

Nerve tissue

Neurons

Glial cells

CNS: oligodendrocytes, astrocytes,
ependymal cells, microglia

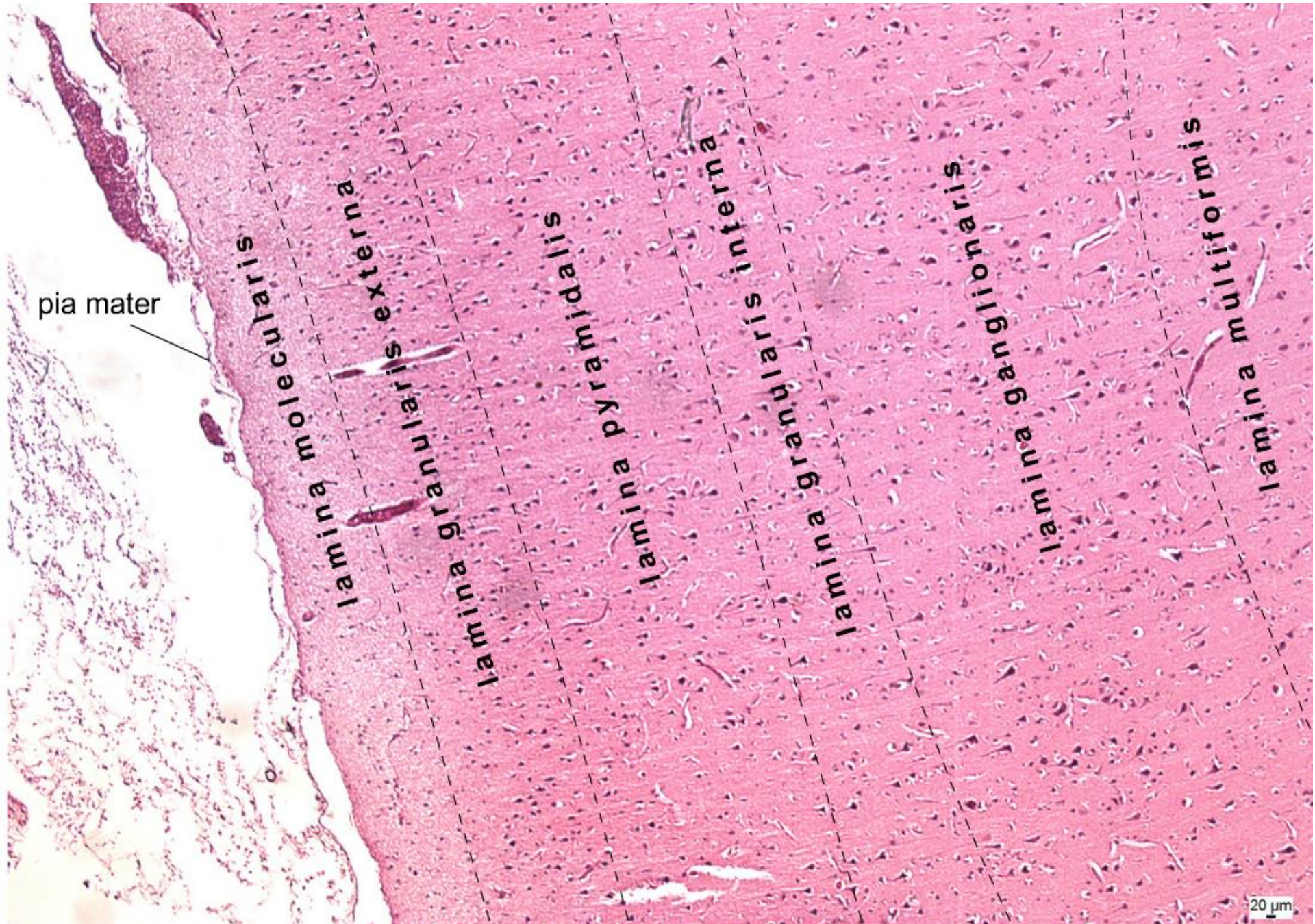
PNS: satellite cells, Schwann's cells

Synapse

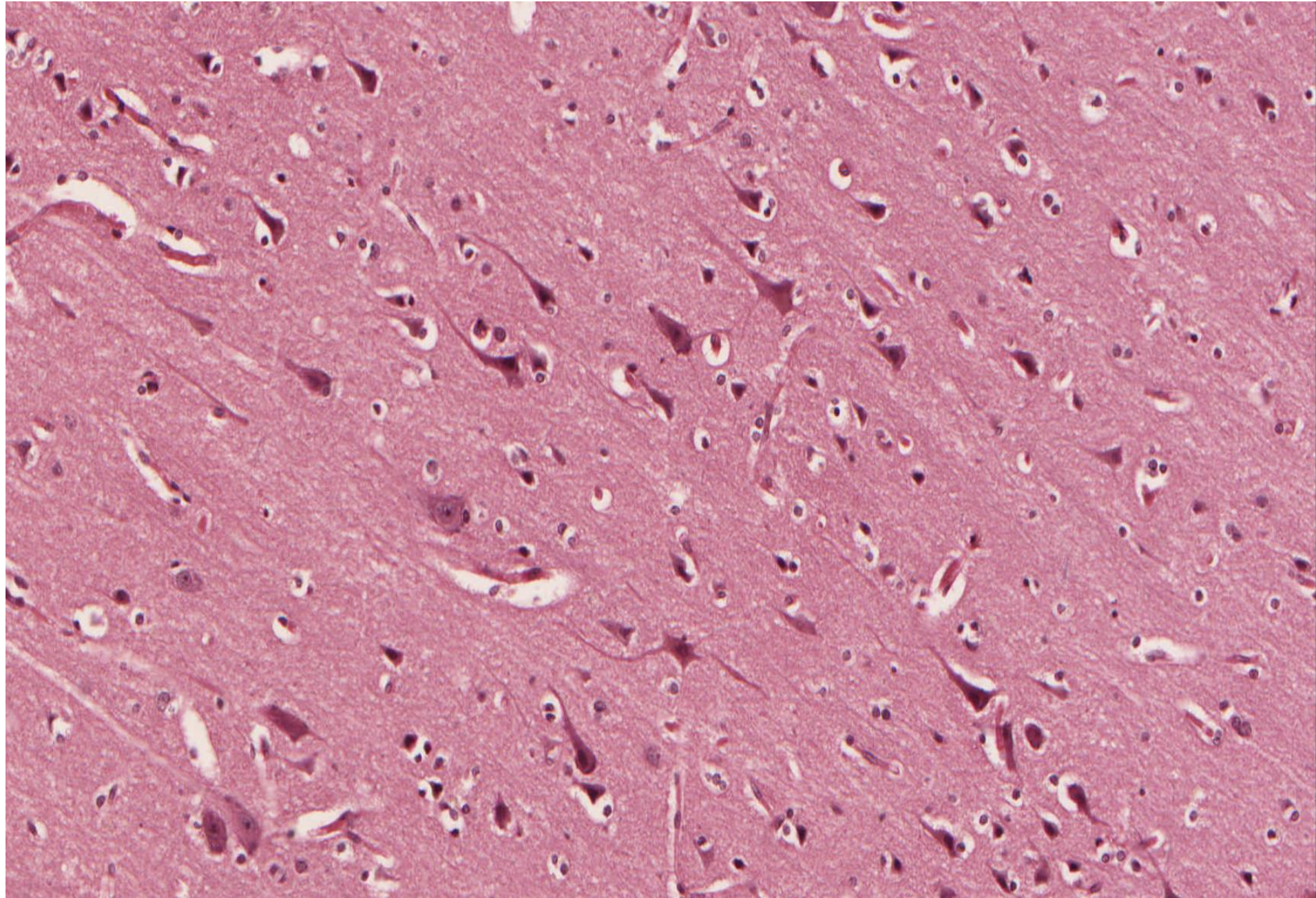
Myelination

Hemato-encephalic barrier

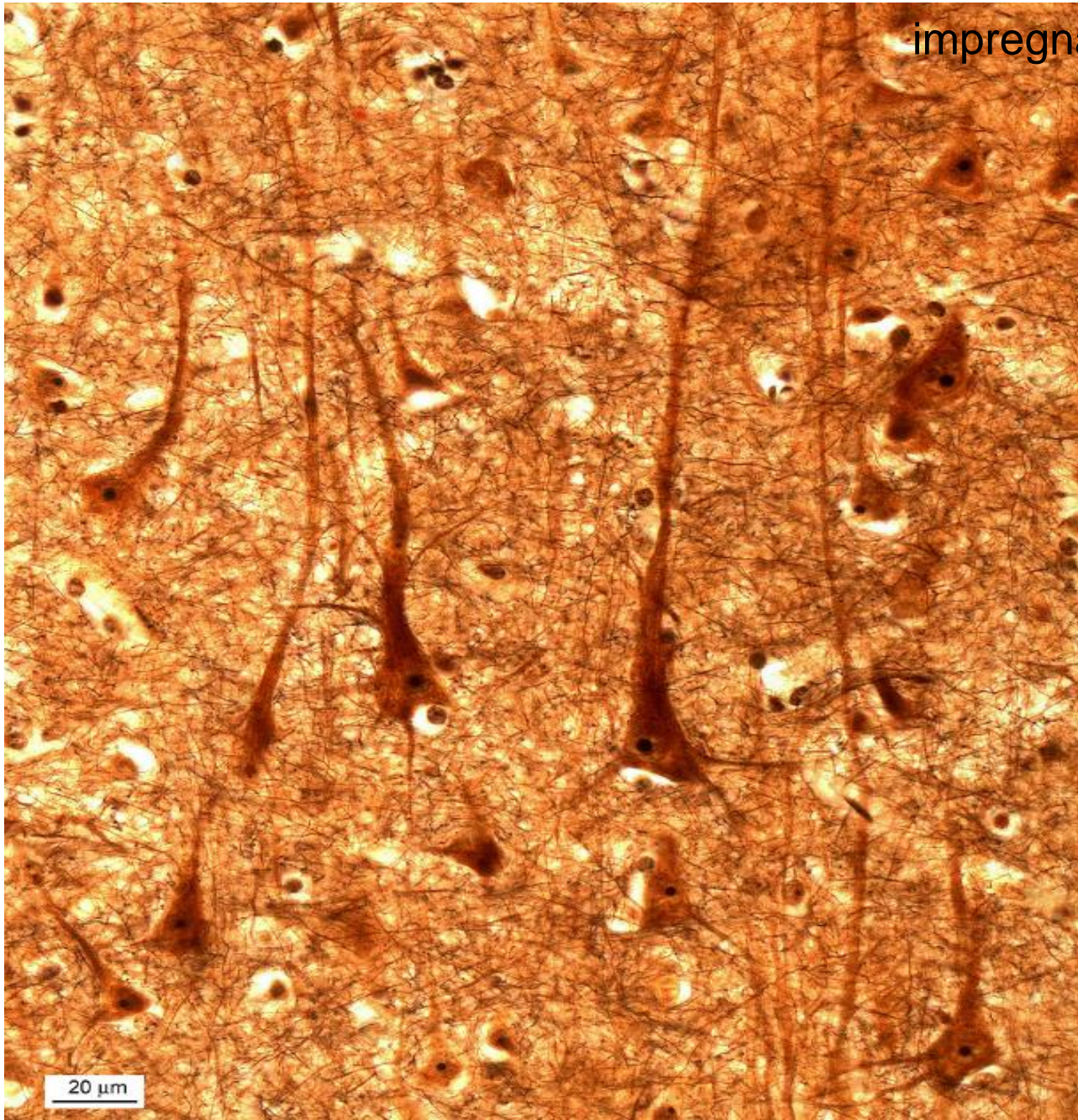
Cortex cerebri



Cortex cerebri – pyramidal cells – multipolar neurons



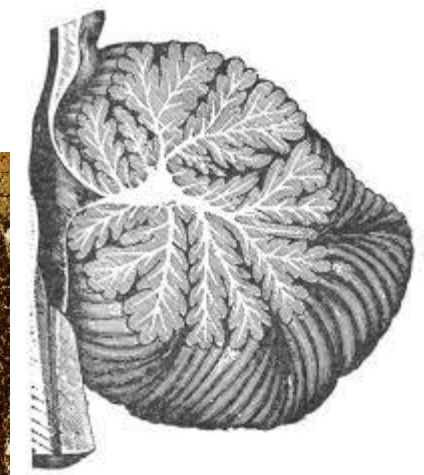
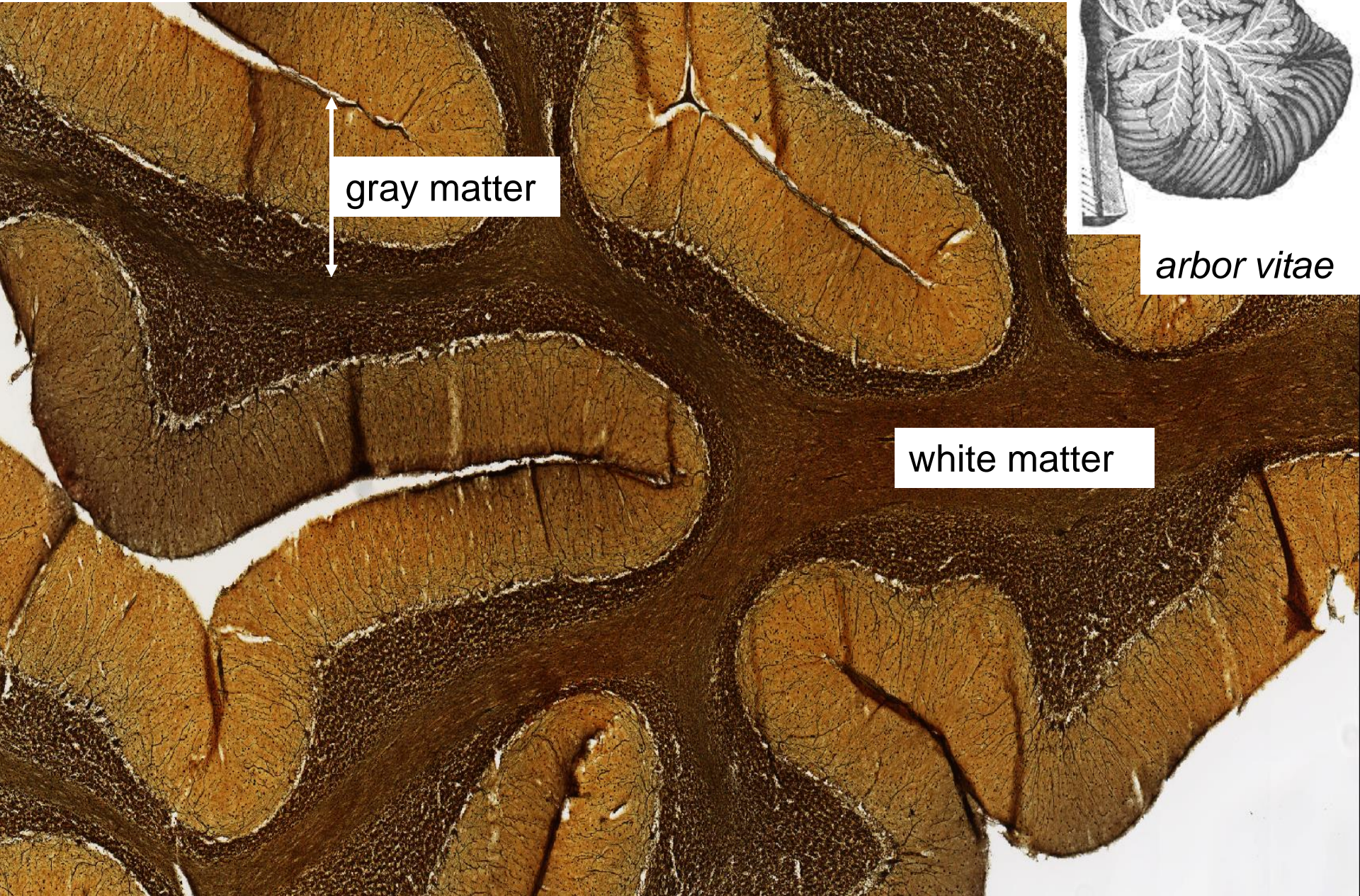
Cortex cerebri – pyramidal cells – multipolar neurons



impregnation

20 μ m

Cerebellum (impregnation)



