Do you ask why the same topic is in in practice and lectures?

Nerve (nervous) tissue is studied in practice
- is about the general structure of the tissue

Nerve (nervous) system is studied in lecture
- is about the special structure of the organs

So therefore …

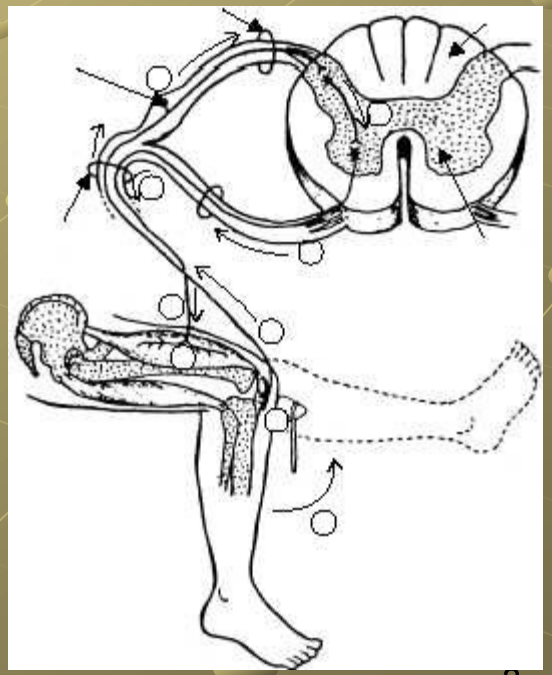
CENTRAL and PERIPHERAL NERVOUS SYSTEM

CNS

- Medulla spinalis (spinal cord)
- Cerebellum
- Cerebrum

PNS

- Ganglia
- Nerves

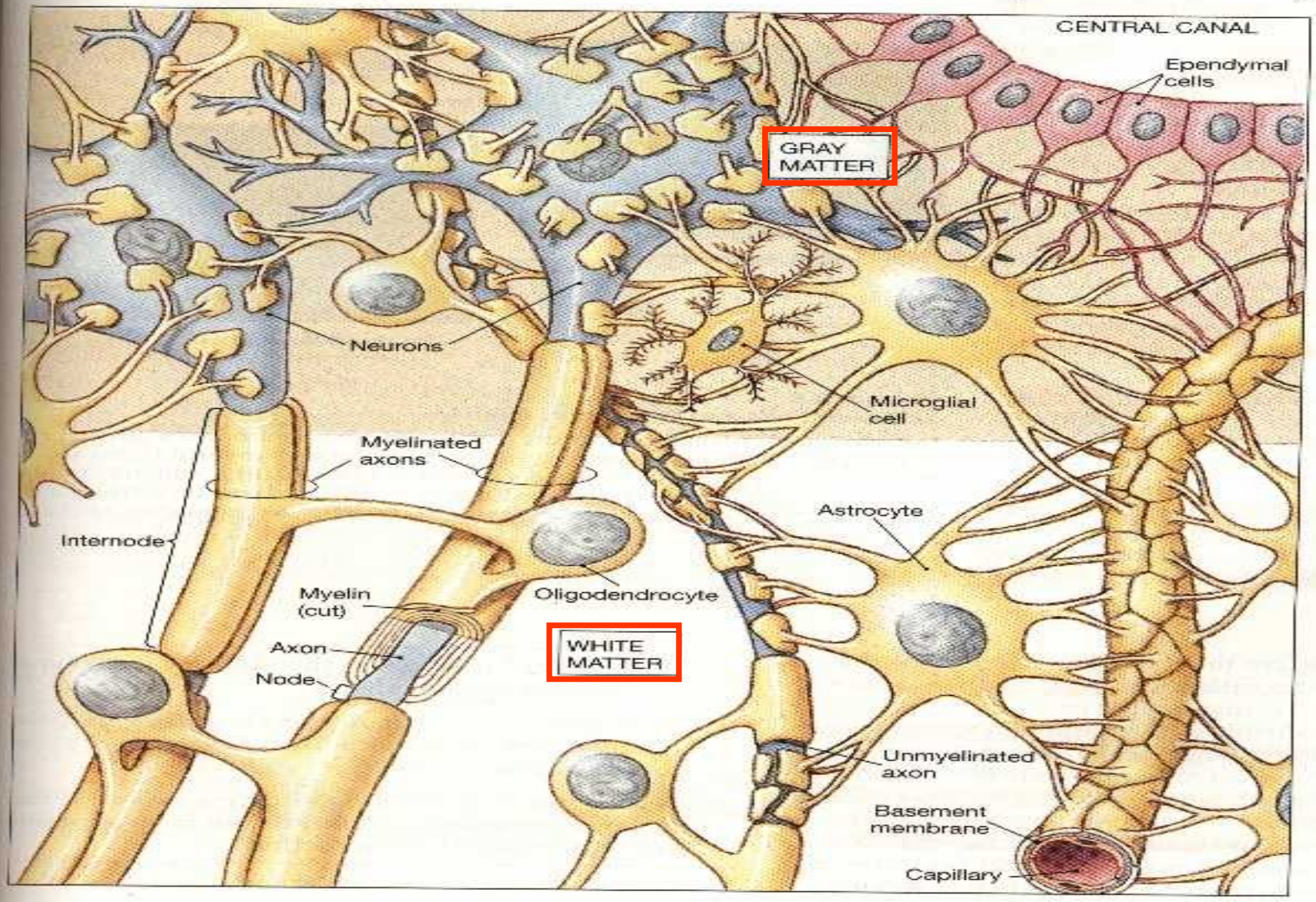


CNS 

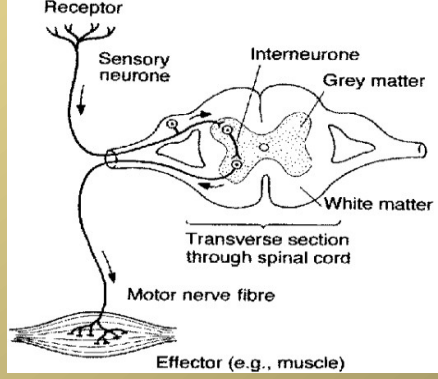
- **Gray matter: bodies of neurons, non-myelinated processes (dendrites, axon hillocks and axon terminals), glial cells (plasmatic astrocytes, microglia), blood capillaries (hemato-encephalic barrier)**
- **White matter: myelinated axons, glial cells (oligodendrocytes, fibrilar astrocytes), blood capillaries**

Figure 8-4
Neuroglia in the CNS

A diagrammatic view of neural tissue in the CNS, showing relationships between neuroglia and neurons.

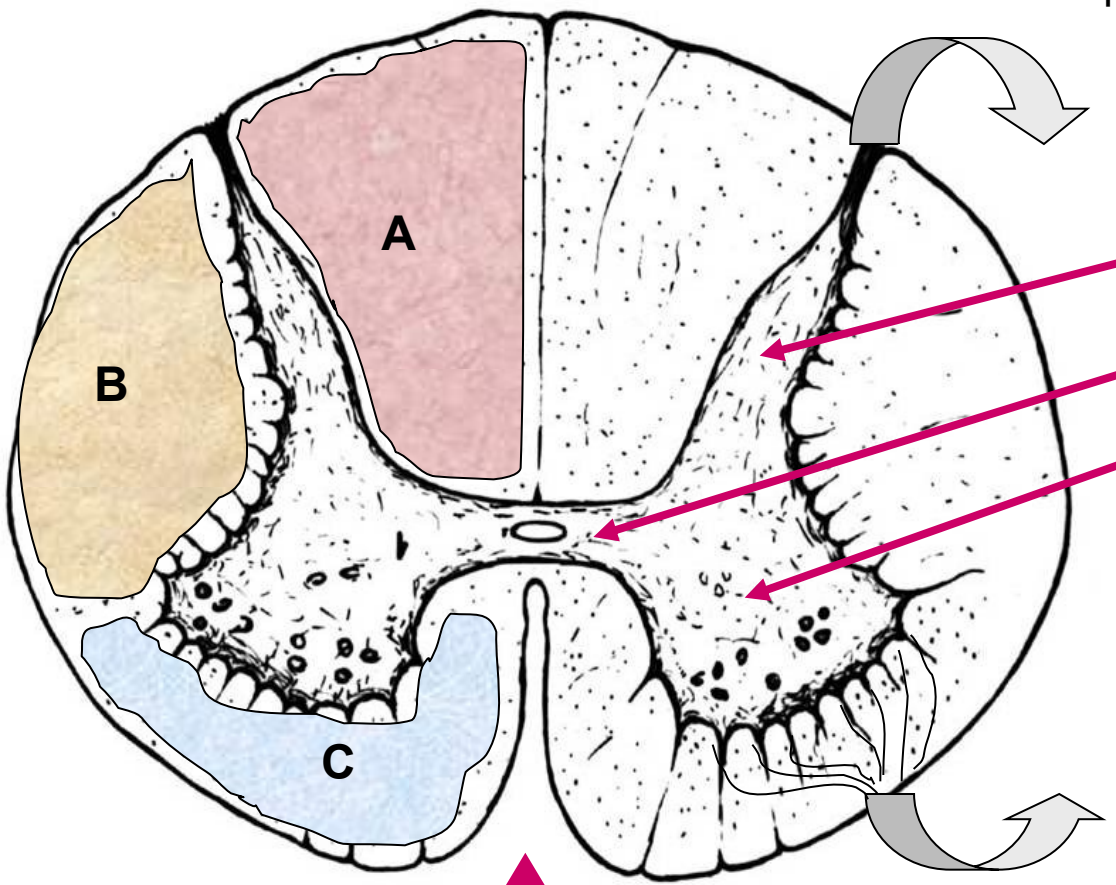


Spinal cord (medulla spinalis)



Septum medianum posterior

ventral root of spinal nerve

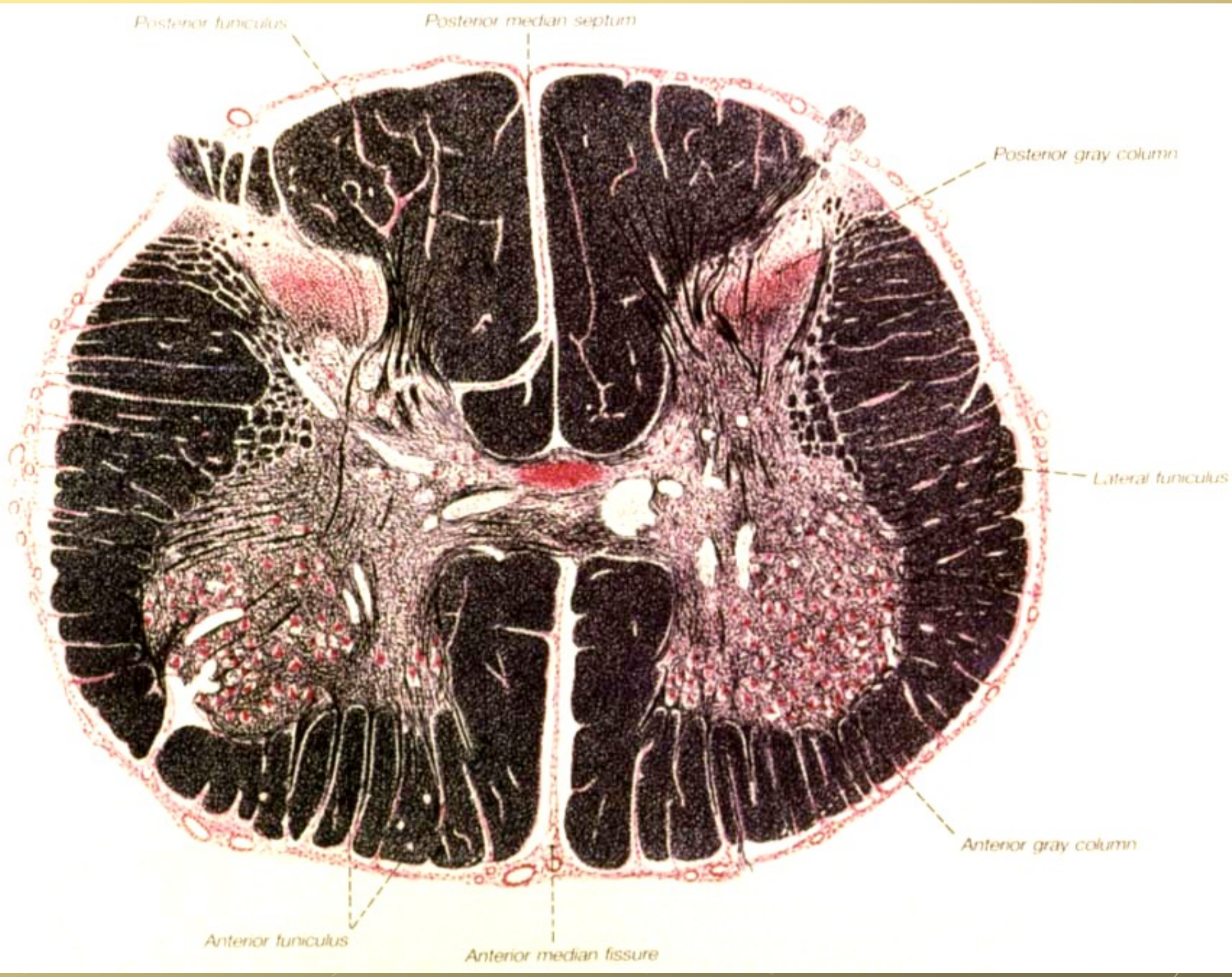


Gray matter
columns (horns)
- posterior
- (lateral)
canalis centralis
- anterior

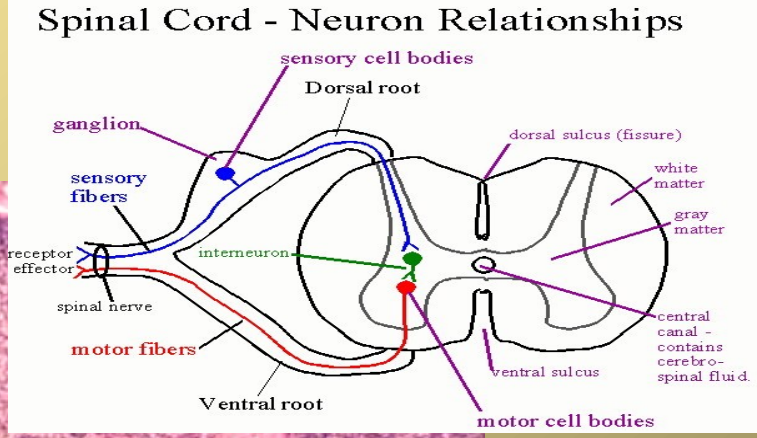
White matter
Funiculi:
A – dorsal
B – lateral
C – ventral

ventral root of spinal nerve

Fissura mediana anterior


Posterior funiculus
Posterior median septum
Posterior gray column
Lateral funiculus
Anterior gray column
Anterior funiculus
Anterior median fissure

Medulla spinalis (HE)



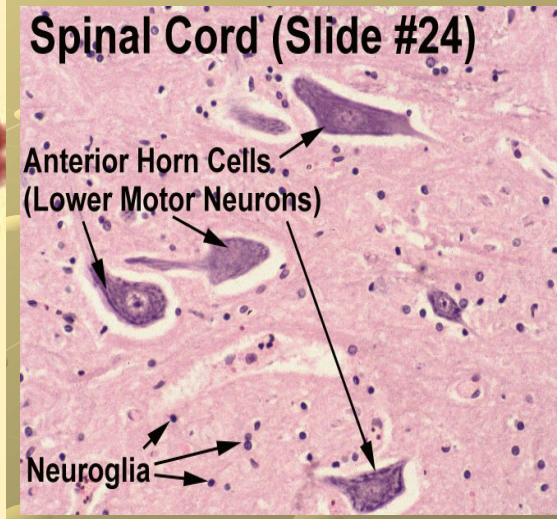
Medulla spinalis (HE) – anterior horn and funiculus

