CNS
lab 2

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The midbrain

❖Levels of the midbrain:

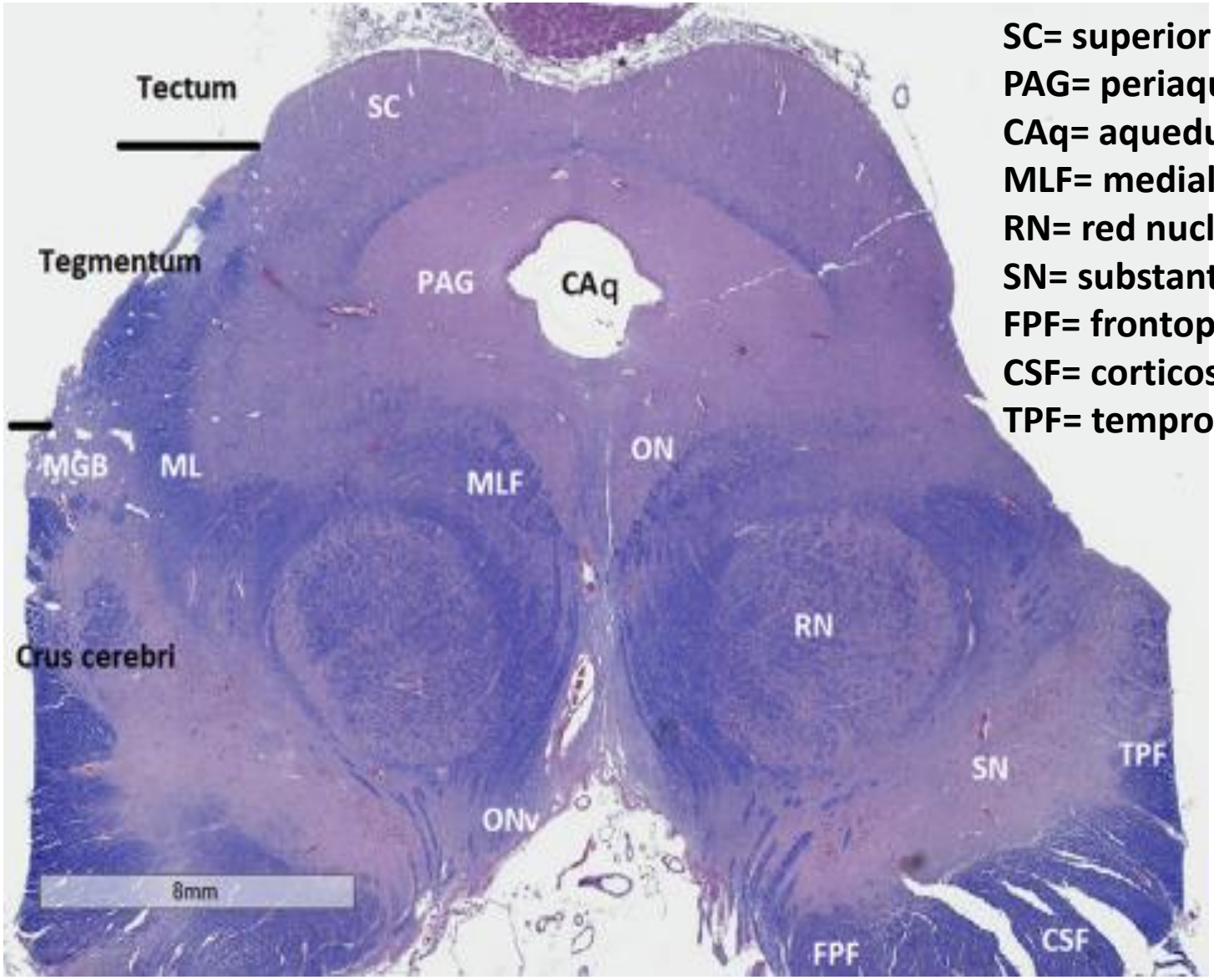
1. Midbrain at the level of inferior colliculus.

2. Midbrain at the level of superior colliculus.

Midbrain at the level of inferior colliculus.
Quadrangular shaped of aqueduct of Sylvius

Midbrain at the level of superior colliculus. Pear shaped of aqueduct of Sylvius

Midbrain at the level of superior colliculus.



SC= superior colliculus
PAG= periaqueductal grey matter
CAq= aqueduct of sylvius
MLF= medial longitudinal bundle
RN= red nucleus
SN= substantia nigra
FPF= frontopontine fibers
CSF= corticospinal fibers
TPF= tempropontine fibers