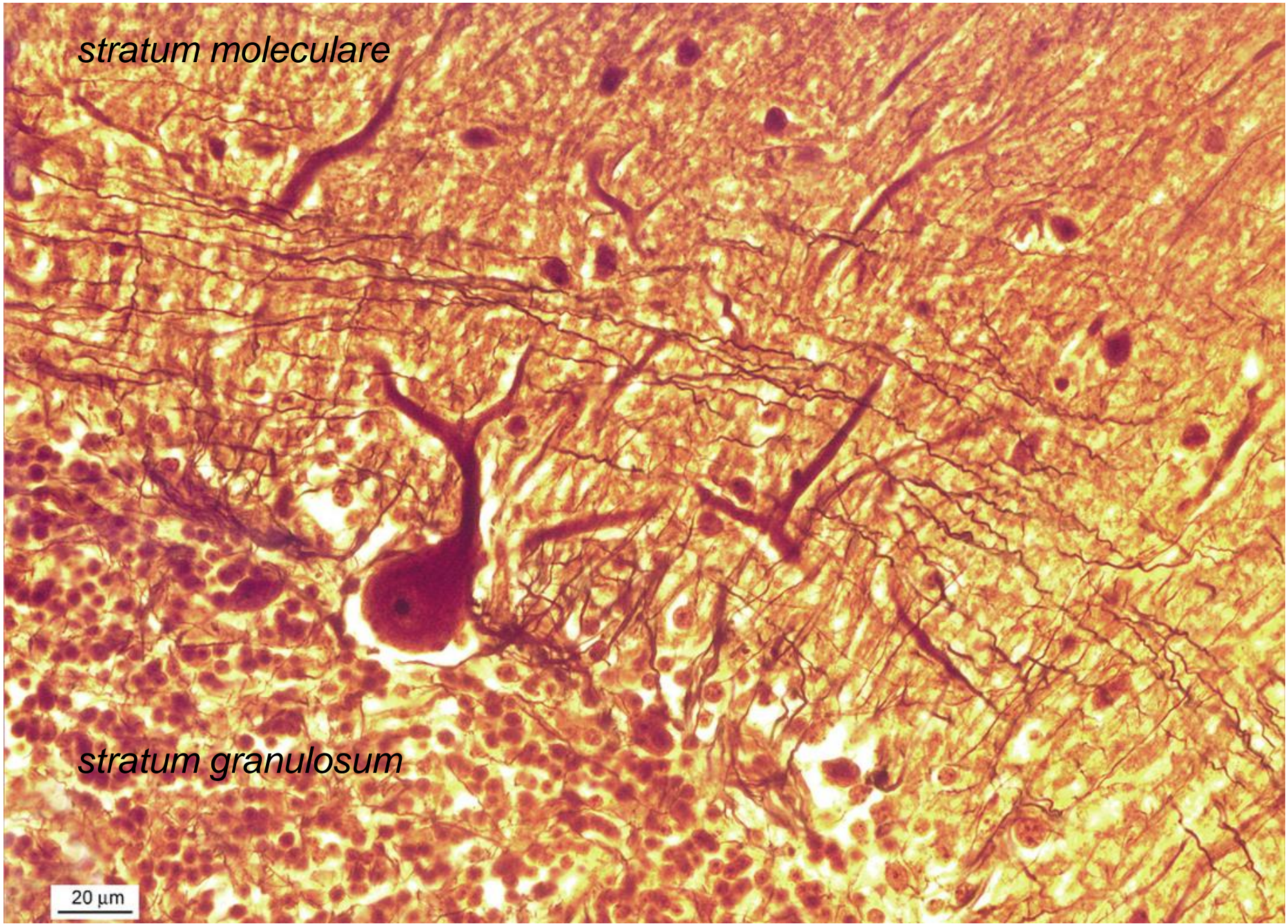
arbor vitae

Cerebellum – Purkinje cell

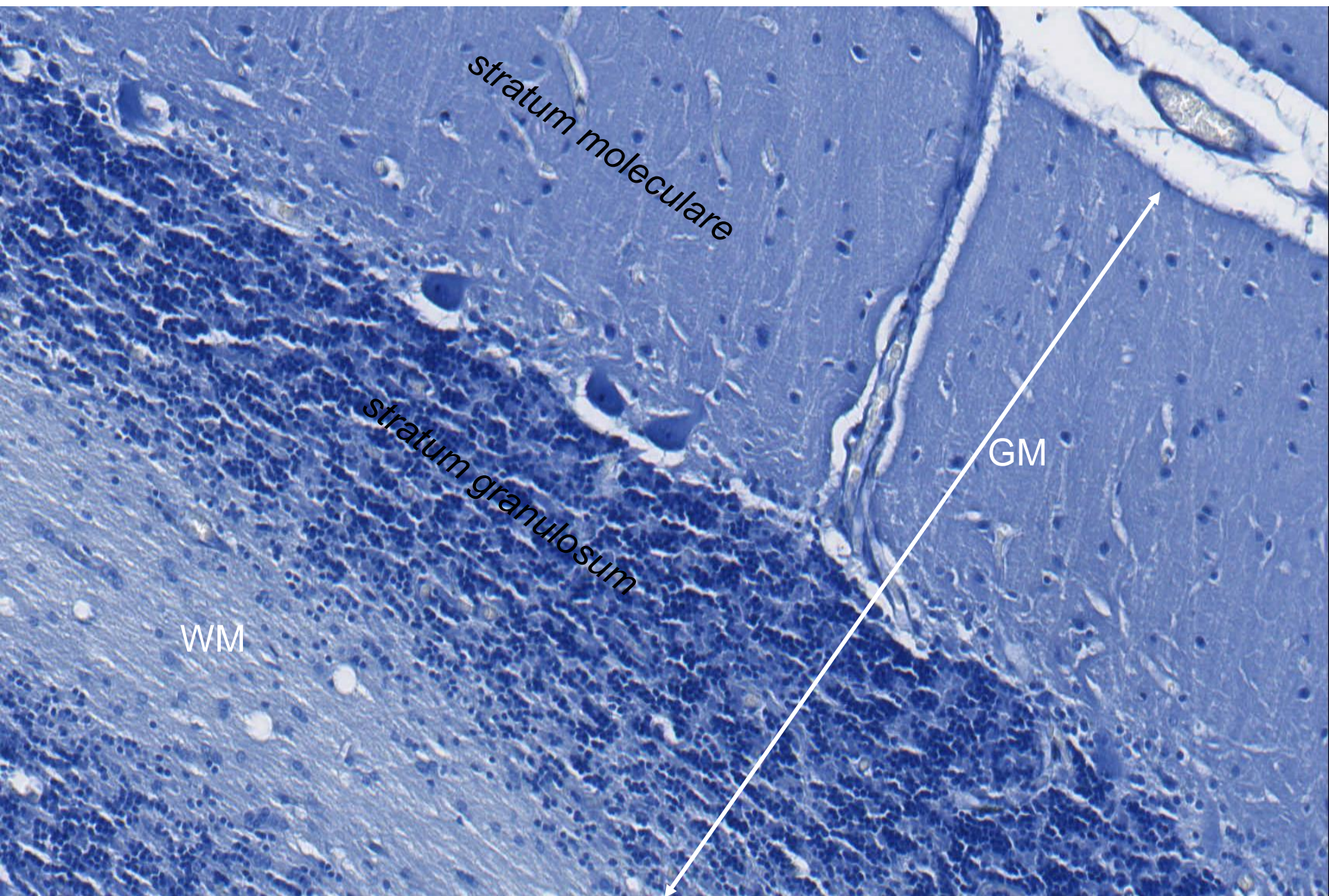
stratum moleculare

stratum granulosum

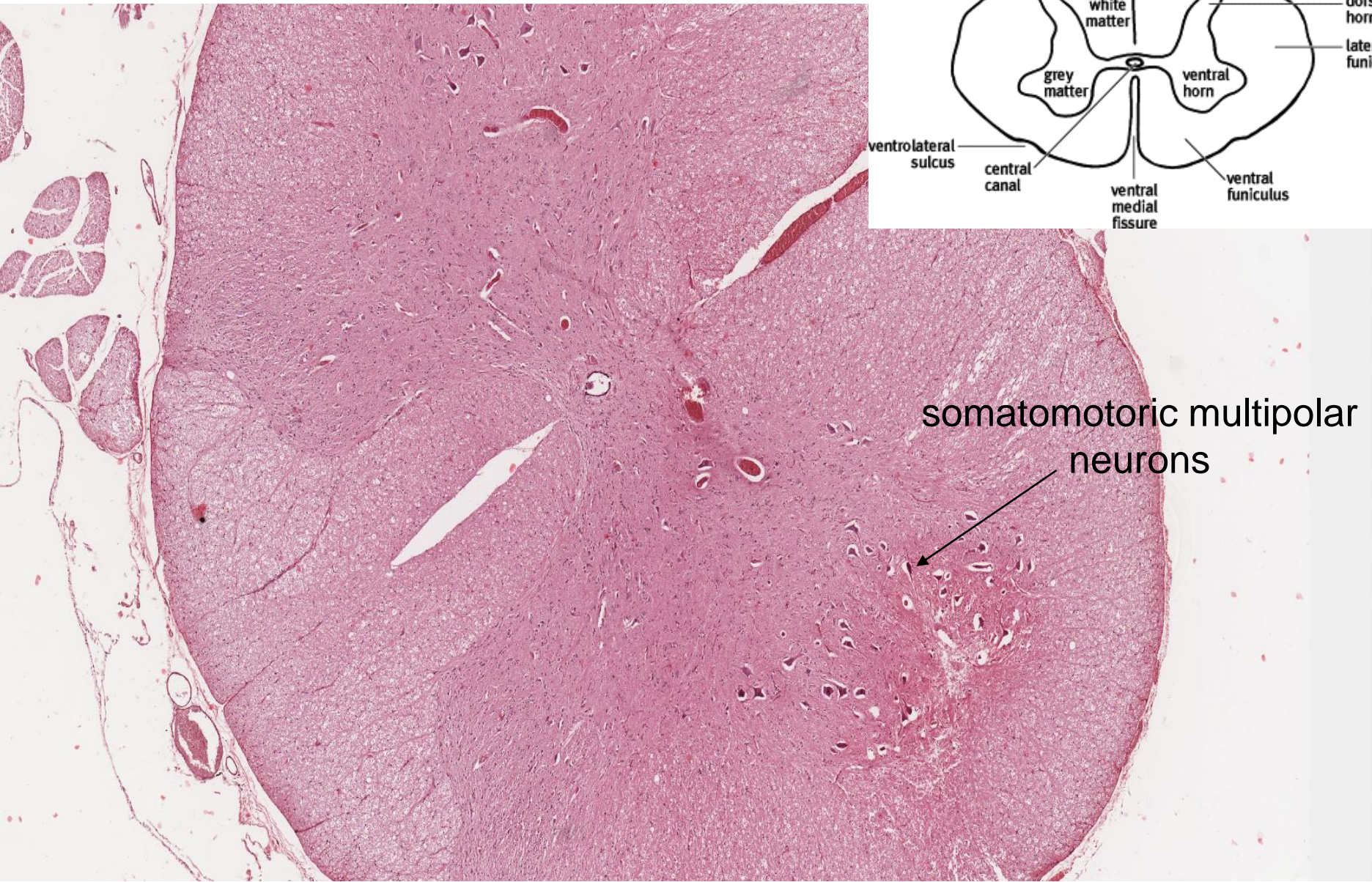
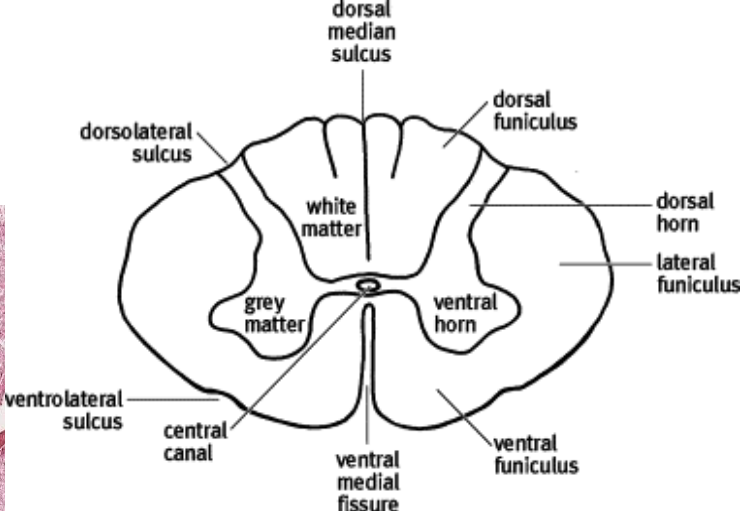
20 μ m



Cerebellum - Nissl bodies in Purkinje cells (Nissl staining)



