

SPINAL CORD

- ***Spinal cord***—**45 cm long** and has *cervical, thoracic* and *lumbosacral* parts.
- Cross-section of spinal cord shows a **central canal** lined by ***ependyma (simple ciliated columnar)***.
- ***Central canal*** **surrounded by grey matter.**
- ***Grey matter*** is **surrounded by white matter.**

- **Grey matter—**

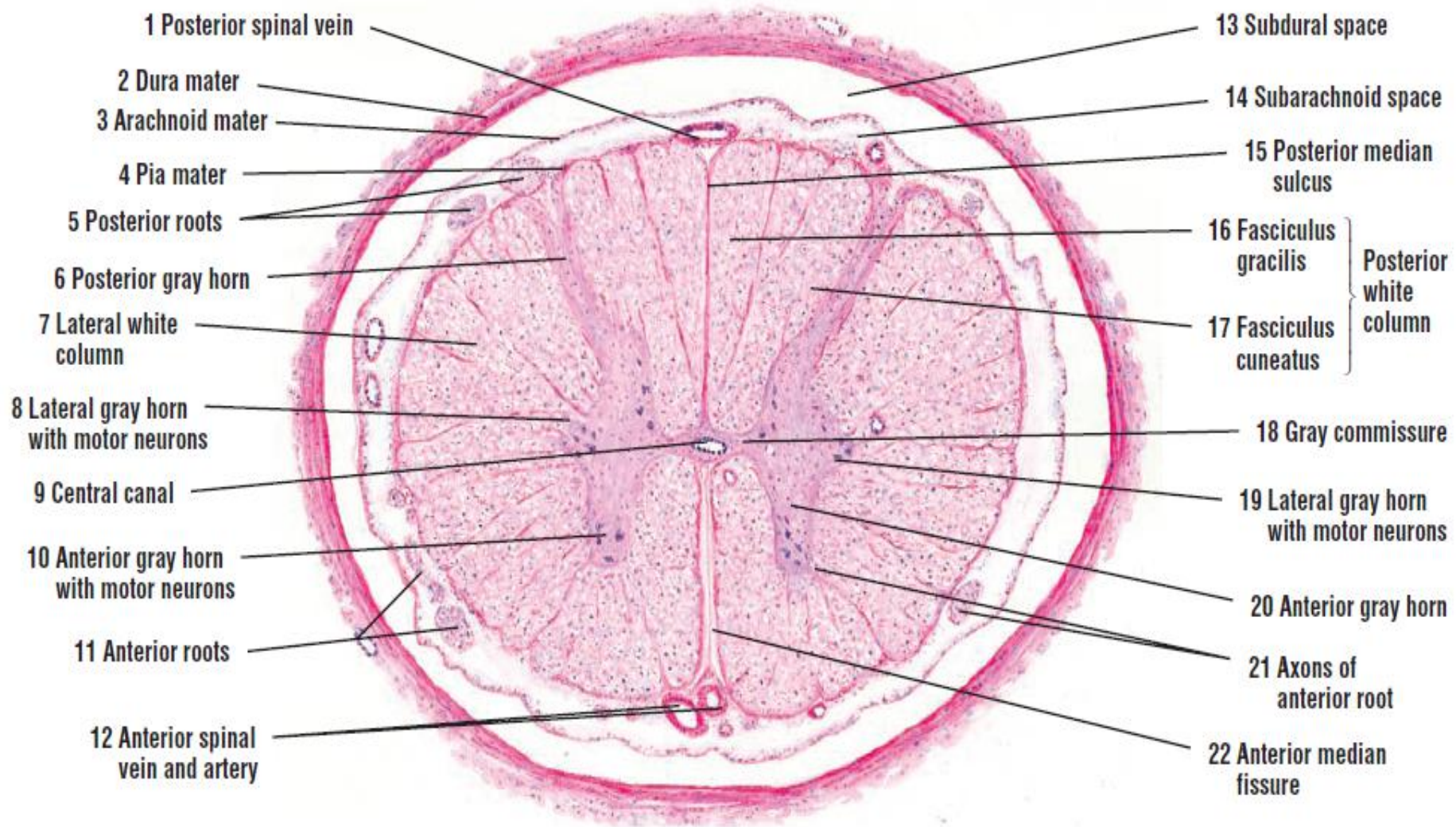
- Appears in the form of **an H.**
- It has **anterior** and **posterior horn.**

- **Anterior horn**

- Short and broad, does not reach the surface of cord
- contains ***large size multipolar motor neurons.***

