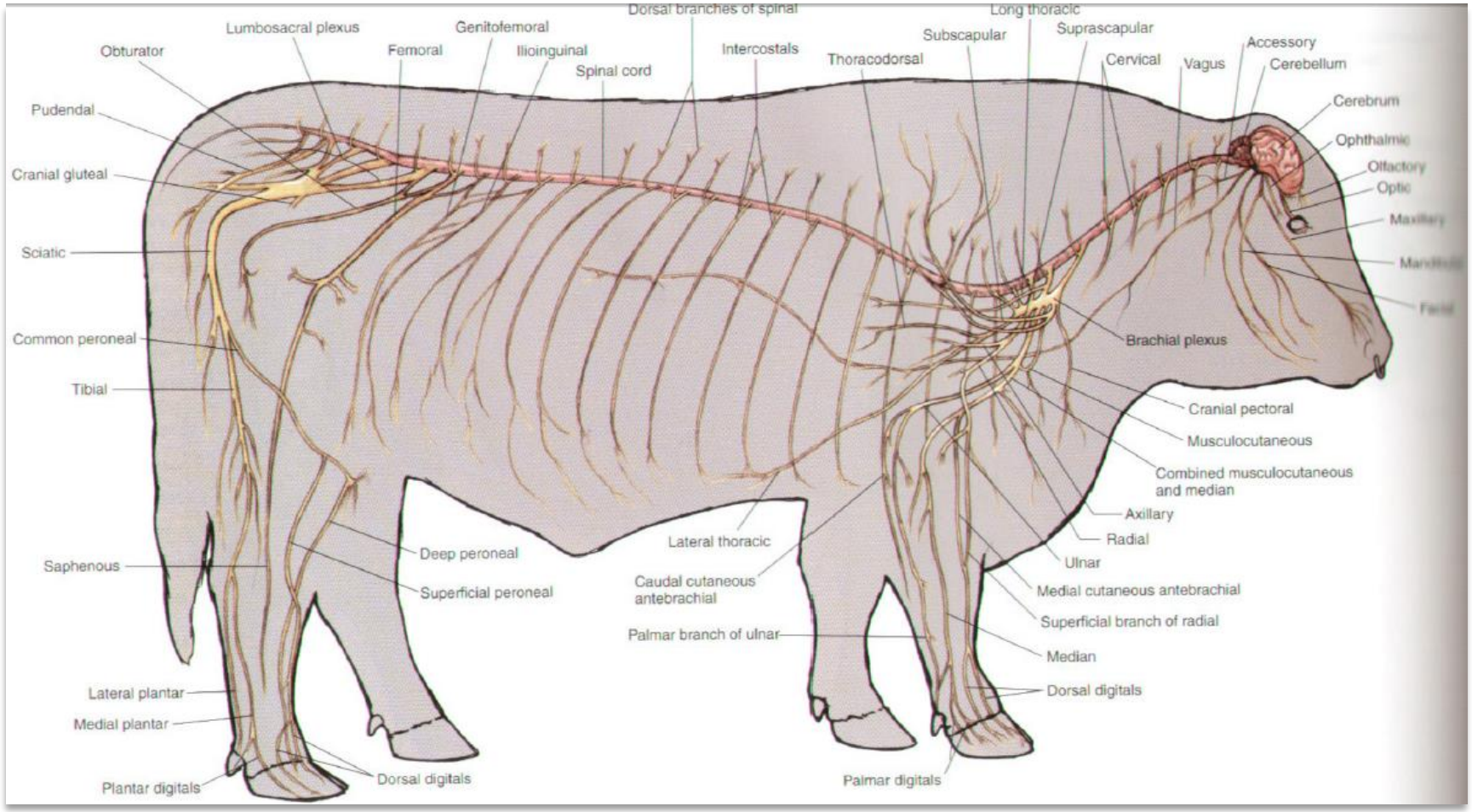
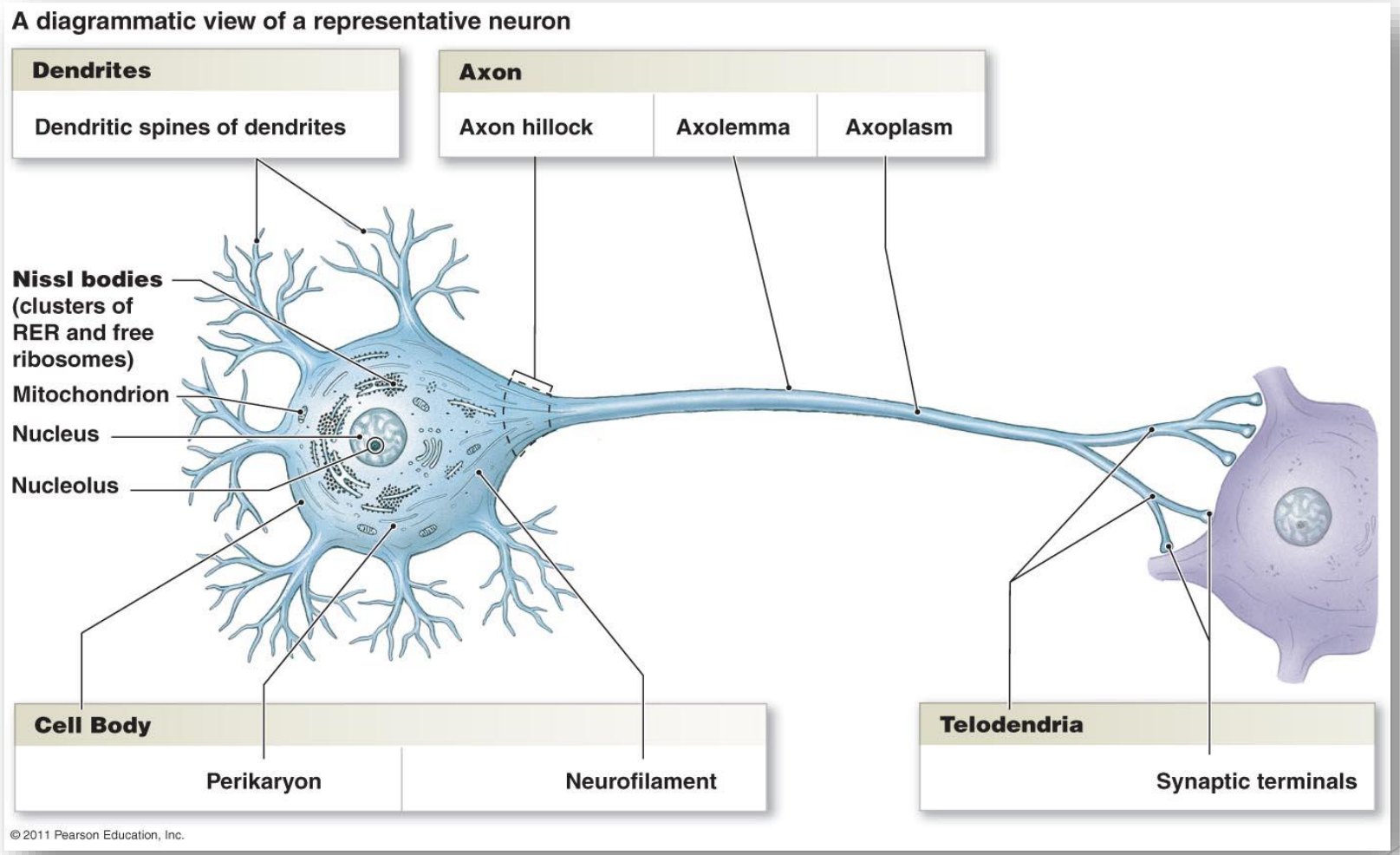
In the name of Allah