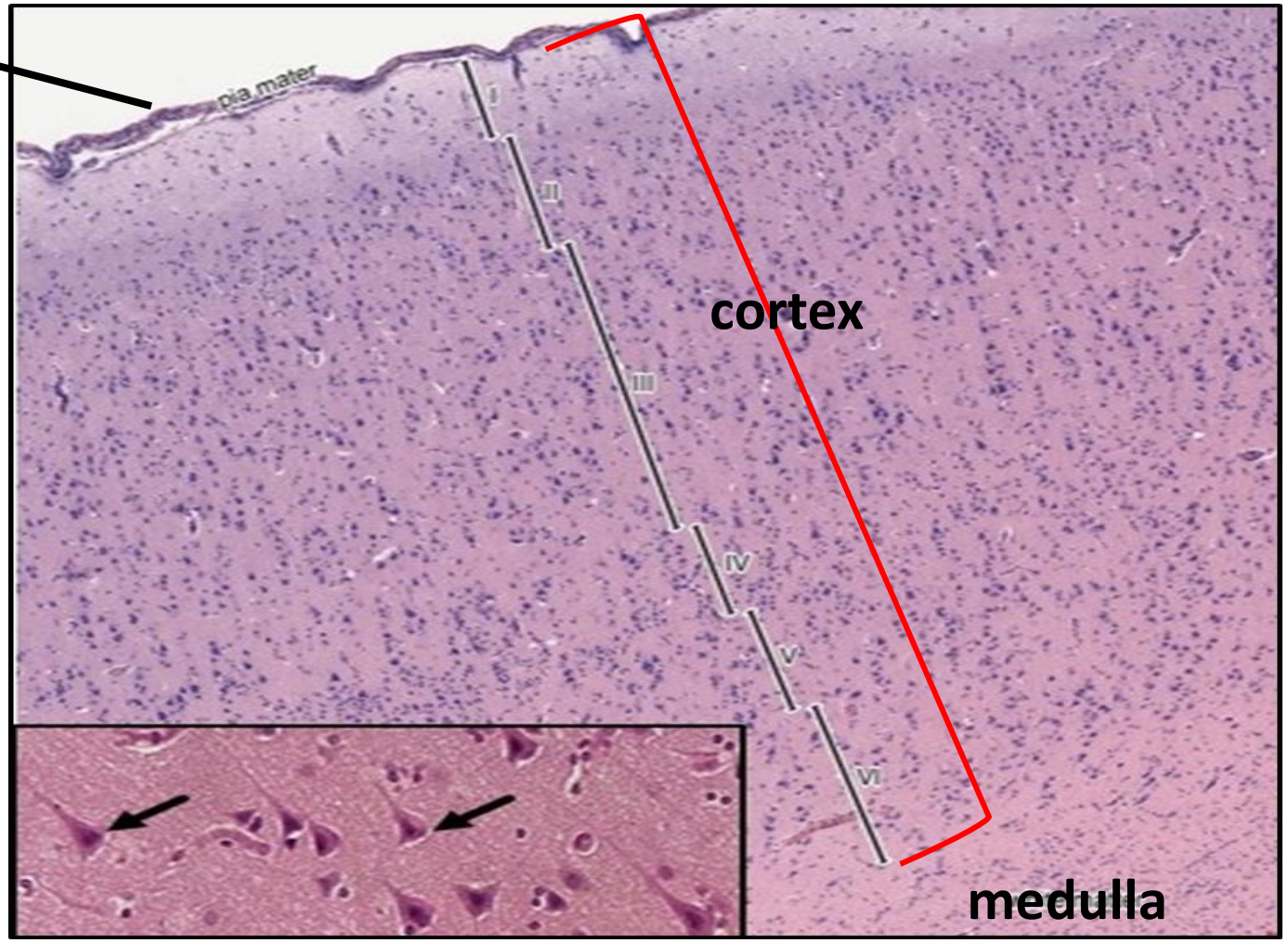
The cerebrum

- **Histological structure of cerebral cortex:**
- The cerebral cortex (grey matter) consists of six layers which are:
- **Molecular layer:** consists mainly of parallel nerve fibers from cells of other deeper layers.
- **External granular layer:** contains small pyramidal cells and granular stellate cells.
- **External pyramidal layer:** contains medium sized pyramidal cells.
- **Internal granular layer:** contains granular stellate cells.
- **Internal pyramidal layer:** contains very large pyramidal cells.
- **Polymorphic cell layer:** contains nerve cells of different shapes (fusiform or spindle shaped) and nerve