Medulla spinalis

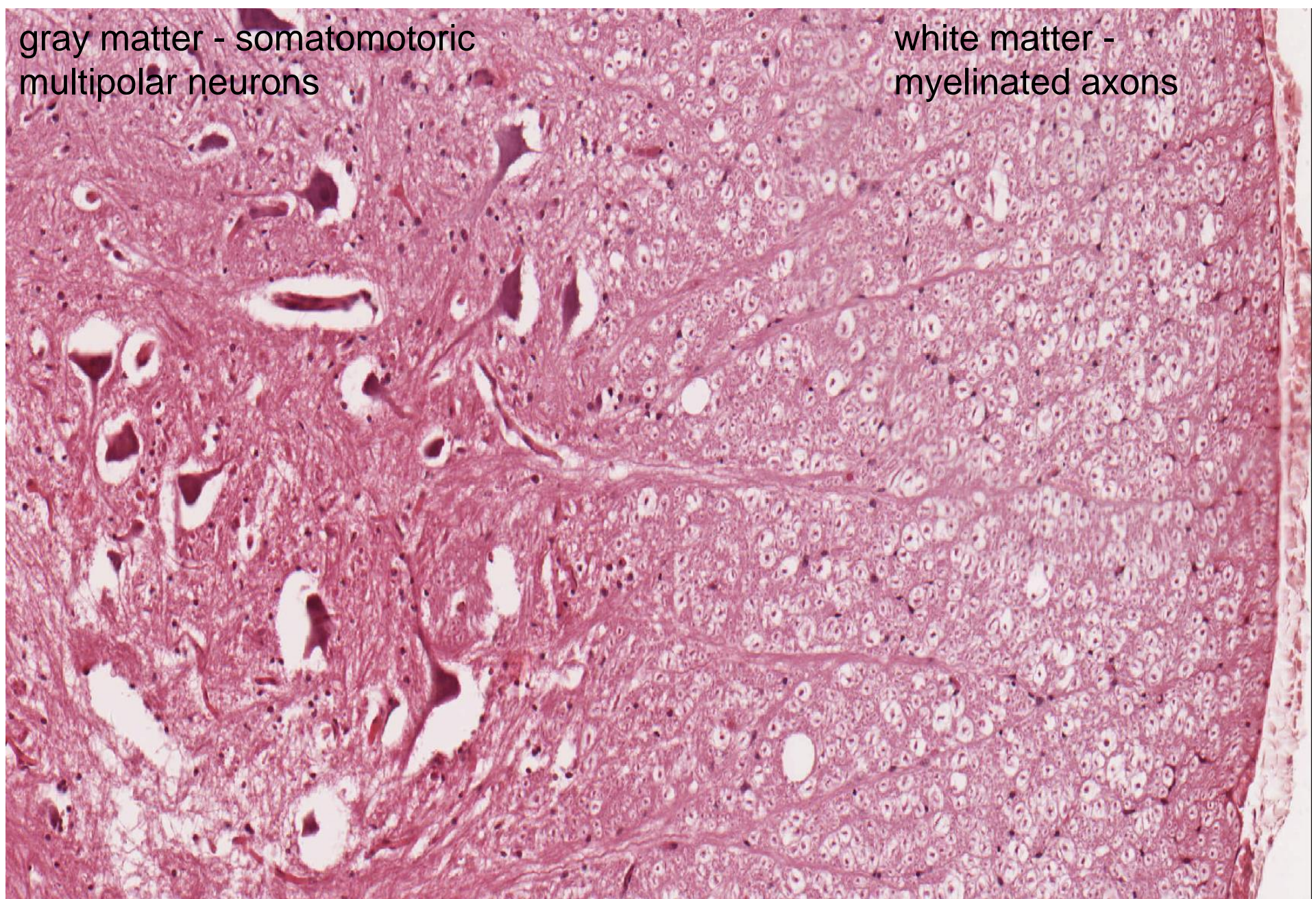


somatomotoric multipolar neurons

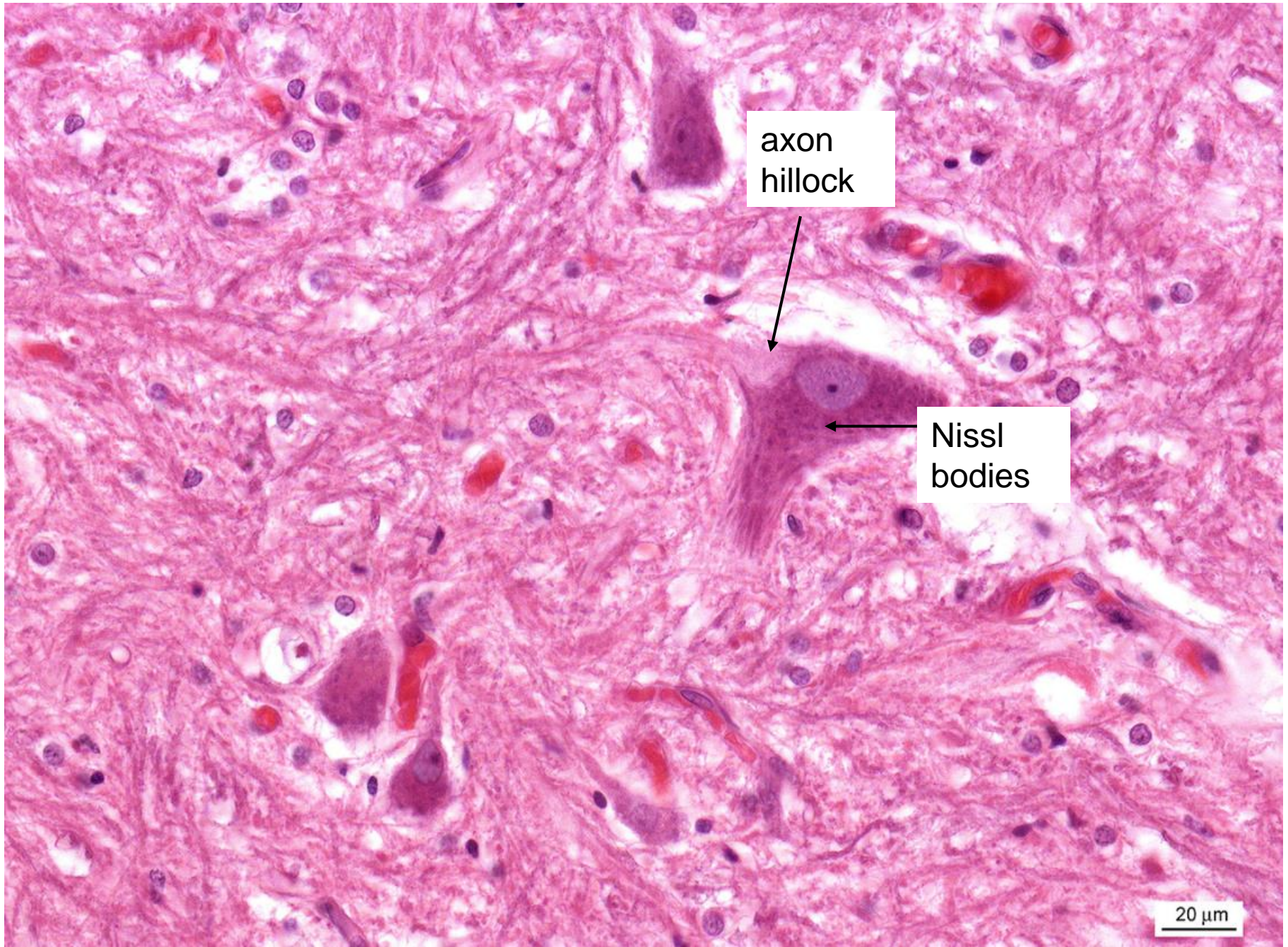
Medulla spinalis

gray matter - somatomotoric
multipolar neurons

white matter -
myelinated axons



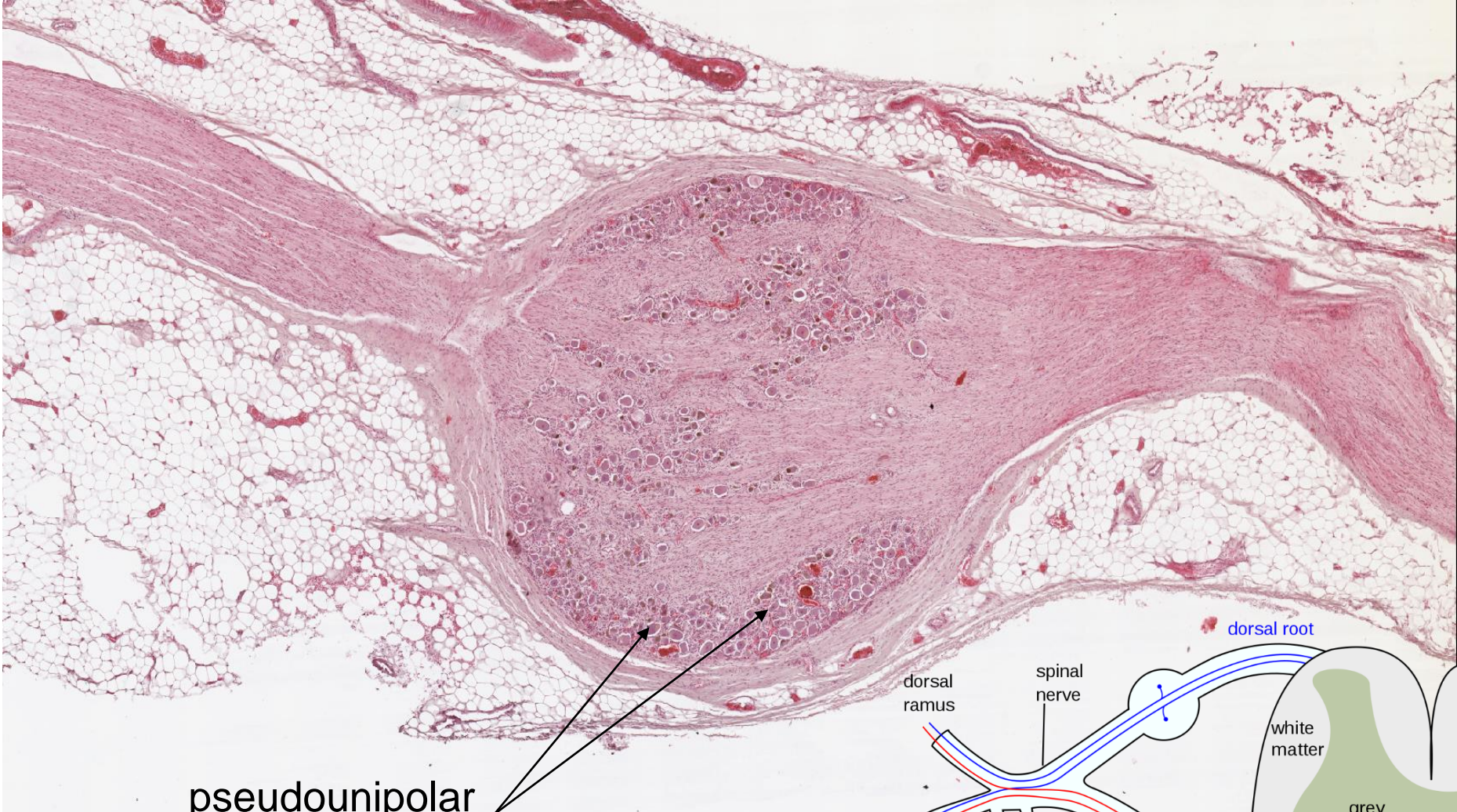
Somatomotoric multipolar neuron – *medulla spinalis*



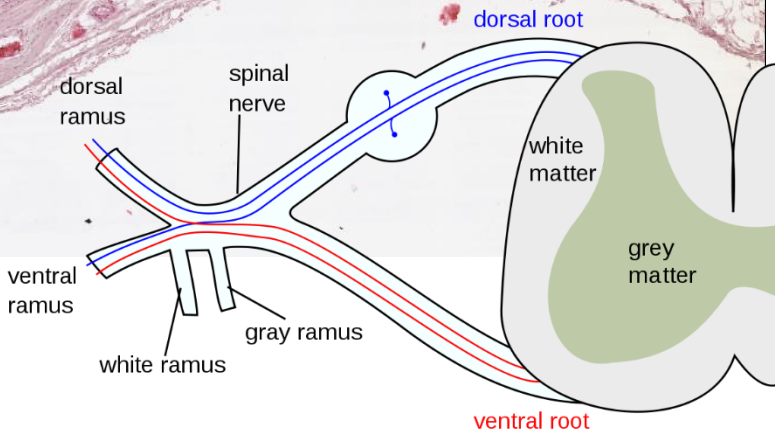
Medulla spinalis – ependymal cells



Ganglion spinale (DRG)