Histology of Nervous system

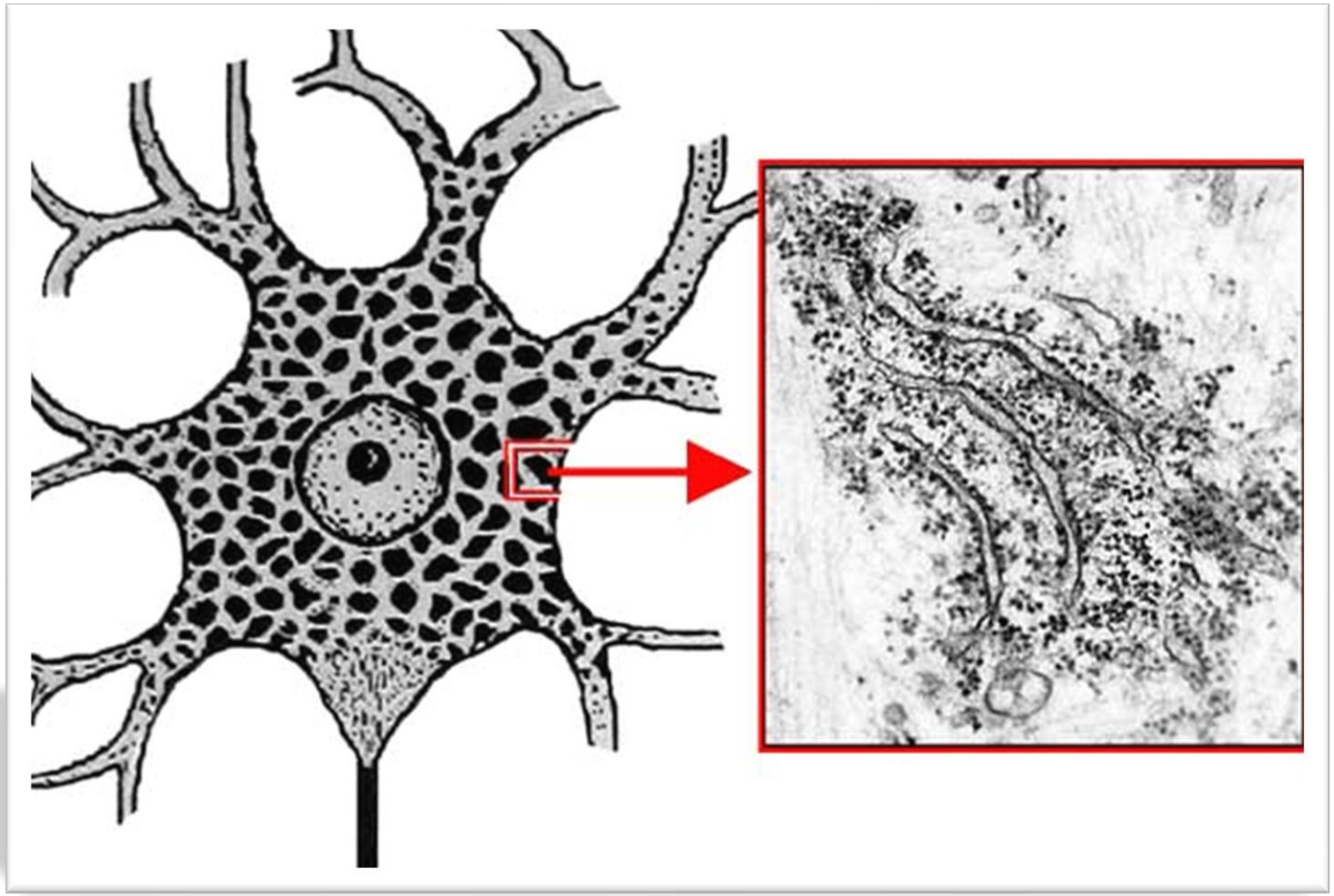

Obturator
Lumbosacral plexus
Femoral
Genitofemoral
Iliolinguinal
Spinal cord
Dorsal branches of spinal
Intercostals
Thoracodorsal
Subscapular
Long thoracic
Suprascapular
Cervical
Vagus
Accessory
Cerebellum
Cerebrum
Ophthalmic
Olfactory
Optic
Maxillary
Pudendal
Cranial gluteal
Sciatic
Common peroneal
Tibial
Saphenous
Deep peroneal
Superficial peroneal
Lateral plantar
Medial plantar
Plantar digitals
Dorsal digitals
Lateral thoracic
Caudal cutaneous antebrachial
Palmar branch of ulnar
Palmar digitals
Brachial plexus
Cranial pectoral
Musculocutaneous
Combined musculocutaneous and median
Axillary
Radial
Ulnar
Medial cutaneous antebrachial
Superficial branch of radial
Median
Dorsal digitals

Neuron :