Cerebrum stained with H&E

cerebrum stained by H&E

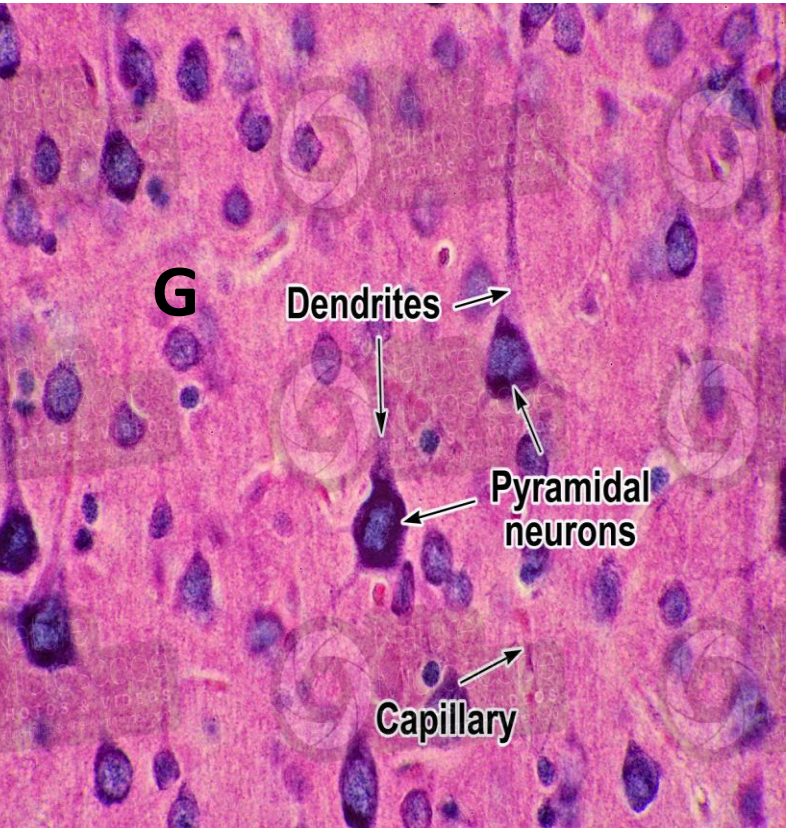
Pia matter

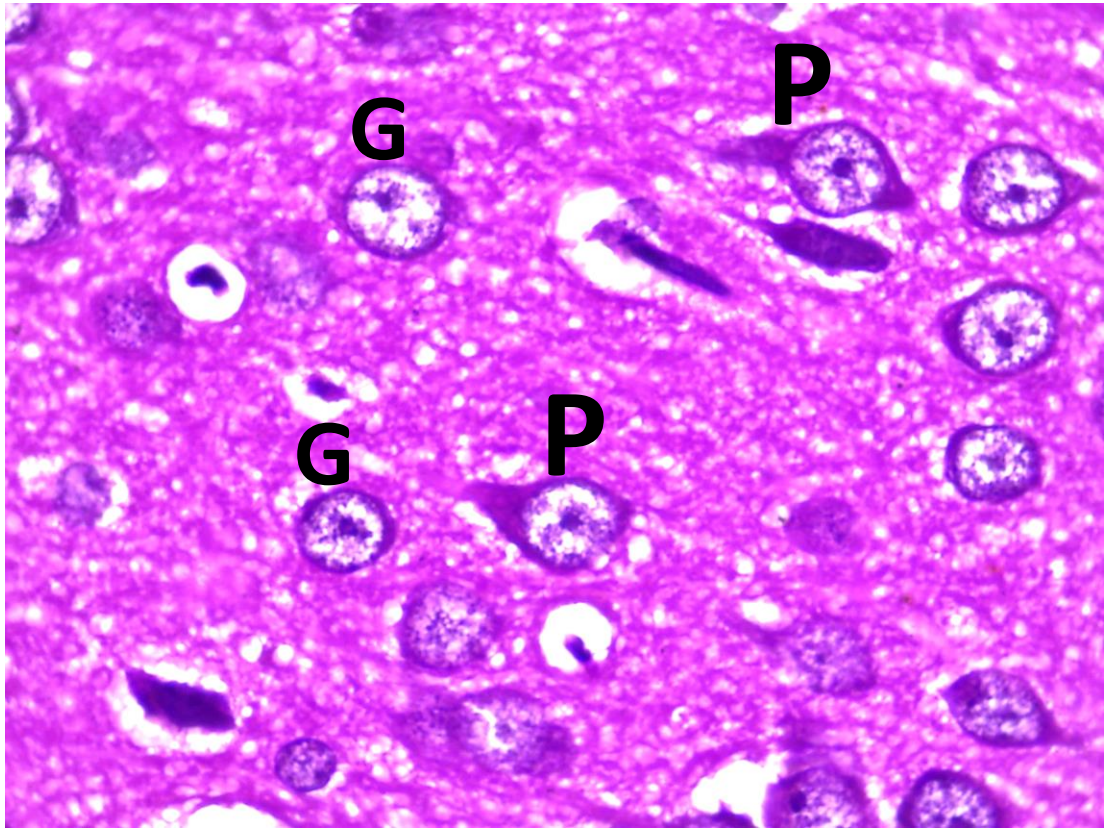


large pyramidal cells pointed by the arrow