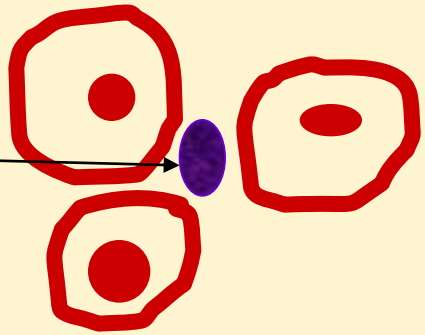
pia mater

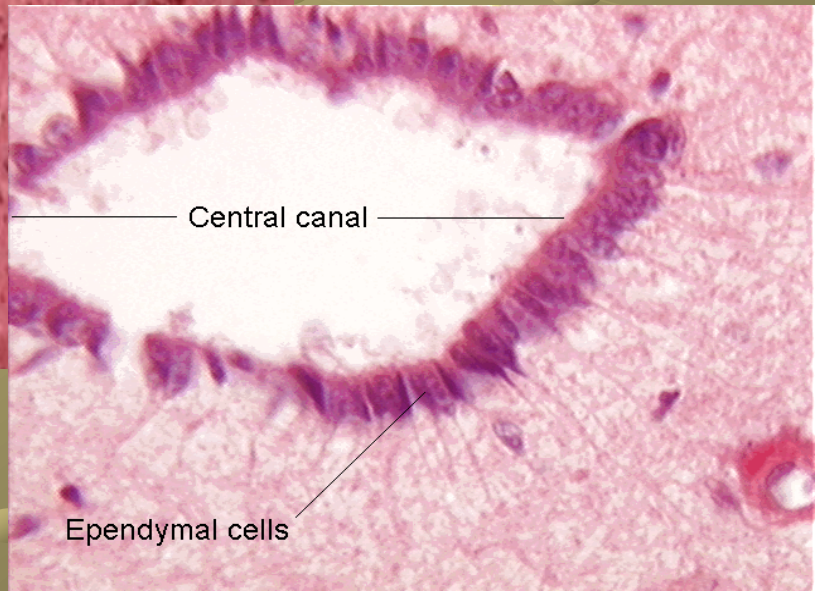
motor neurons

myelinated axons

nuclei of glial cells

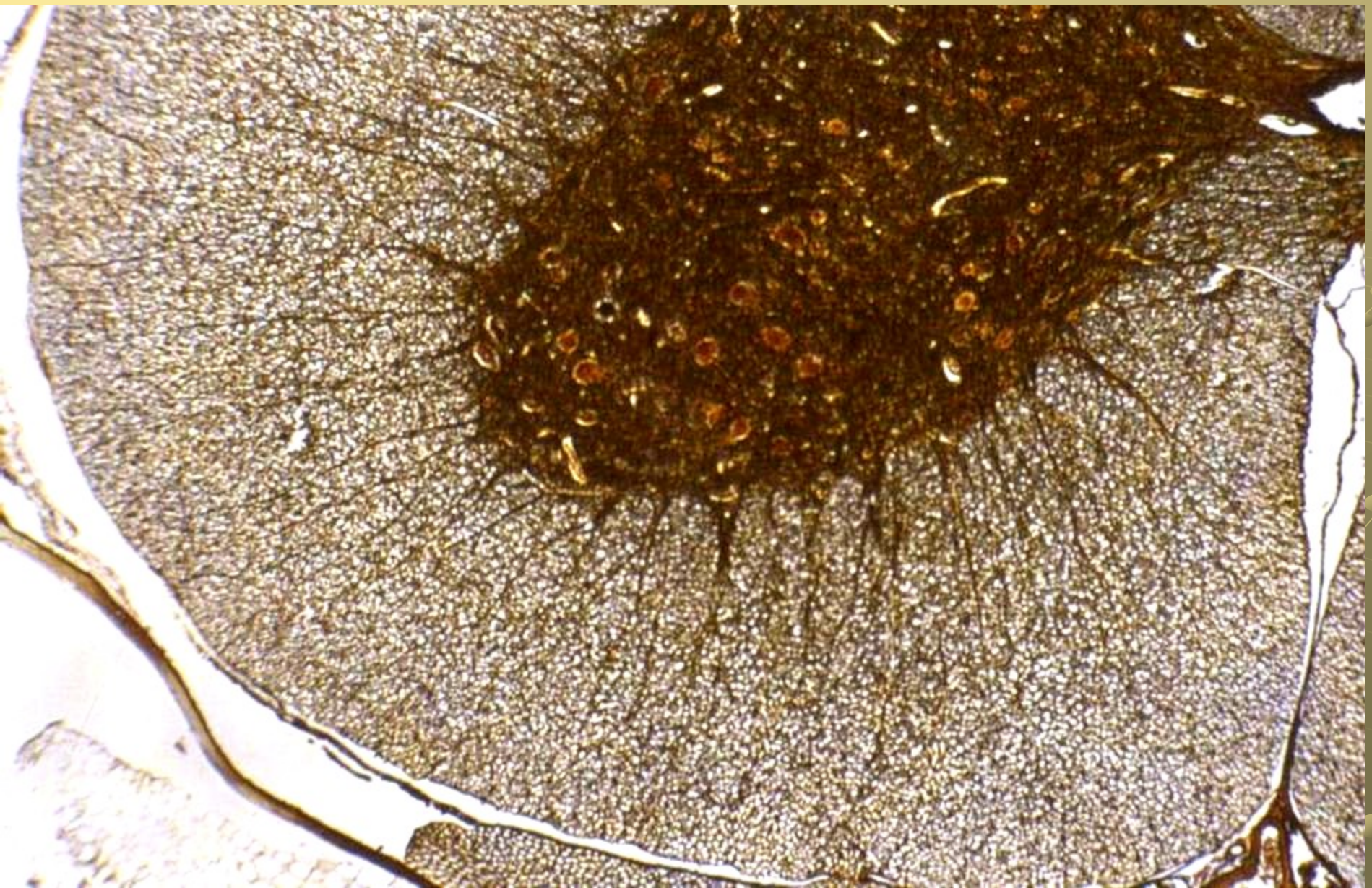




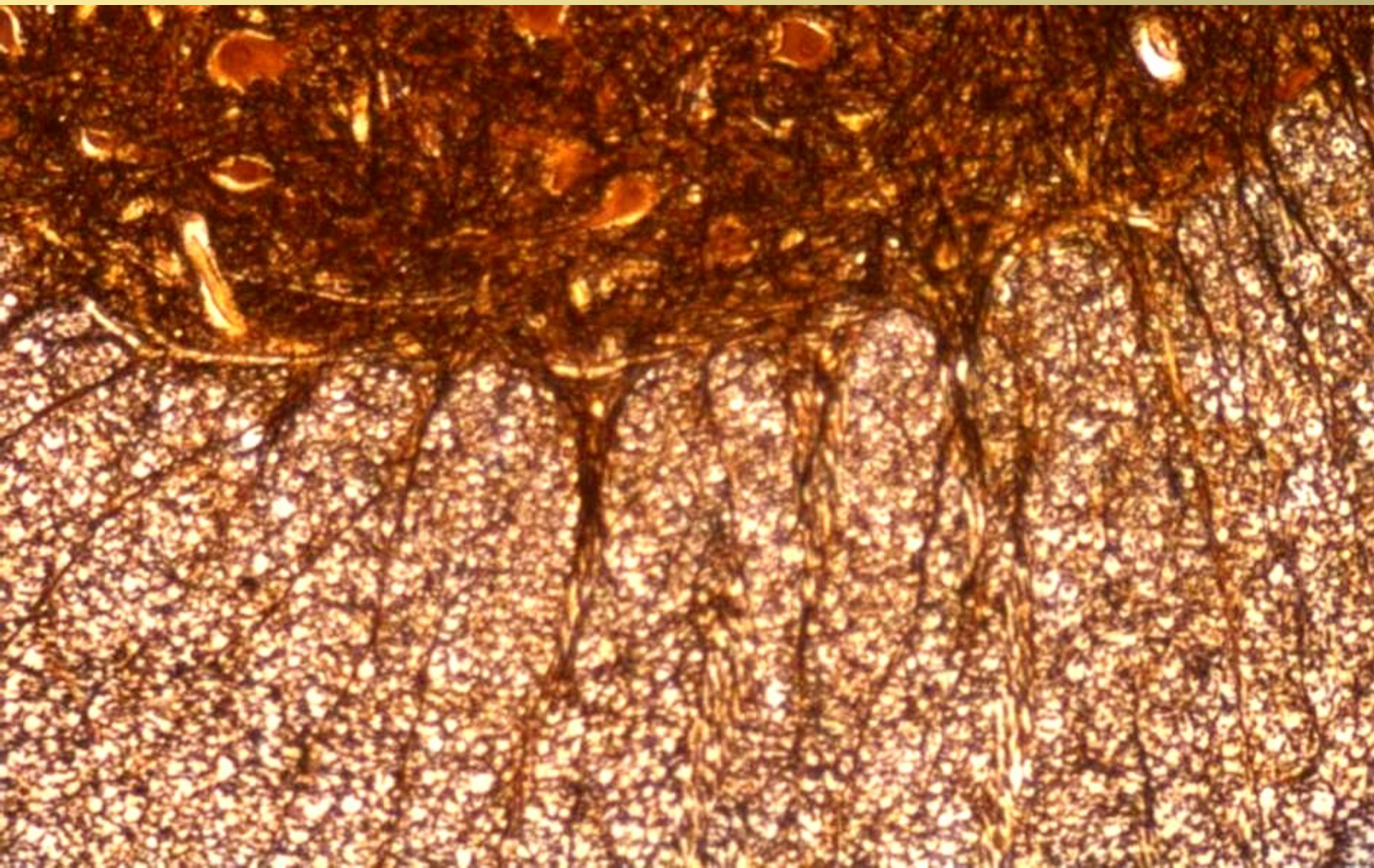


Medulla spinalis (HE)

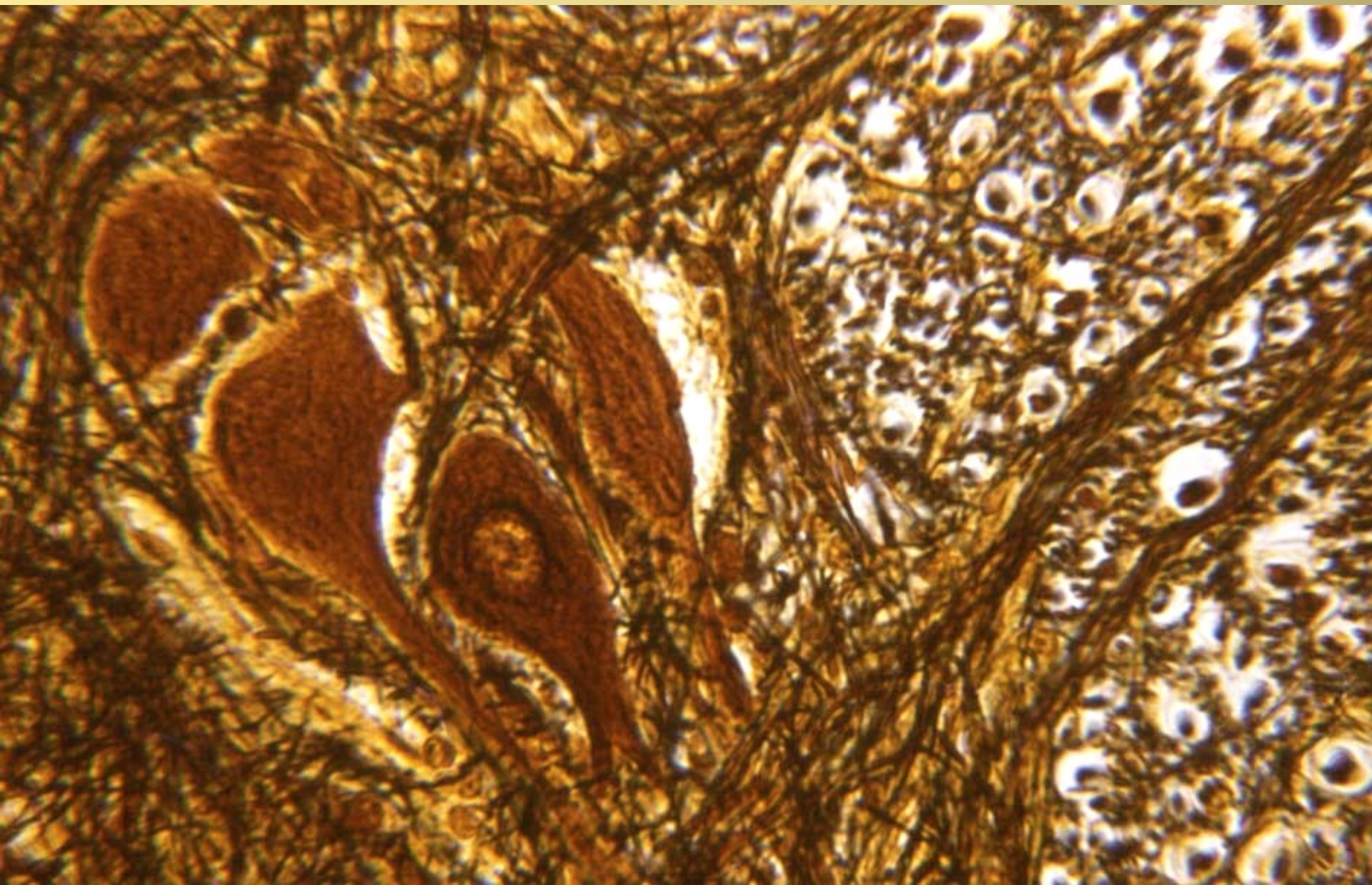
Medulla spinalis (impregnation) – ventral horn



Medulla spinalis (impregnation) – ventral horn

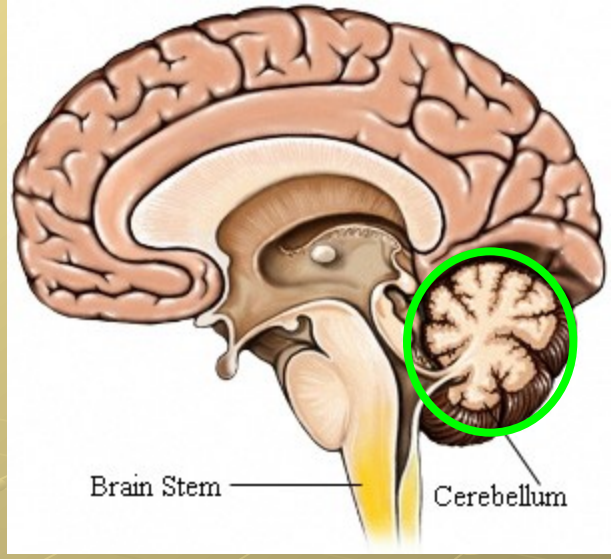


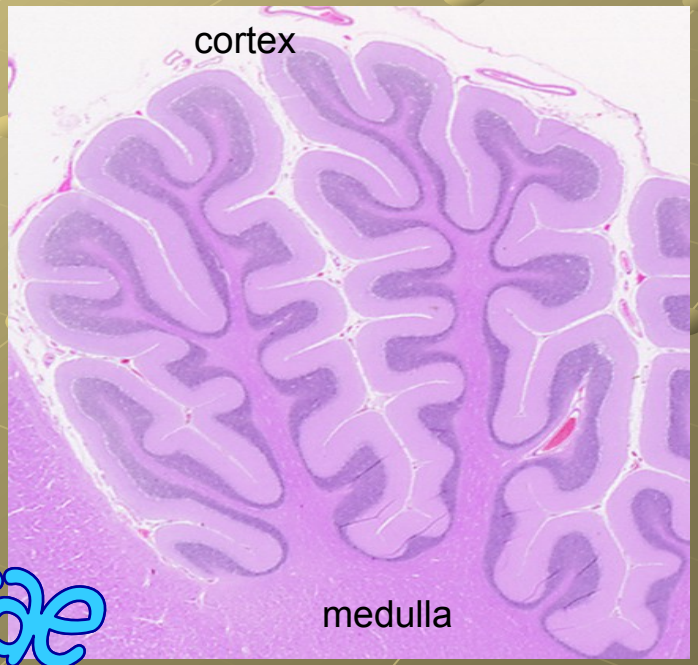
Medulla spinalis (impregnation) – ventral horn: motor neurons



Cerebellum

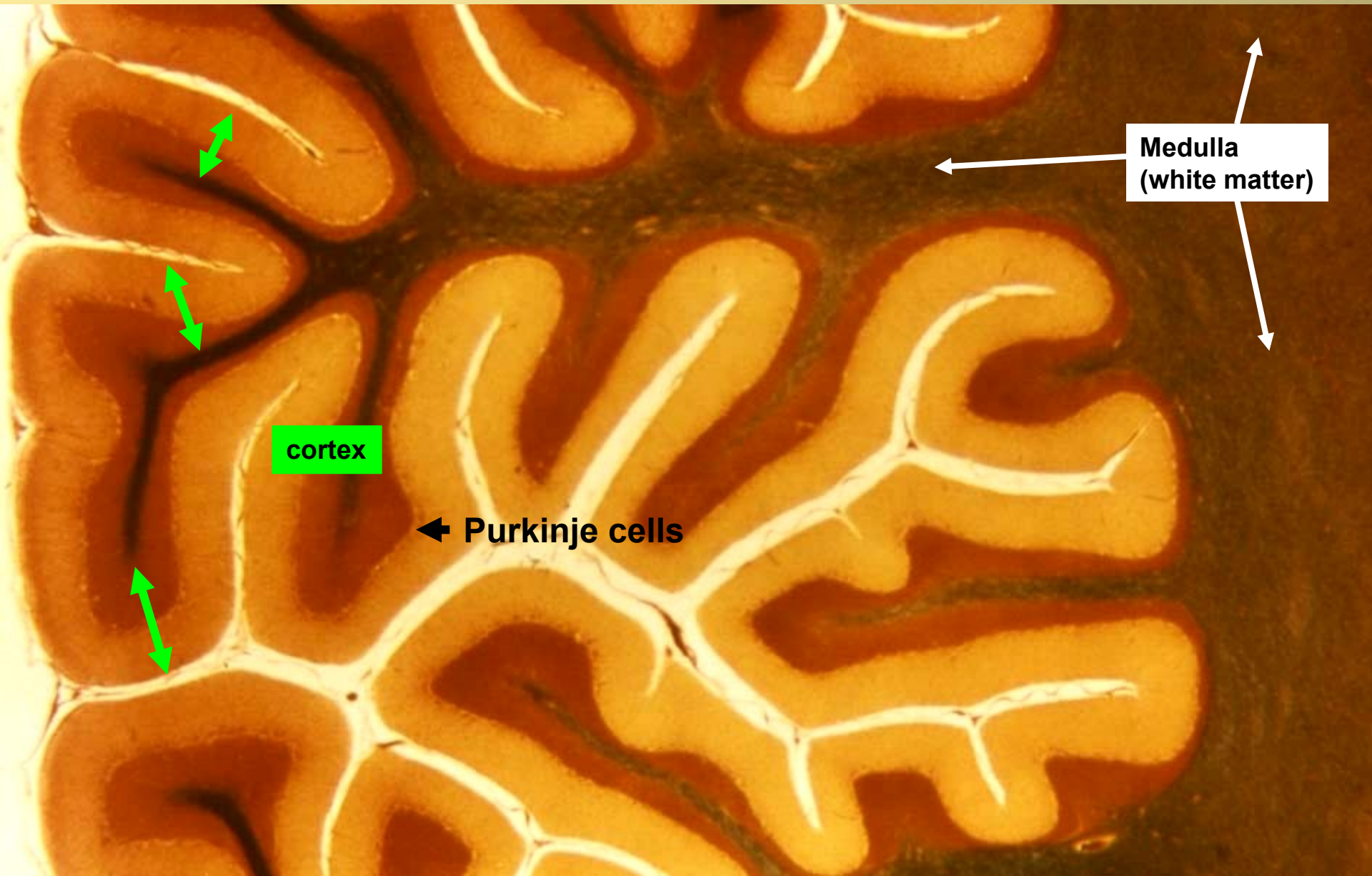
- **Gray matter = cortex**:
  - stratum moleculare
  - stratum gangliosum
  - stratum granulosum
- **White matter - medulla**