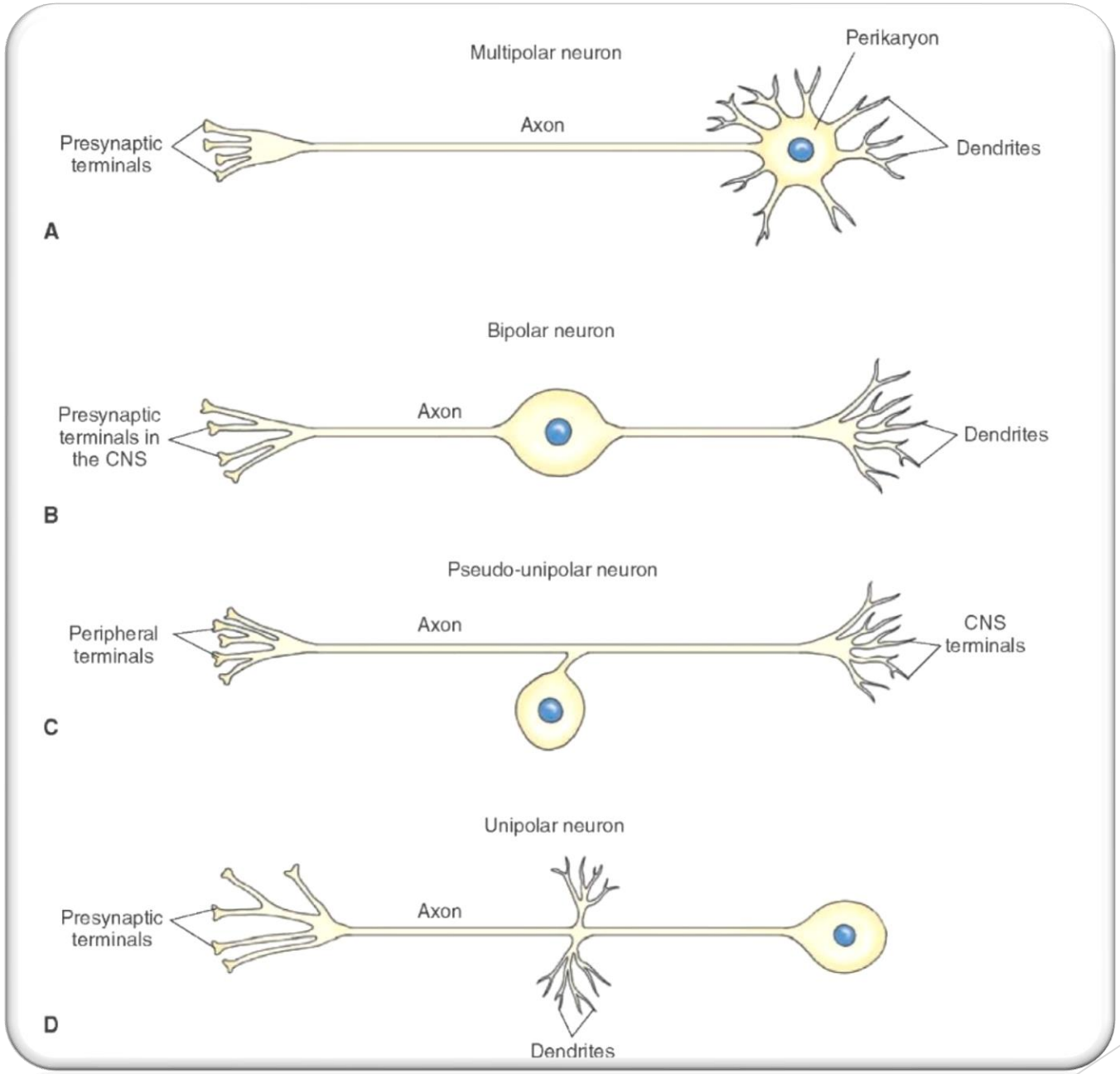
Soma (Perikaryon) + Cellular processes (Axon & Dendrites)