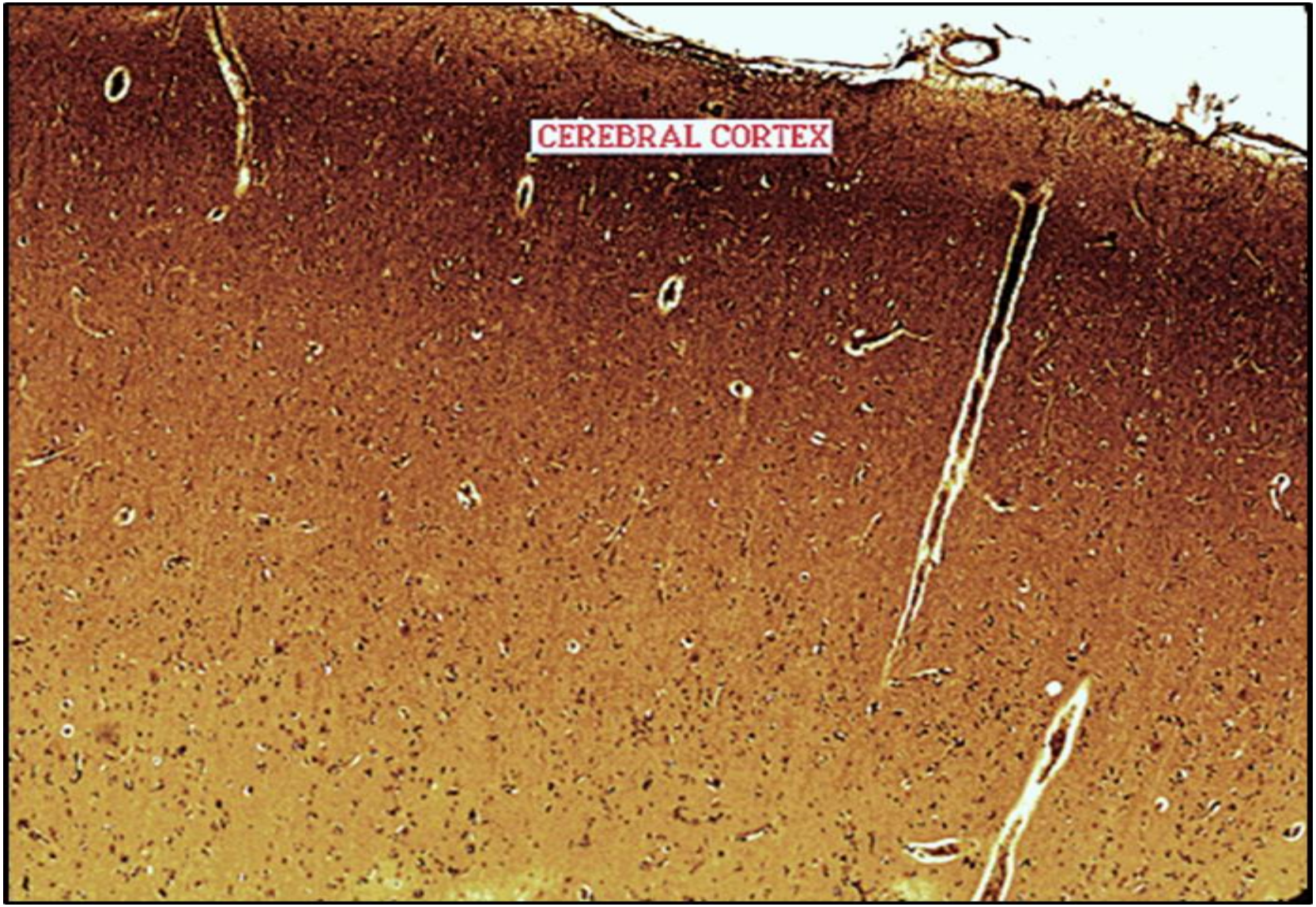
P= pyramidal cells

G= granule cells

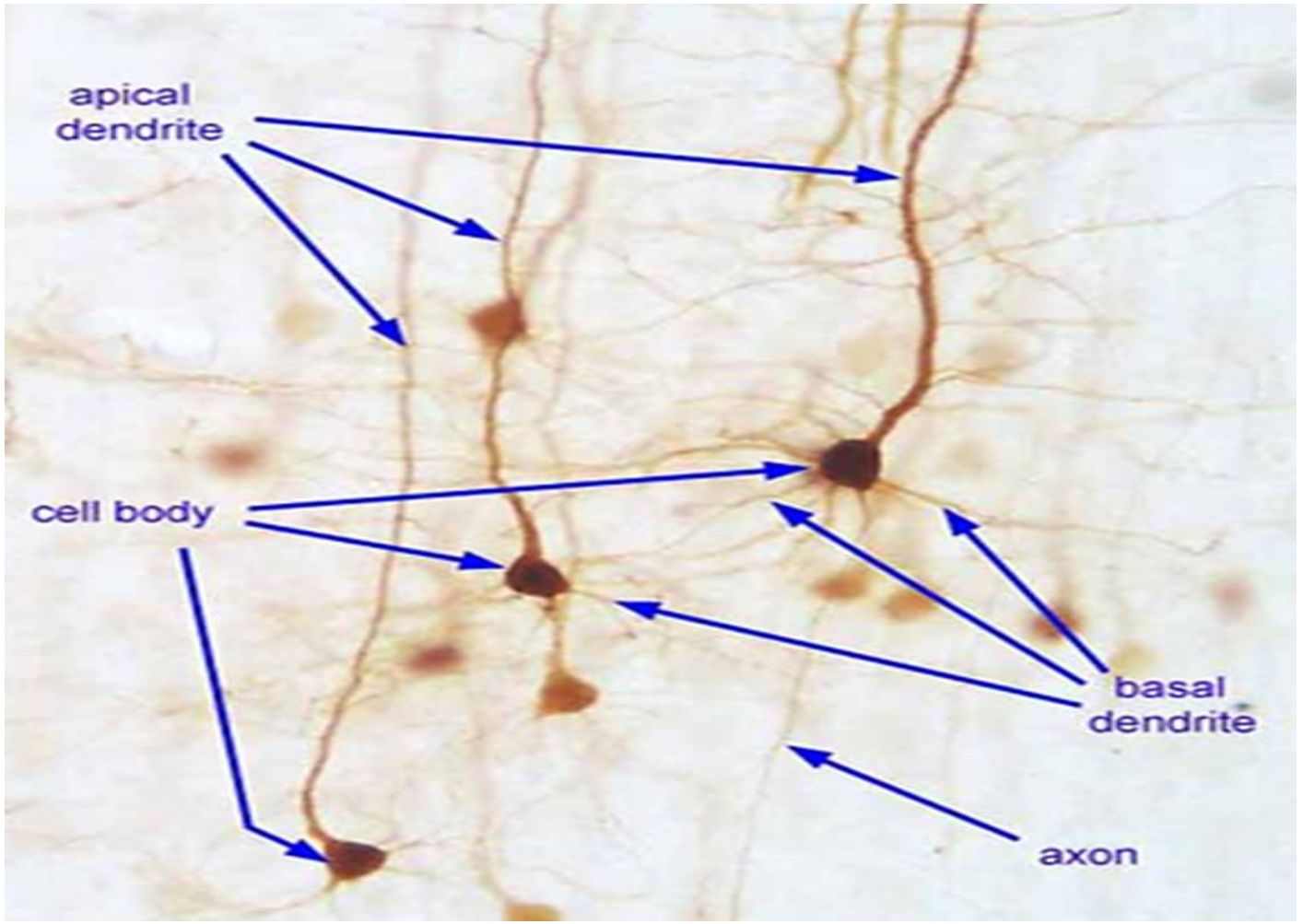




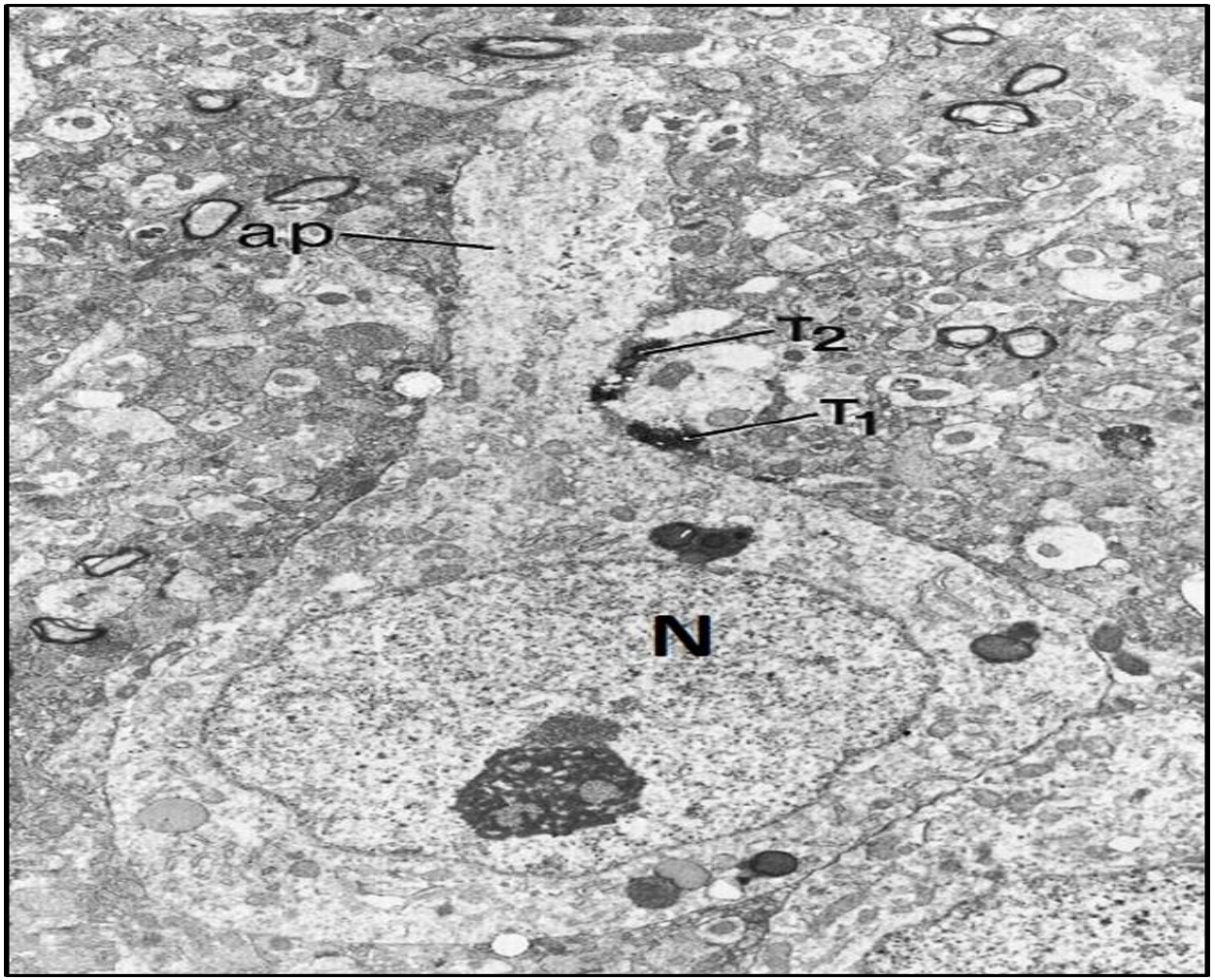
A microscopic picture shows the cerebrum stained by silver



Pyramidal cells (silver stain)



An electron micrograph shows a pyramidal neuron having euchromatic nucleus (N) with prominent nucleolus. An apical dendrite (ap) and synaptic terminals (T1&T2) can be seen.