pseudounipolar neurons



dorsal root

dorsal ramus

spinal nerve

ventral ramus

white ramus

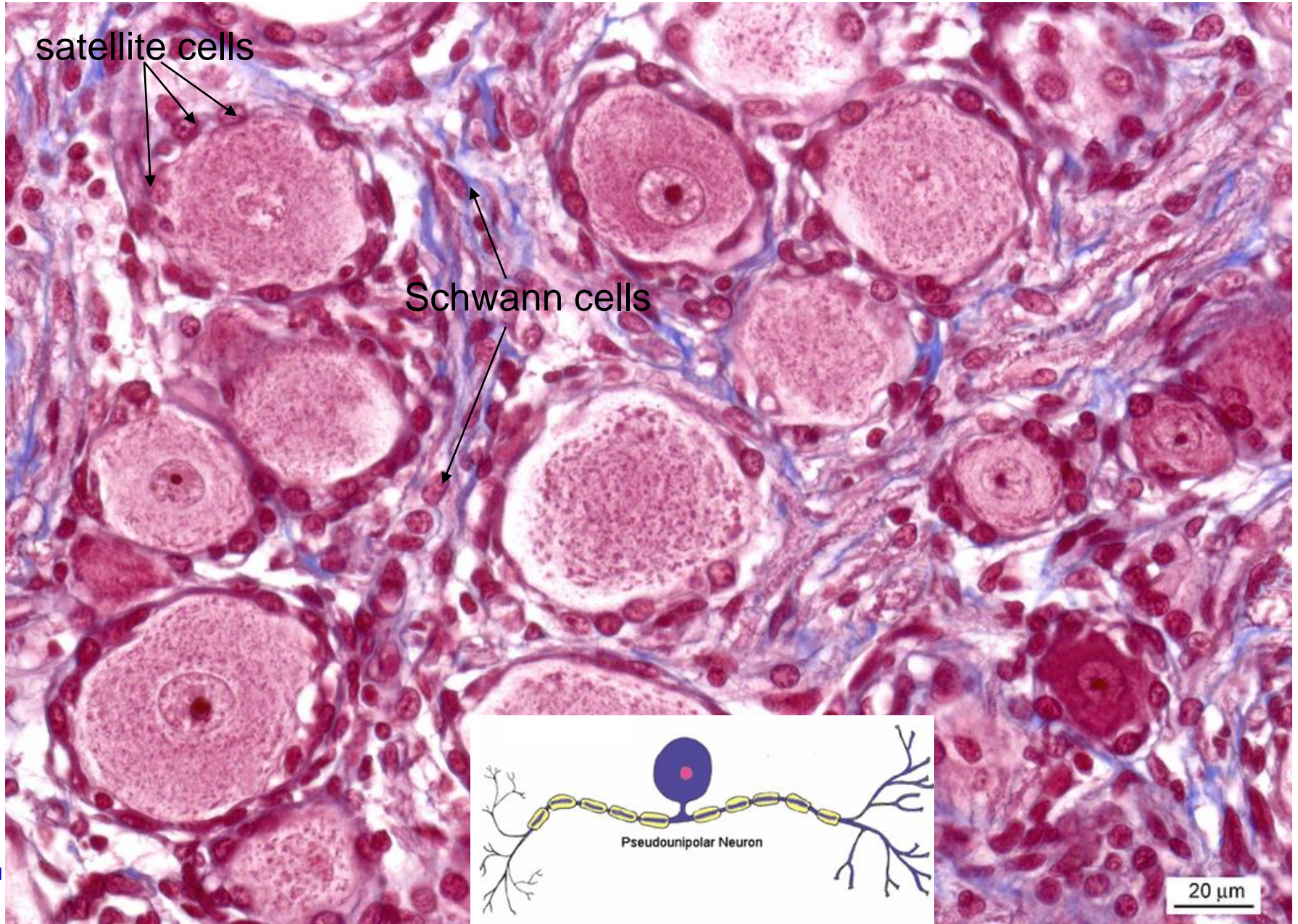
gray ramus

white matter

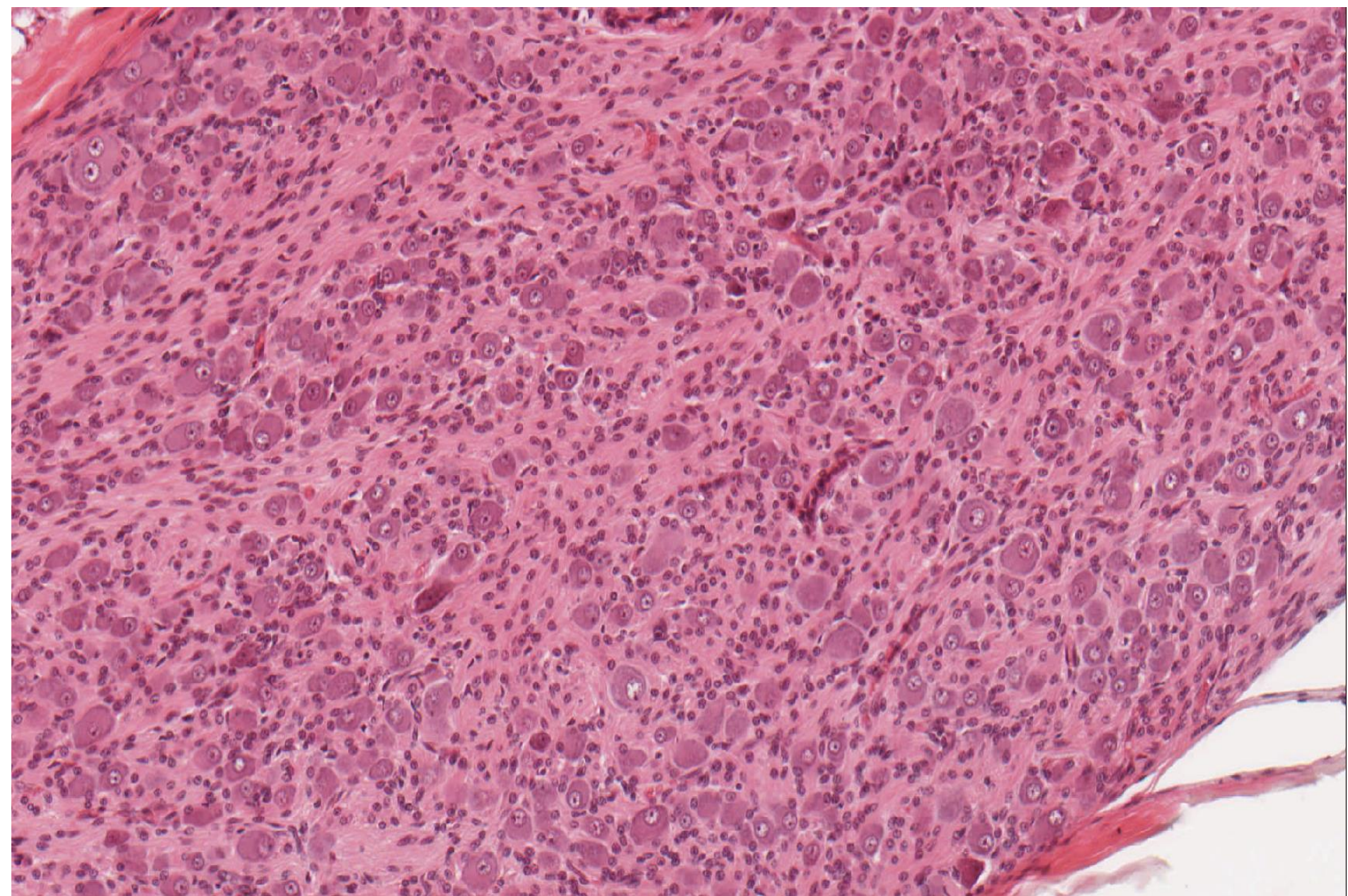
grey matter

ventral root

Ganglion spinale (DRG) – pseudounipolar neuron



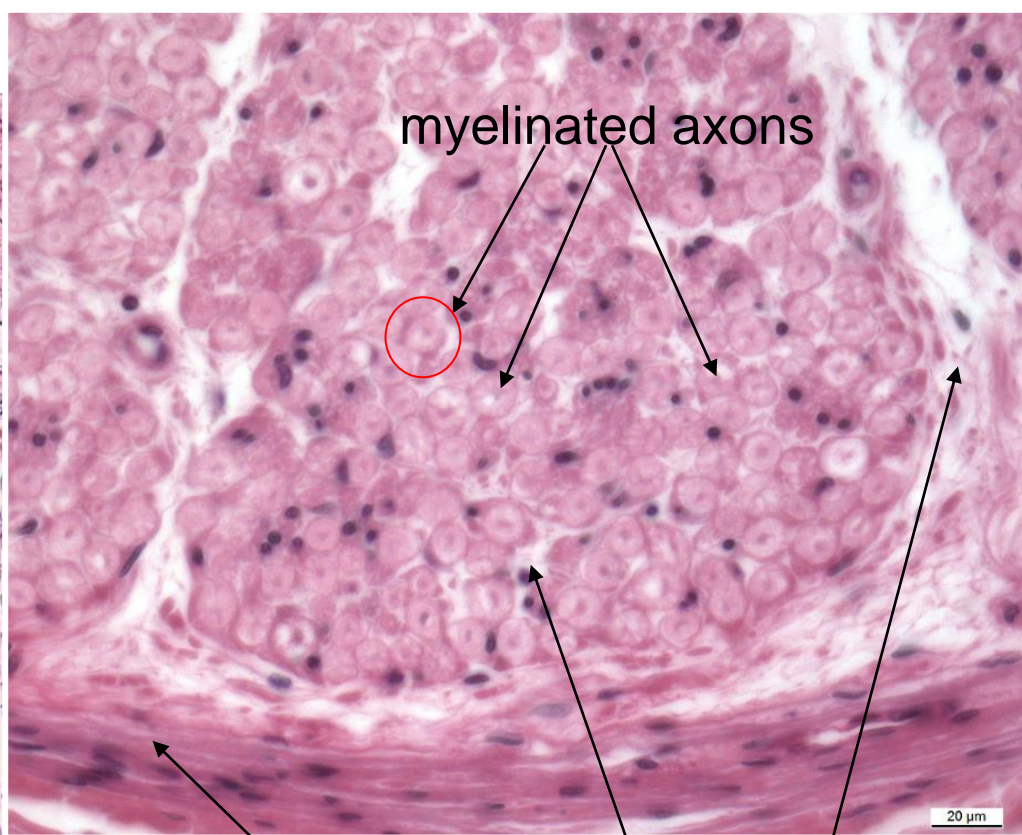
Vegetative ganglion – ganglion cells (multipolar neurons), satellite cells