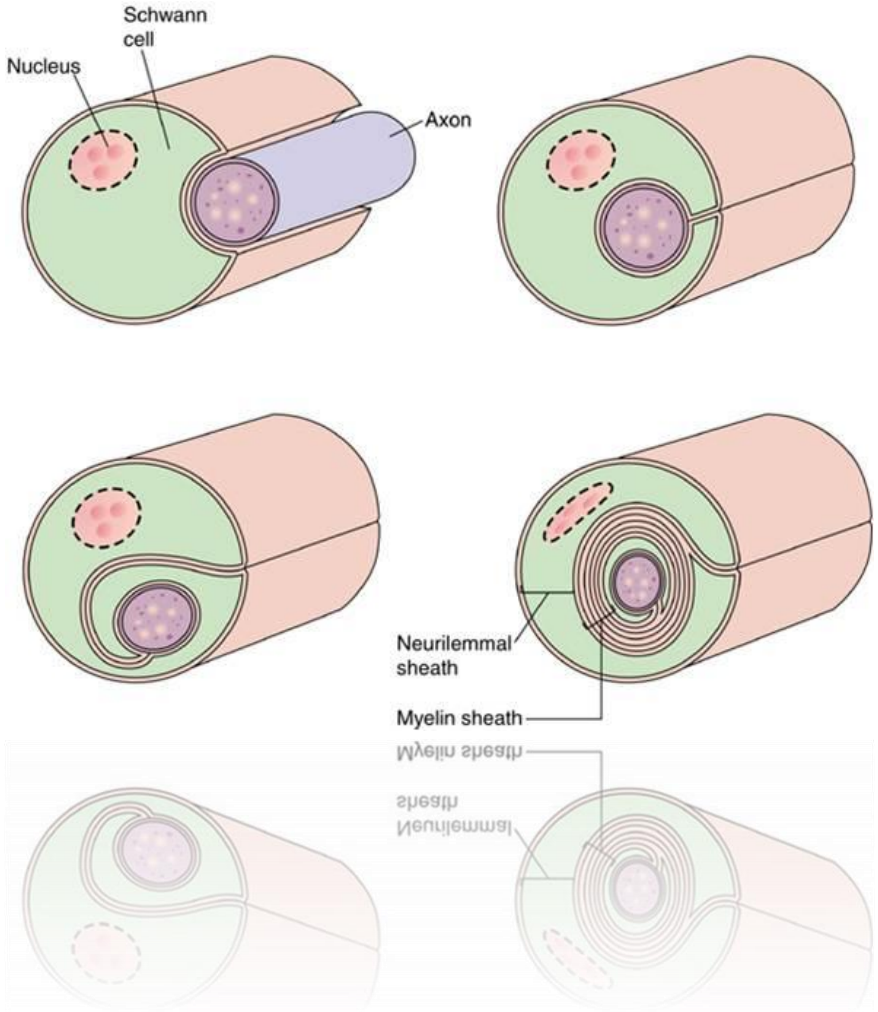
Nissl's body

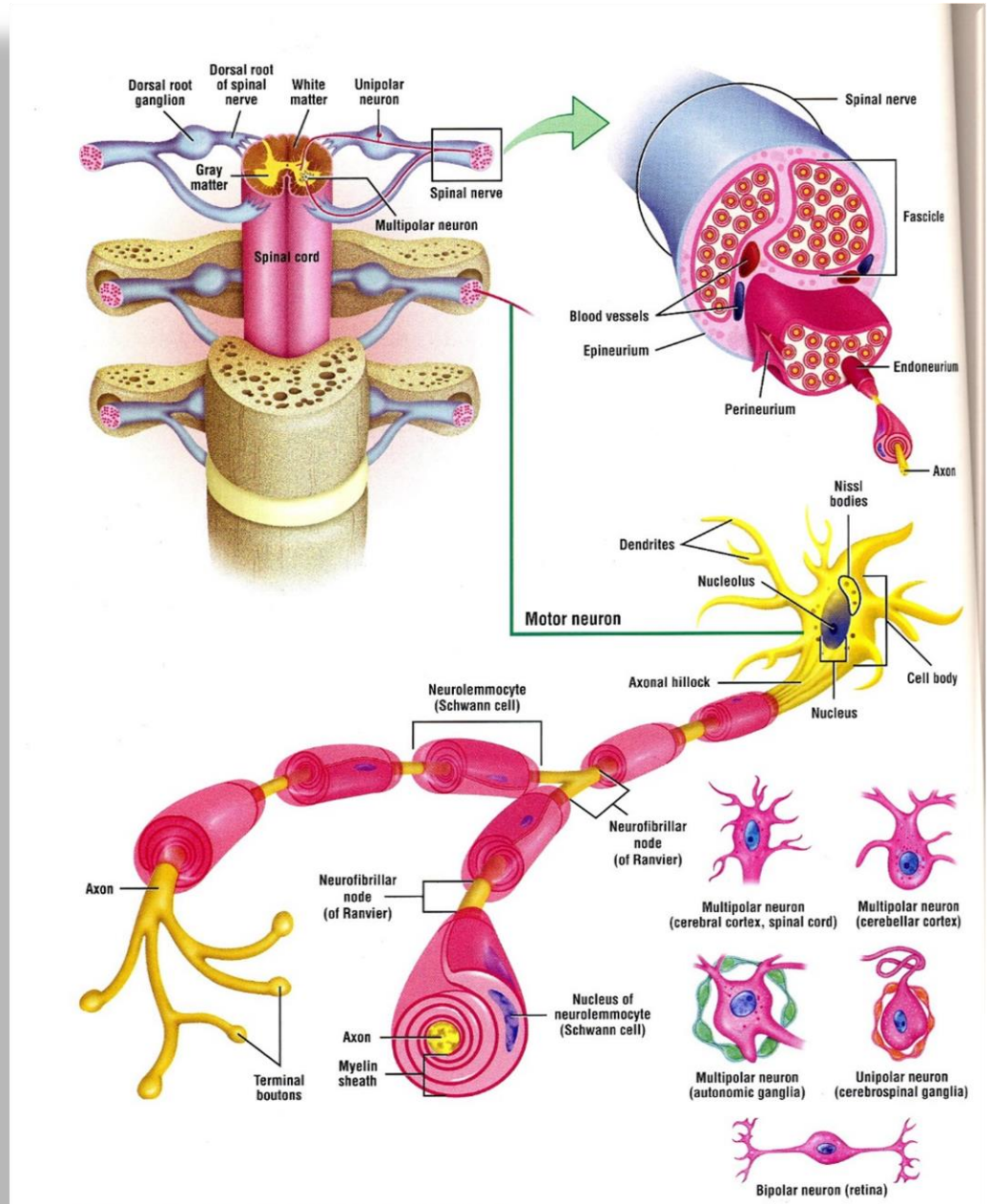


Types of neuron

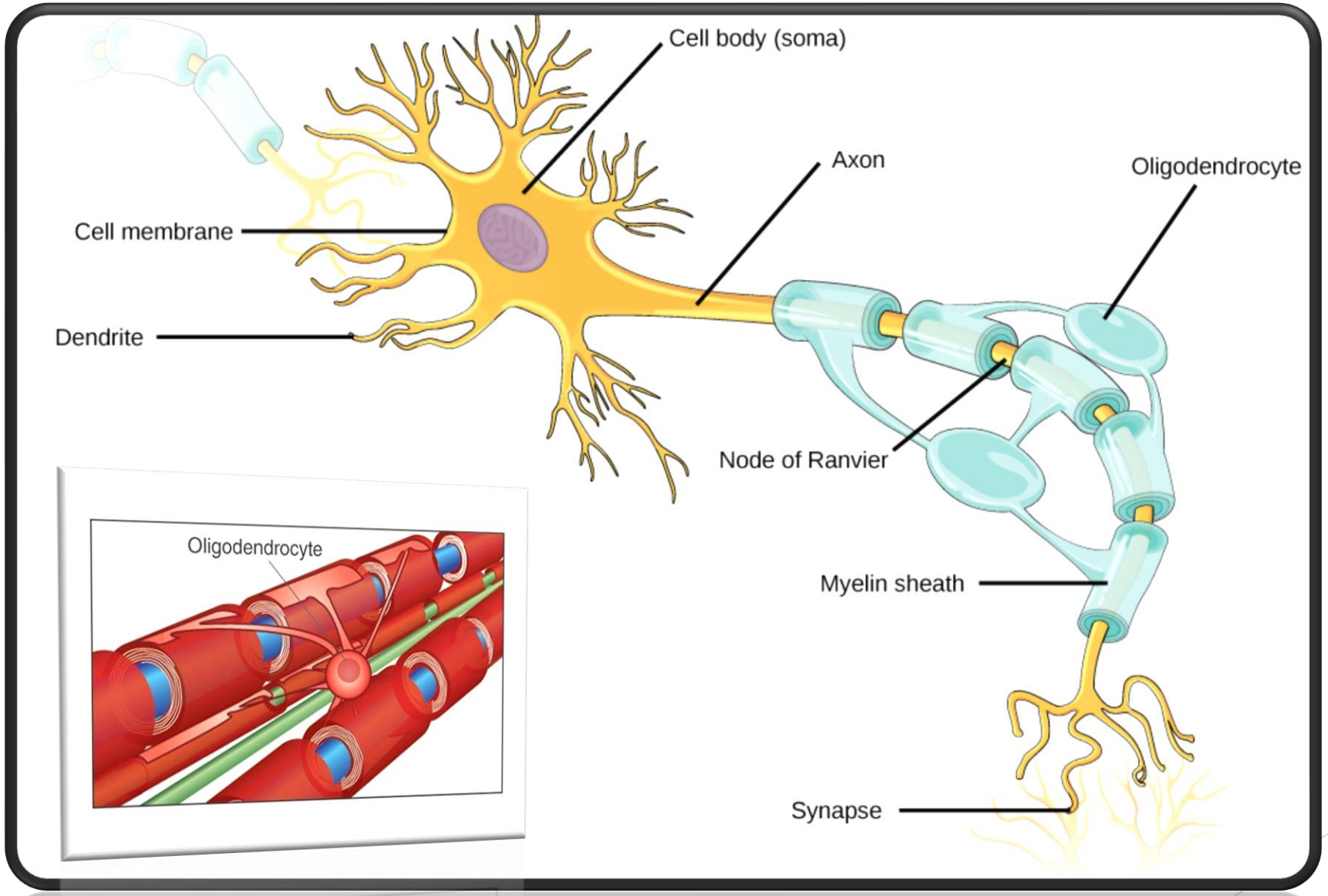


Myelinated and Unmyelinated Axon





OVERVIEW FIGURE–PERIPHERAL NERVOUS SYSTEM ■ The peripheral nervous system is composed of the cranial and spinal nerves. A cross-section of the spinal cord is illustrated here with the characteristic features