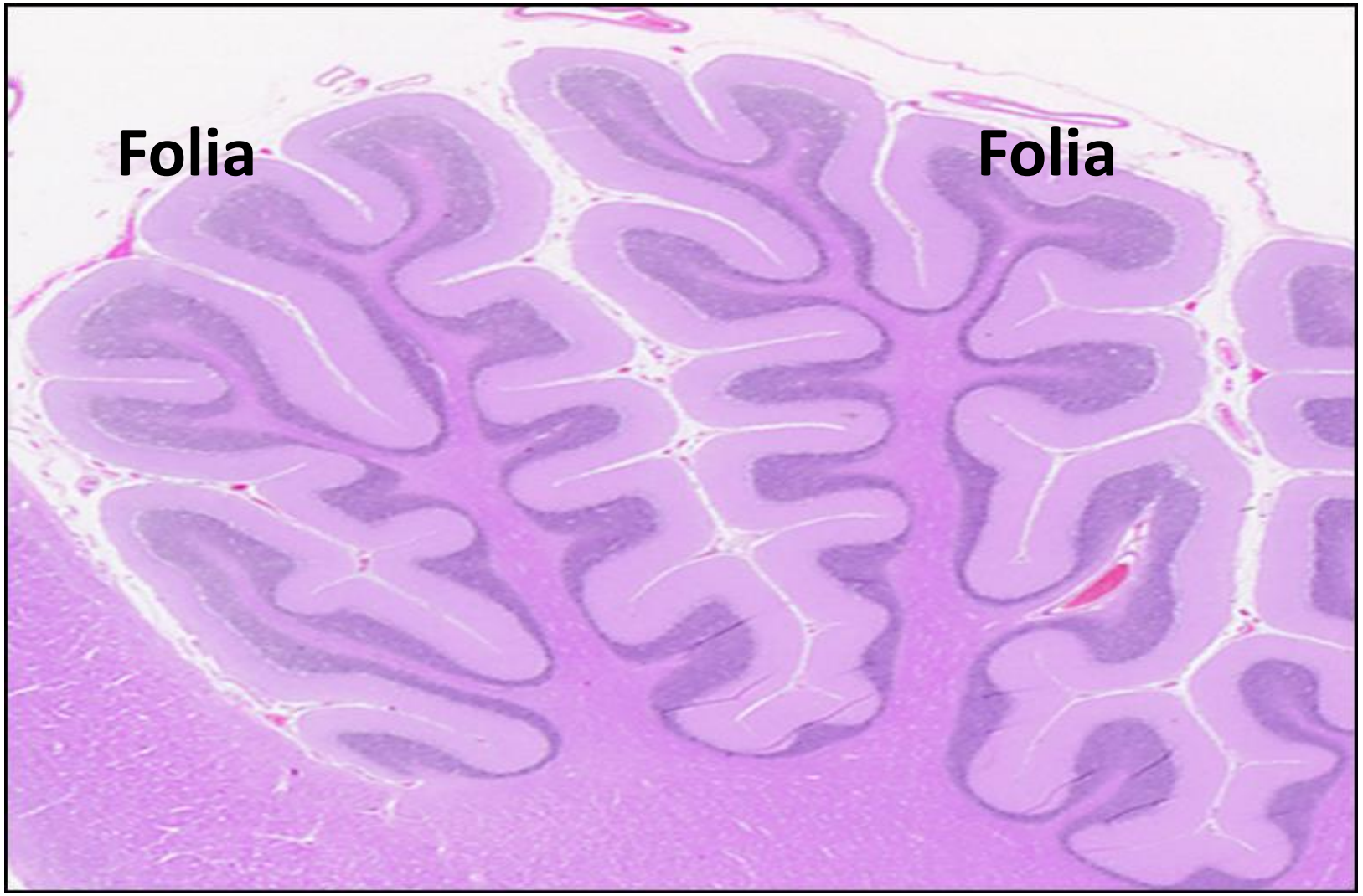


The cerebellum

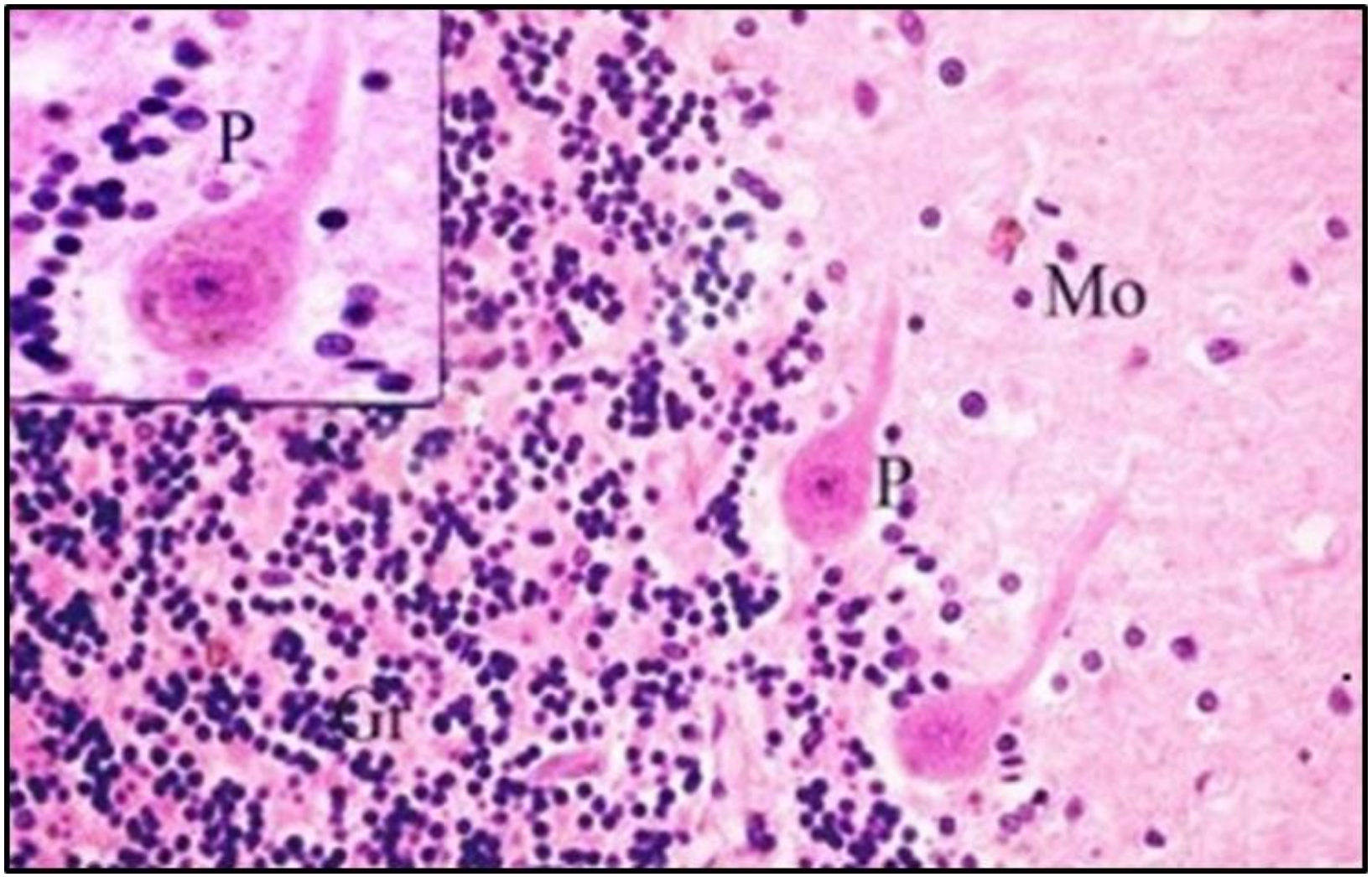
- The cerebellar cortex can be divided into three layers:

- **1- Molecular layer**
- **2- Purkinje cell layer**
- **3- Granular layer:** highly cellular layer