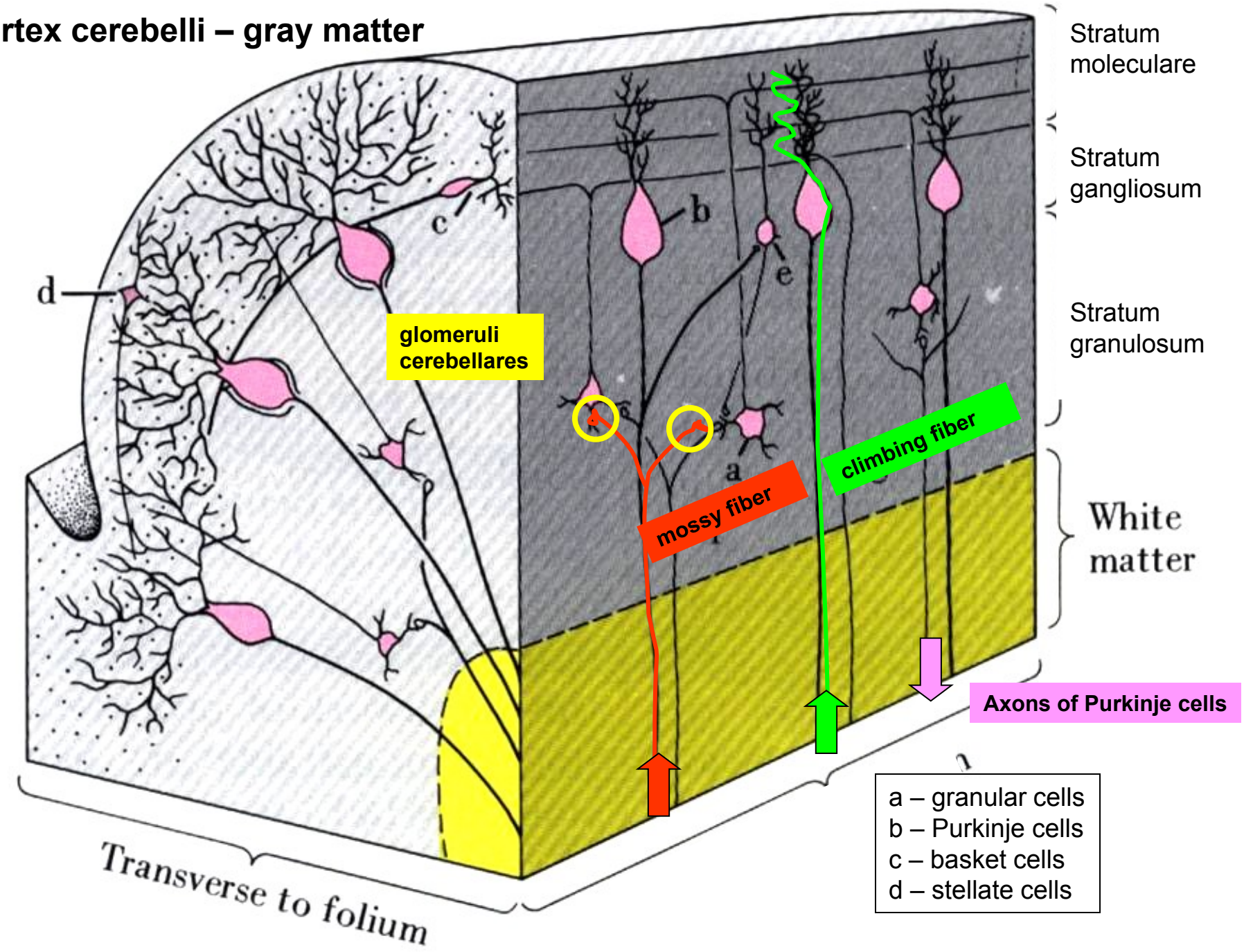


arbor vitae

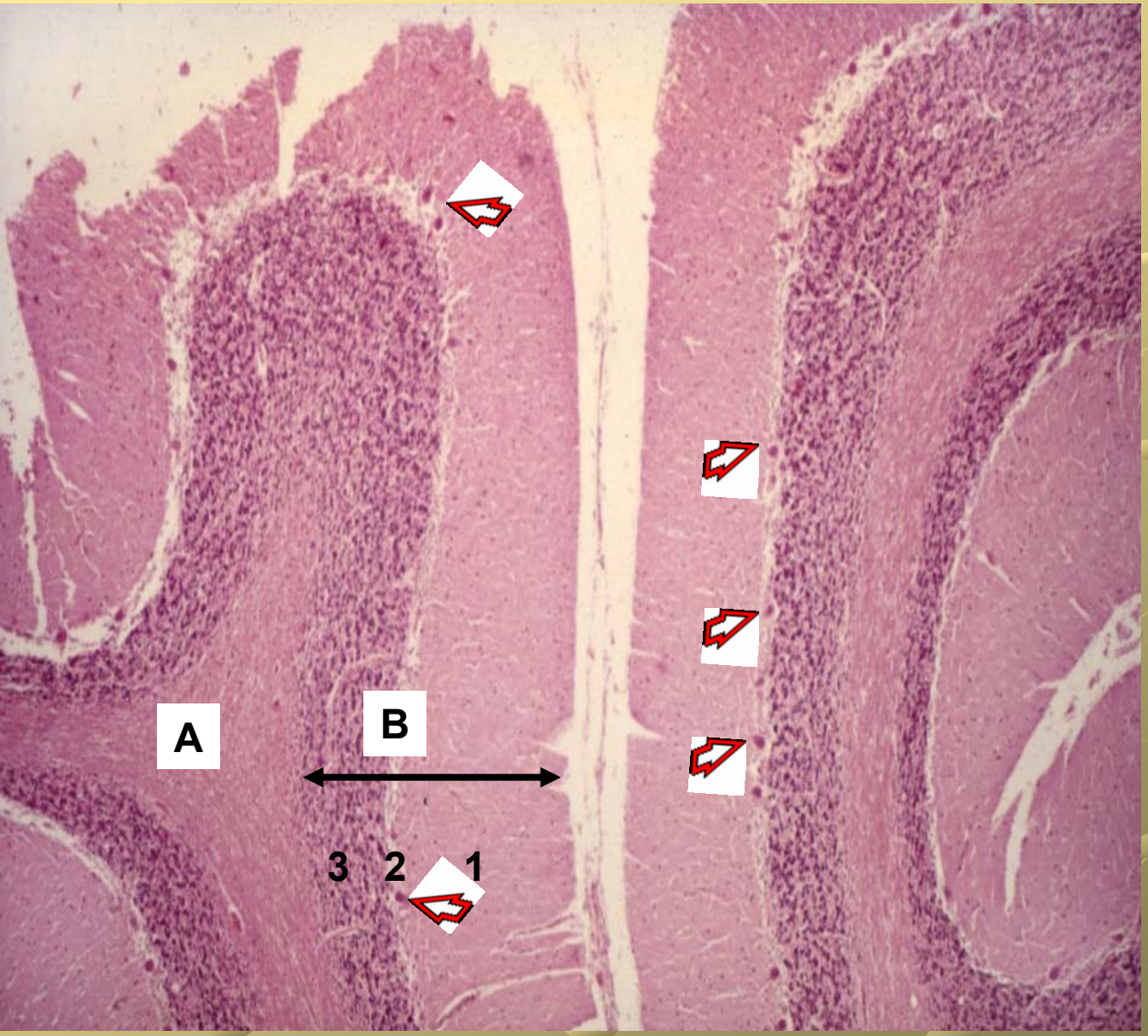
Cerebellum (impregnation)



Cortex cerebelli – gray matter



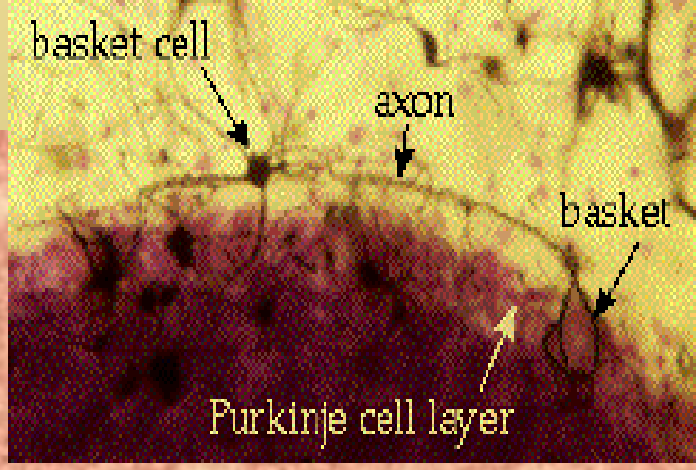
Cerebellum (HE)



A – medulla
B – cortex:
1 – str. moleculare
2 – str. gangliosum
3 – str. granulosum

Purkinje cells
(**in str. gangliosum**)

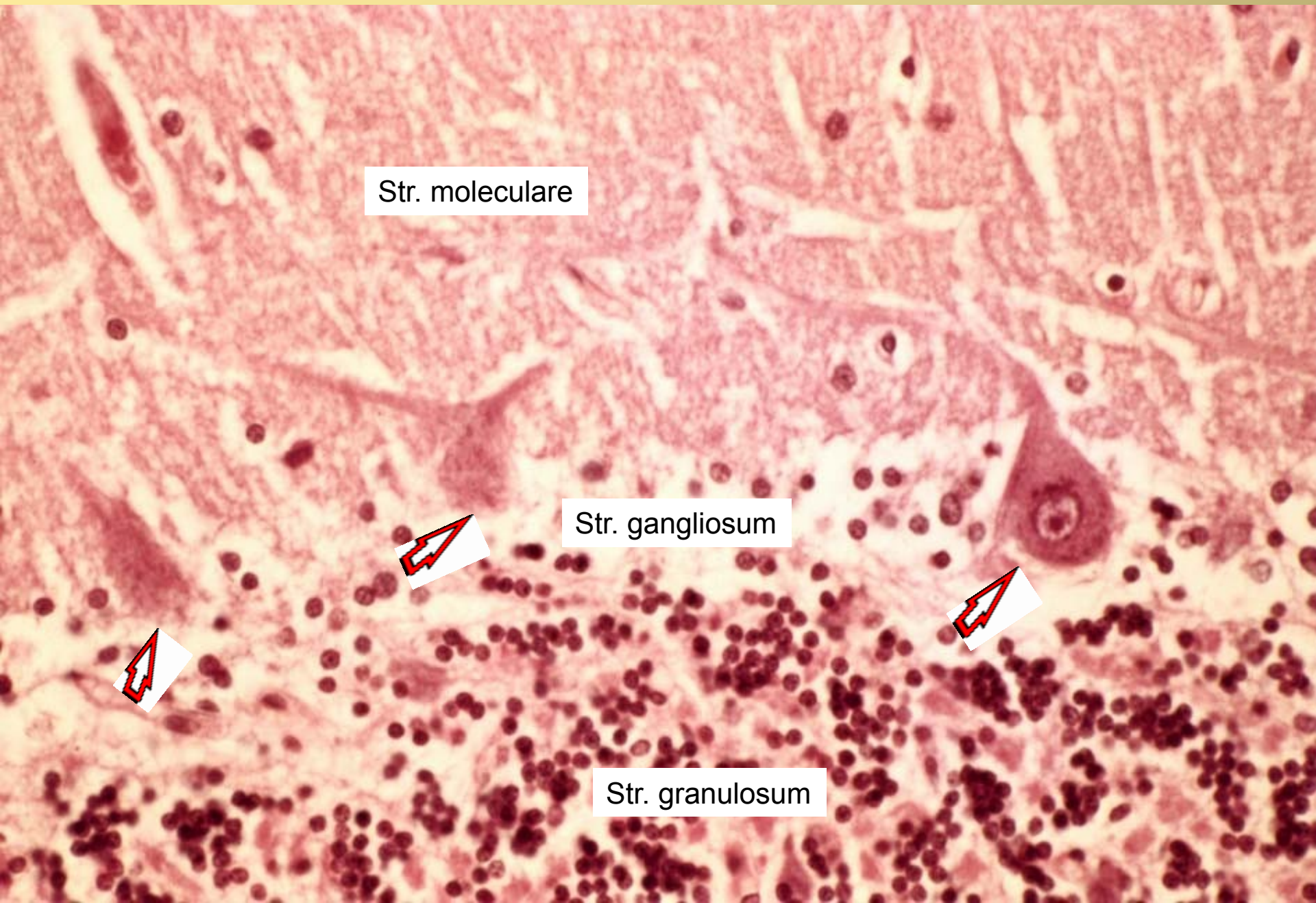
Cerebellum (HE) – stratum moleculare (cinereum)



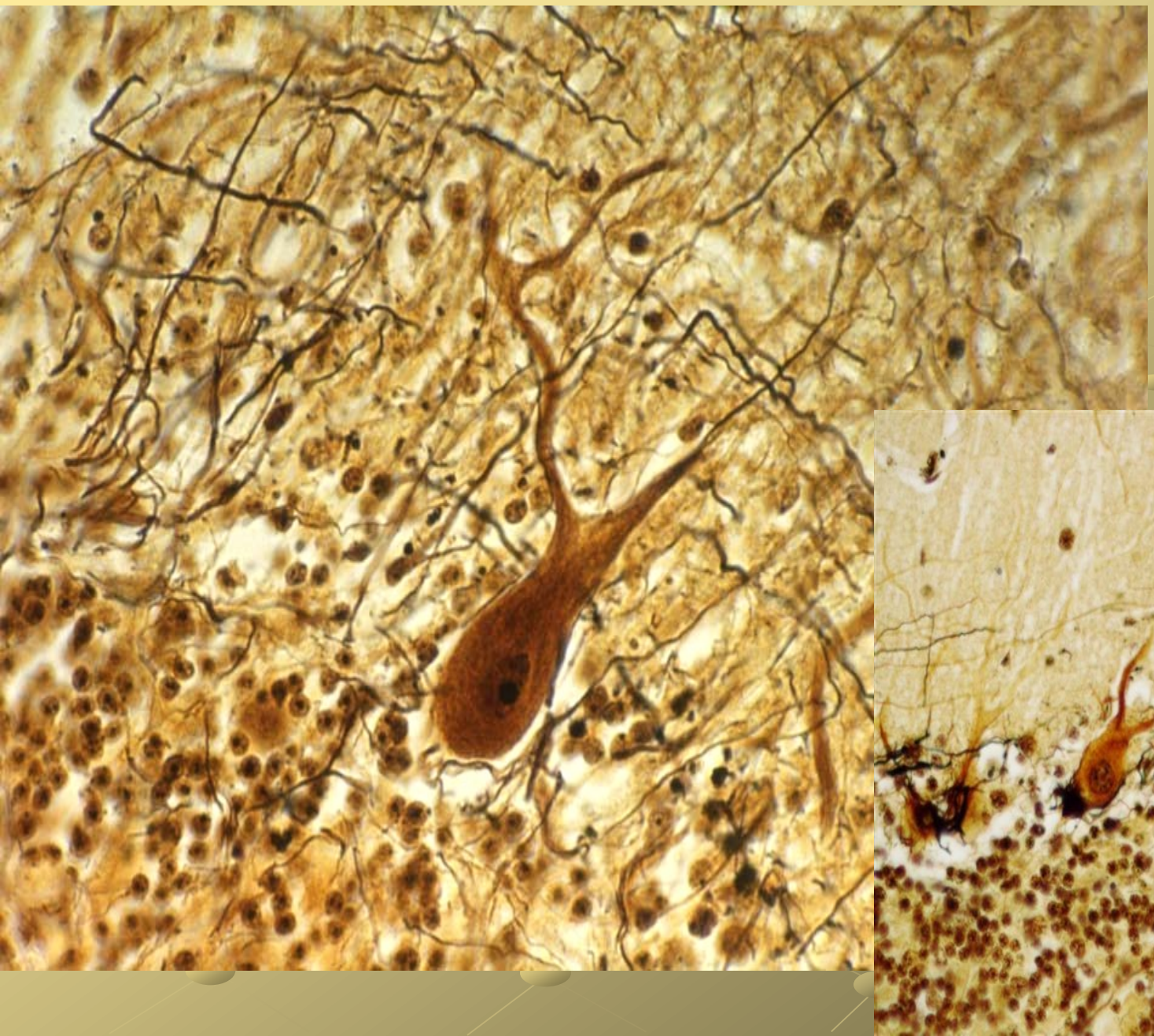
glial cells

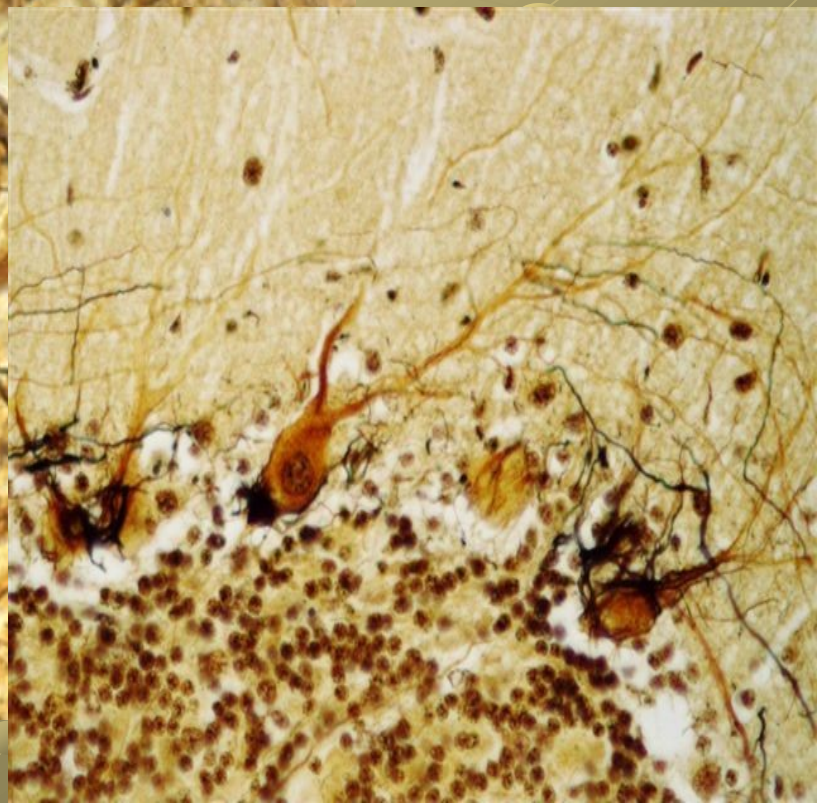
basket cells

Cerebellum (HE) – stratum gangliosum with Purkinje cells



Cerebellum – cortex (impregnation)

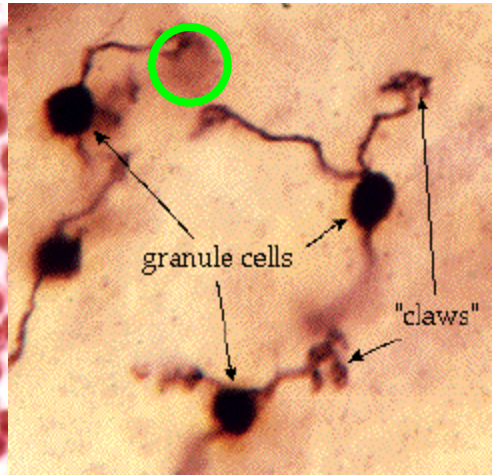




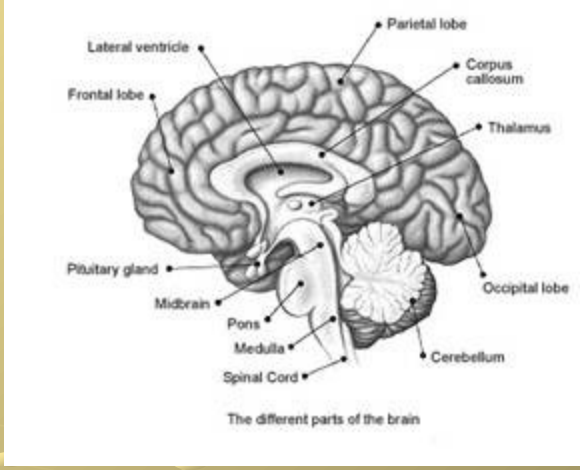
Cerebellum (HE) – stratum granulosum

Glomeruli cerebellares

places o synapses



Cortex cerebri



Cells (cytoarchitecture):

- **pyramidal cells (layer III and V)**
- **granular cells (layer II and IV)**
- **spindle-shaped cells (layer V)**
- **special:**
  horizontal cells of Cajal (layer I)
  vertikal cells of Martinotti (all layers, specially V and VI)

Cortex cerebri - izocortex

Laminae (layers):