of the motor neuron and a cross-section of a peripheral nerve. Also illustrated are types of neurons located in different ganglia and organs outside of the central nervous system.


Cell body (soma)
Axon
Oligodendrocyte
Cell membrane
Dendrite
Node of Ranvier
Myelin sheath
Synapse
Oligodendrocyte

Neuroglial cells

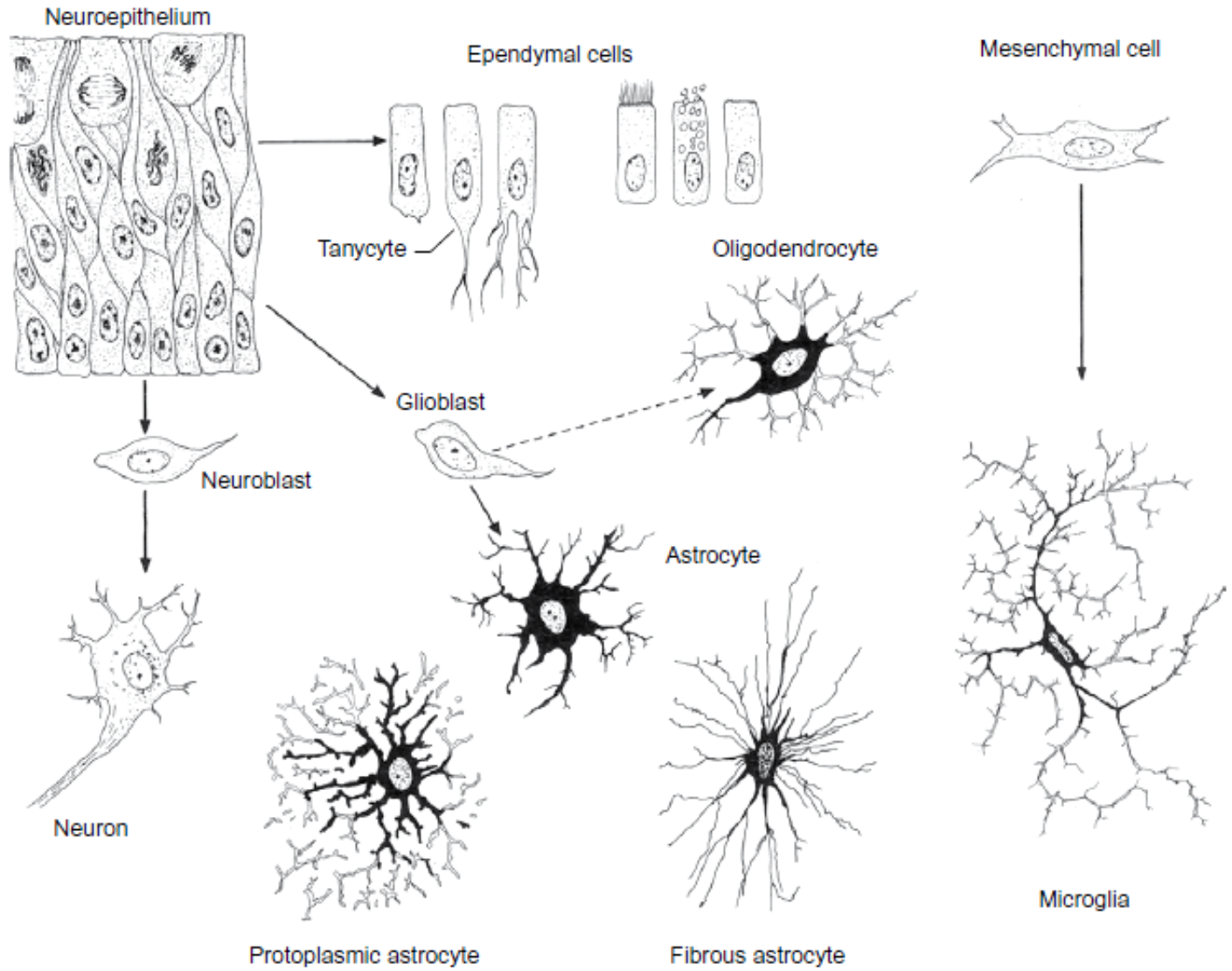
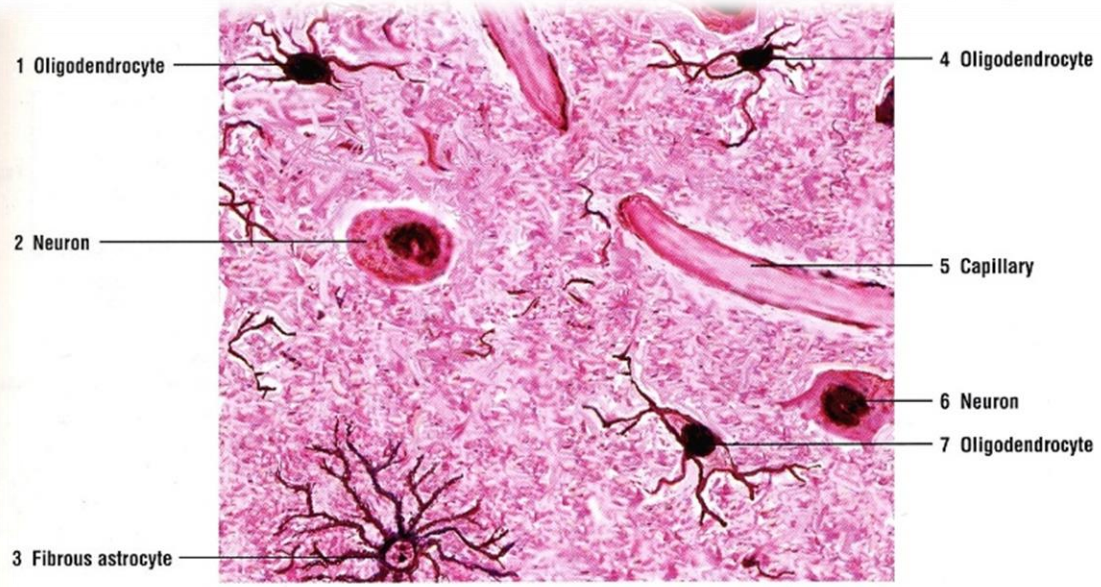