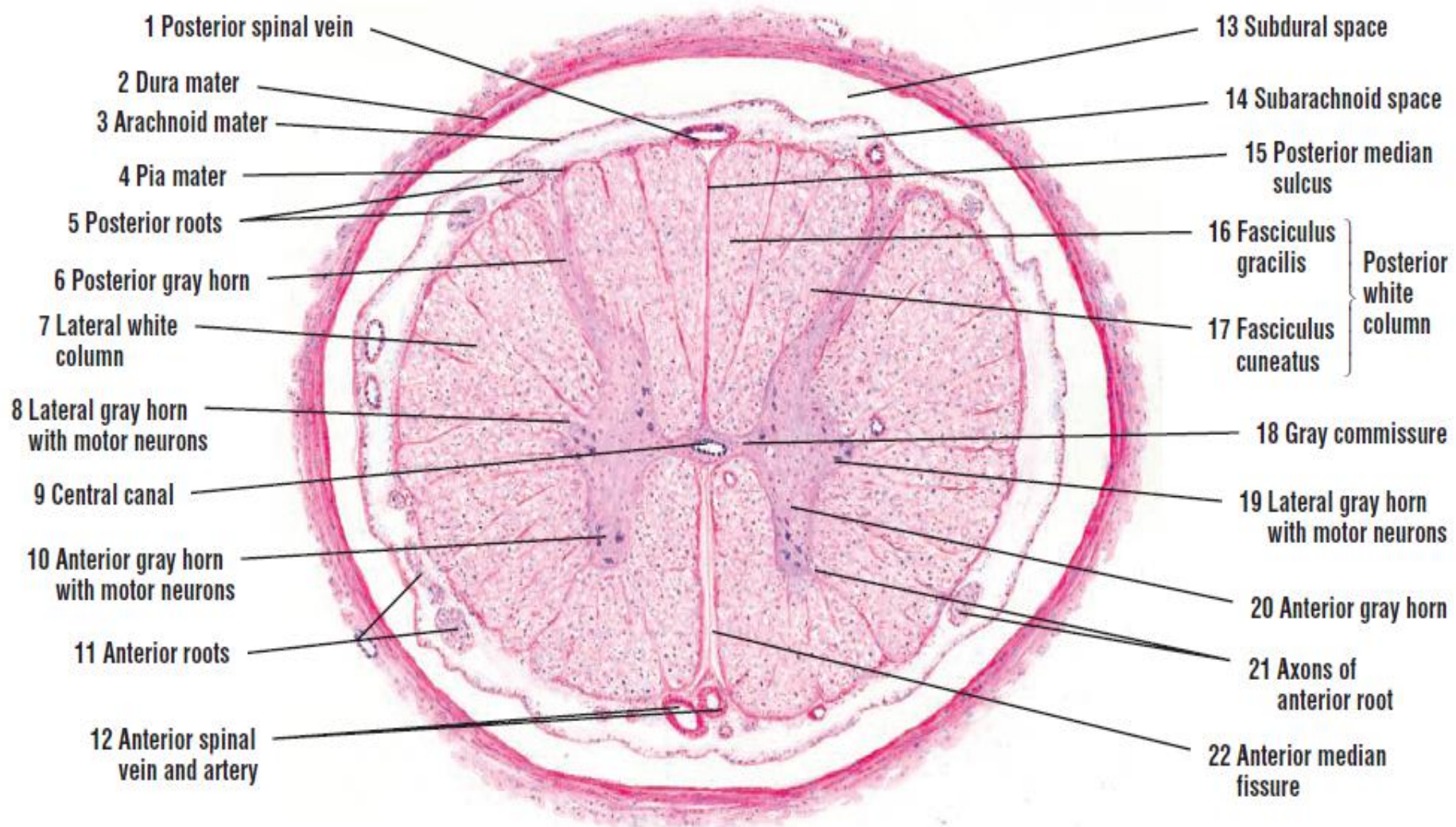
- **Posterior horn**

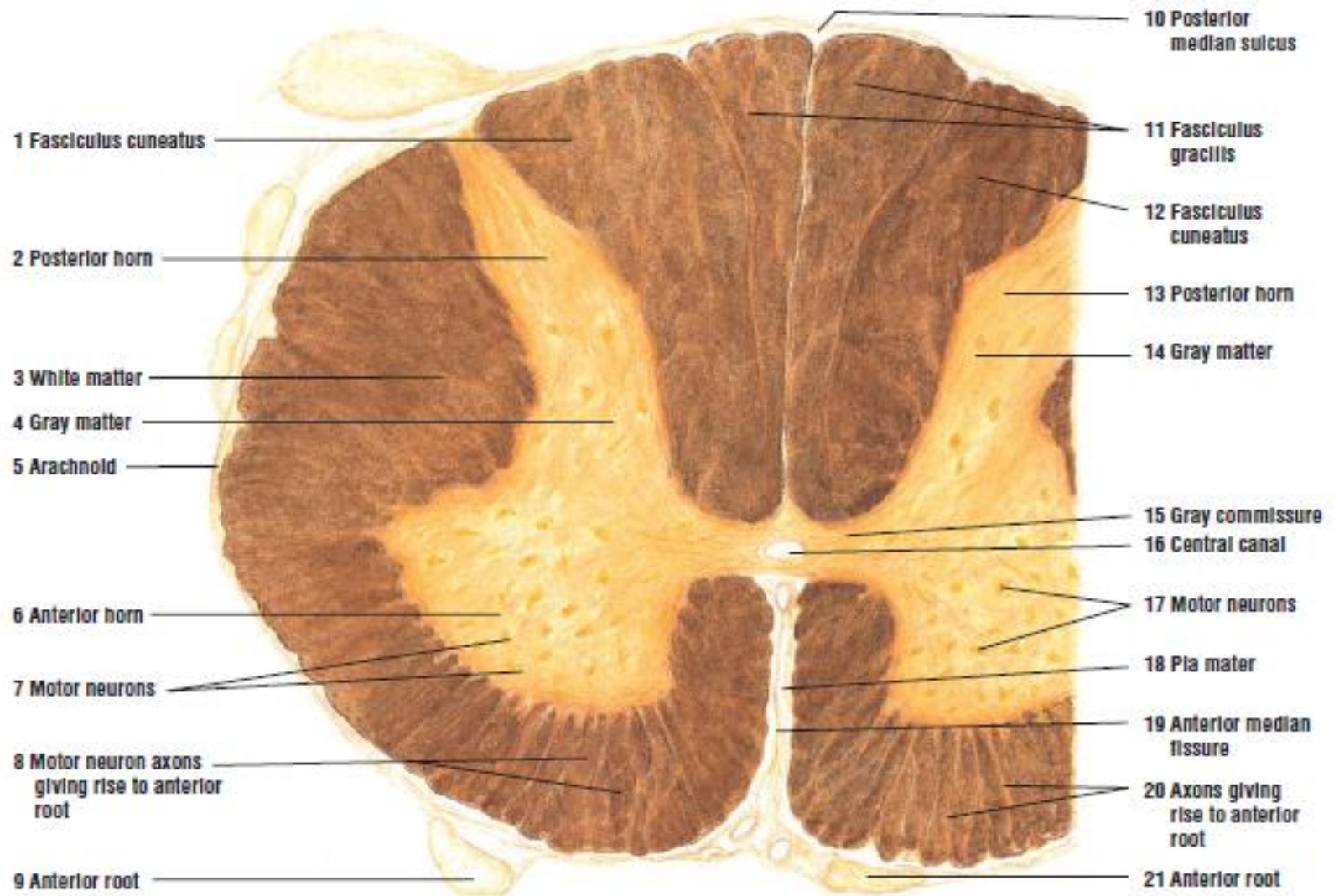
- Narrow and elongated, reaches up to the surface
- contains ***smaller neurons.***



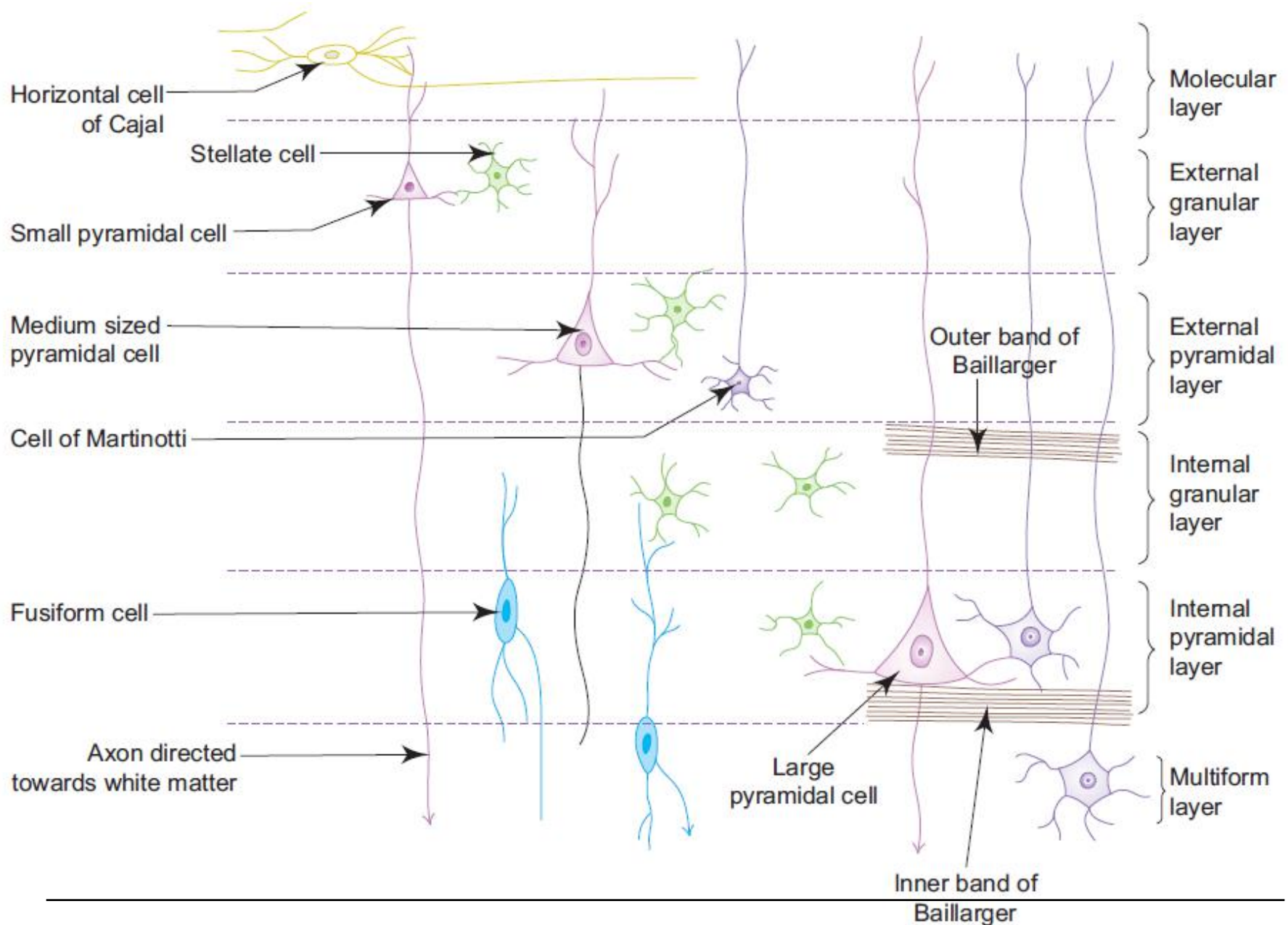
- **White matter—**
- Composed of *myelinated nerve fibres*.
- *Each half divided into anterior, lateral and posterior regions.*
- The nerve fibres are *comprised of ascending and descending tract*.