I. **l. zonalis** (cells of Cajal, strip of Exner)
II. **l. granularis externa** (granular cells)
III. **l. pyramidalis (externa)** (small + middle pyramidal cells, strip of Bechtěrev)
IV. **l. granularis interna** (granular cells, cells of Martinotti)
V. **l. ganglionaris (pyramidalis interna)** (large pyramidal cells of Betz, cells of Martinotti, inner strip of Baillarger)
VI. **l. multiformis** (spindle cells, granular cells, cells of Martinotti, strip of Meynert)

I. L. molecularis (zonalis)

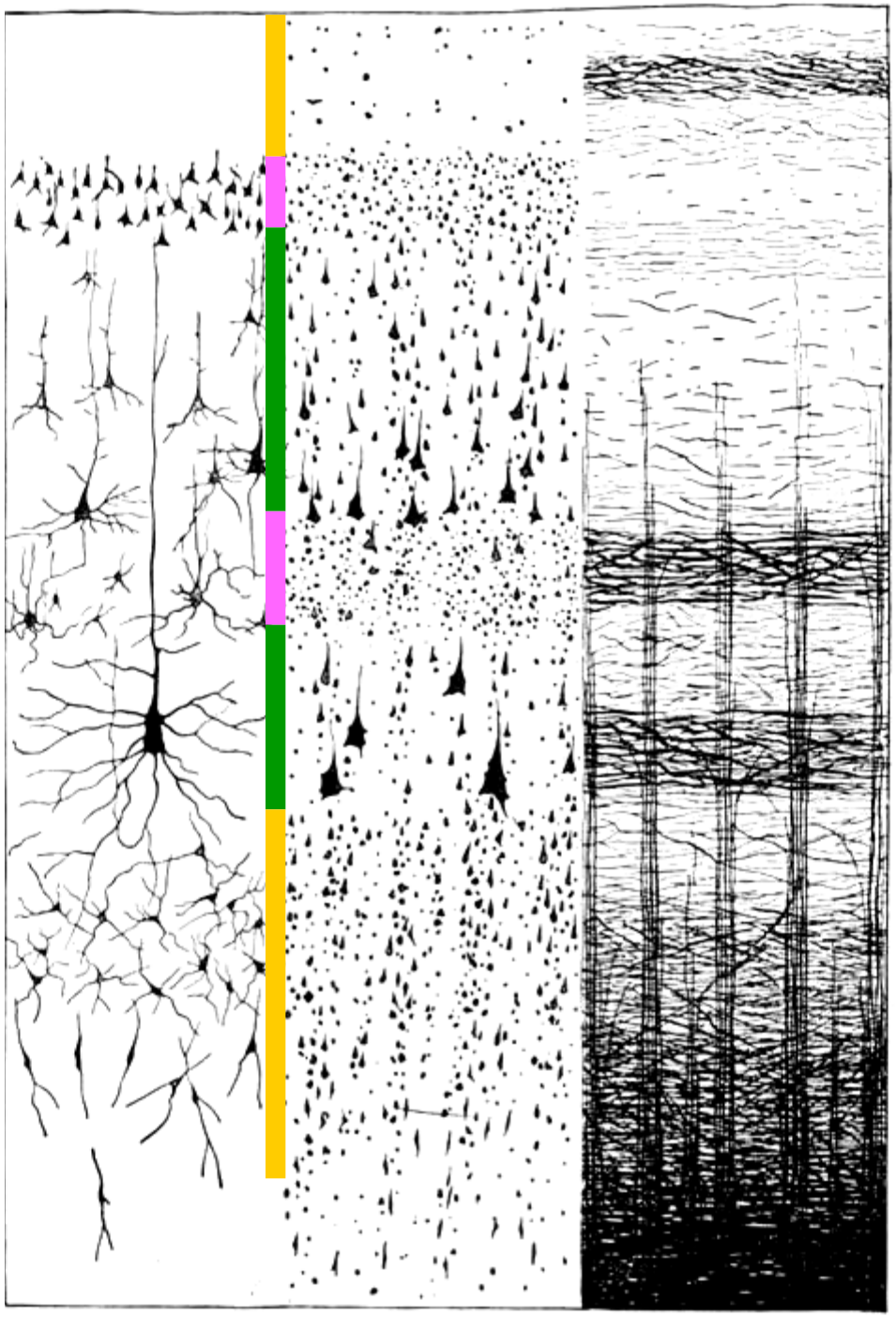
II. L. granularis ext.

III. L. pyramidalis

IV. L. granularis int.

V L. ganglionaris

VI. L. multiformis



Exner

Bechtěrev

outer Baillarger

inner Baillarger

Meynert

ISOCORTEX

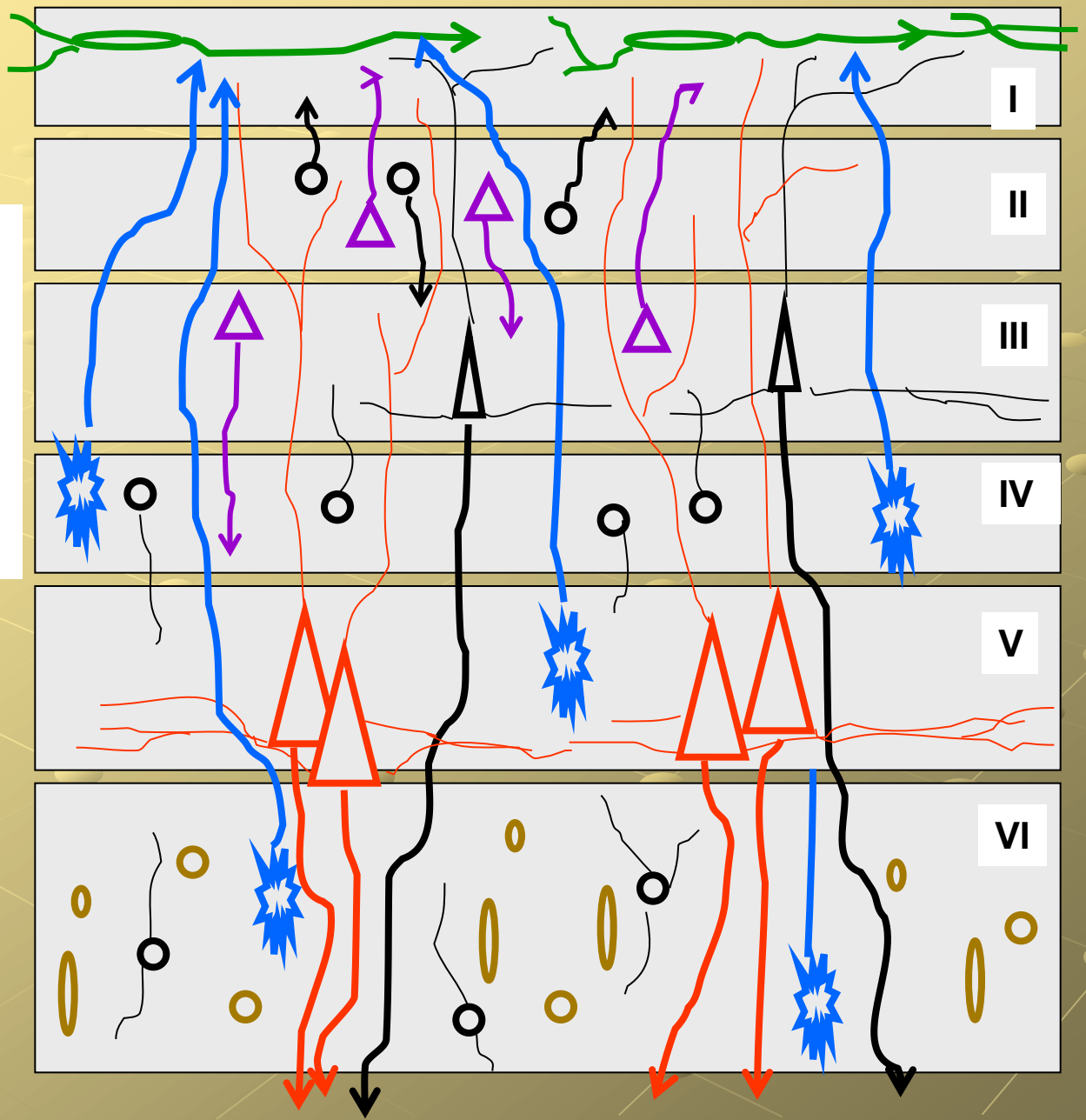
Strips:

Exner

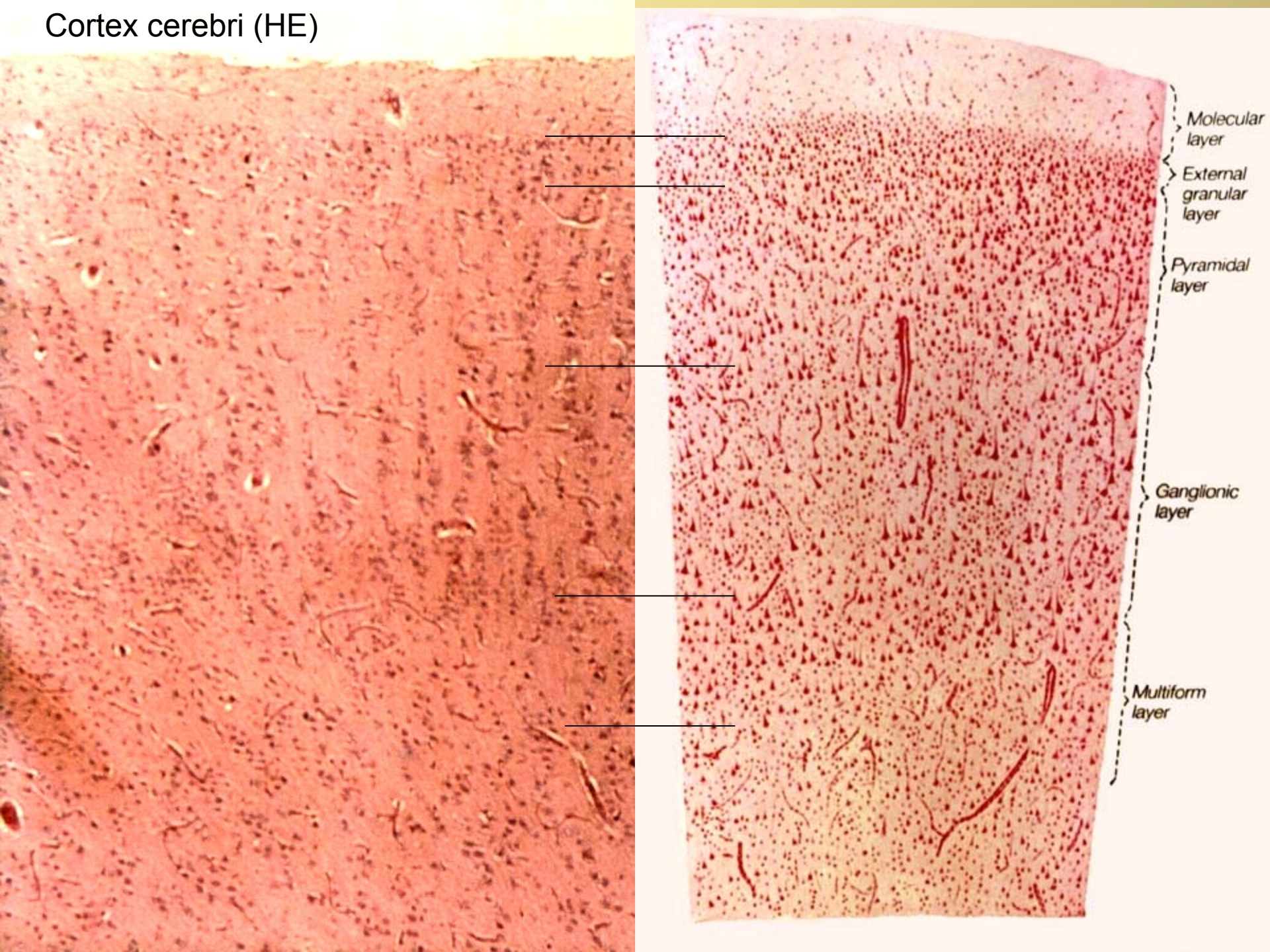
Bechtěrev

Baillarger II

Cells:
-Cajal
-Granular
-Small pyram.
-Medium pyram.
-Martinotti
-Large pyramid
-multipolar

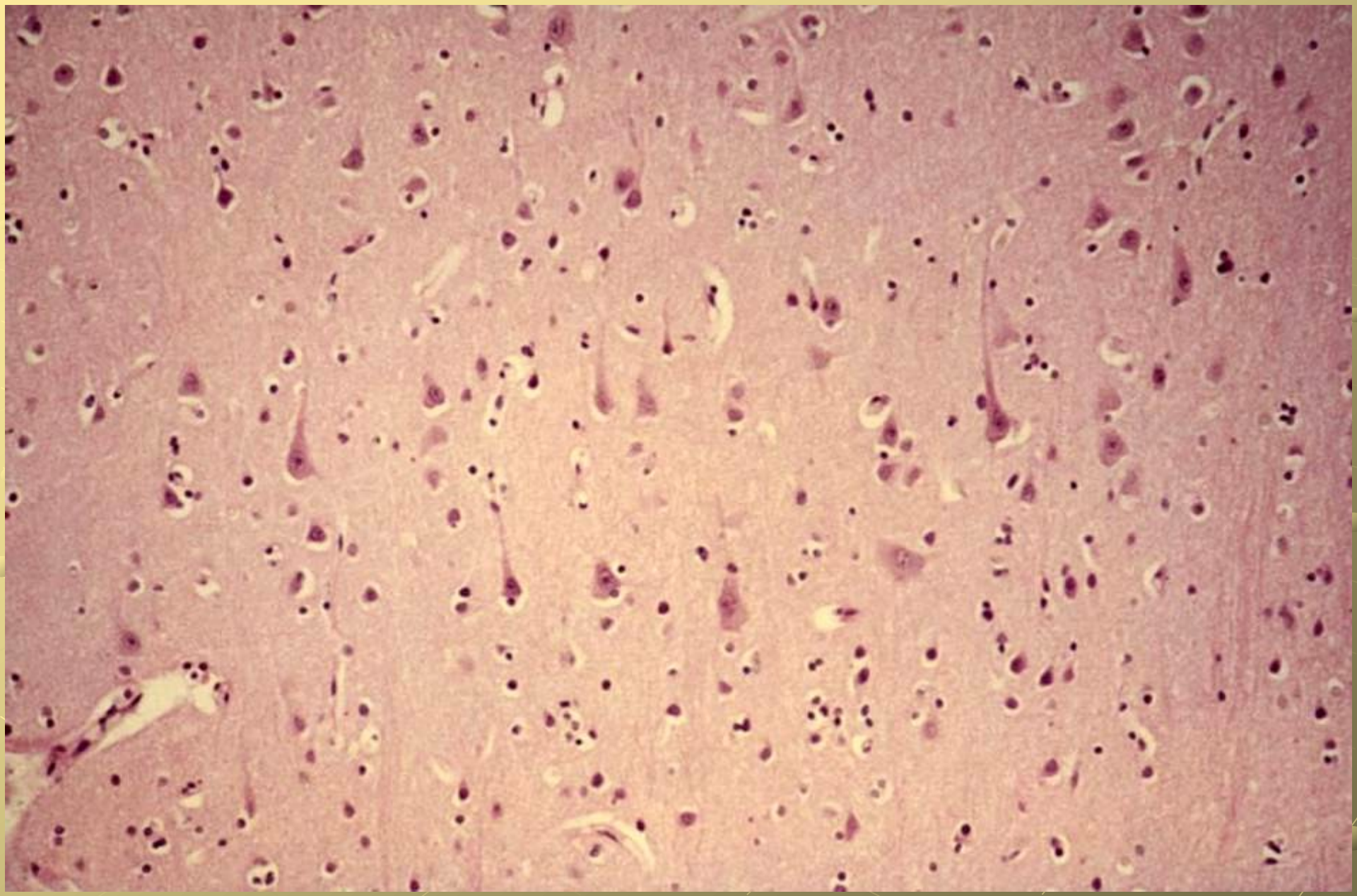


Cortex cerebri (HE)

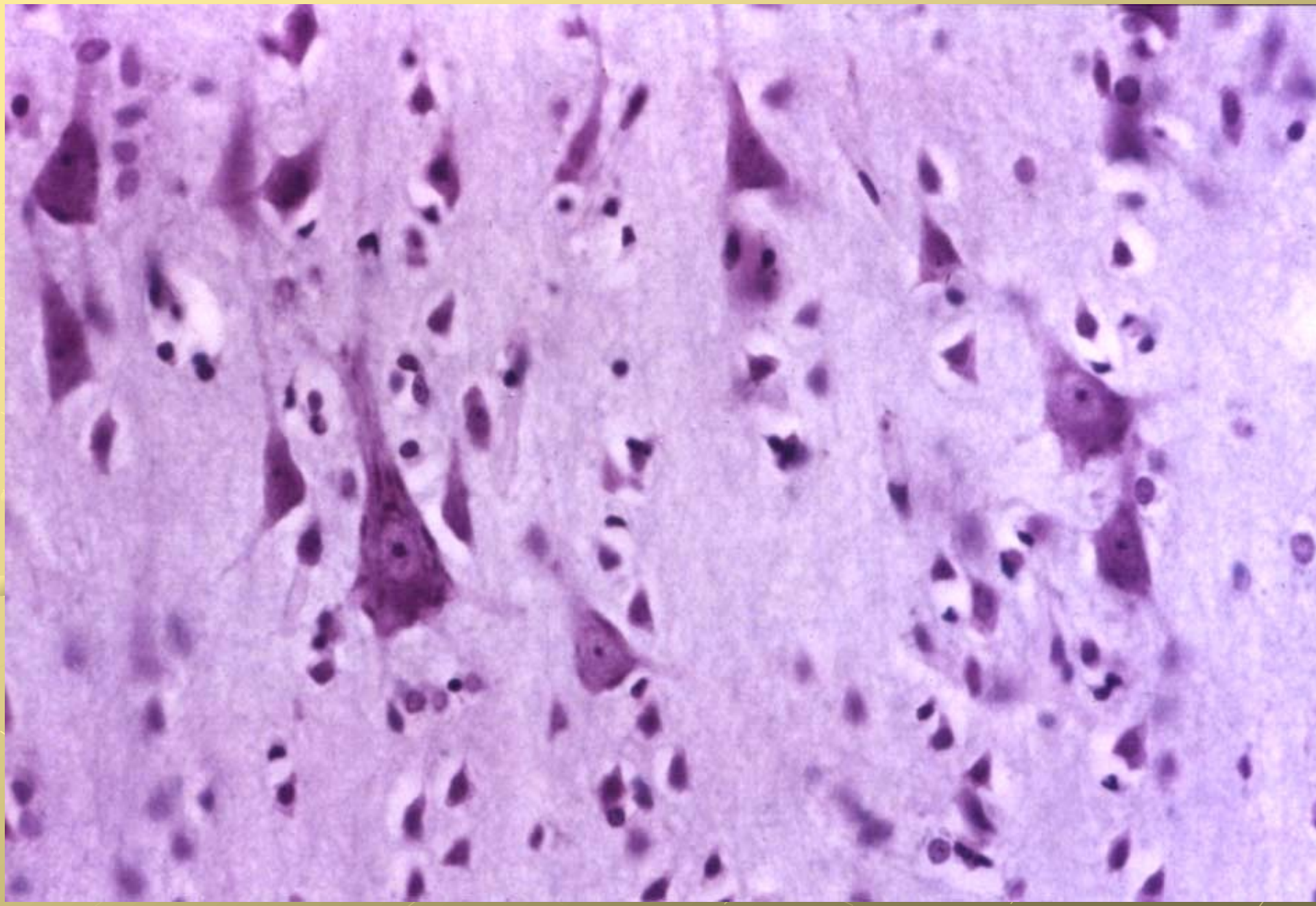


Cortex cerebri (HE) – lamina molecularis (zonalis)