Peripheral nerve

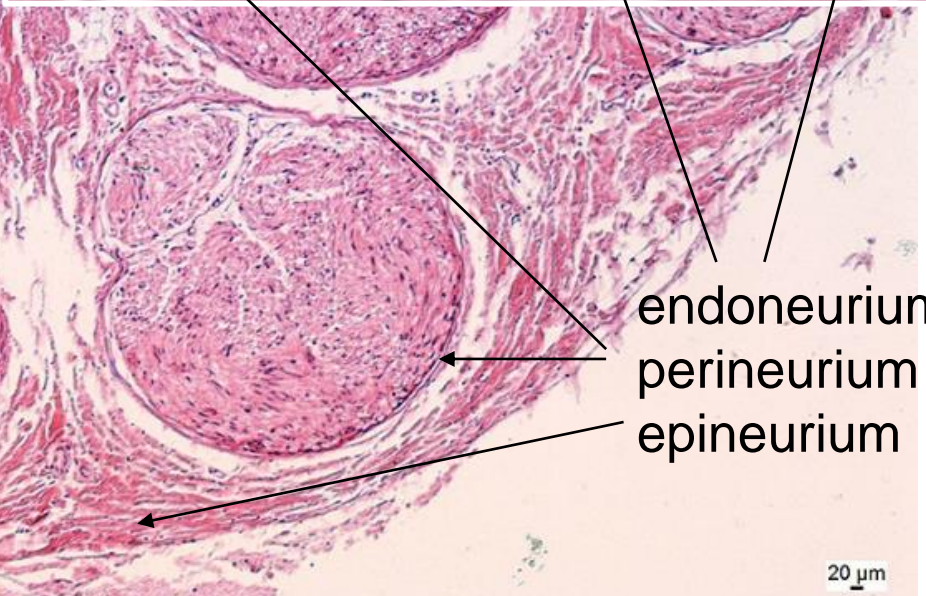


nerve bundles



myelinated axons

20 μm

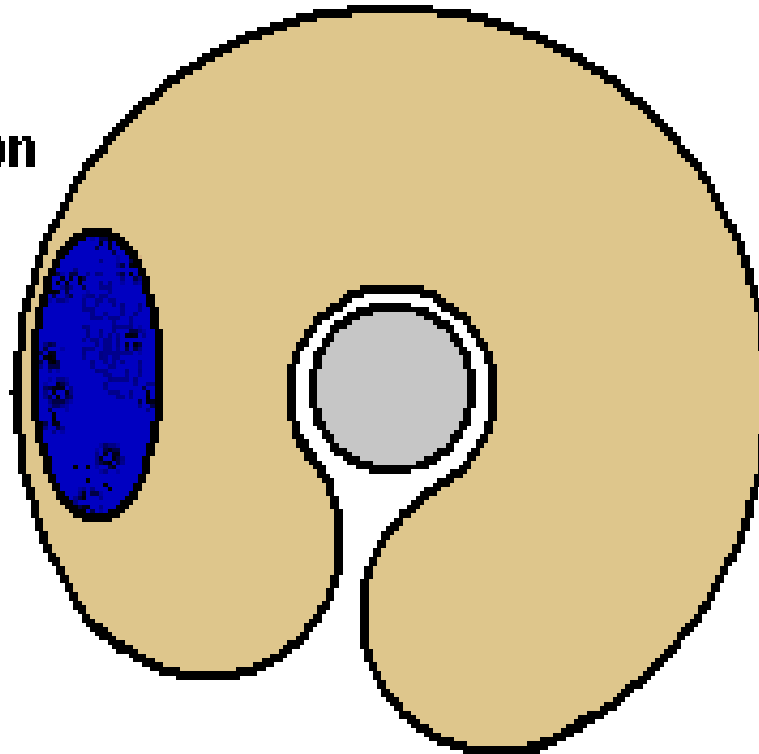


endoneurium
perineurium
epineurium

20 μm

Development of myelin sheath

**Myelination of
a peripheral axon**

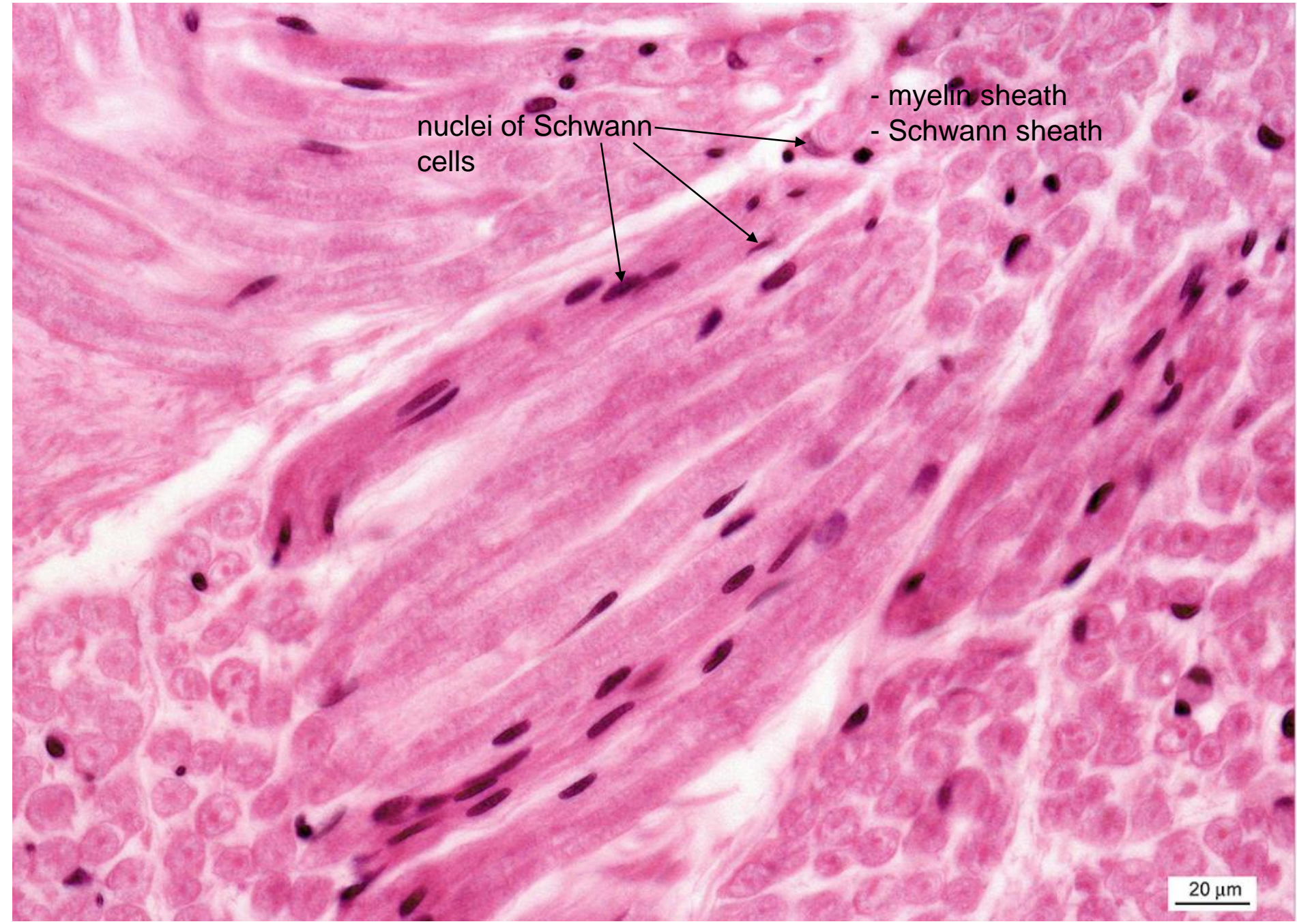


Peripheral nerve

