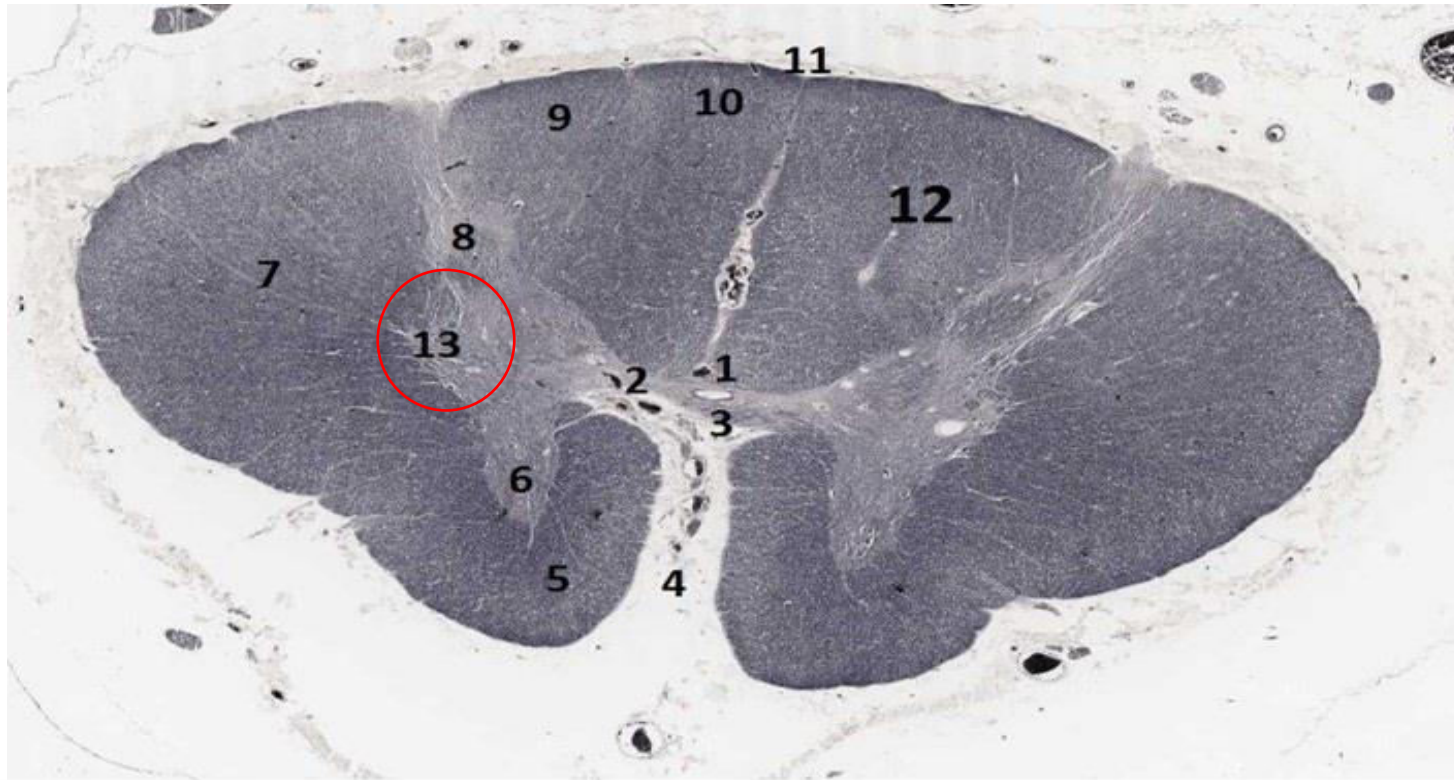
- 1- central canal
- 2- gray commissure
- 3- anterior white commissure
- 4- ventral median fissure
- 5- anterior white column
- 6- anterior gray horn
- 7- lateral white column
- 8- posterior gray horn
- 9- cuneate tract
- 10- gracile tract
- 11- dorsal median sulcus
- 12- posterior white column

You have to memorize them all along with the features 😊

Features:

- ✓ Oval in shape
- ✓ **Wide** ventral horn " Because of brachial plexus "
- ✓ **Thin** dorsal horn
- ✓ **NO** lateral horn