- **Spinal Cord**
- Thoracic region contains *anterior, posterior, and lateral* gray horns
- Lateral horns contain motor neurons of sympathetic division of autonomic nervous system
- Gray commissure connects two sides of the gray matter and contains the central canal





CEREBRAL CORTEX



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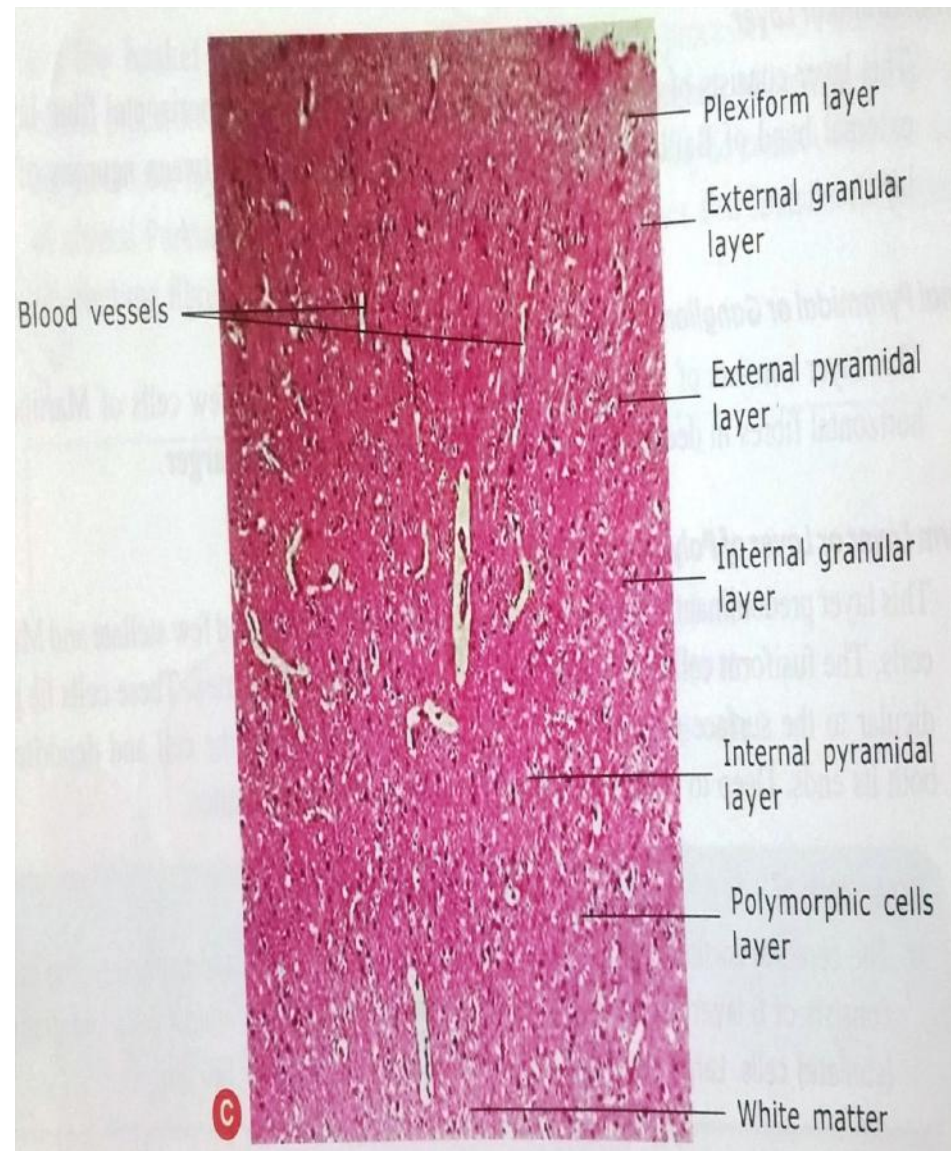
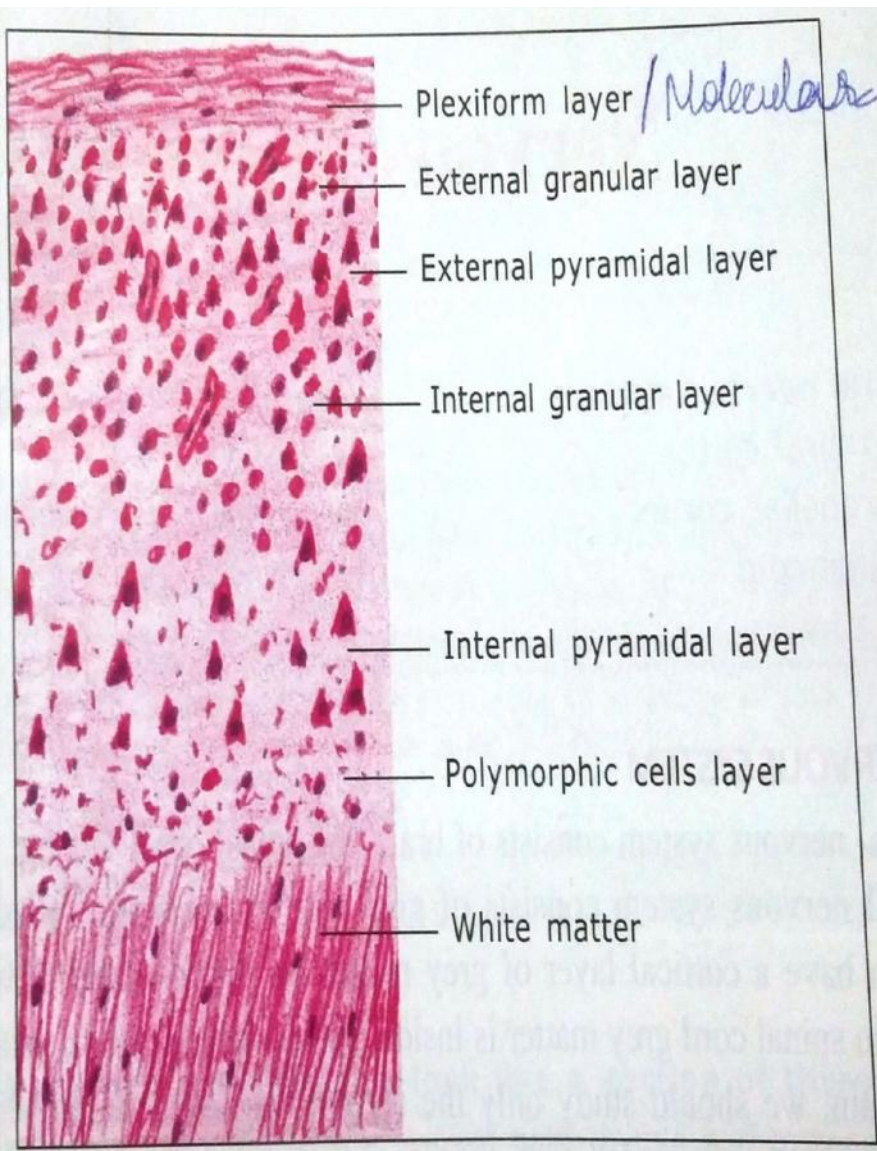
- Cerebral cortex has six layers—