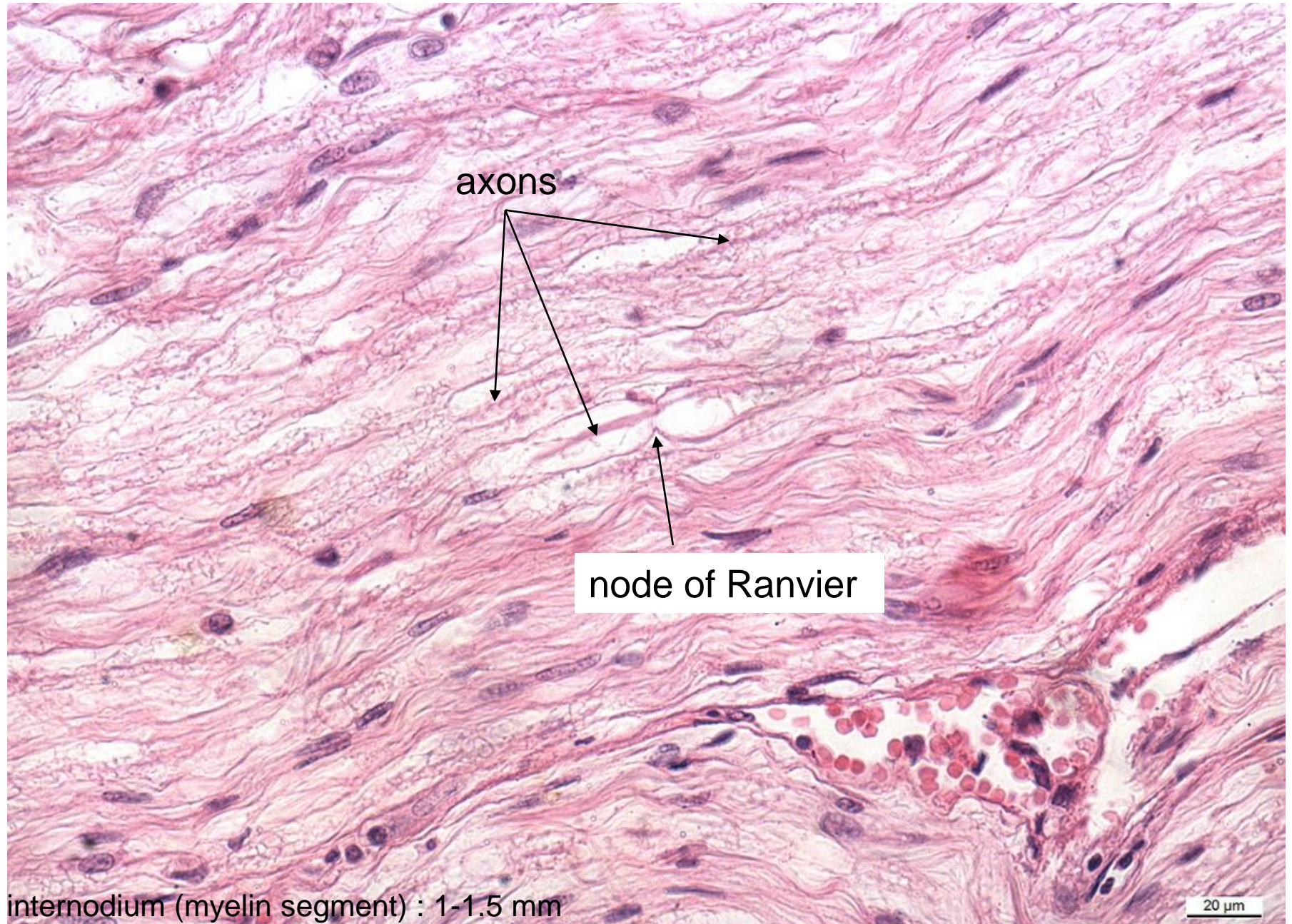
nuclei of Schwann
cells

- myelin sheath
- Schwann sheath

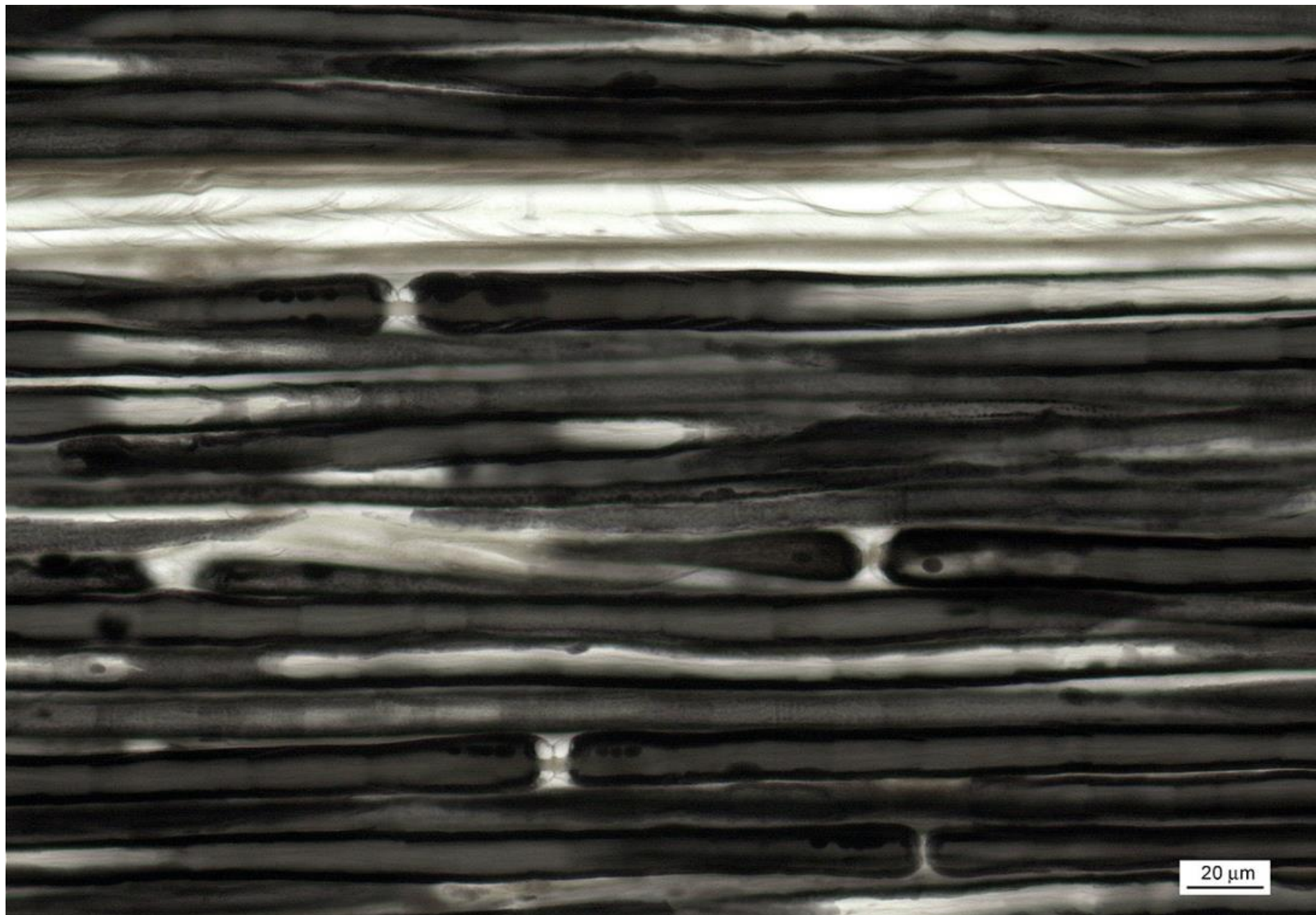
20 μ m



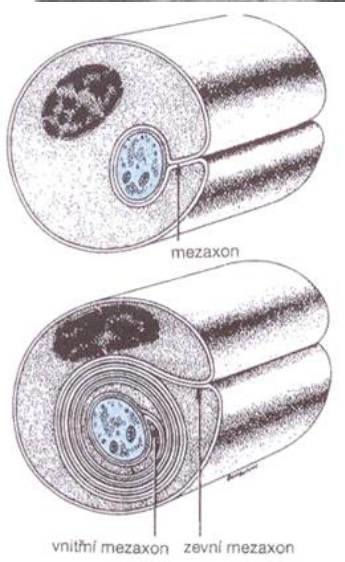
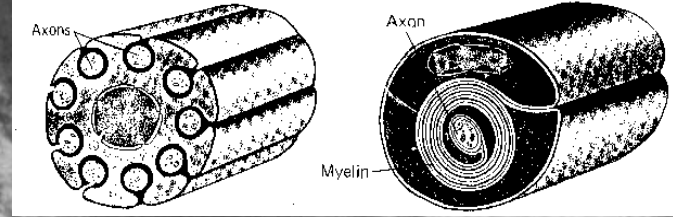
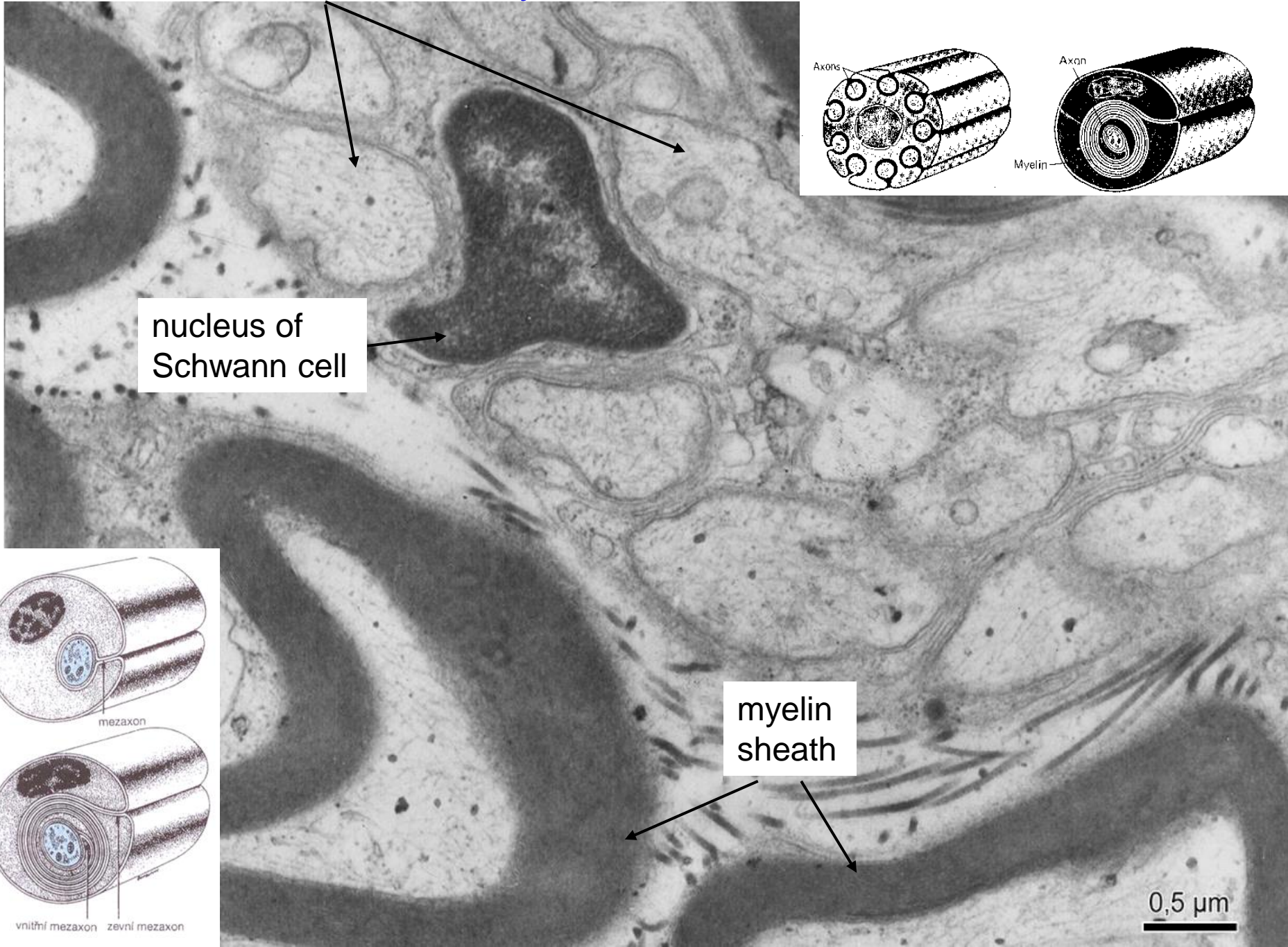
Peripheral nerve – longitudinal section