Thoracic Spinal cord



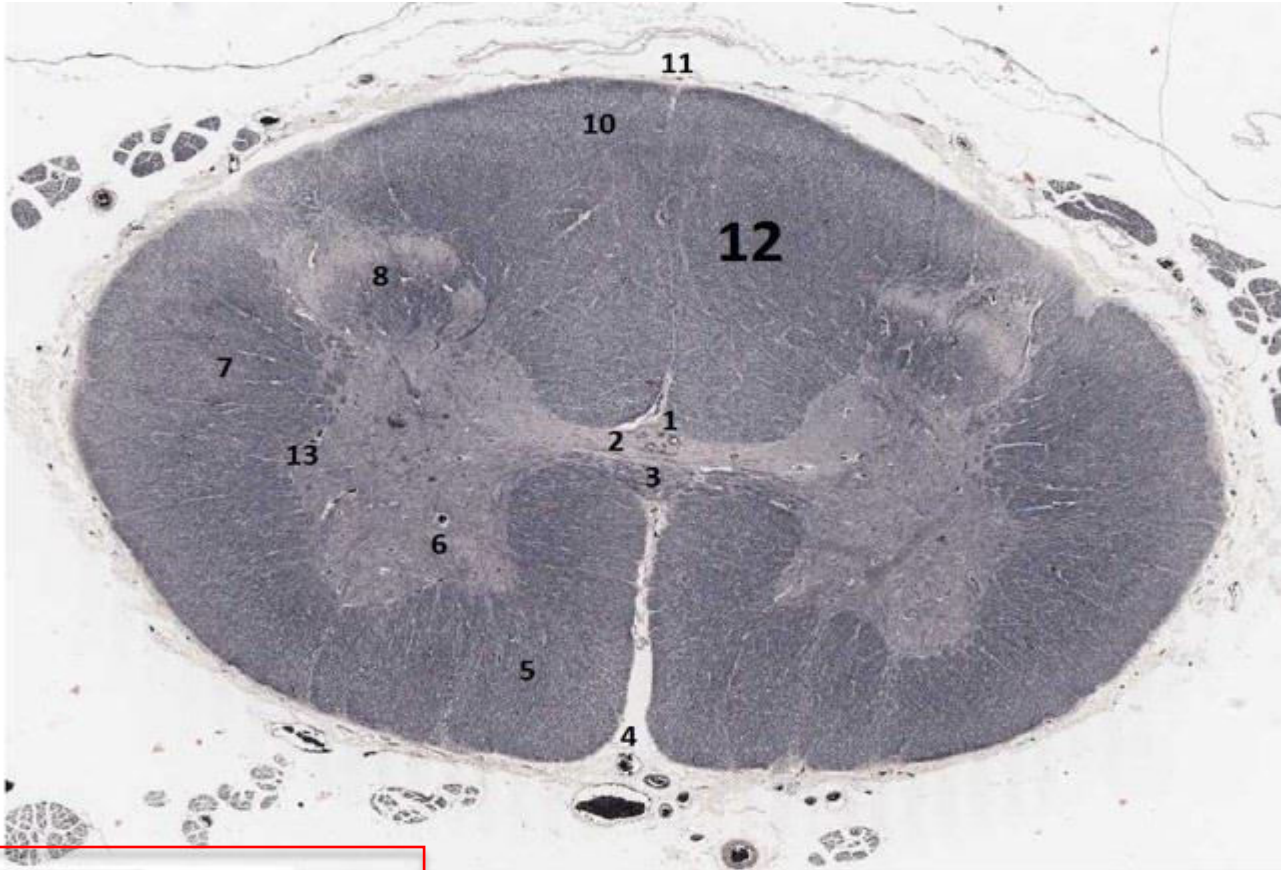
- 1- central canal
- 2- gray commissure
- 3- anterior white commissure
- 4- ventral median fissure
- 5- anterior white column
- 6- anterior gray horn
- 7- lateral white column
- 8- posterior gray horn
- 9- cuneate tract
- 10- gracile tract
- 11- dorsal median sulcus
- 12- posterior white column
- 13- lateral gray horn

You have to memorize them all along with the features 😊

Features:

- ✓ Ventral and dorsal horn are thin
- ✓ It contains a lateral horn

Lumbar Spinal cord



Note: don't worry about the 13 structures, they're the same in all the spinal cord segments except when there's no lateral horn, or no cuneate!