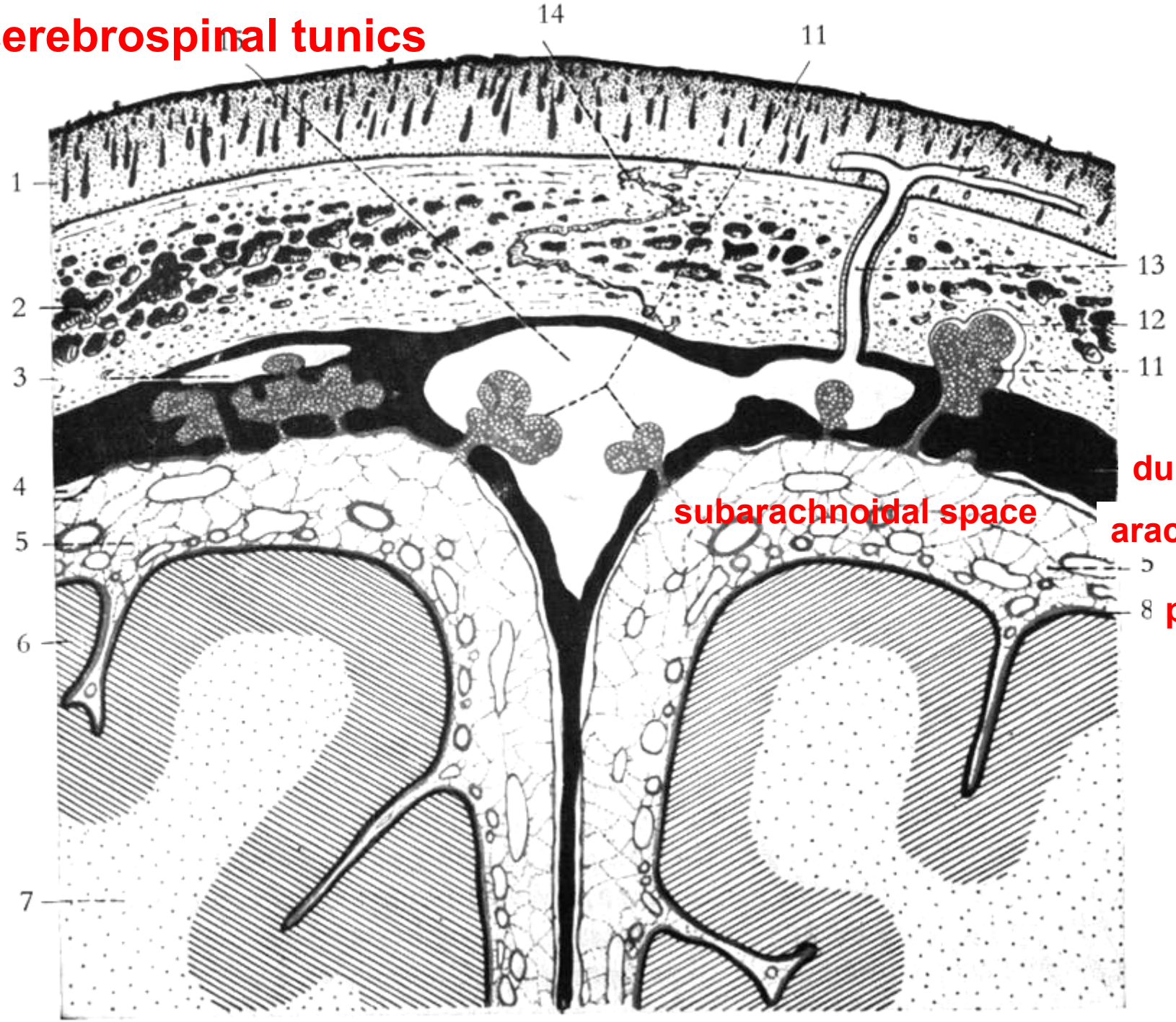
Cortex cerebri (HE) – lamina pyramidalis



Cortex cerebri (HE) – lamina ganglionaris with large pyramidal cells of Betz

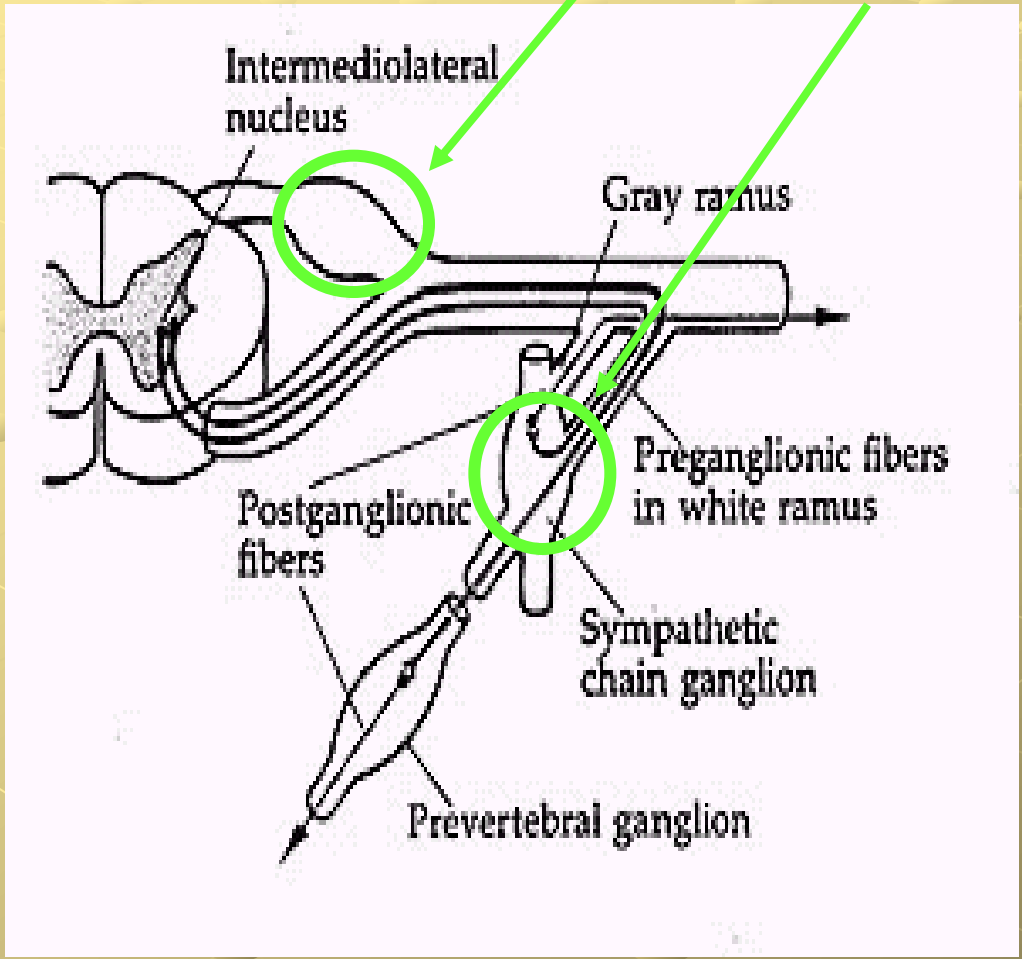


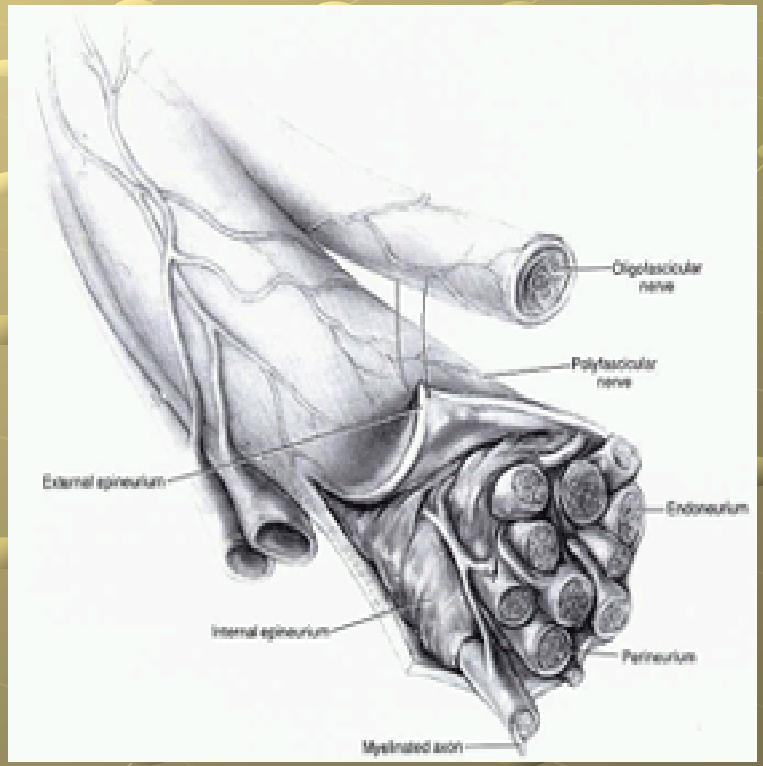
cerebrospinal tunics



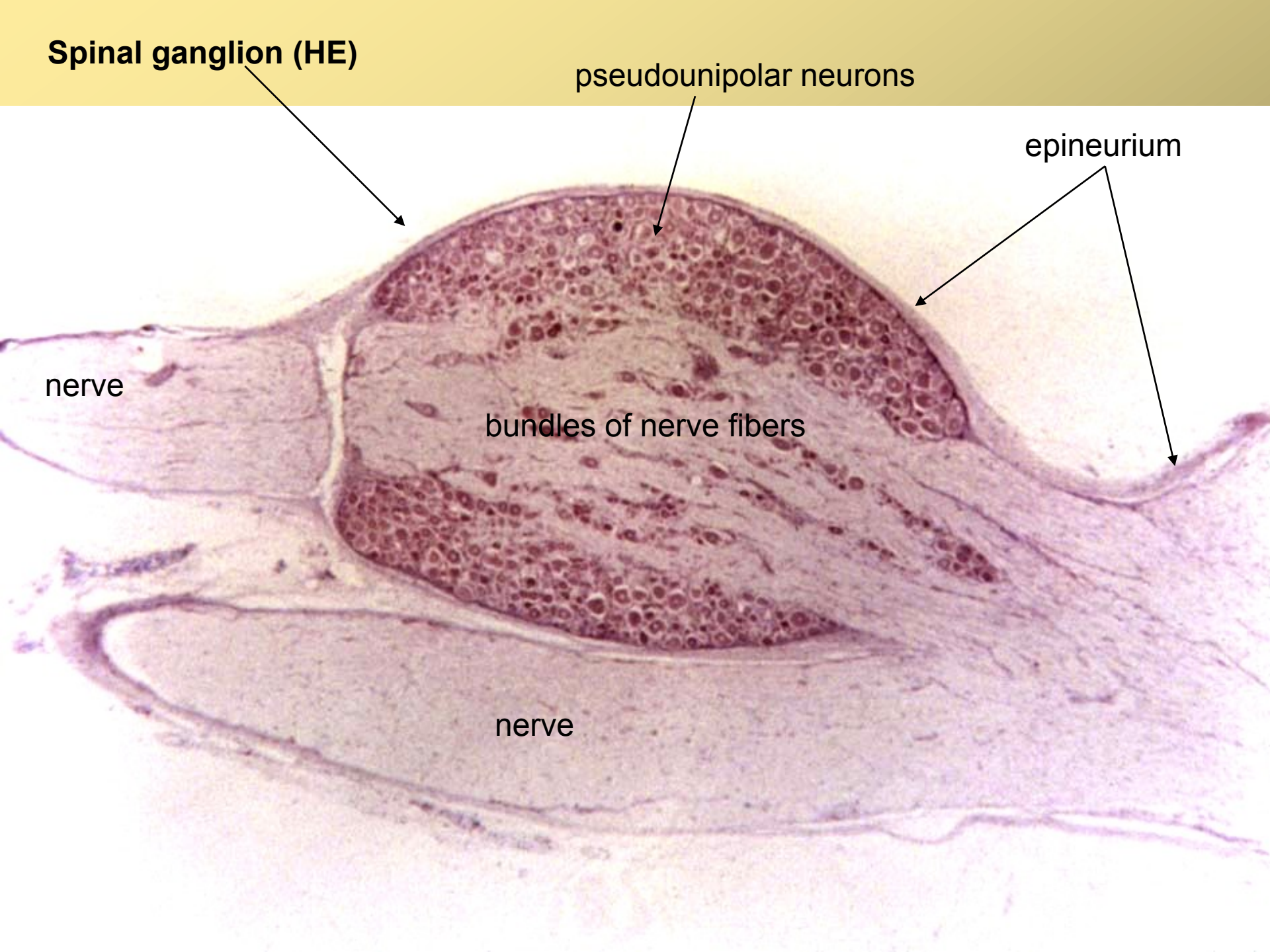
PNS: ganglia and nerves

spinal autonomic

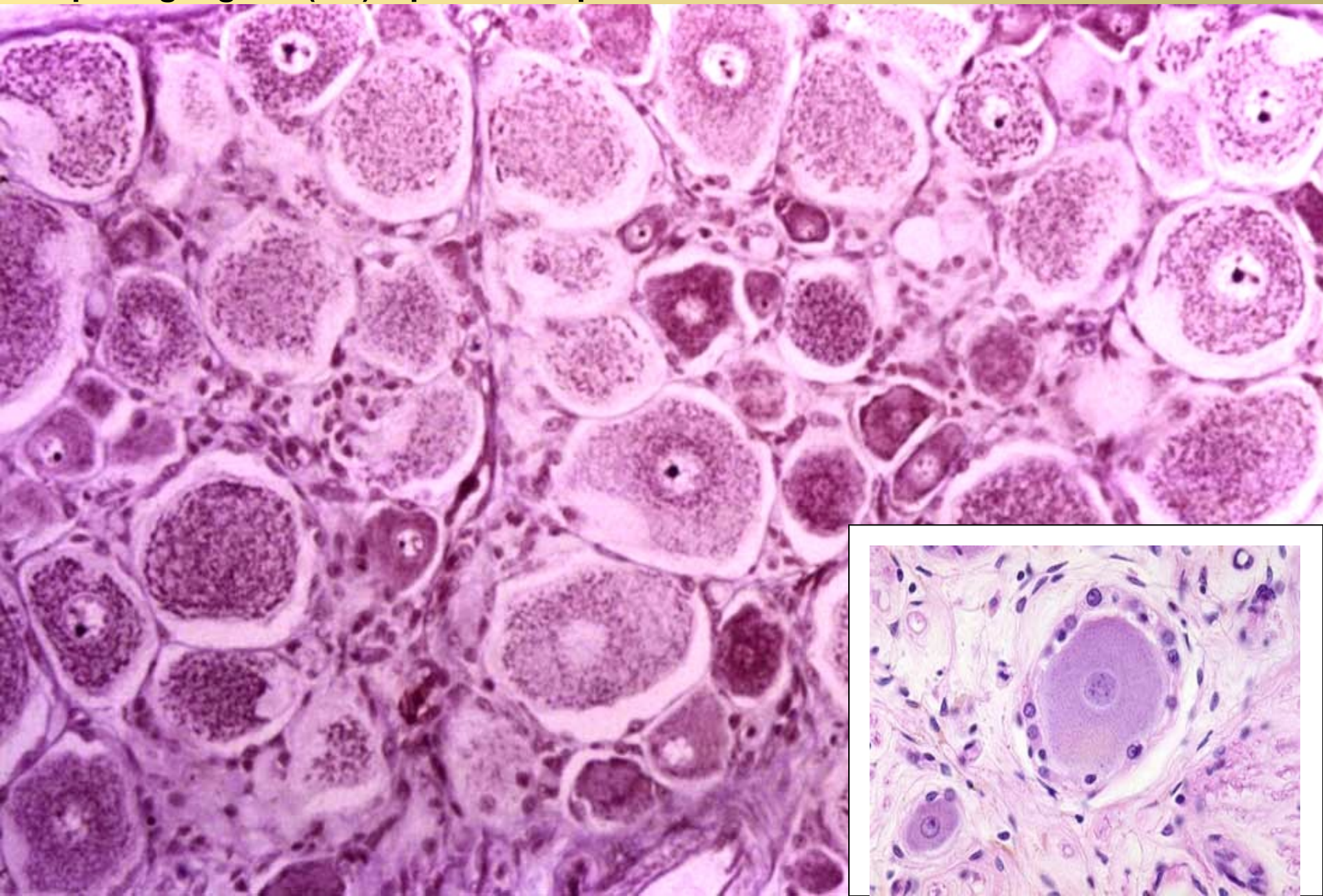




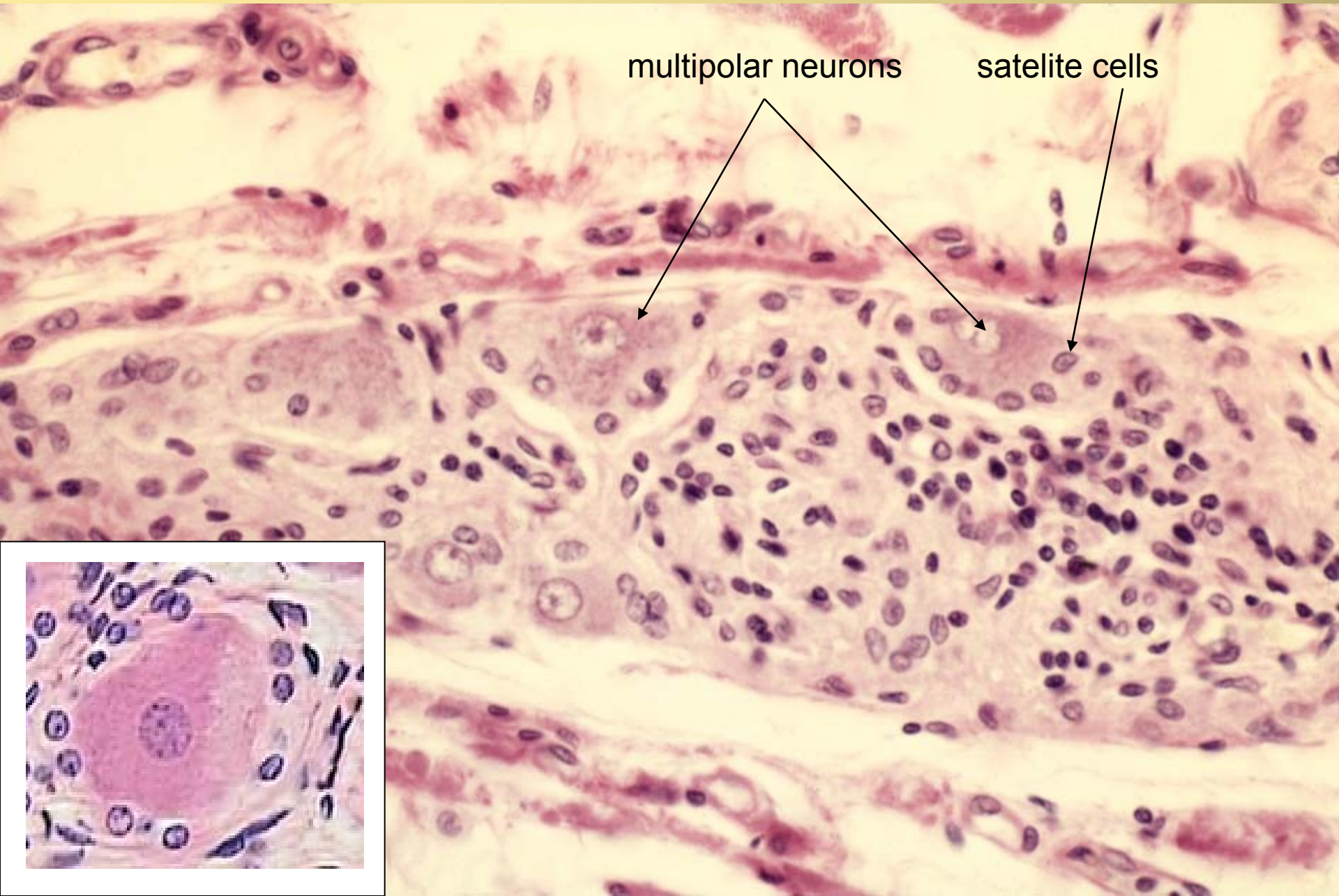
Spinal ganglion (HE)