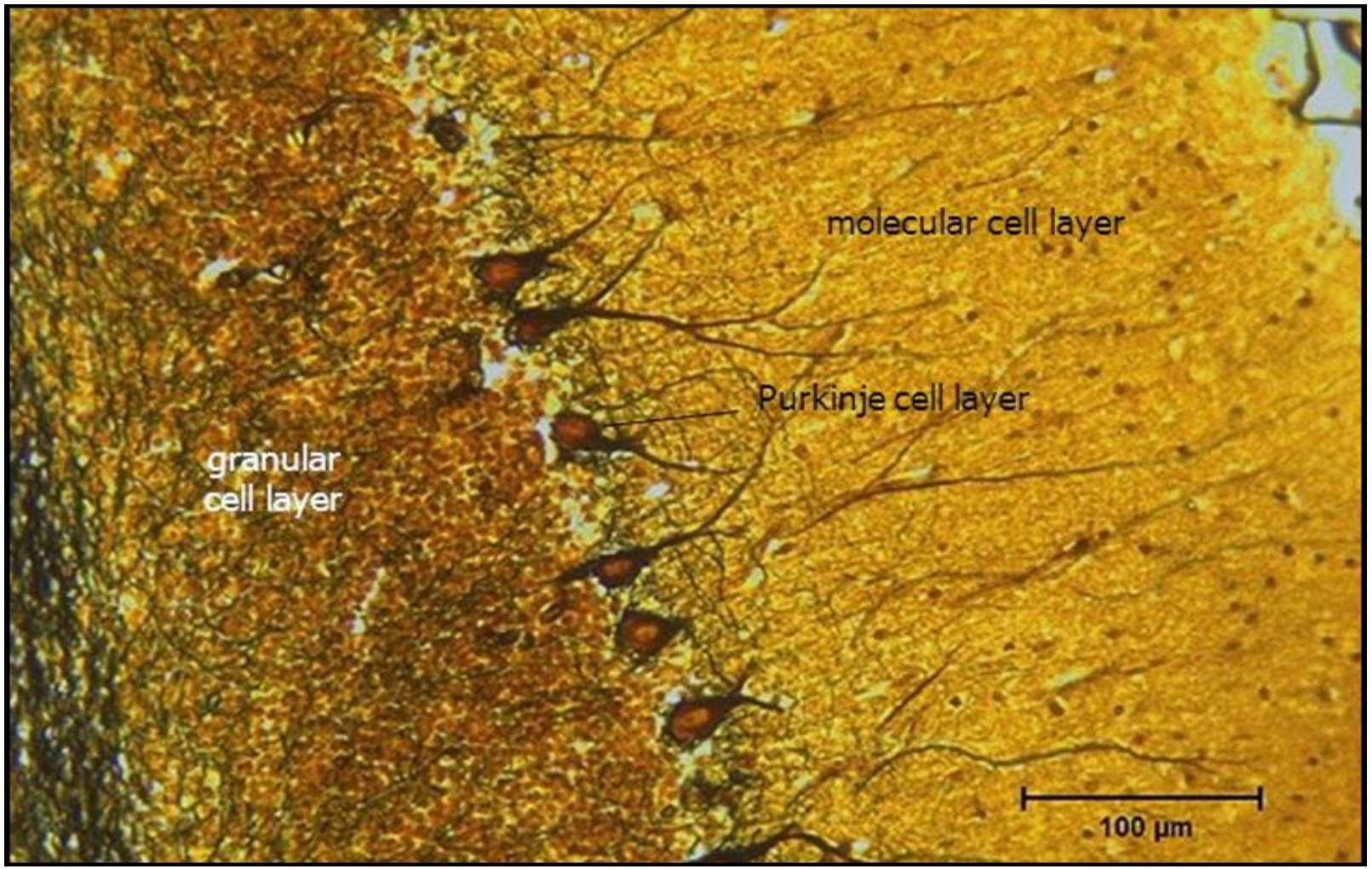
Cerebellum stained with H&E



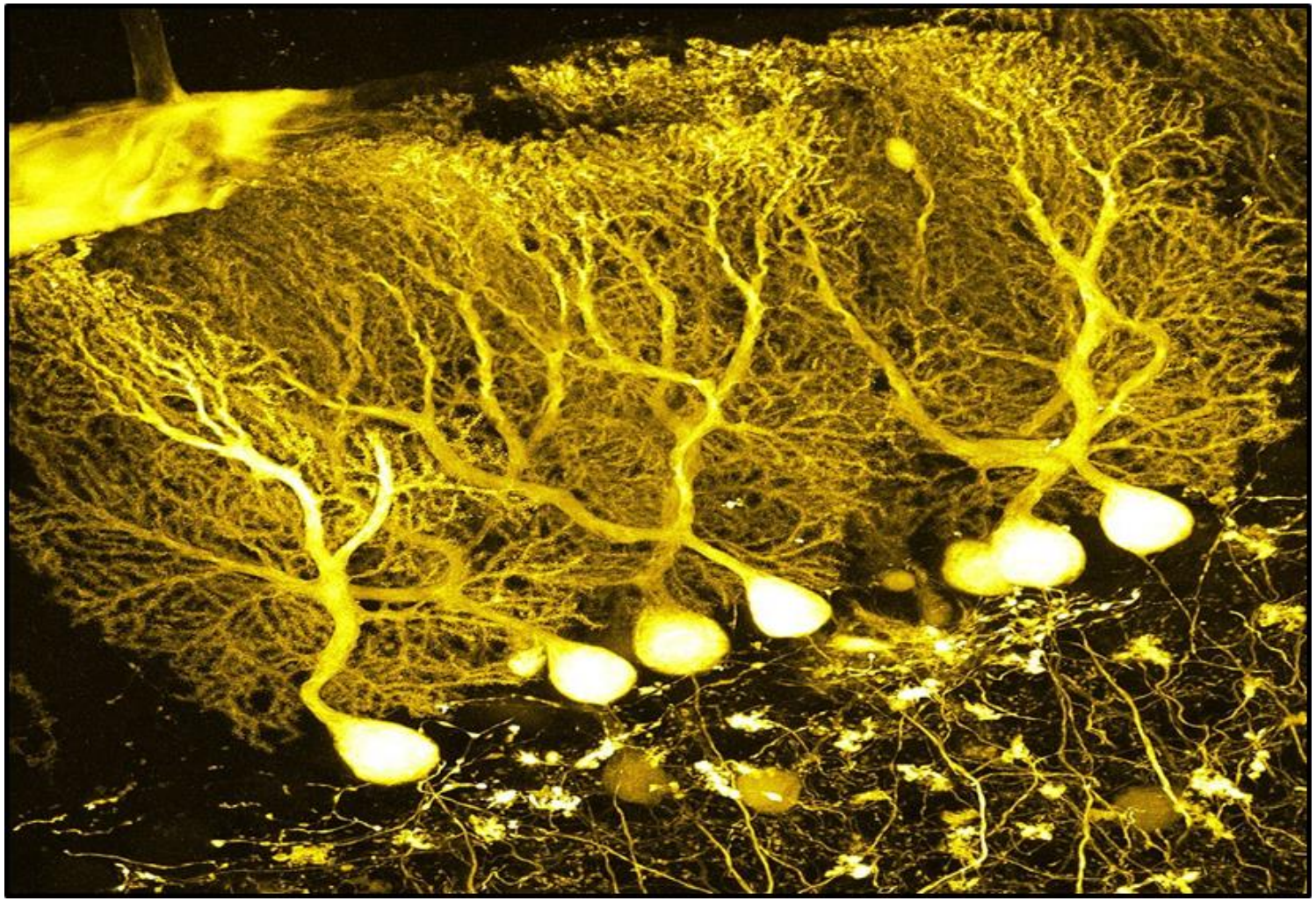
A microscopic picture shows the cerebellar cortex stained by H&E (N.B: Mo= molecular layer, P= Purkinje cell layer, Gr= granule cell layer



Microscopic picture shows cerebellar cortex stained by silver



A confocal microscope image shows Purkinje cells with arborizations of their dendrites



An electron micrograph of a blood capillary in the brain. (blood brain barrier)