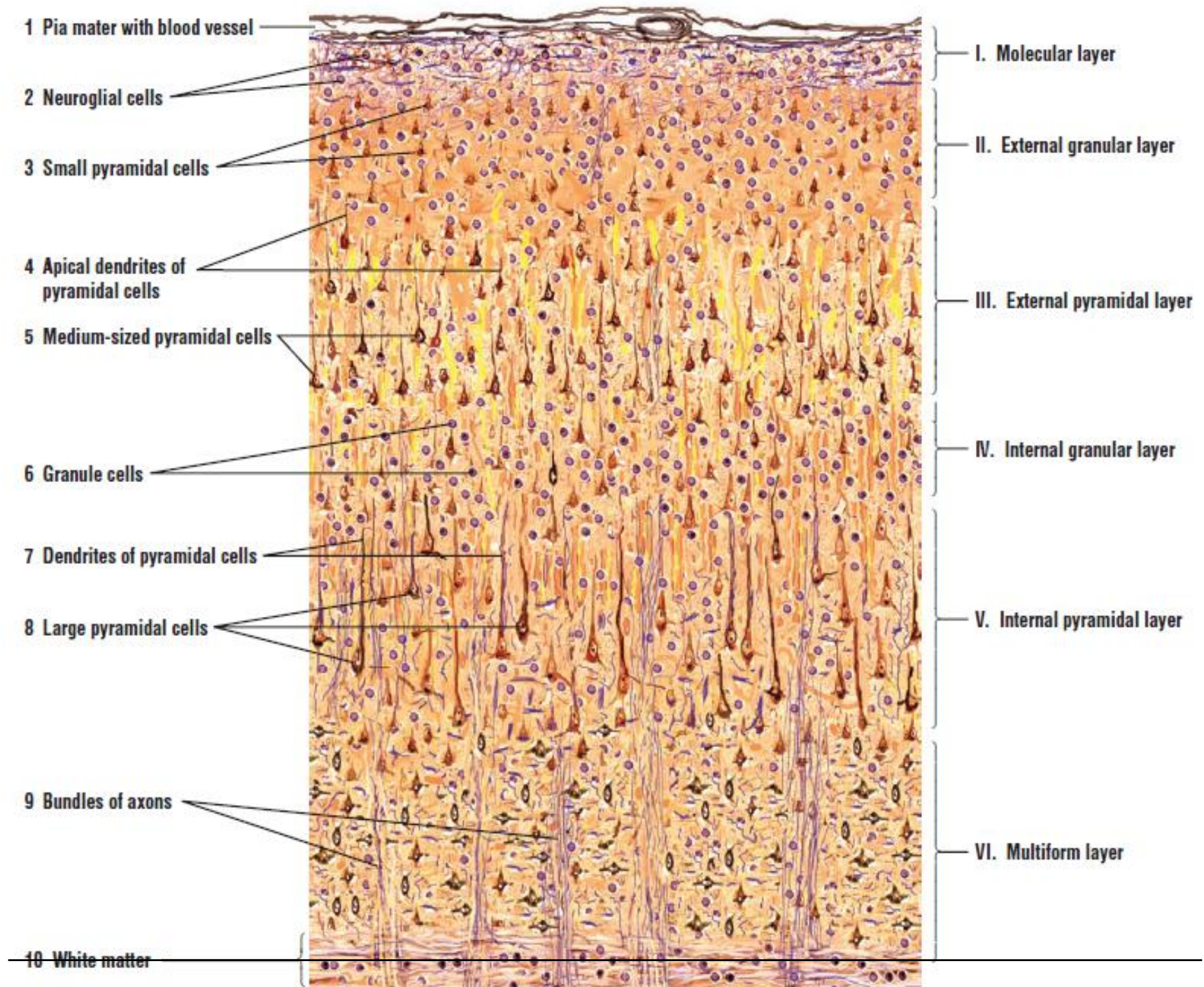
1.Molecular(plexiform layer):

- Just beneath pia mater
- Consist of ***neuroglial cells*** and few ***horizontal cells***.

2.External granular layer:

- Consists of two types of neurons small ***pyramidal*** and ***granular cells***.





3.External pyramidal layer:

- Consists of *medium pyramidal cells*.
- Axons of pyramidal cells form *association* and *commissural fibres*.

4.Internal granular layer:

- Consists of *granular cells* and *horizontal fibres*.

5.Internal pyramidal layer:

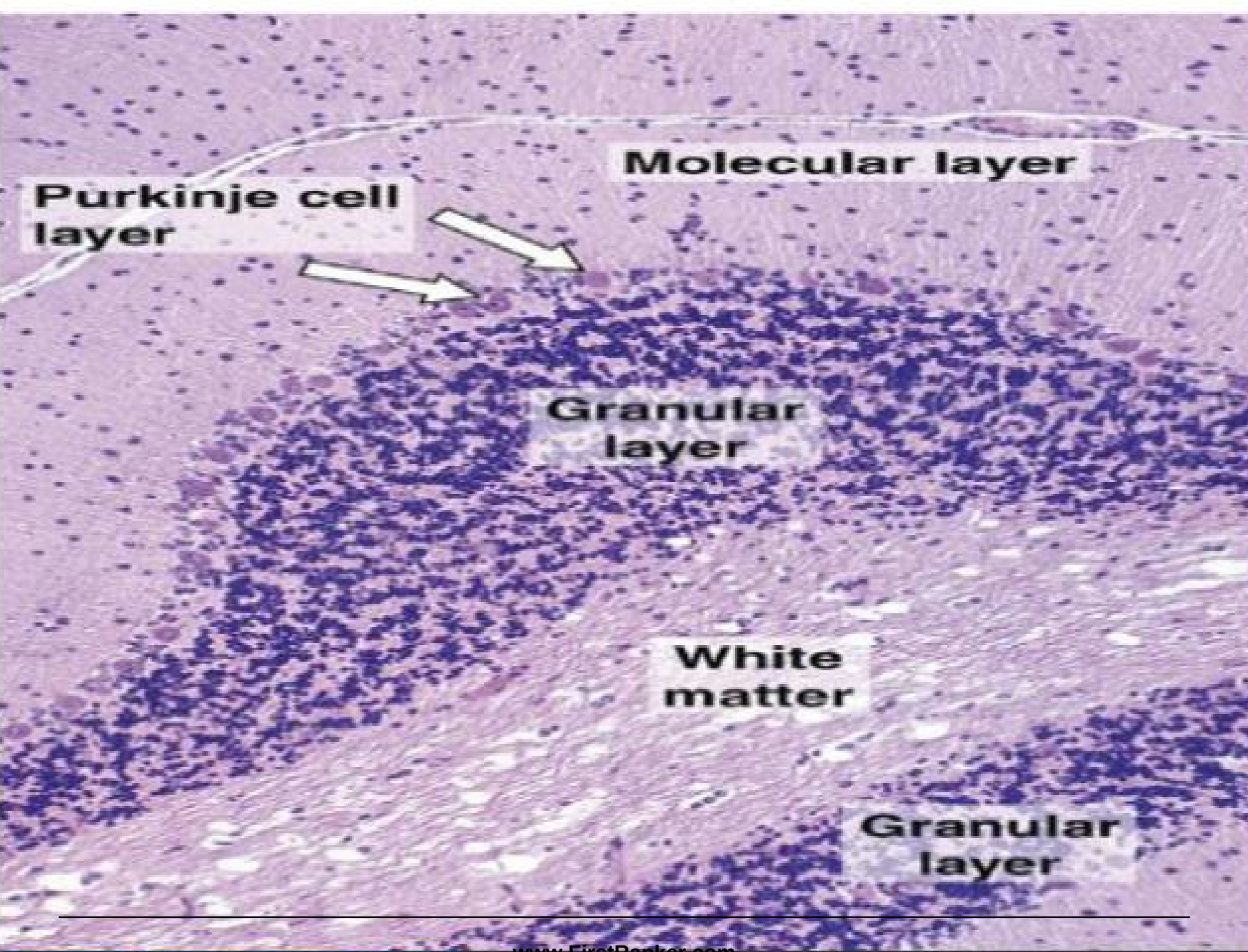
- Consists of *large pyramidal cells* (cells of Betz).