Fig. 10-3: Cell lineages in the developing central nervous system. Courtesy Sinowatz and Rüsse (2007).



GURE 7.13 ■ Oligodendrocytes of the brain. Stain: silver impregnation (Cajal's method). Medium magnification.

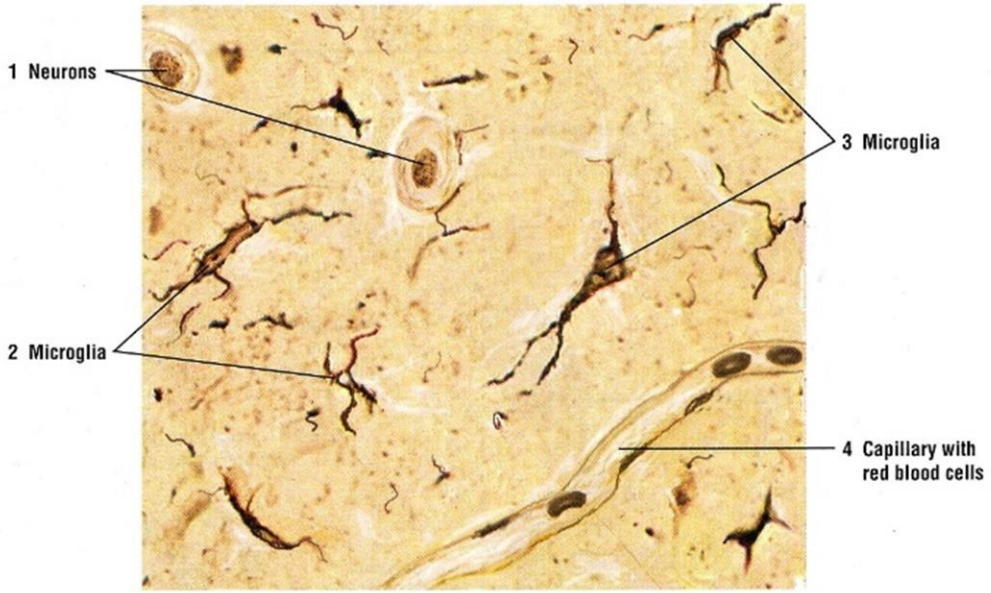


FIGURE 7.14 ■ Microglia of the brain. Stain: Hortega's method. Medium magnification.

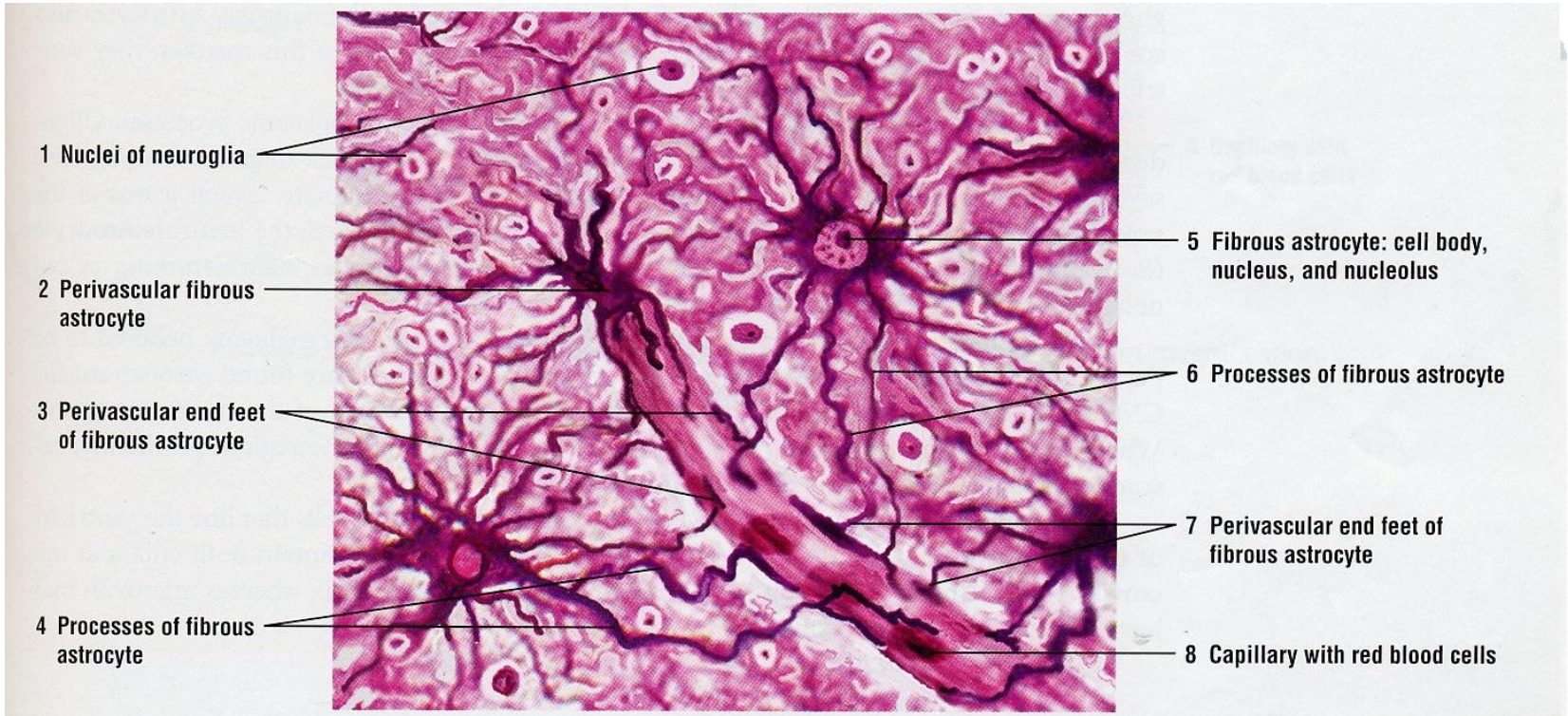


FIGURE 7.12 ■ Fibrous astrocytes and capillary in the brain. Stain: silver impregnation (Cajal's method.) Medium magnification.