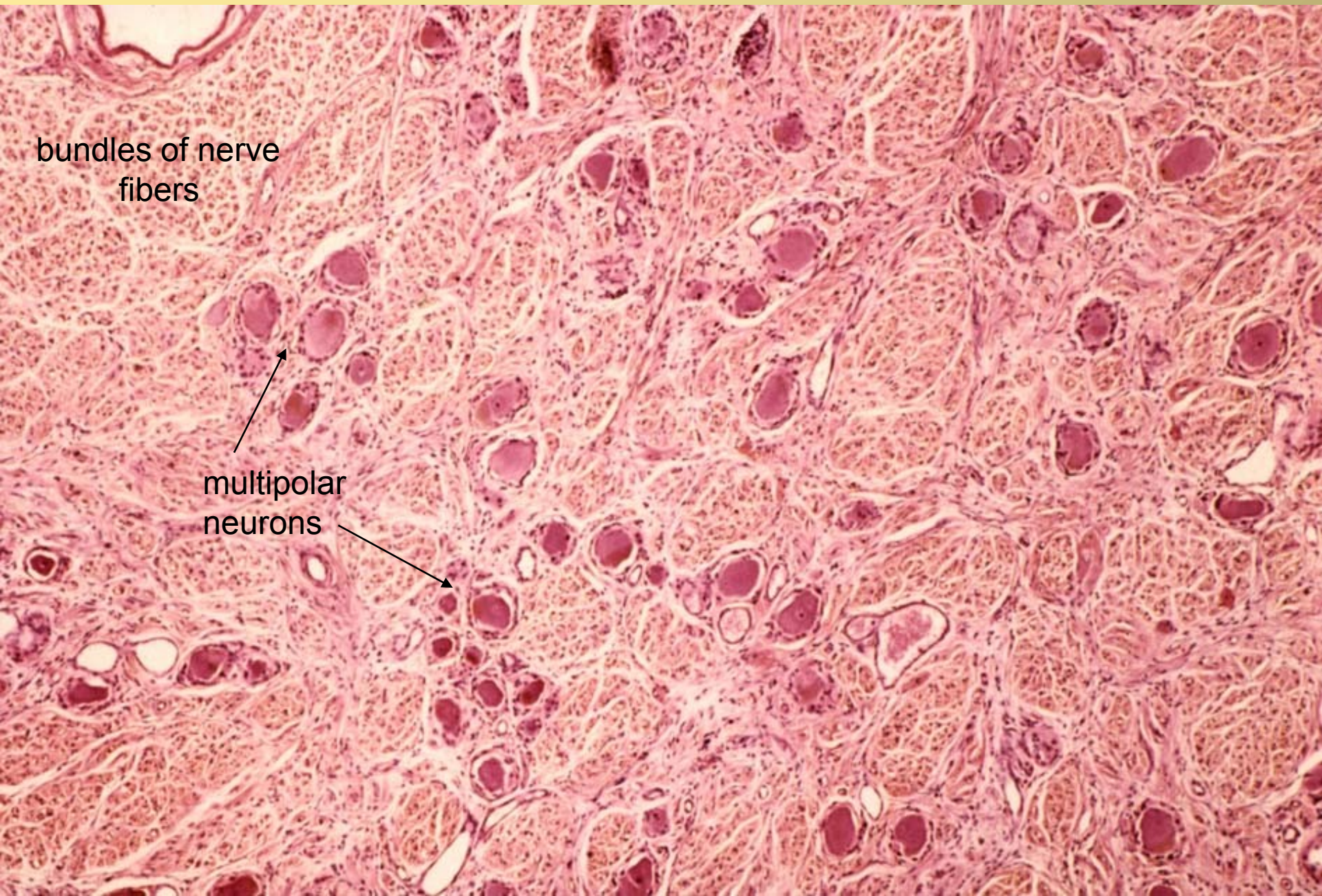
Spinal ganglion (HE) – pseudounipolar neurons + satelite cells



Autonomic ganglion (HE)

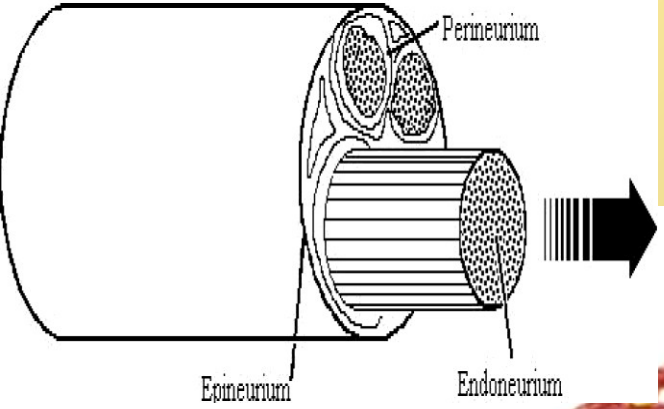


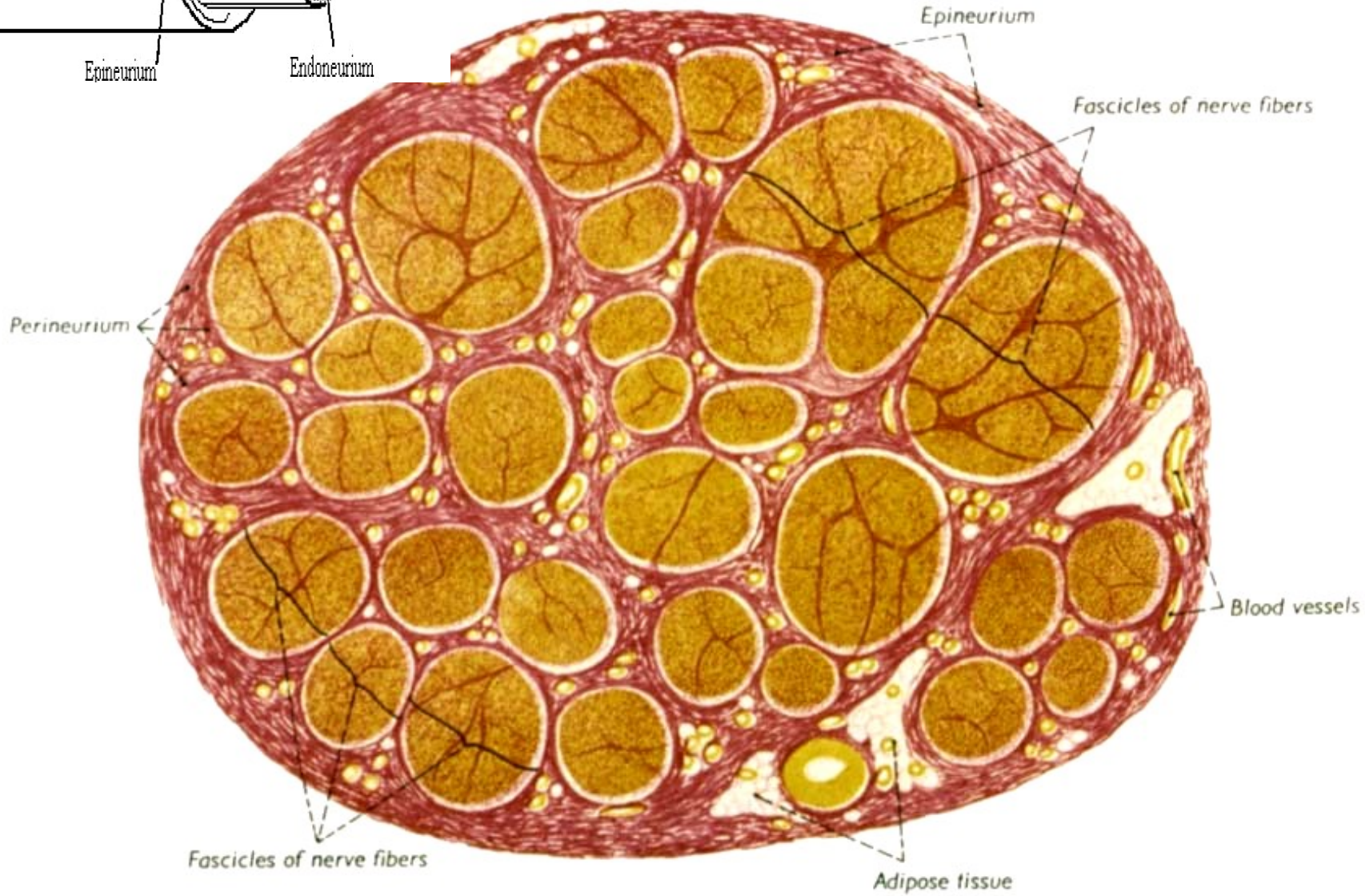
Autonomic ganglion (HE)



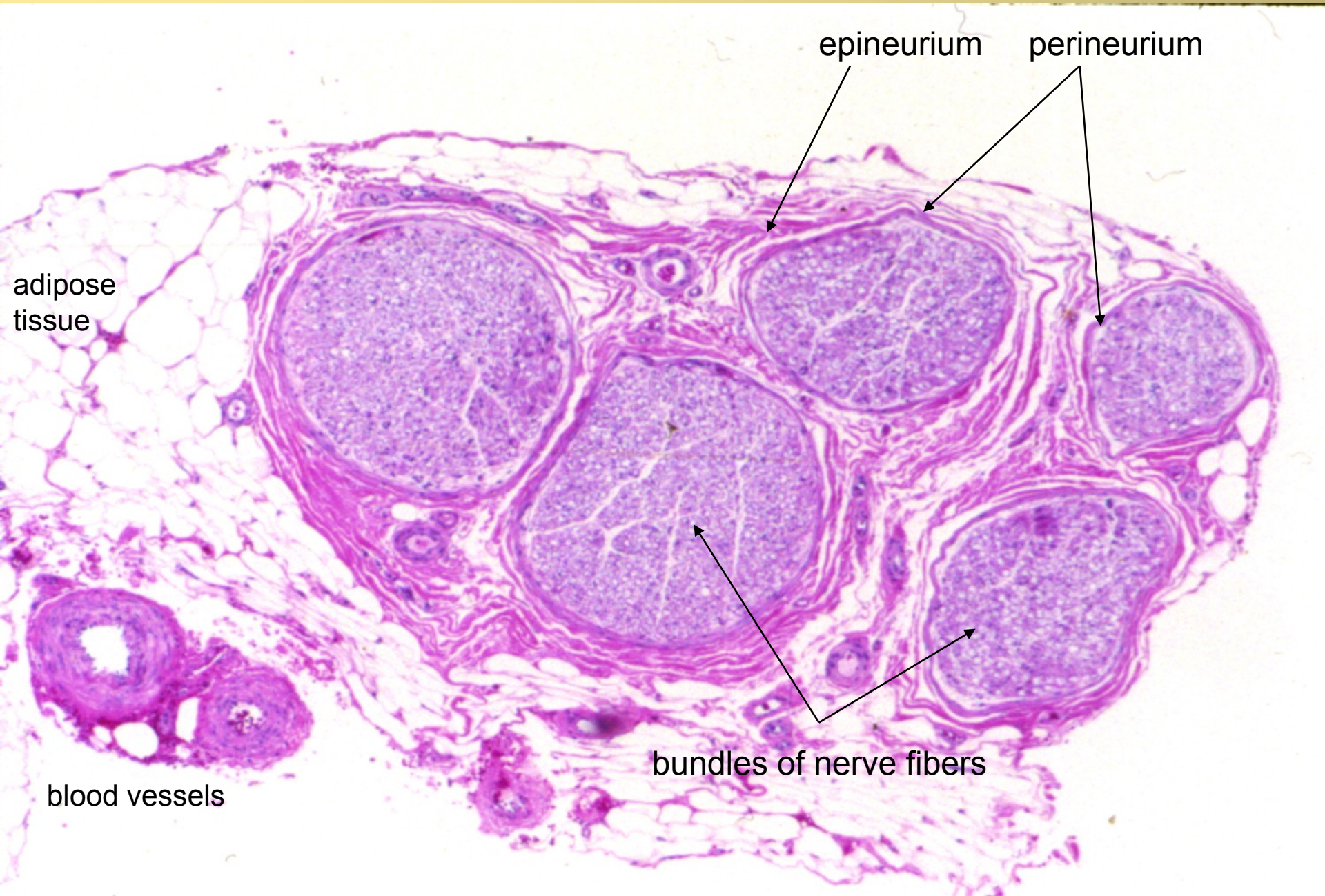
Autonomic ganglion (HE)