6.Polymorphic cell layer:

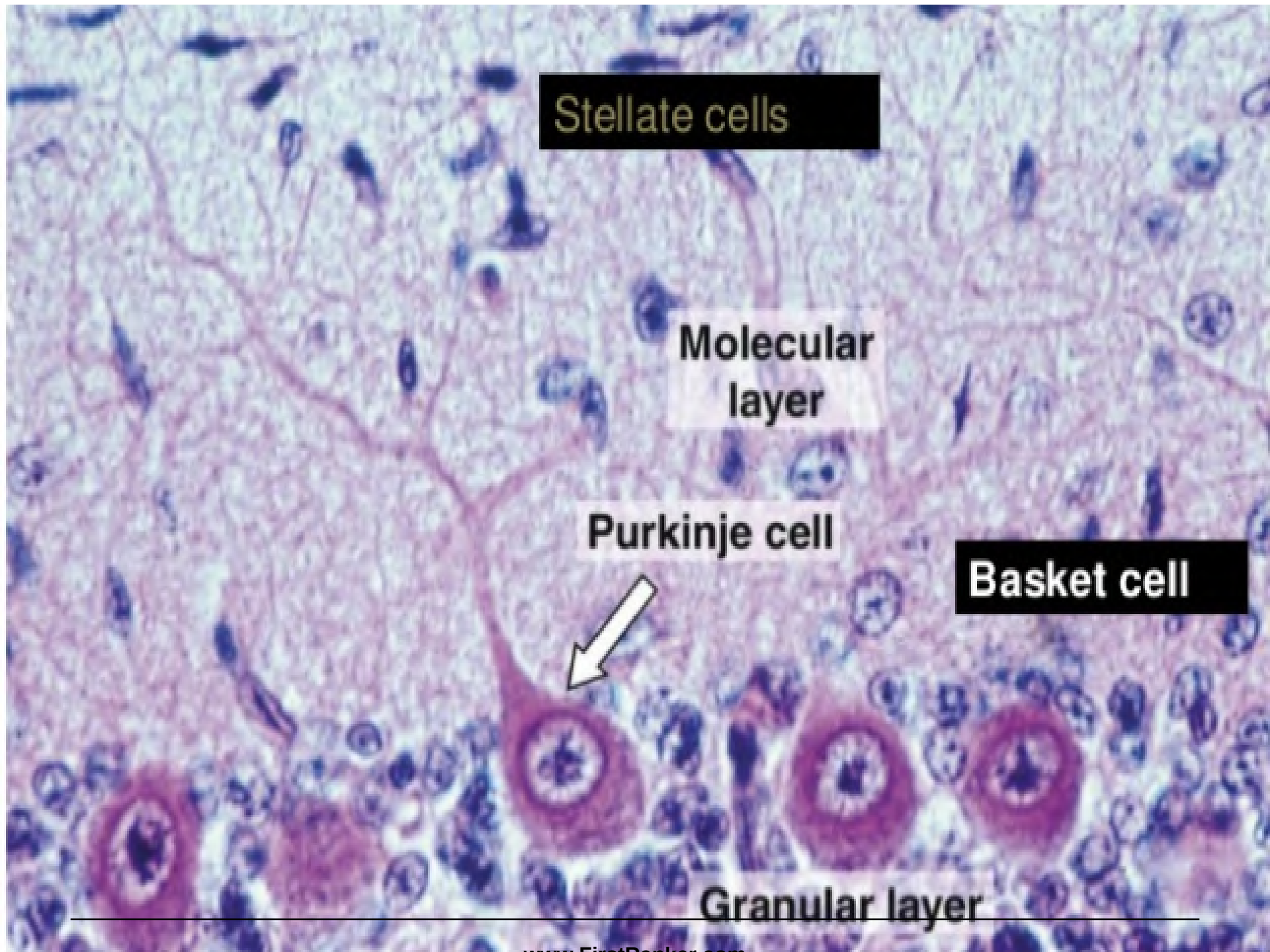
- Consists of *fusiform cells* and *stellate cell*.

CEREBELLAR CORTEX

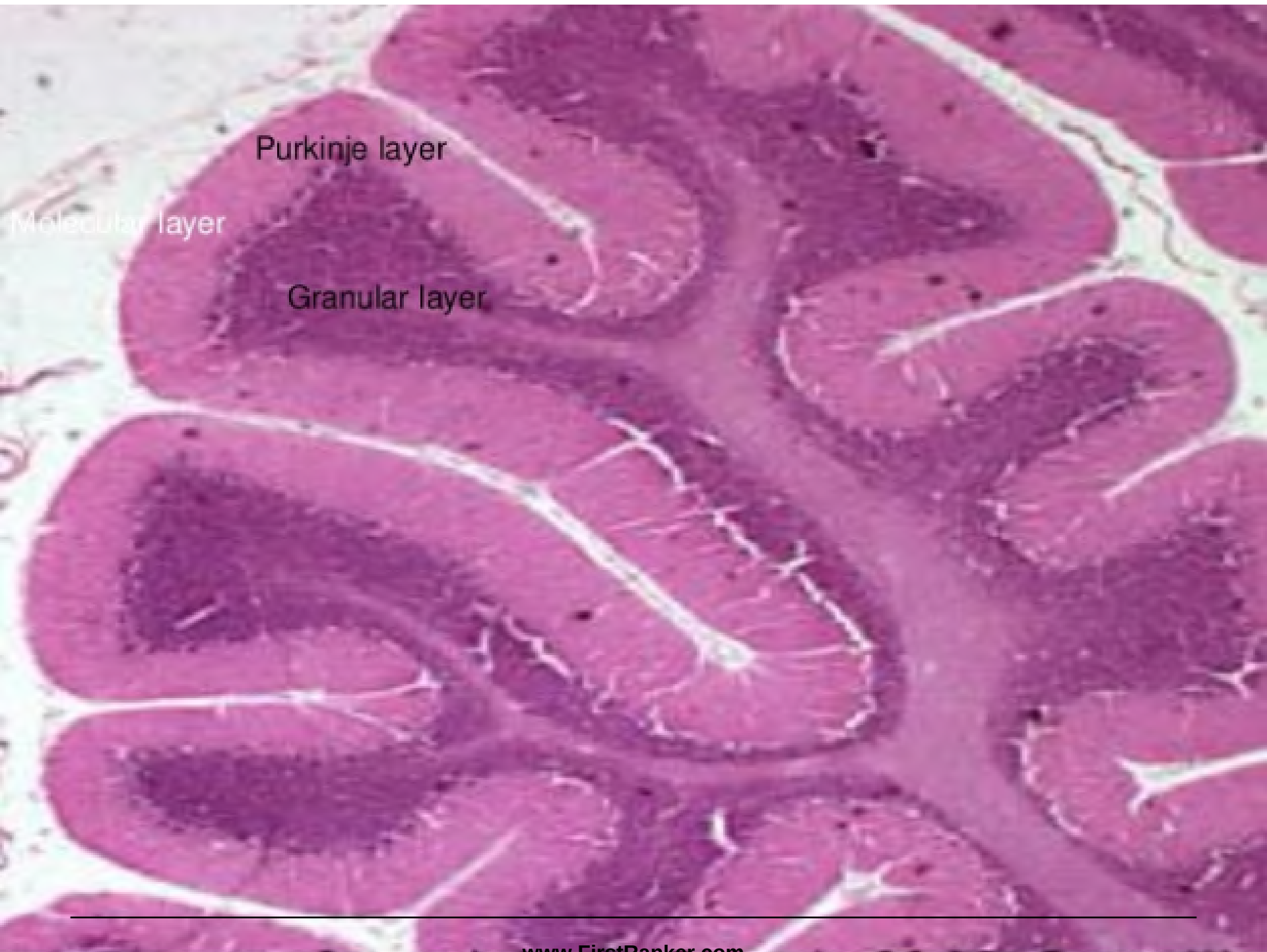
- Histological structure of cerebellar cortex is uniform throughout.
- **Consists of three layers—**
 - *Molecular layer*
 - *Purkinje cell layer*
 - *Granular layer*