- 1- central canal
- 2- gray commissure
- 3- anterior white commissure
- 4- ventral median fissure
- 5- anterior white column
- 6- anterior gray horn
- 7- lateral white column
- 8- posterior gray horn
- 9- cuneate tract "not found at this level"
- 10- gracile tract
- 11- dorsal median sulcus
- 12- posterior white column
- 13- lateral gray horn

You have to memorize them all along with the features 😊

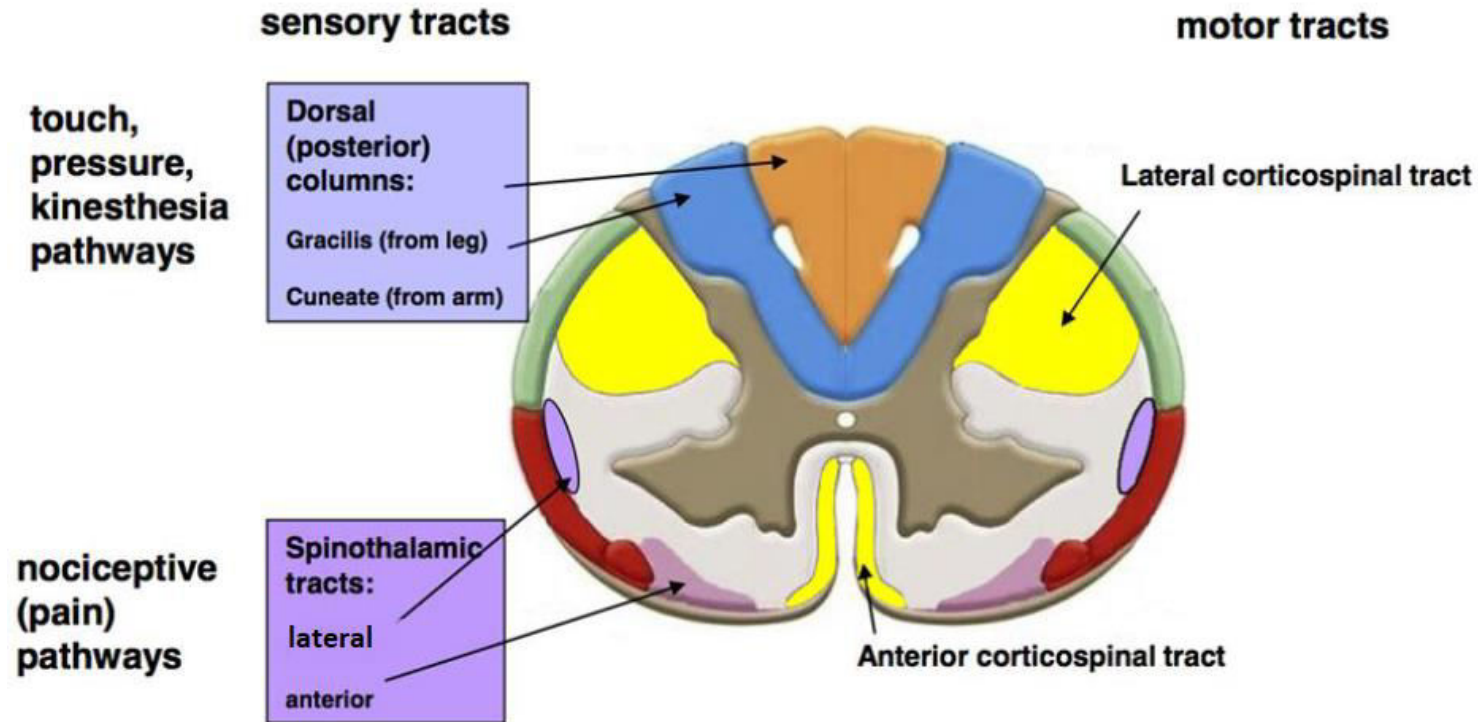
Features:

- ✓ Ventral and dorsal horn are wide
- ✓ It **doesn't** contain cuneate tract

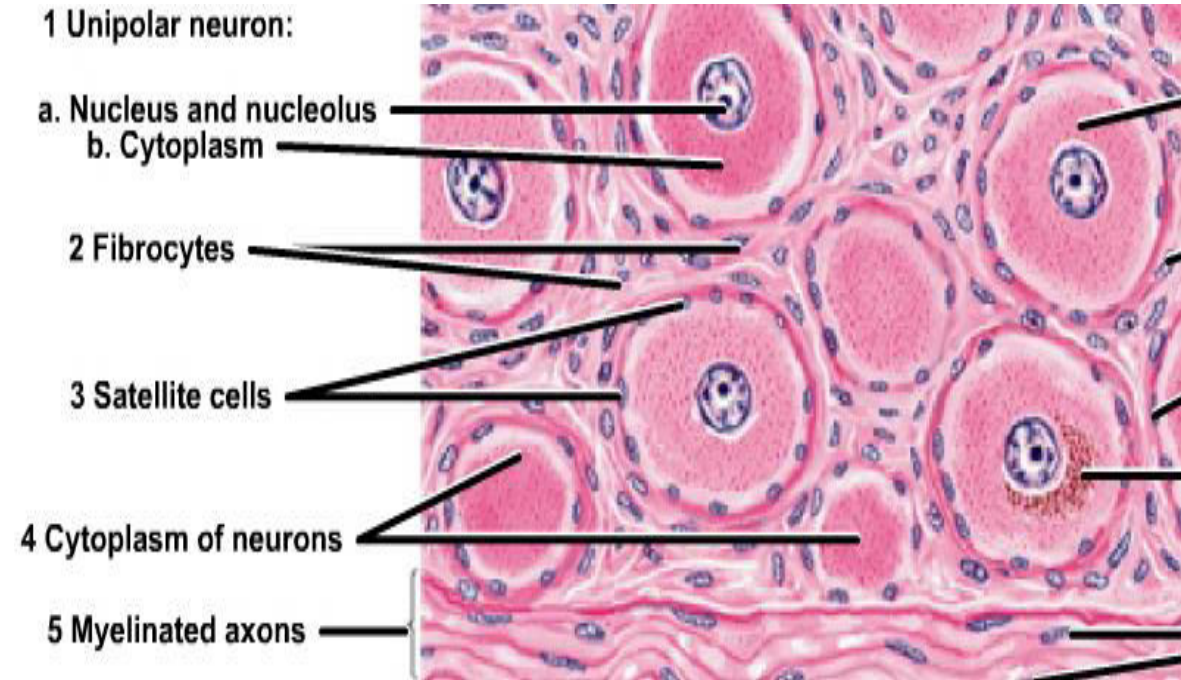
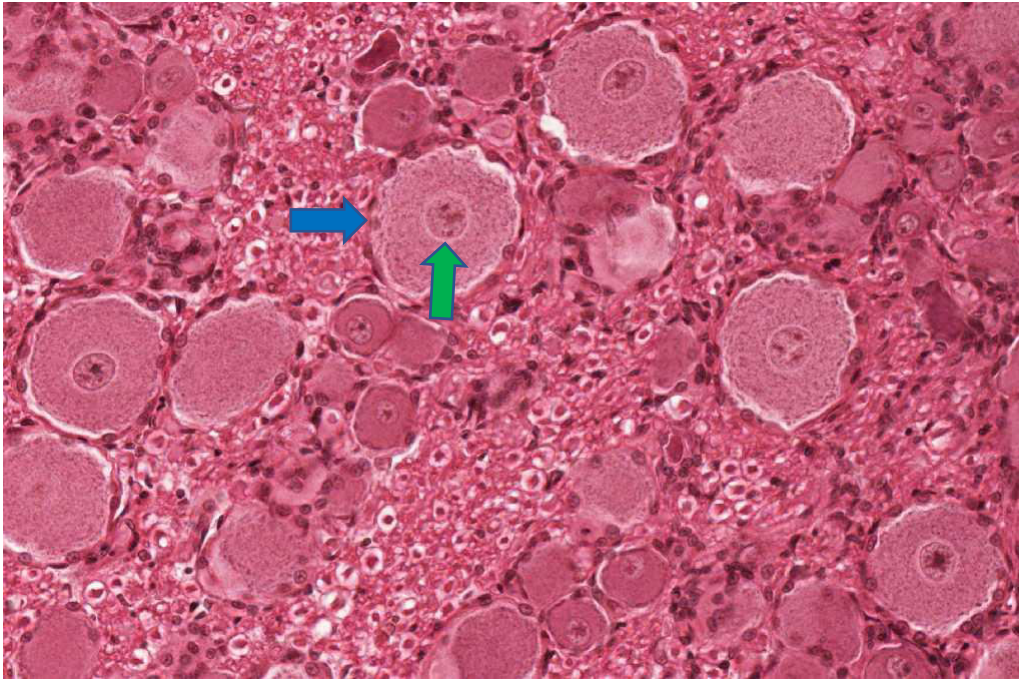
Remember: gracilis and cuneate ascending (sensory) tracts of the dorsal column.

Ascending & Descending Tracts

- ✓ Identify the labelled structures
- ✓ Identify the function of each tract



Pseudo-unipolar/Unipolar Neuron



Contains:

- ✓ Cell body
- ✓ Nucleus and Nucleolus
- ✓ Nissl bodies
- ✓ Mitochondria

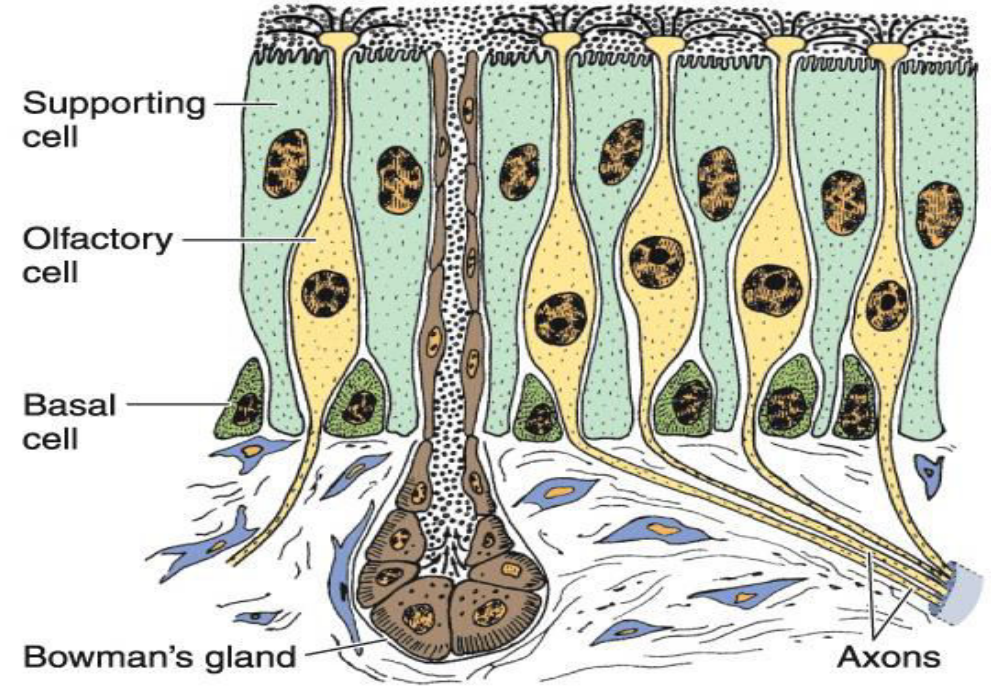
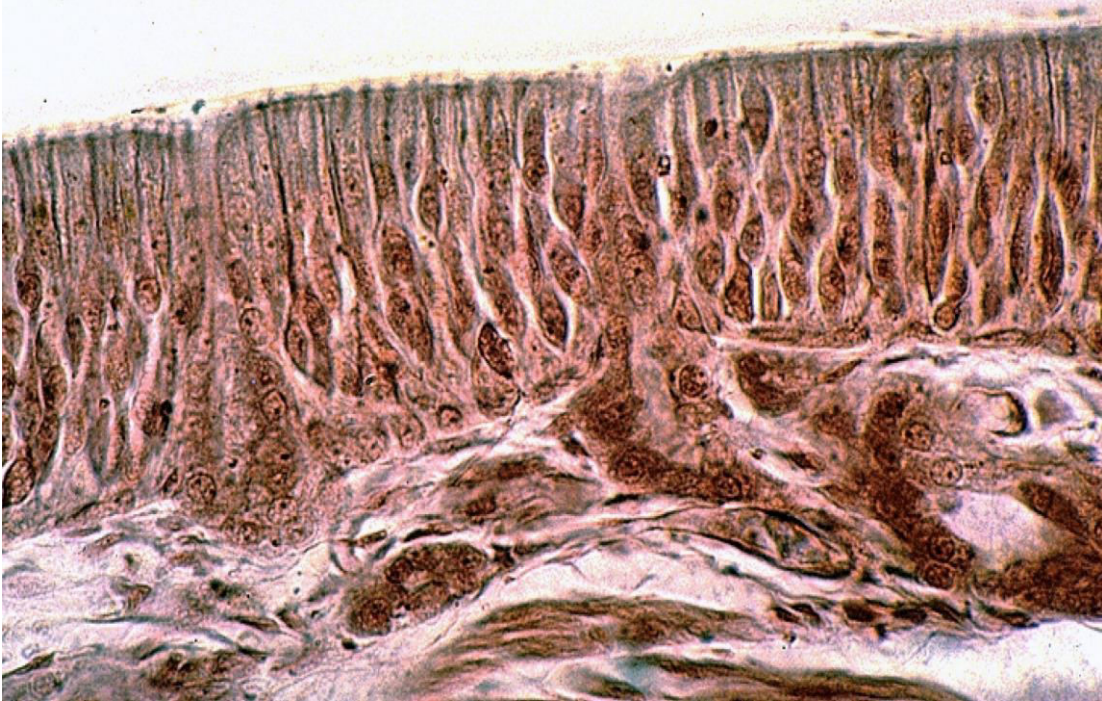
Location:

- ✓ Dorsal root ganglion
- ✓ Mesencephalic nucleus of the trigeminal nerve



These features are NOT specific for this type only!
They are found in every neuron!