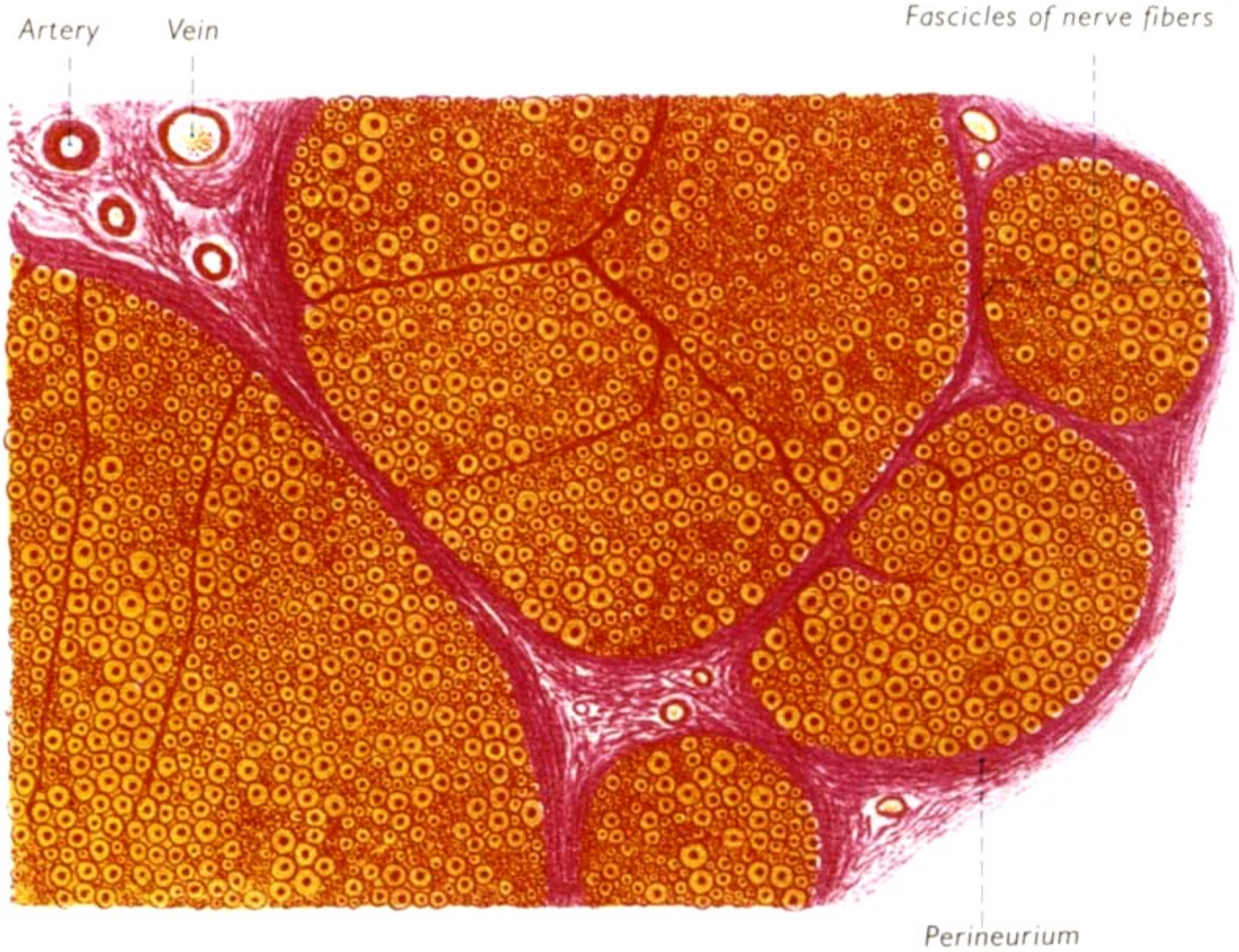
Peripheral nerve



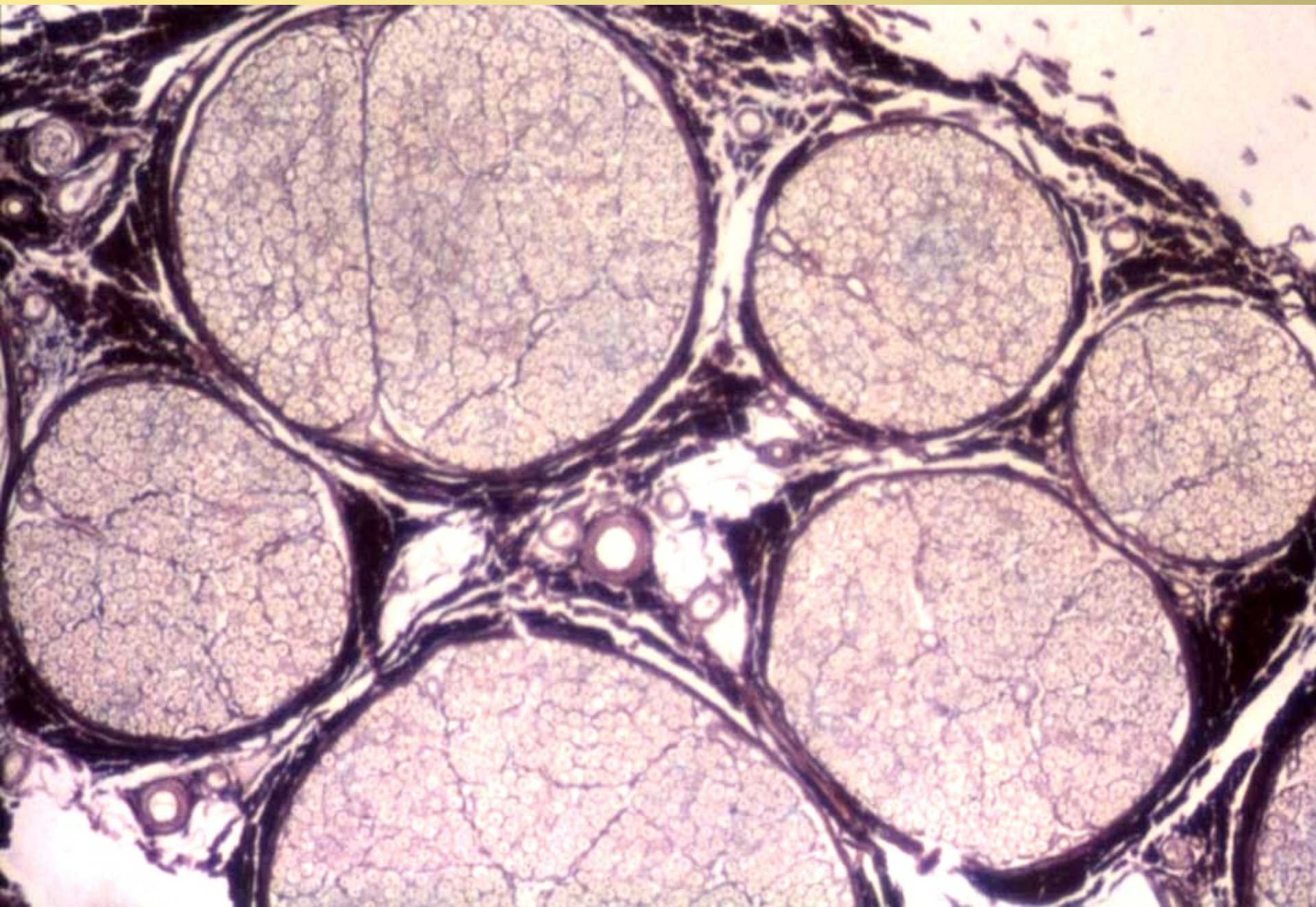


Peripheral nerve (HE) – cross section

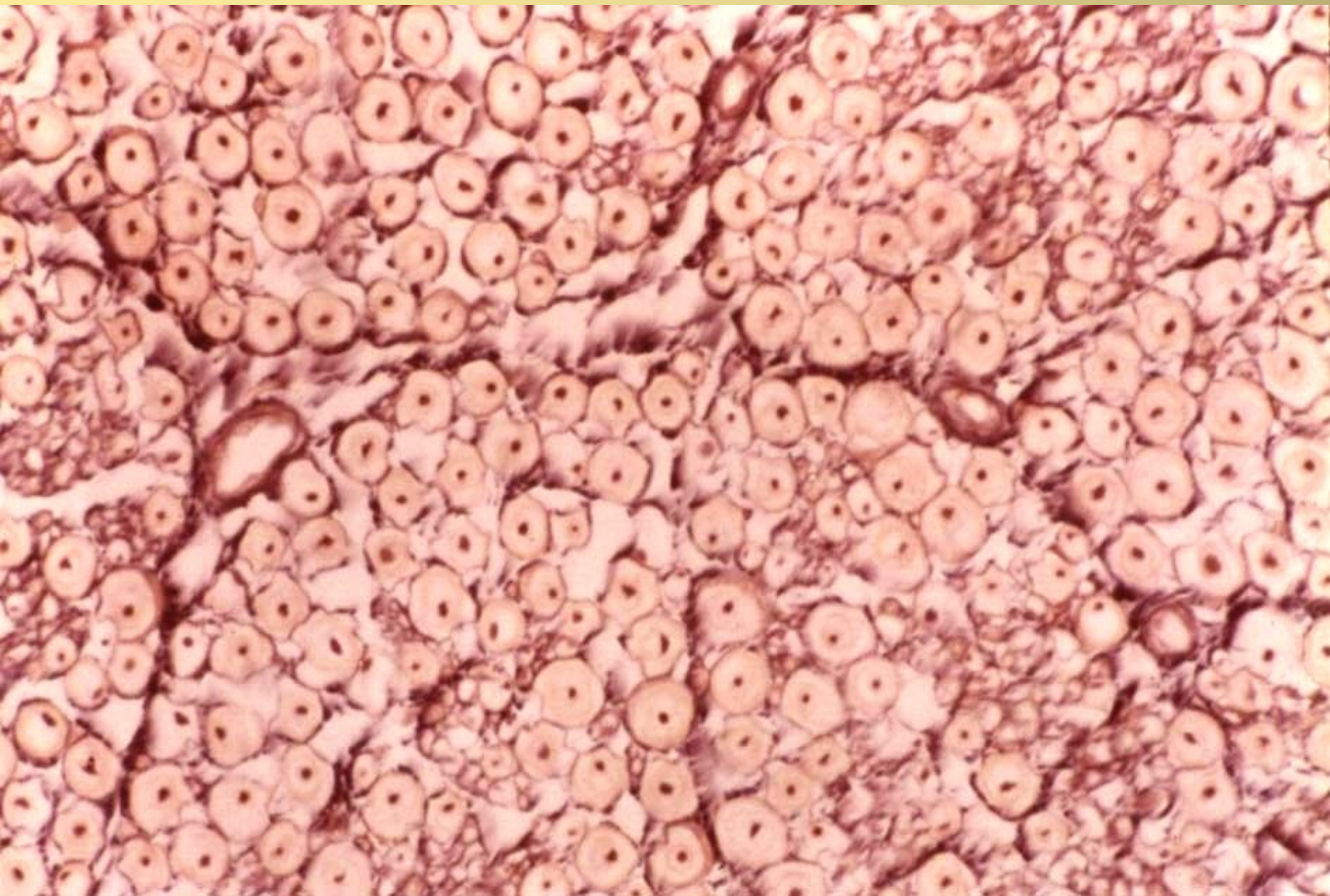


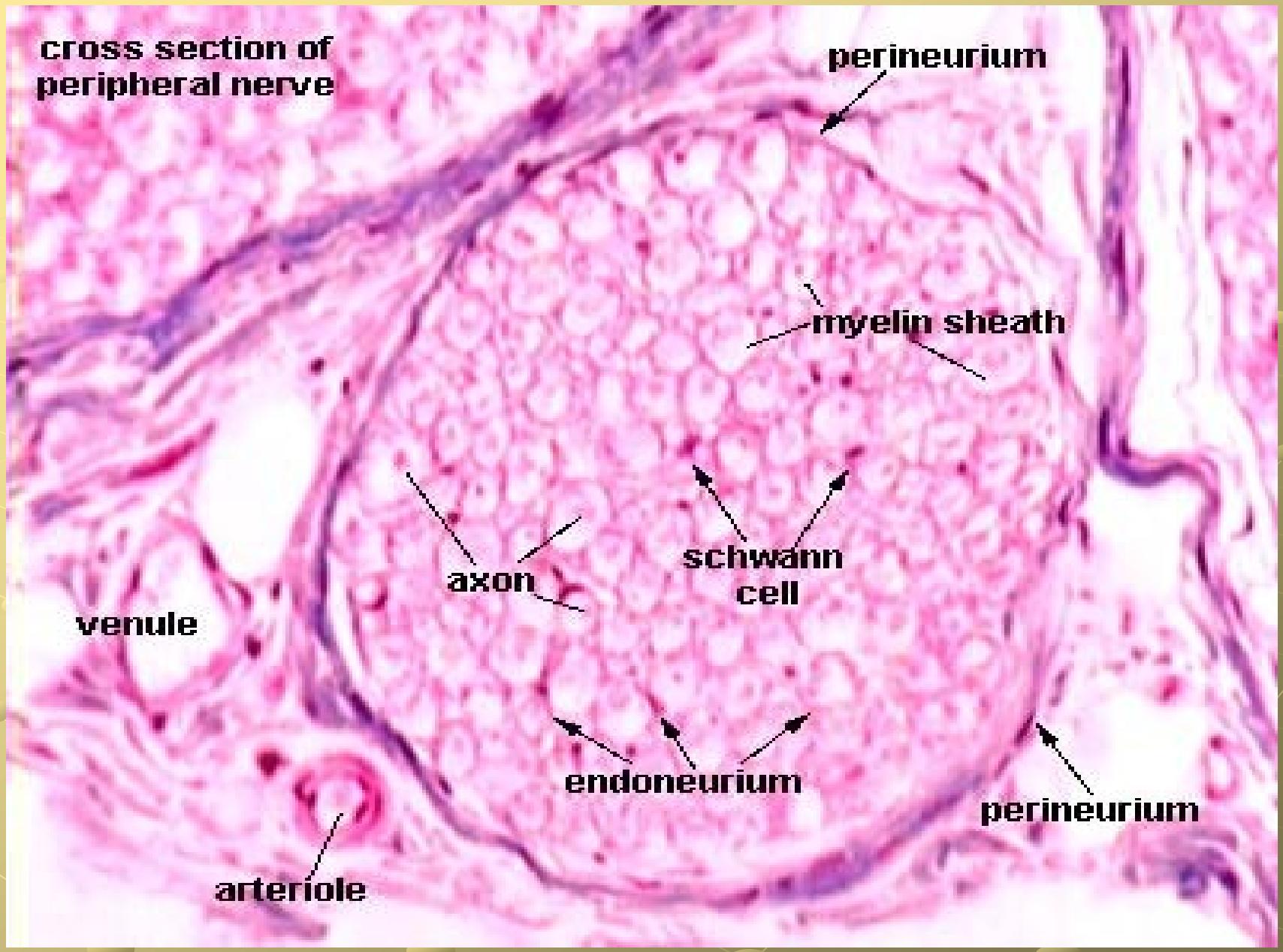

Artery
Vein
Fascicles of nerve fibers
Perineurium

Peripheral nerve (myelin) – cross section

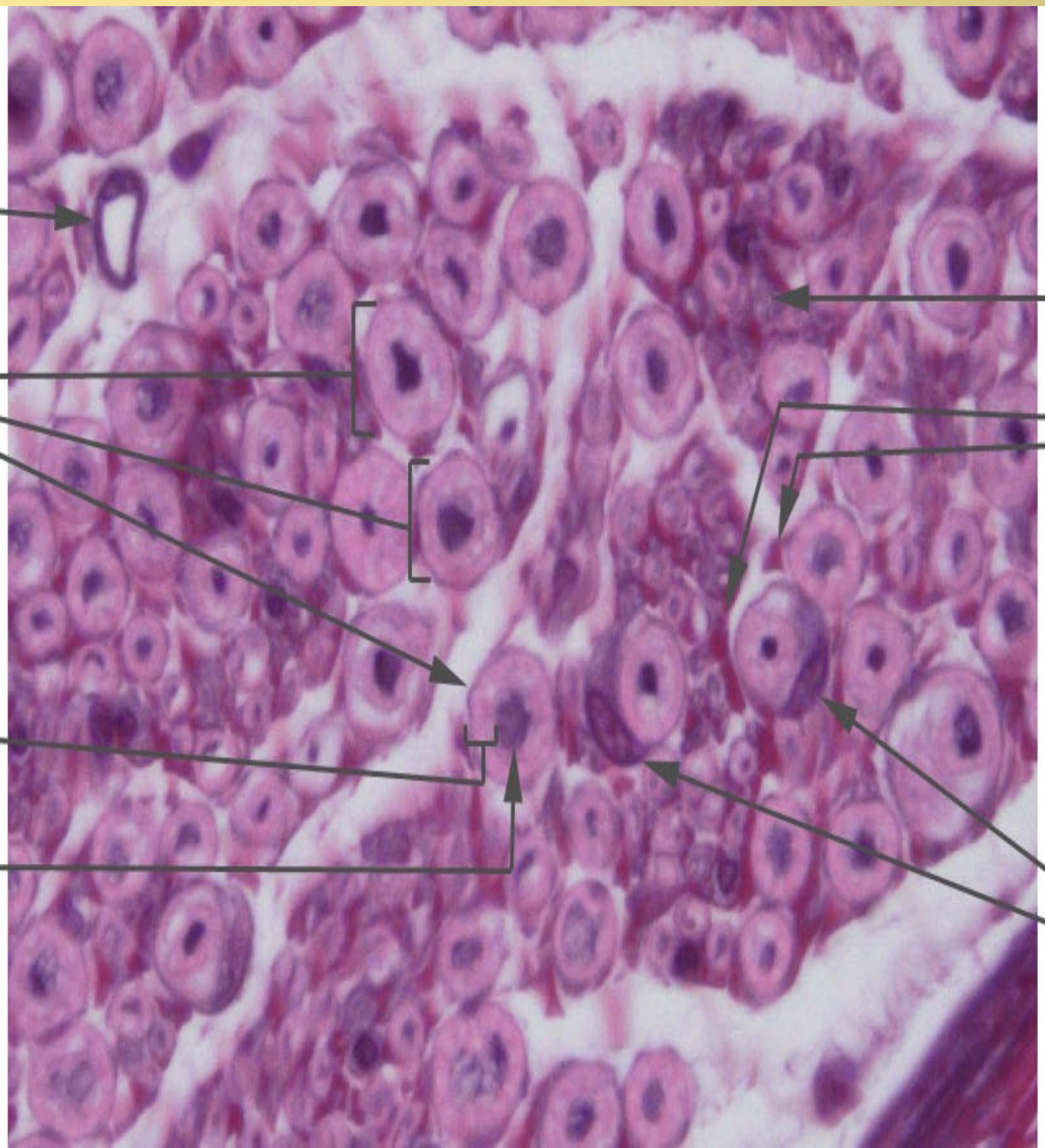


Peripheral nerve (HE) – cross section



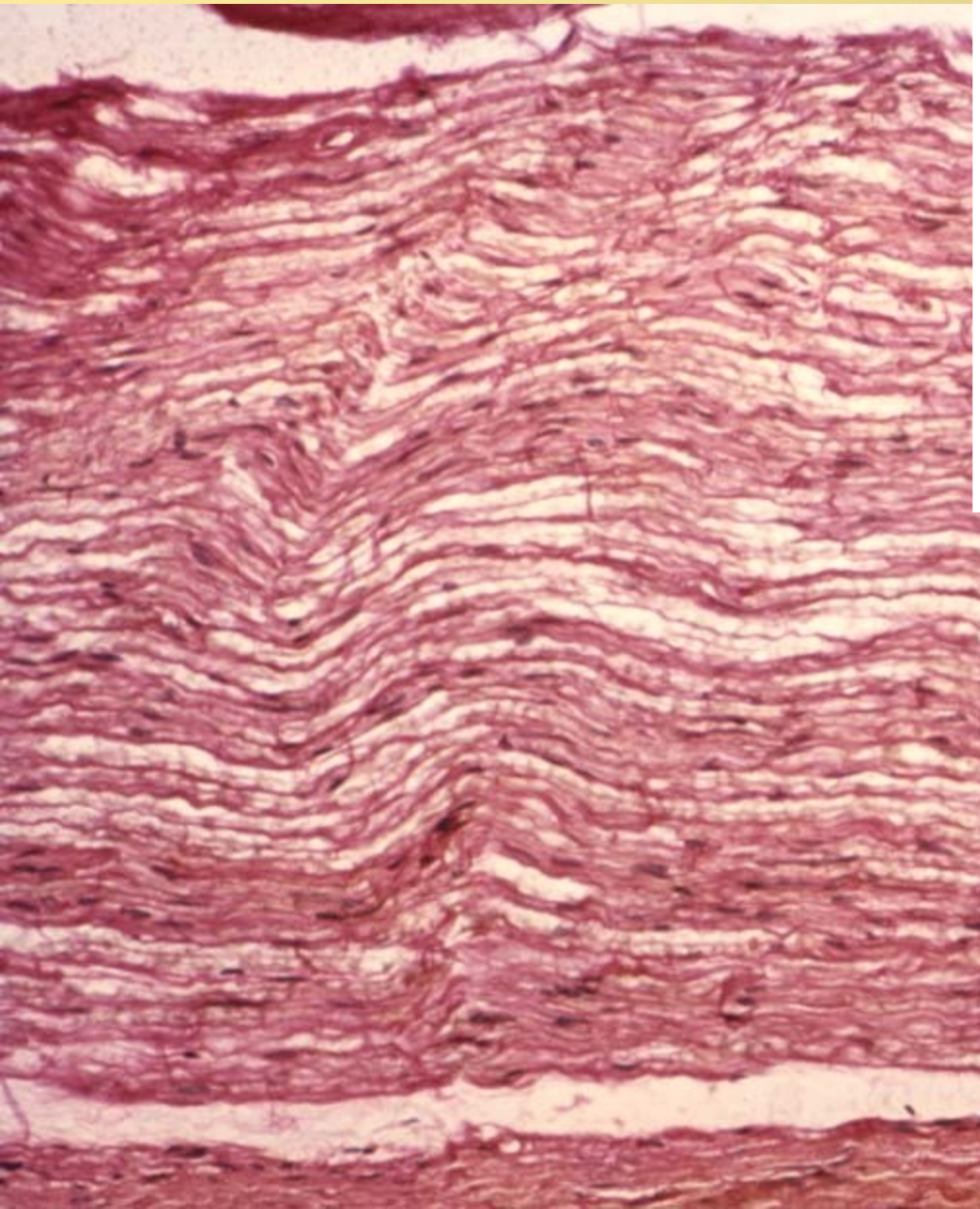

cross section of peripheral nerve
perineurium
myelin sheath
axon
schwann cell
venule
endoneurium
perineurium
arteriole