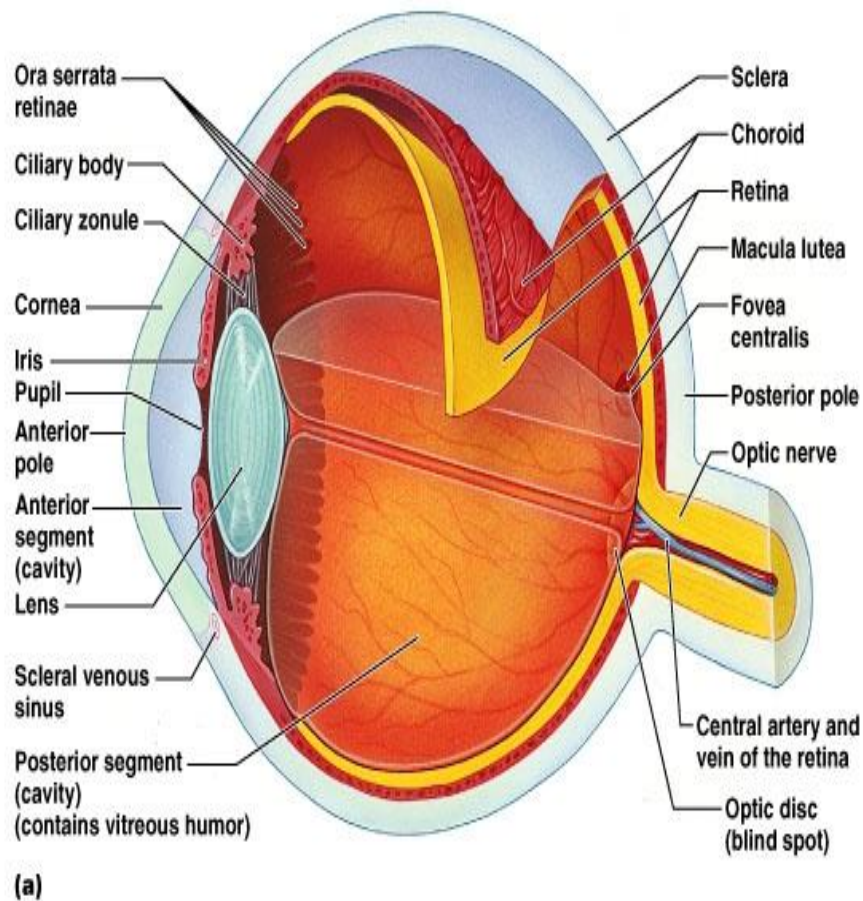
- ***Molecular layer—***
- Just beneath ***pia matter***.
- **Stellate cells** in *superficial part*.
- **Basket cells** in *deeper part*.
- ***Dendrite of purkinje cells***.
- ***Terminal part of climbing fibres***.



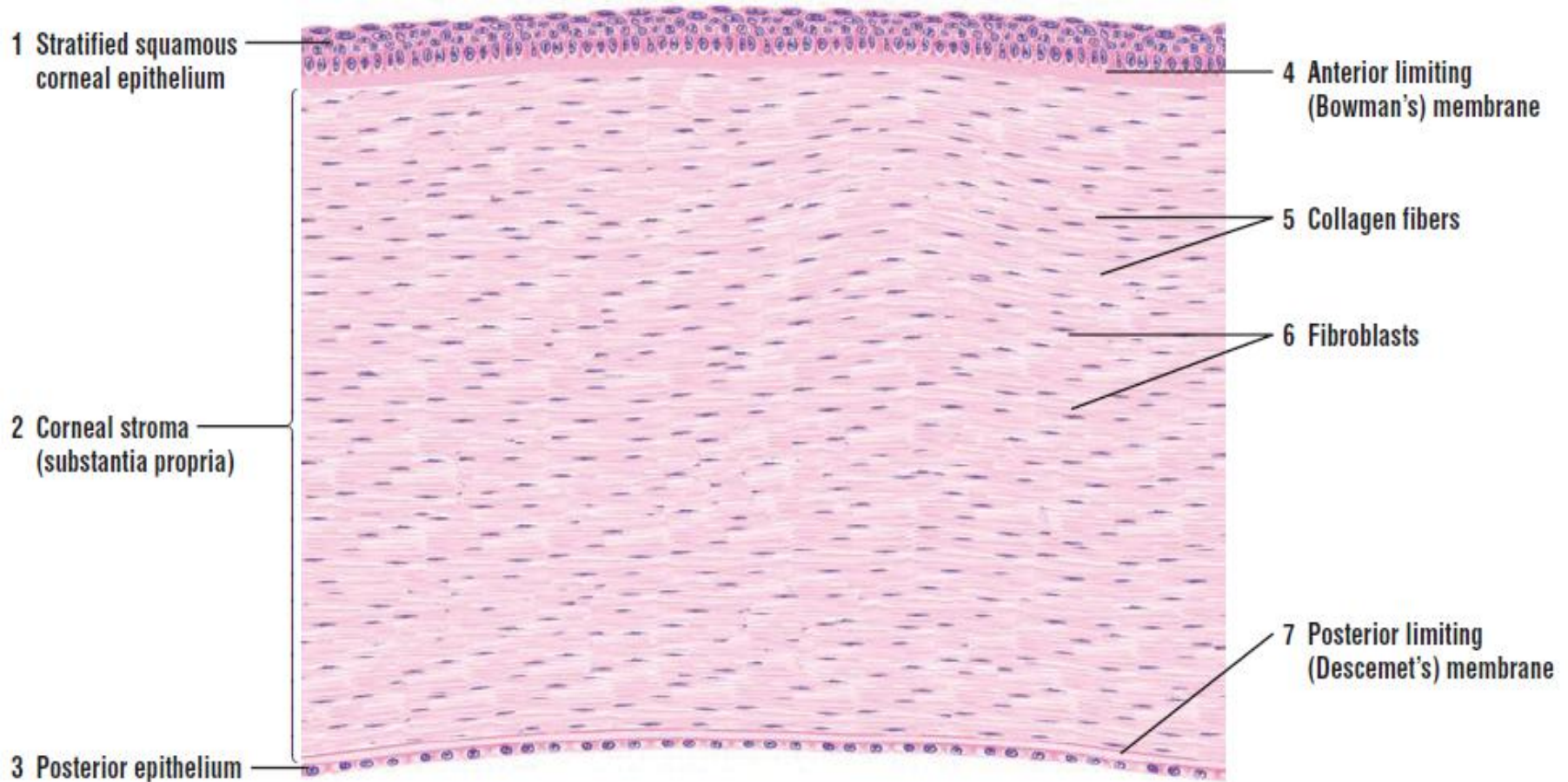
- ***Purkinje cell layer—***
- Arranged in ***single row*** between **molecular** and **granular layer**.
- ***Granular layers—***
- ***Densely packed with granular cells.***



CORNEA



- ***Consists of five layers from superficial to deep—***
- **Corneal epithelium (Anterior epithelium)**
- **Bowman's membrane**
- **Corneal Stroma**
- **Descemet's Membrane**
- **Endothelium (Posterior epithelium)**