Bipolar Neuron



Contains:

- ✓ Cell body
- ✓ Nucleus and Nucleolus
- ✓ Nissl bodies
- ✓ Mitochondria

Location:

- ✓ Olfactory Epithelium
- ✓ Retina



These features are NOT specific for this type only!
They are found in every neuron!

Multipolar Neuron

1- Stellate neuron:

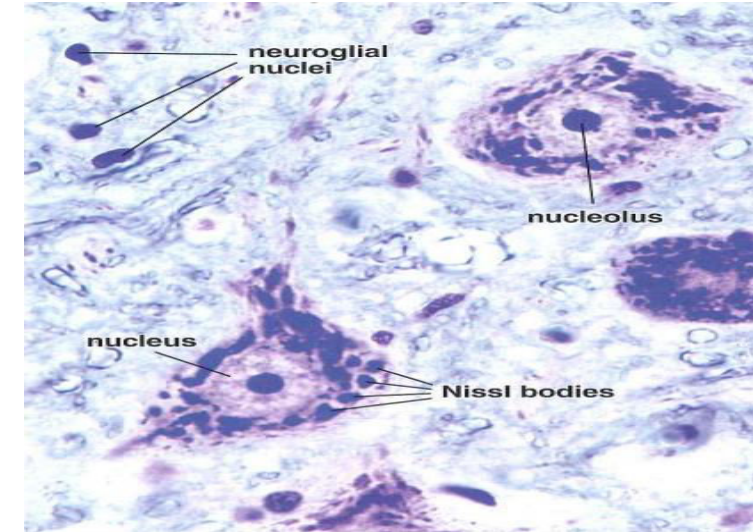
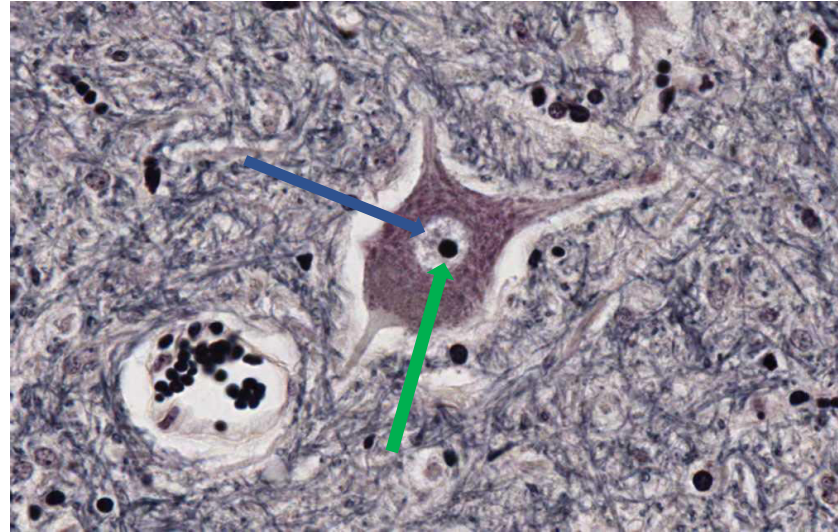
*Location:

- ✓ Anterior horn cells of the spinal cord

*Contains:

- ✓ Nucleus
- ✓ Nucleolus
- ✓ Nissl bodies
- ✓ Mitochondria

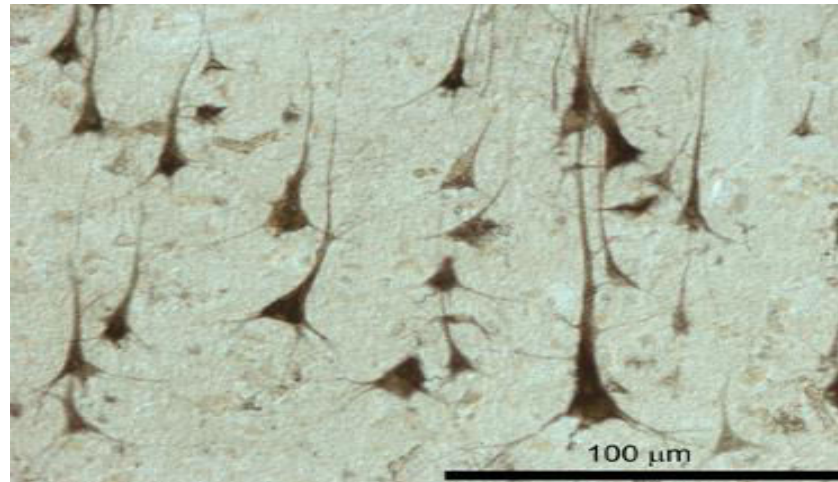
These features are NOT specific for this type only!
They're found in every neuron!