Ependymal cell

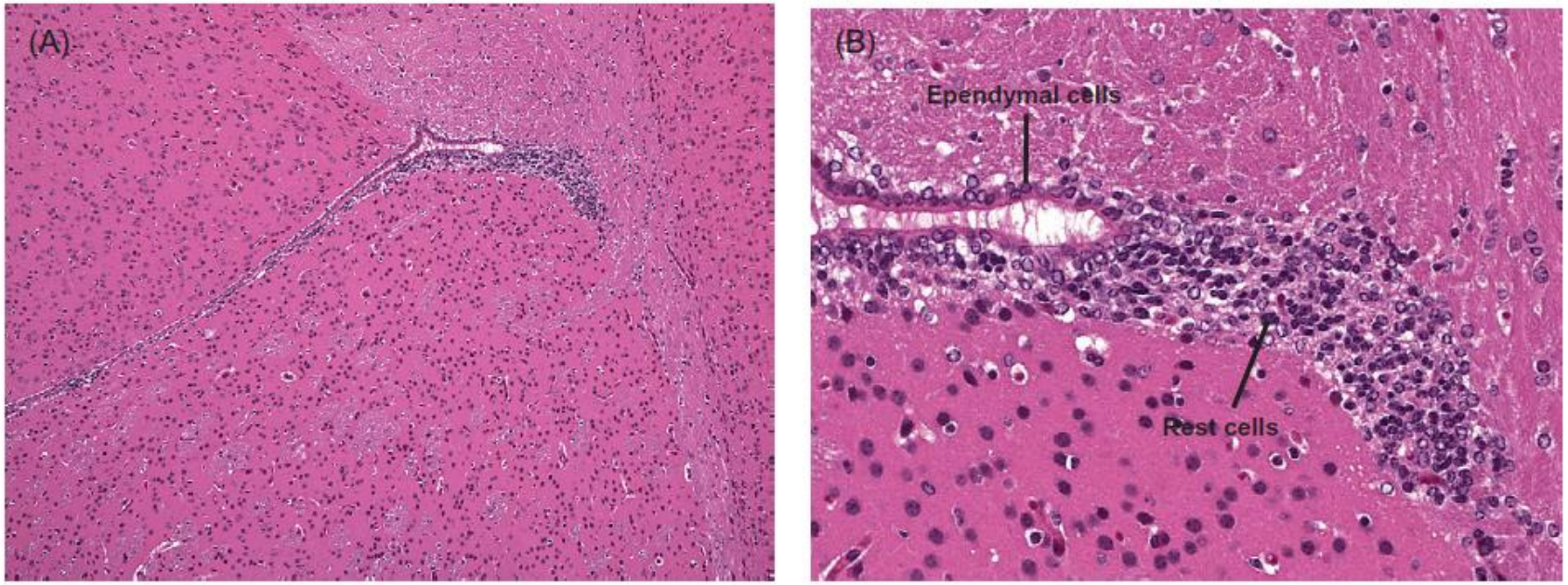
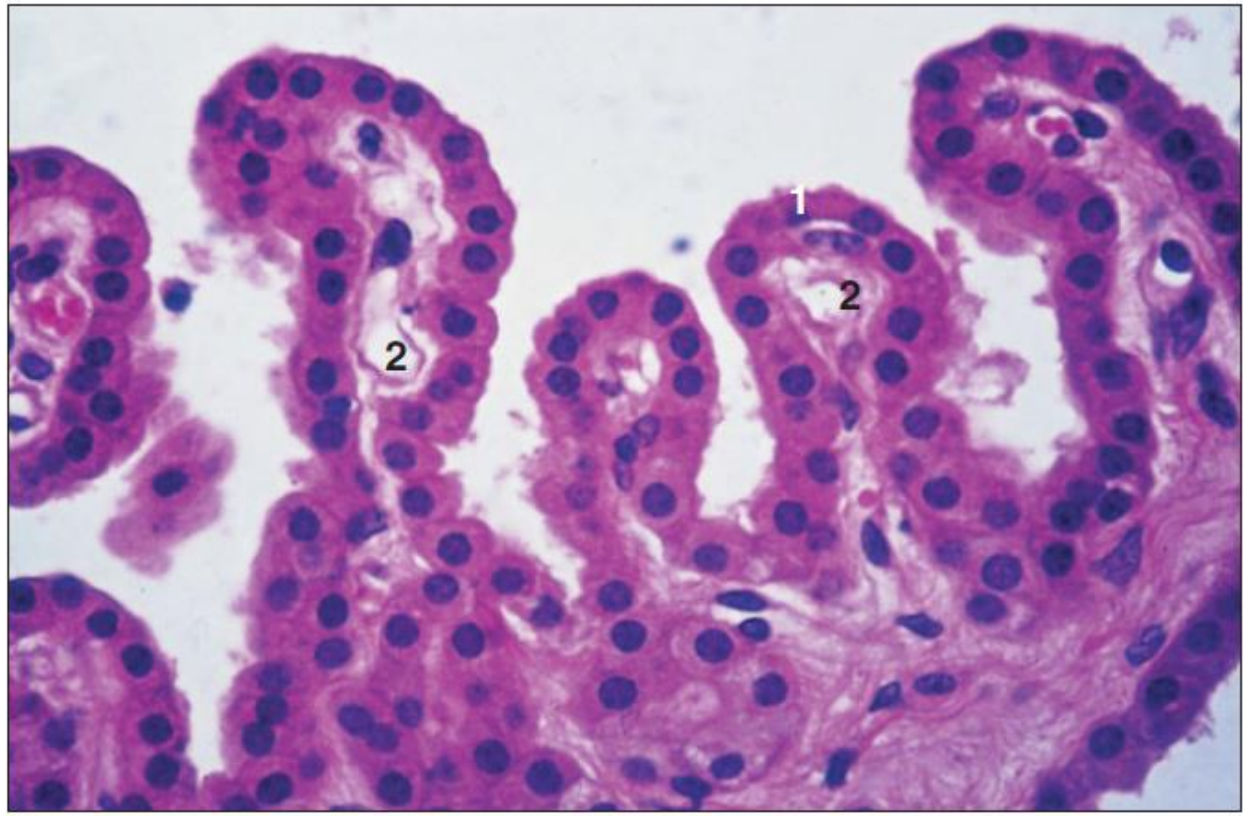
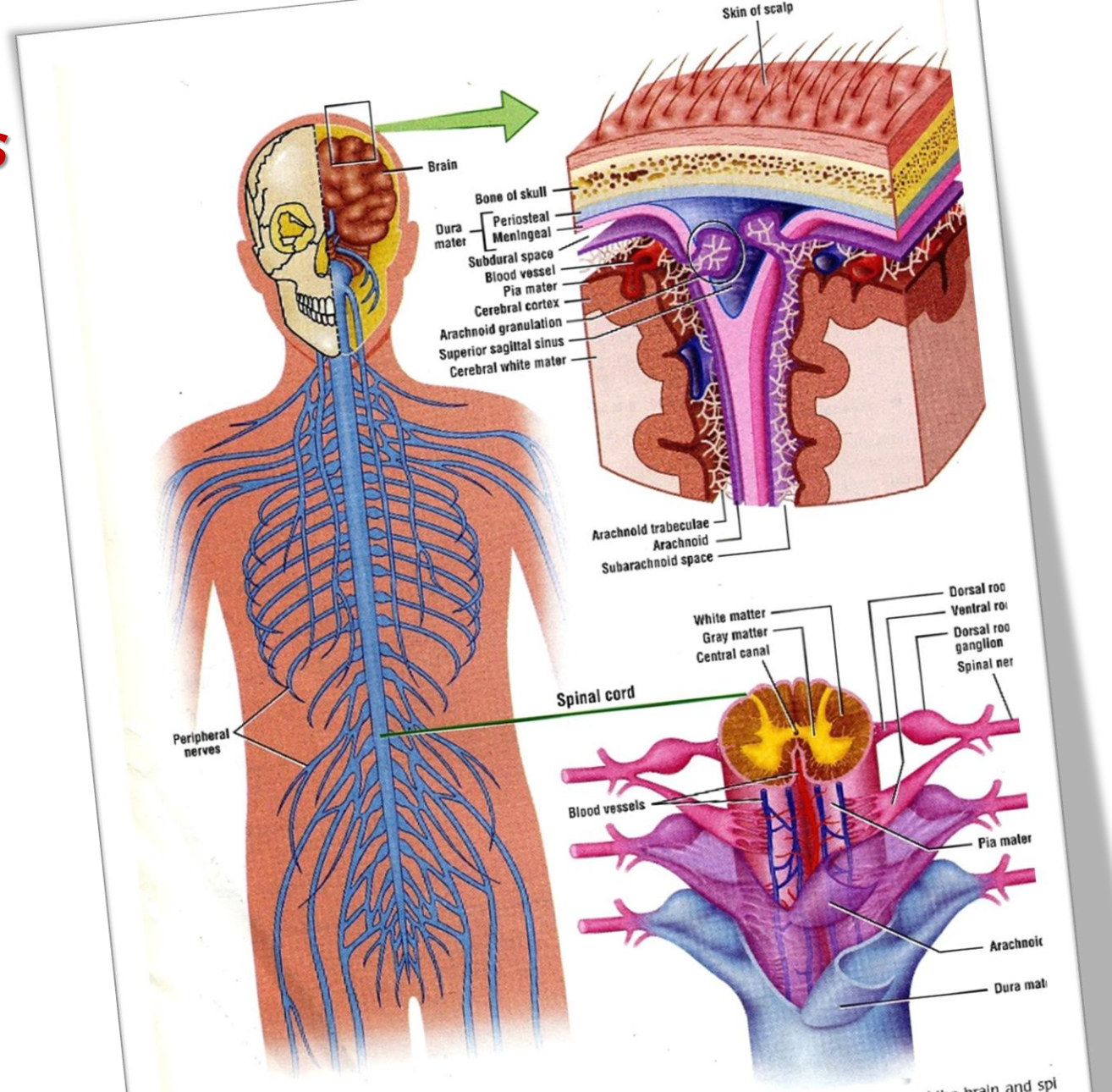