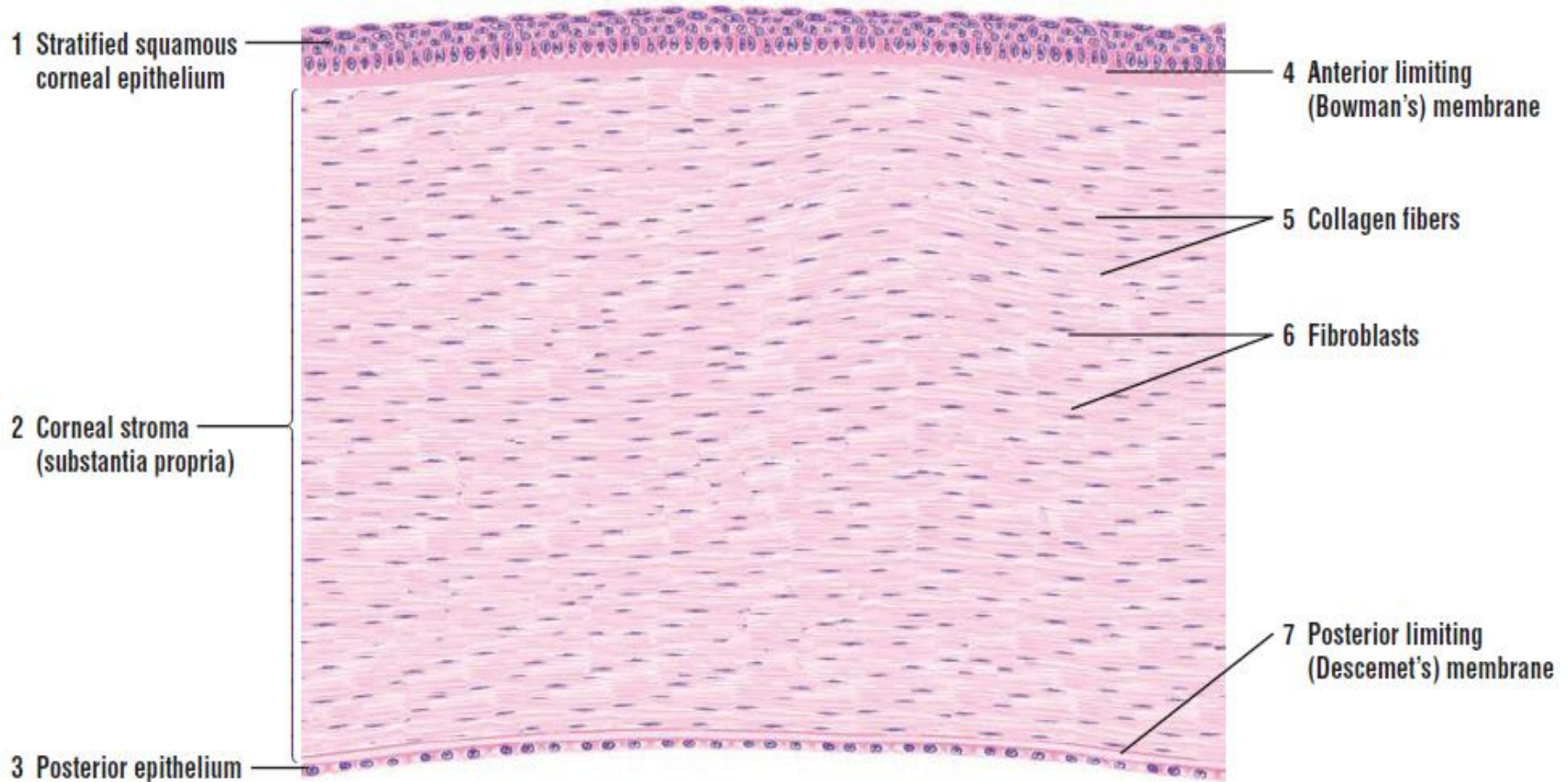


Corneal epithelium:

- Stratified squamous non keratinised epithelium*
- Highly sensitive.*

Bowman's membrane:

- Also called *anterior limiting membrane*
- Dense mass of *collagen fibers*
- Acts barrier*—spread of infection
- Damaged—*can't regenerate*



Corneal stroma:

- 90% thickness**
- Bundles of **type 1 collagen fibers**
- Transparent**

Descemet's membrane:

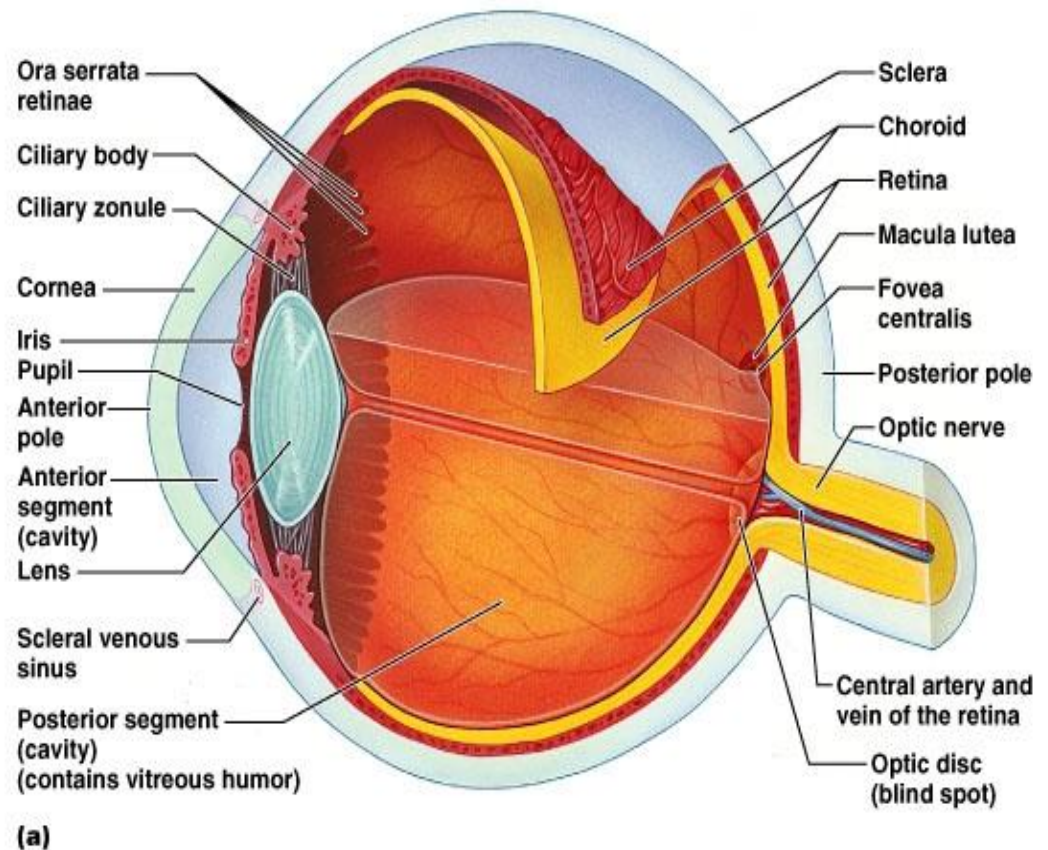
- Also called **Posterior limiting membrane**
- Acellular**
- Regarded as **BM** of endothelium

Endothelium:

- Single layer of cuboidal cells.**
- Metabolic exchange.**

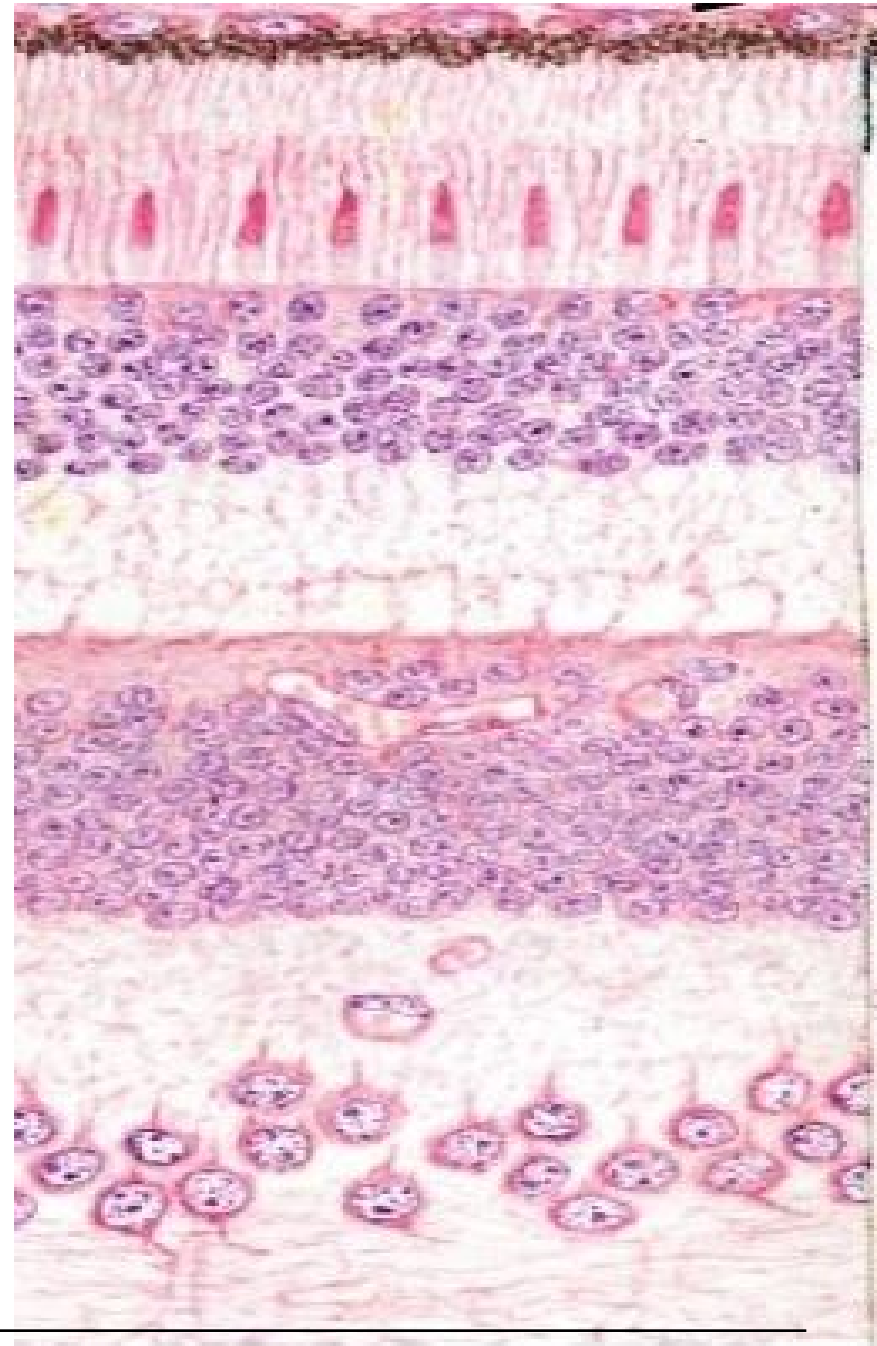
RETINA

- I. Neural sensory layer.
- II. Inner coat—
posterior 3/4th
surface.