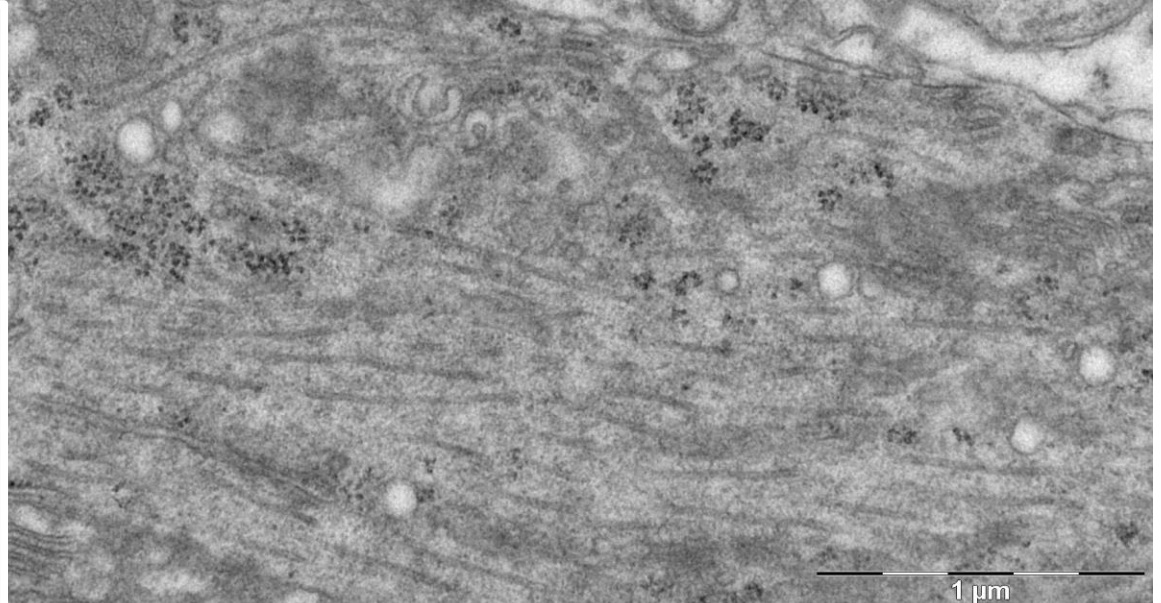
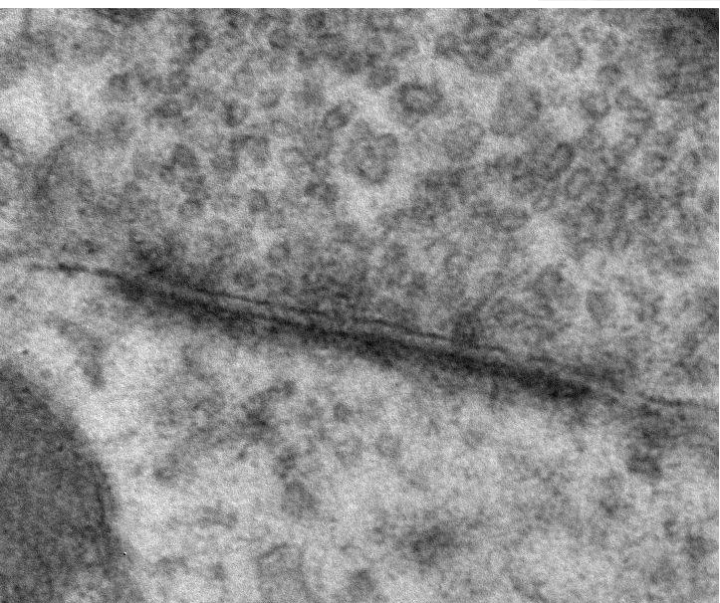
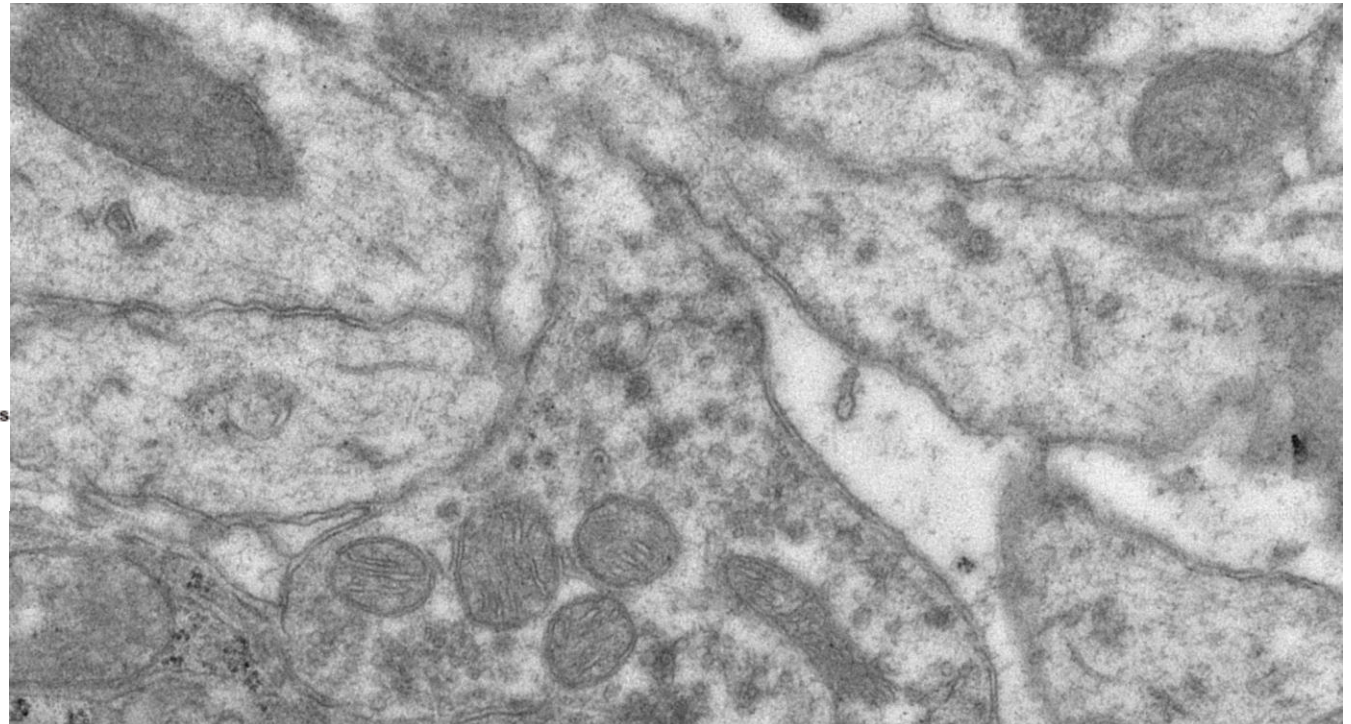
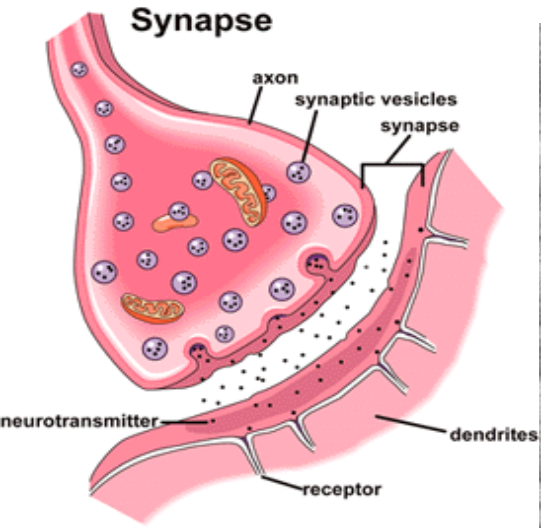
Myelin sheaths with nodes of Ranvier – peripheral nerve (OsO₄)