2- Pyramidal neuron:

*Location:

- ✓ Cerebrum (motor area 4)



Multipolar Neuron

3- Pyriform neuron:

*Location:

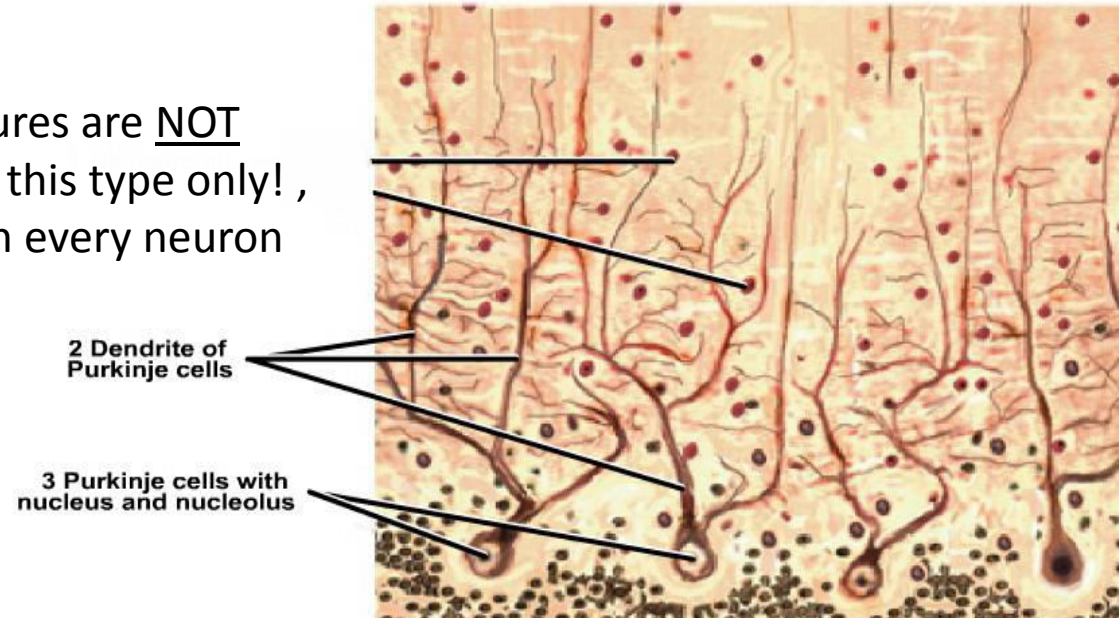
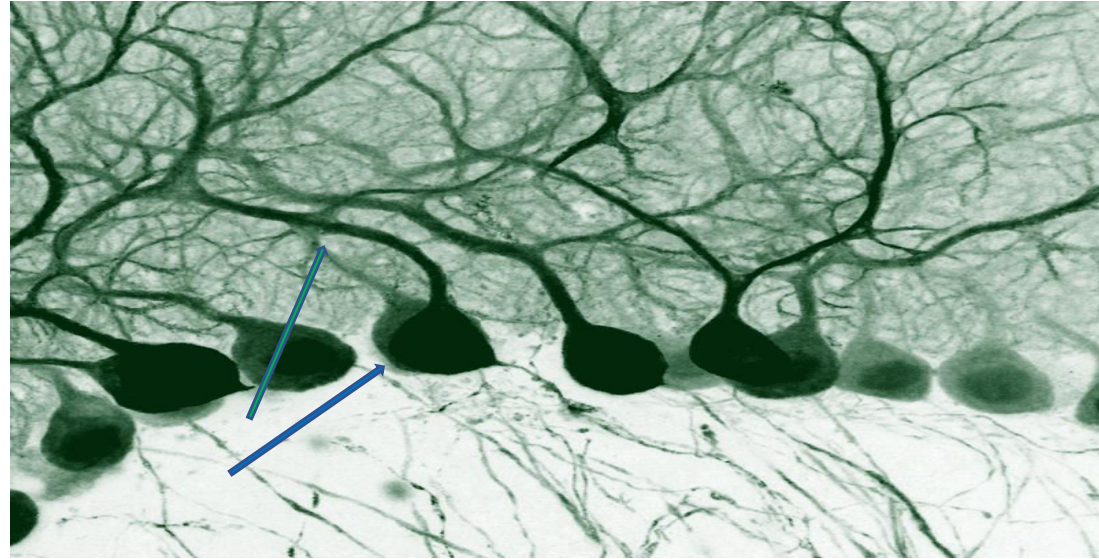
- ✓ Purkinje cells of cerebellum