LAYERS OF RETINA

- 1. Pigment cell layer**
- 2. Layer of rods & cones**
- 3. External limiting membrane**
- 4. Outer nuclear layer**
- 5. Outer plexiform layer**
- 6. Inner nuclear layer**
- 7. Inner plexiform layer**
- 8. Ganglion cell layer**
- 9. Nerve fiber layer**
- 10. Internal limiting membrane**



1.Pigment layer....

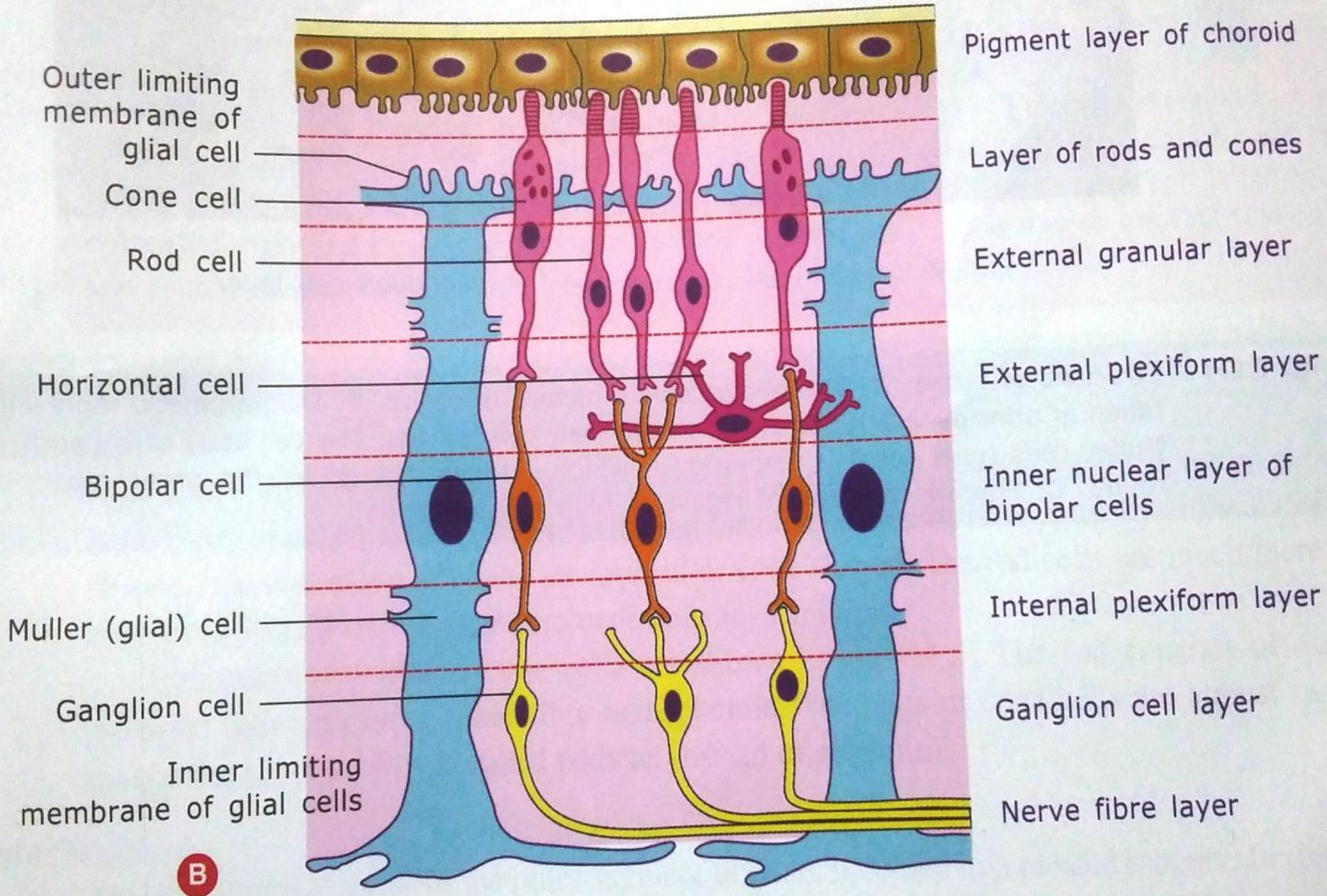
- Lined by *cuboidal epithelium*
- Cytoplasm contains *melanin pigment*.
- Melanin pigment—*absorbs light*

2.Layer of rods and cones...

- Rod and cone cells—*photoreceptors*

3.External limiting membrane...

- Junctional zone b/w *Muller's cells* (*glial cells, supporting cells of retina*) and *photoreceptor processes*



4. Outer nuclear layer.....

- Consist of **cell bodies and nuclei** of *rods and cones*.
- Nuclei arranged in *several layers*
- Darkly stained* area

5. Outer plexiform layer...

- Consist of **axons of rods & cones + dendrites of bipolar neurons + horizontal cells**

6. Inner nuclear layer....

- Consist of **cell bodies and nuclei of—**
Bipolar neurons + Amacrine cells + Muller's cell + Horizontal cell
-

7.Inner plexiform layer;

--Consist of axons of *bipolar* + *dendrites of ganglionic cells and amacrine cells*.

8.Ganglionic cell layer....

--Consist **body and nuclei** of *large ganglion cell*

9.Nerve fiber layer

--Consist of **axons of *ganglion cell*** gather together at *optic disc* and leave eye as *OPTIC NERVE*.

10.Internal limiting membrane...

--Seperates *retina* from *vitreous humour*

MCQ

FEMALE REPRODUCTIVE SYSTEM &

EYE

1. Primordial follicle is identified in section by the presence of

- (a) zona pellucida
- (b) single layer of flattened follicular cells
- (c) theca folliculi
- (d) antrum folliculi

2. Which stage of the follicle is marked by the surrounding of flattened (squamous) follicular cell becoming cuboidal?

- (a) Primary follicle
- (b) Primordial follicle
- (c) Secondary follicle
- (d) Mature follicle

3. Which stage of ovarian follicle development is characterized by an initial period of follicular fluid accumulation?

- (a) Graafian follicle
- (b) Primary follicle
- (c) Primordial follicle
- (d) Secondary follicle

4. Fallopian tube is lined by the following epithelium

- (a) simple columnar
- (b) simple cuboidal
- (c) simple columnar ciliated
- (d) pseudostratified ciliated columnar

5. The life span of corpus luteum of pregnancy is

- (a) 10–12 days
- (b) 4–5 weeks
- (c) 4–5 months
- (d) 10 lunar months

6. Thickest layer of cornea is

- (a) Corneal epithelium
- (b) Bowman's membrane
- (c) Corneal Stroma
- (d) Descement's Membrane

7. Which of the following is a glial cell of retina?

- (a) Muller cells
- (b) Bipolar cells
- (c) Horizontal cells
- (d) Amacrine cells

ANSWER

- 1.(b) single layer of flattened follicular cells**
- 2.(a) Primary follicle**
- 3.(d) Secondary follicle**
- 4.(c) Simple columnar ciliated**
- 5.(c) 4–5 months**
- 6.(c) Corneal stroma**
- 7.(a) Muller cells**