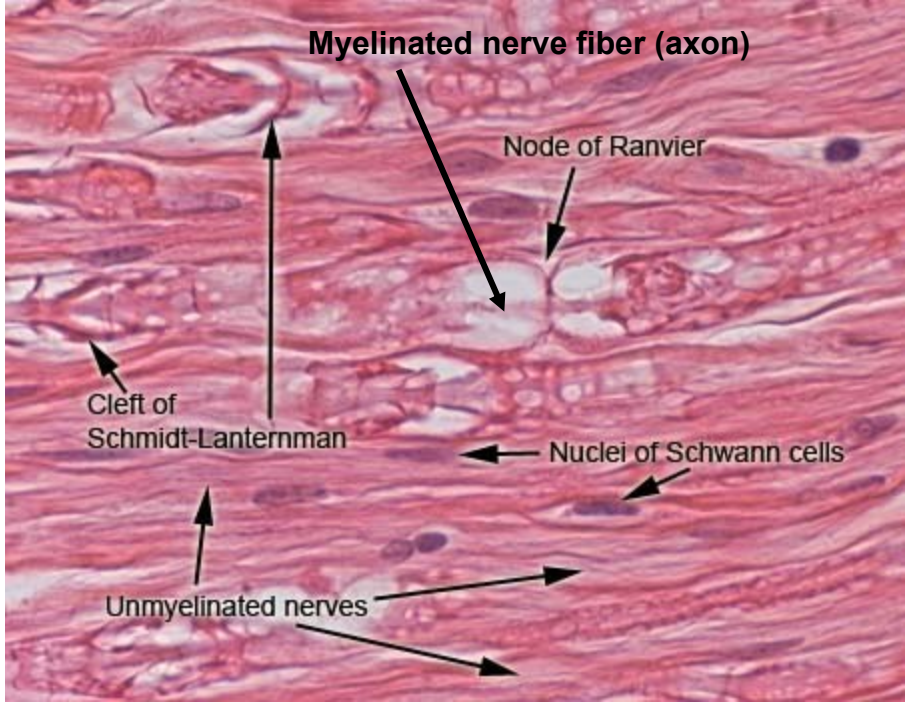
Peripheral nerve (HE) – detail of cross section



Peripheral nerve – myelin, longitudinal section

Peripheral nerve (HE) longitudinal section





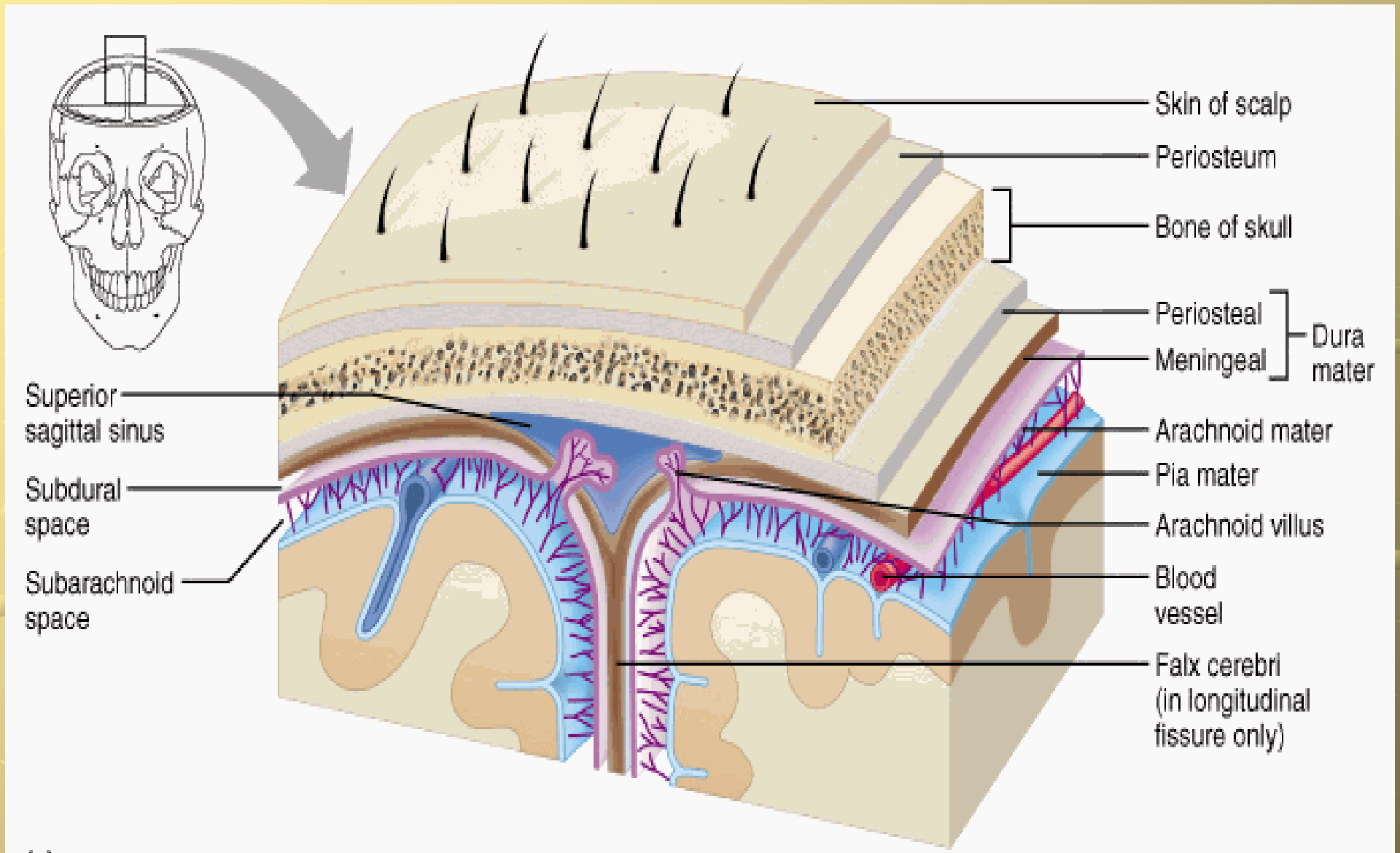
Male reproductive system

 **Slides:**

75, 76. Cortex cerebri (HE, impregnation)
77, 78. Cerebellum (impregnation, Nissl)
79. Medulla spinalis (HE)
81, 82. Ganglion spinale (HE, impregnation)
83. Autonomic ganglion (HE)
84, 86. Peripheral nerve (HE) –cross and longit. section
85, 87. Peripheral nerve (myelin) -"-

 **Atlas of EM:**

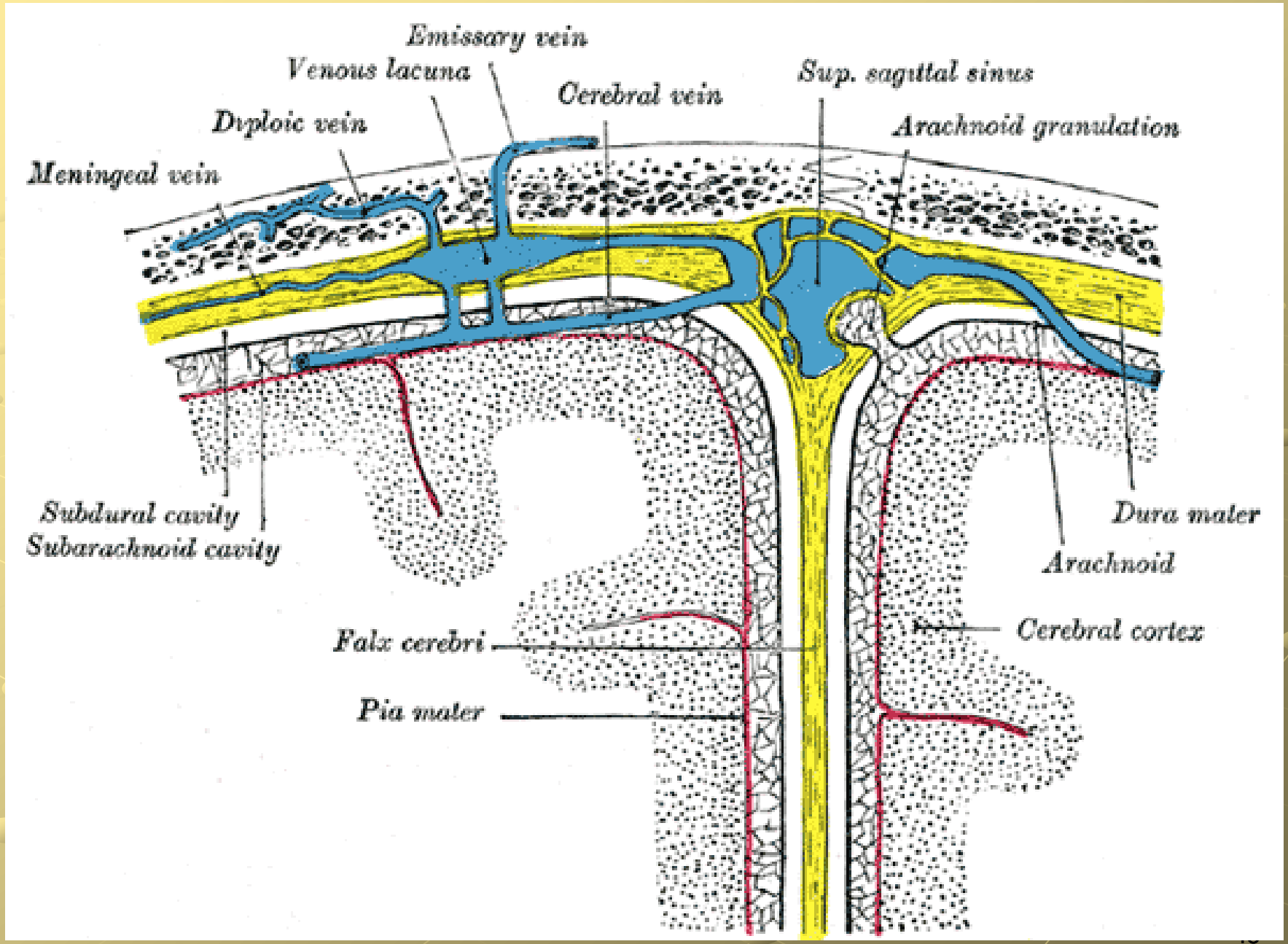
pp. 55 - 58

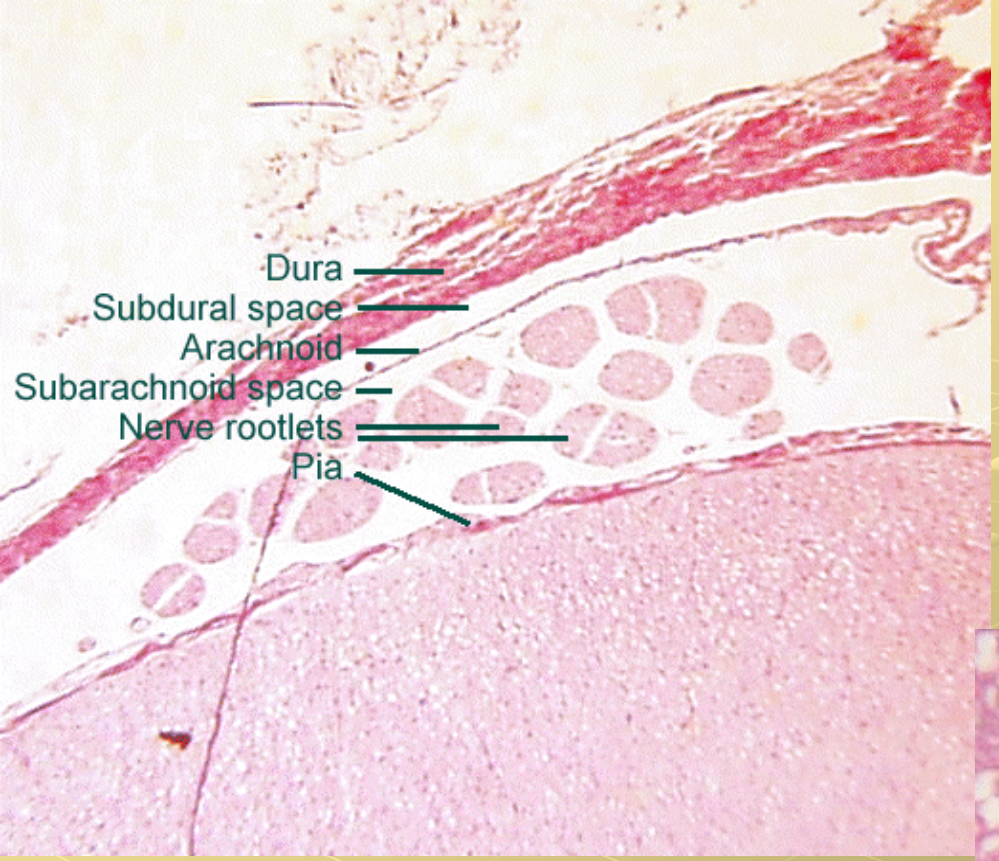


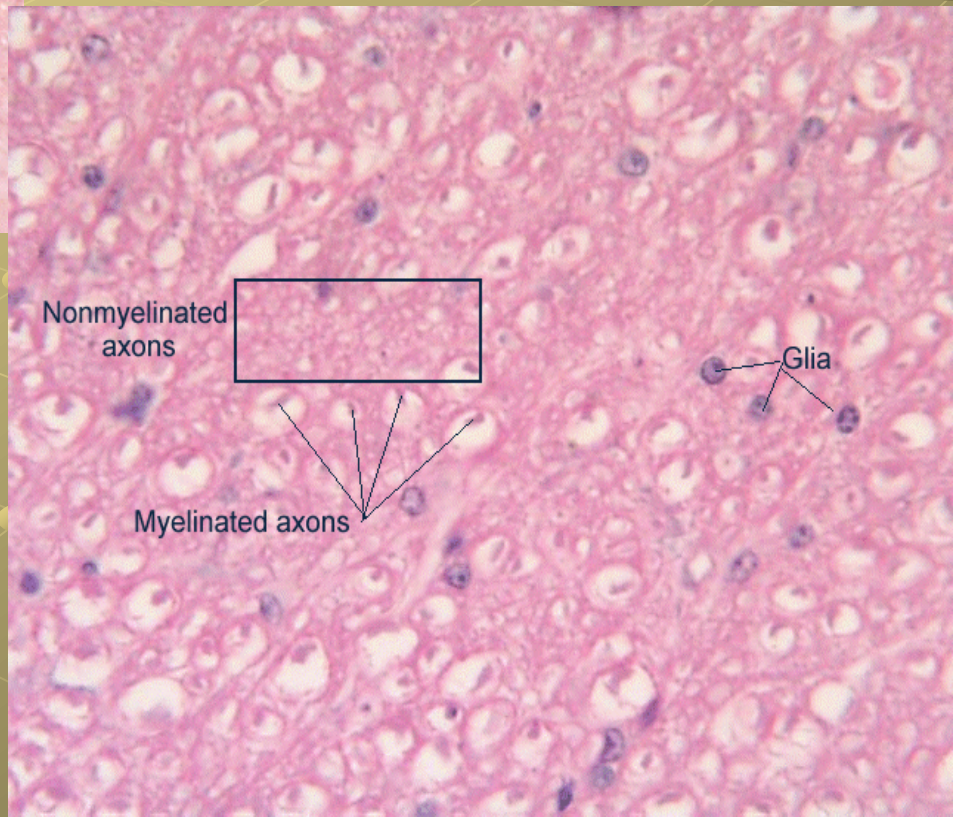
(a)

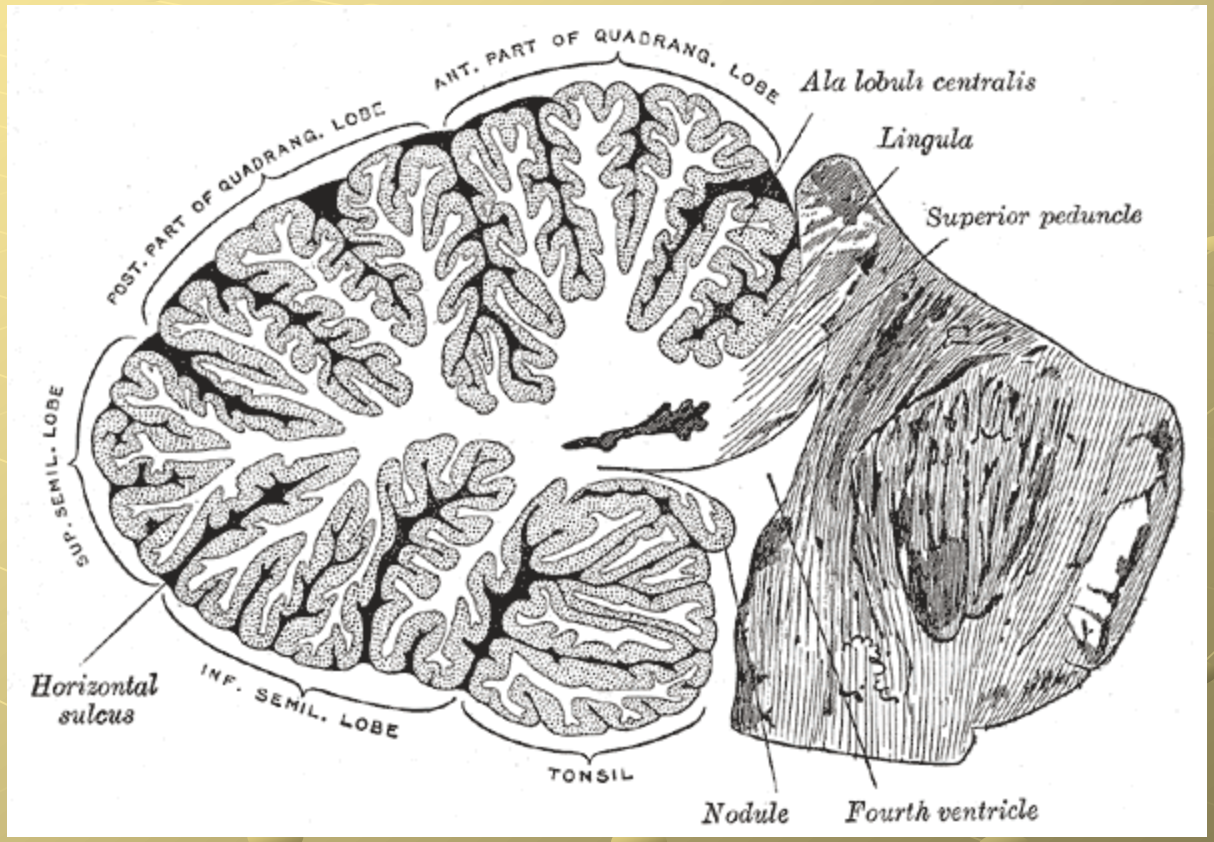
Thank you for attention

(pictures on following slides were not presented, but they can help you)


Emissary vein
Venous lacuna
Cerebral vein
Sup. sagittal sinus
Diploic vein
Arachnoid granulation
Meningeal vein
Subdural cavity
Subarachnoid cavity
Dura mater
Arachnoid
Cerebral cortex
Falx cerebri
Pia mater


Dura
Subdural space
Arachnoid
Subarachnoid space
Nerve rootlets
Pia


Nonmyelinated axons
Glia
Myelinated axons


POST. PART OF QUADRANG. LOBE
ANT. PART OF QUADRANG. LOBE
Ala lobuli centralis
Lingula
Superior peduncle
SUP. SEMIL. LOBE
Horizontal sulcus
INF. SEMIL. LOBE
TONSIL
Nodule
Fourth ventricle