*Contains:

- ✓ Purkinje cells with nucleus and nucleolus
- ✓ Dendrites of Purkinje cells
- ✓ Nissl bodies
- ✓ Mitochondria



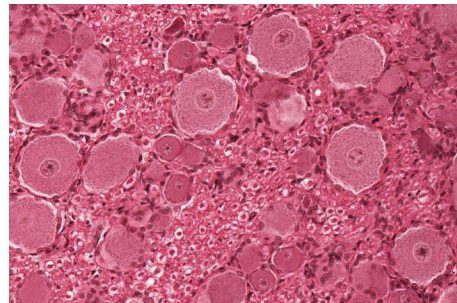
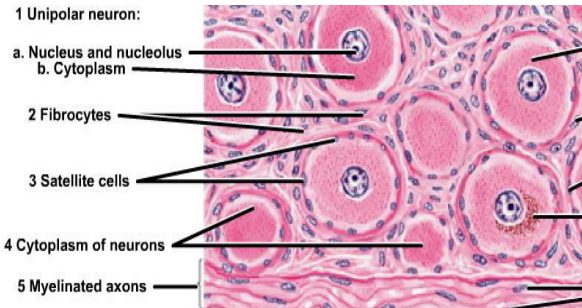
These features are NOT specific for this type only! , it's found in every neuron



Summary of neurons

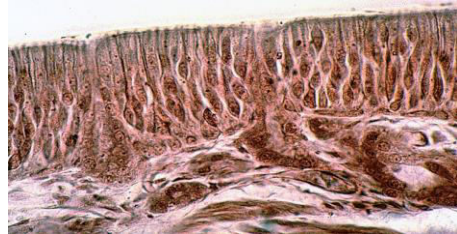
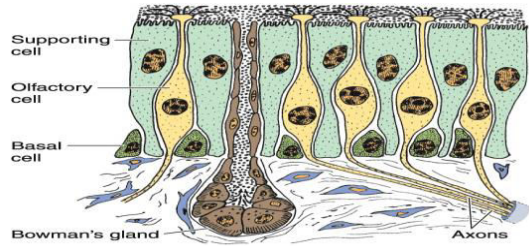
Unipolar neuron
(Pseudounipolar)
(rounded neuron)
Not directly connected to the cell body

- Location:**
 1- *Mesencephalic nucleus of trigeminal nerve.*
 2- *Dorsal root (spinal) ganglion.*
- Contains:**
- ✓ Cell body
 - ✓ Nucleus and Nucleolus



Bipolar Neuron
(spindle-shaped neuron)
like having 2 necks

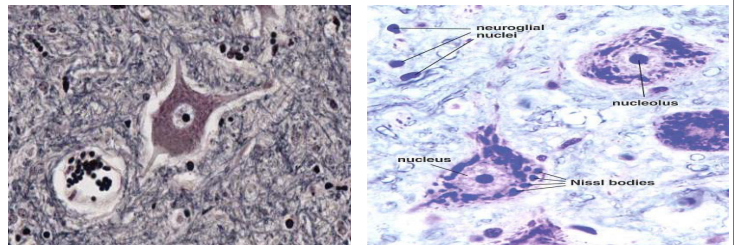
- Location:**
 1- *Retina*
 2- *olfactory epithelium.*



Multipolar neuron:
Has one axon and multiple dendrites.

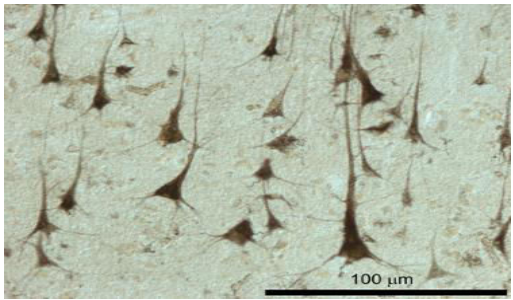
Stellate Neurons (star shape)

- Location:**
 ✓ Anterior horn cells of the spinal cord
- *Contains:**
- ✓ Nucleus
 - ✓ Nucleolus
 - ✓ Nissl bodies
 - ✓ Mitochondria



Pyramidal Neurons (wide base)

- Location:**
 ✓ Cerebrum (motor area 4)



Pyriform Neurons

- Location:**
 ✓ Purkinje cells of cerebellum
- *Contains:**
- ✓ Purkinje cells with nucleus and nucleolus
 - ✓ Dendrites of Purkinje cells
 - ✓ Nissl bodies
 - ✓ Mitochondria





Thank you & good luck

- Histology team

Team leaders:

- ✓ Rana Barasain
- ✓ Faisal Alrabaii