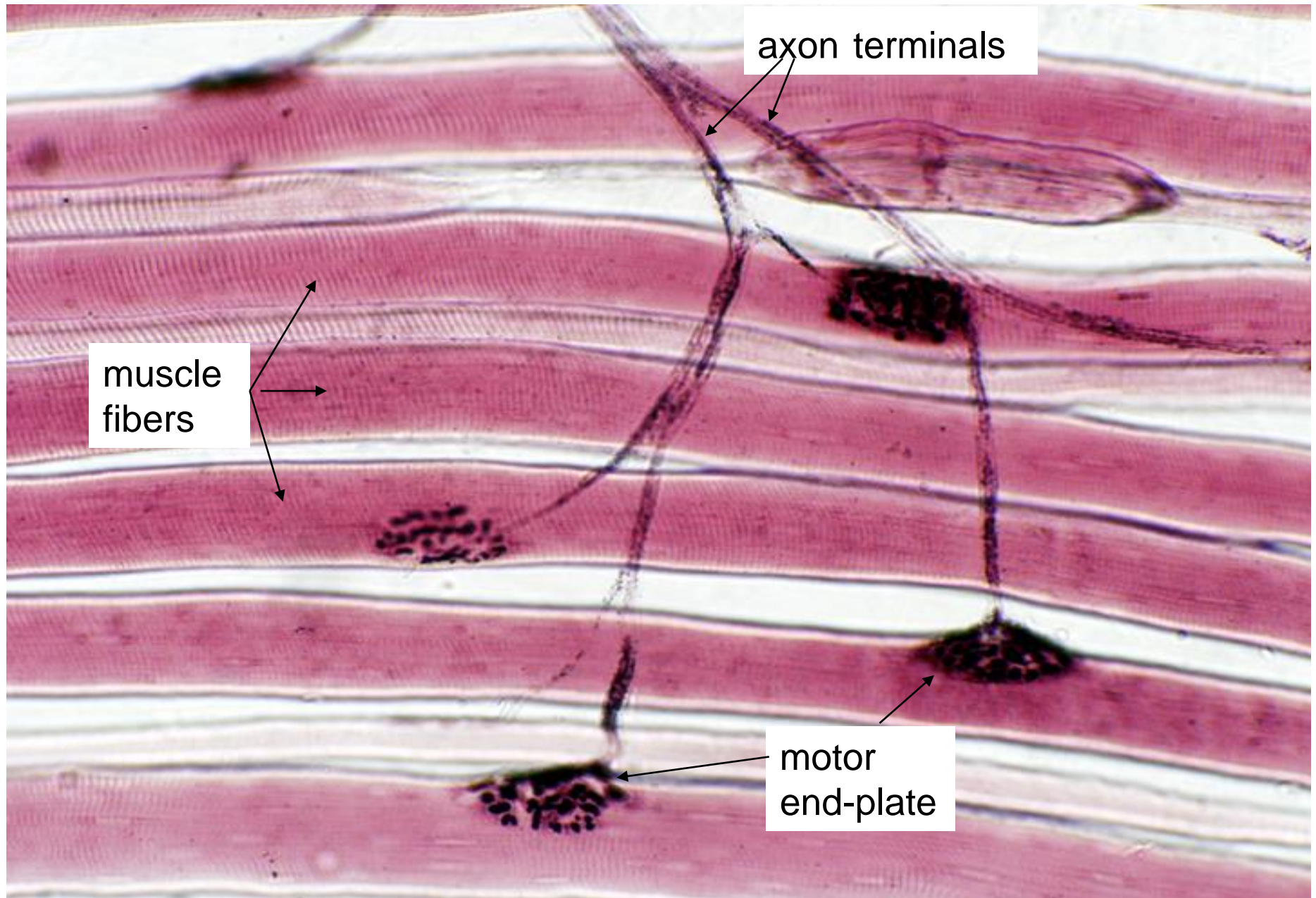
Axons with myelin and Schwann sheath



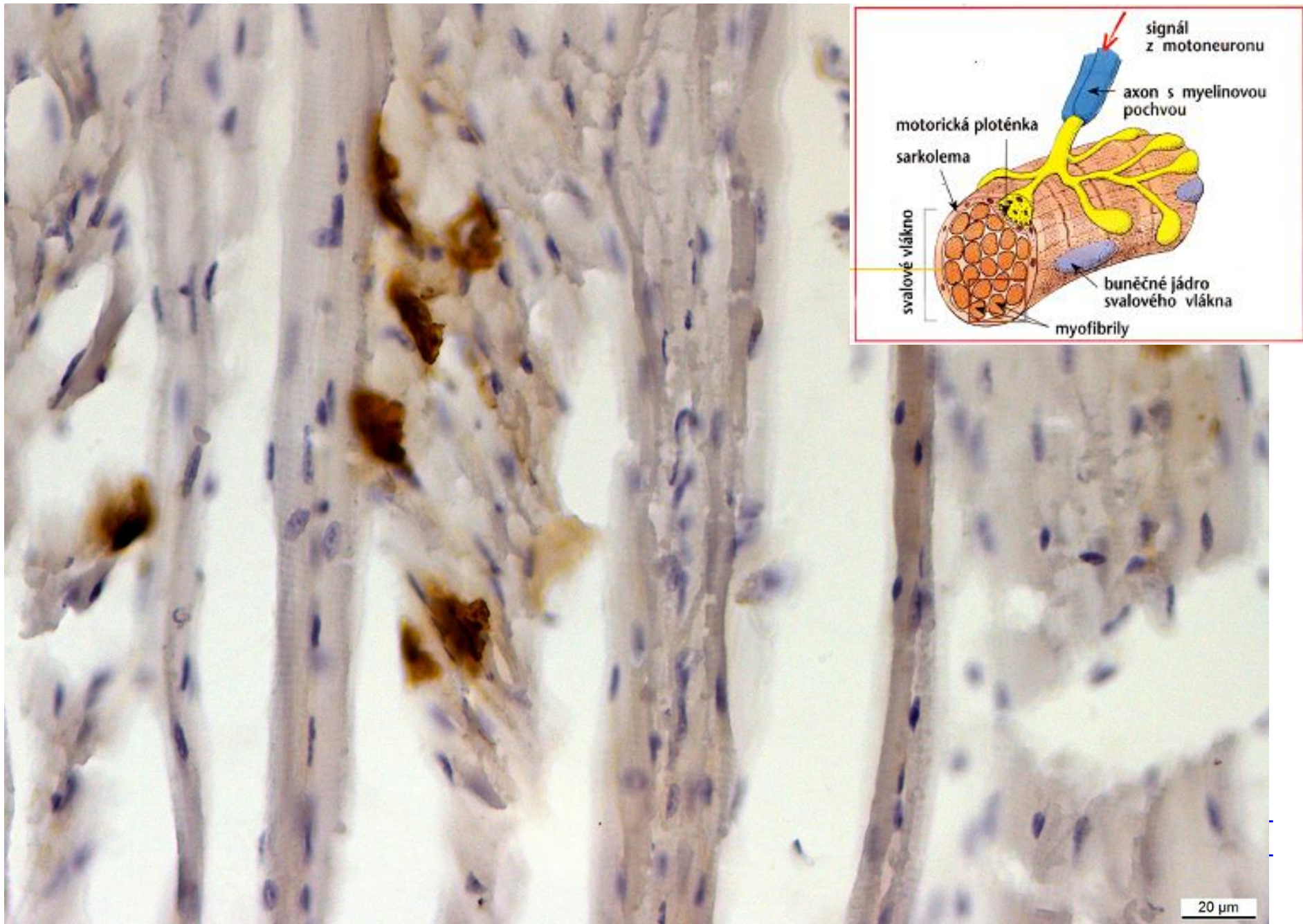
Synapse



Motor end-plates in motor unit



Motor end-plates (localization of acetylcholinesterase)



NEUROTRANSMITTERS

ADRENALINE fight or flight

produced in stressful situations. Increases heart rate and blood flow, leading to physical boost and heightened awareness.

GABA calming

Calms firing nerves in the central nervous system. High levels improve focus, low levels cause anxiety. Also contributes to motor control and vision.

NORADRENALINE concentration

affects attention and responding actions in the brain. Contracts blood vessels, increasing blood flow.

ACETYLCHOLINE learning

Involved in thought, learning and memory. Activates muscle action in the body. Also associated with attention and awakening.

DOPAMINE pleasure

feelings of pleasure, also addiction, movement and motivation. People repeat behaviors that lead to dopamine release.

GLUTAMATE memory

Most common neurotransmitter. Involved in learning and memory, regulates development and creation of nerve contacts.

SEROTONIN mood

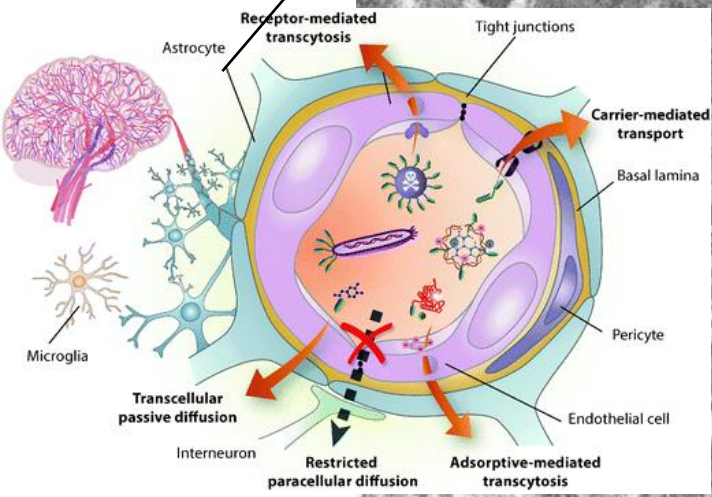
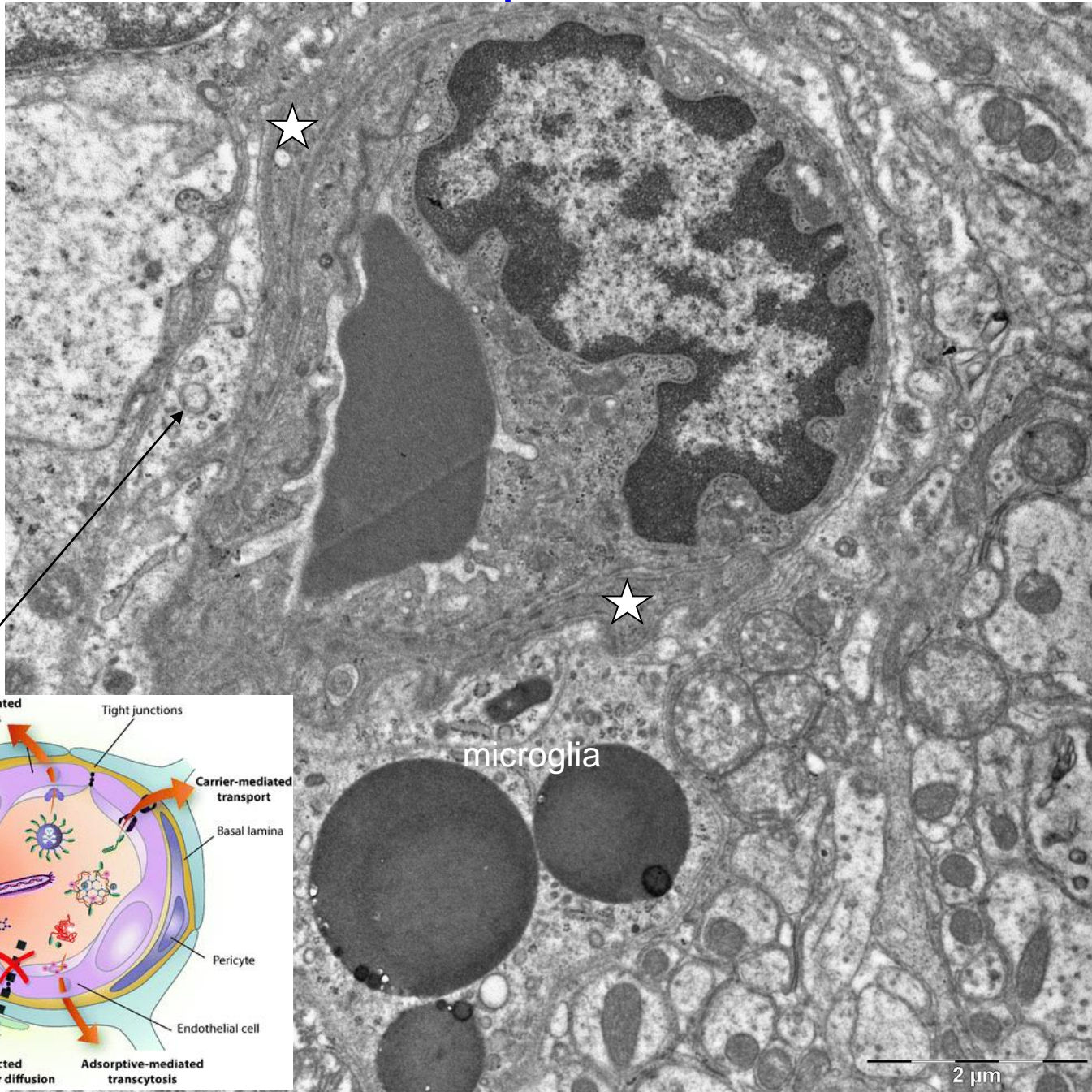
contributes to well-being and happiness. Helps sleep cycle and digestive system regulation. Affected by exercise and light exposure.

ENDORPHINS euphoria

Released during exercise, excitement and sex, producing well-being and euphoria, reducing pain

Hemato-encephalic barrier

☆ pericyte



microglia

2 μ m

NERVE TISSUE

Slides:

Pyramidal cell (75, 76. Cortex cerebri)

Purkinje cell (77. Cerebellum)

Nissl substance (78. Cerebellum or 79. Medulla spinalis)

Somatomotoric multipolar neuron (79. Medulla spinalis)

Pseudounipolar neuron (81. Ganglion spinale)

Peripheral nerve (84, 85. Peripheral nerve – cross section)

Peripheral nerve (86, 87. Peripheral nerve – longitudinal section)

Atlas EM:

Neuron – cortex cerebri (3, 48), Purkinje neuron (49)

Oligodendrocyte (50)

Synapse (51)

Hemato-encephalic barrier (52)

Peripheral nerves (53, 54)