FIGURE 40 Mouse ependymal and cell "rests." The ependymal cells form a simple layer of specialized, ciliated, cuboidal epithelium that covers the surfaces of the brain ventricles and spinal cord central canal. These cells differentiate from germinal cells of the embryonic neural tube. Occasionally, undifferentiated germinal cells fail to migrate and are found as clusters or "rests" (neural tube remnants) located near the ependyma of ventricles. (A) Rostral extension of the lateral ventricle with adjacent germ cell rest. (B) Rests contain small, dark, round cells with minimal cytoplasm. These cell clusters also occurs in humans, in whom the most common site is the floor of the fourth ventricle and the second most common location is the lateral ventricle.

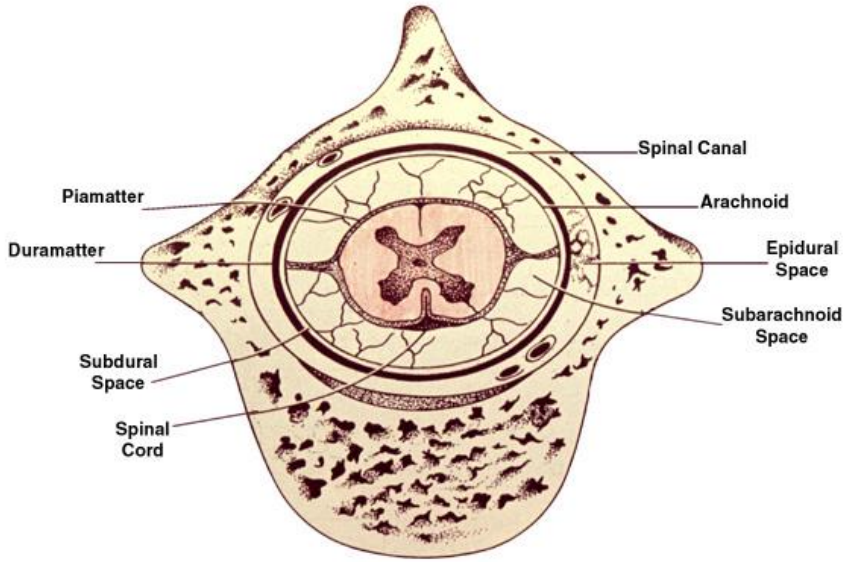


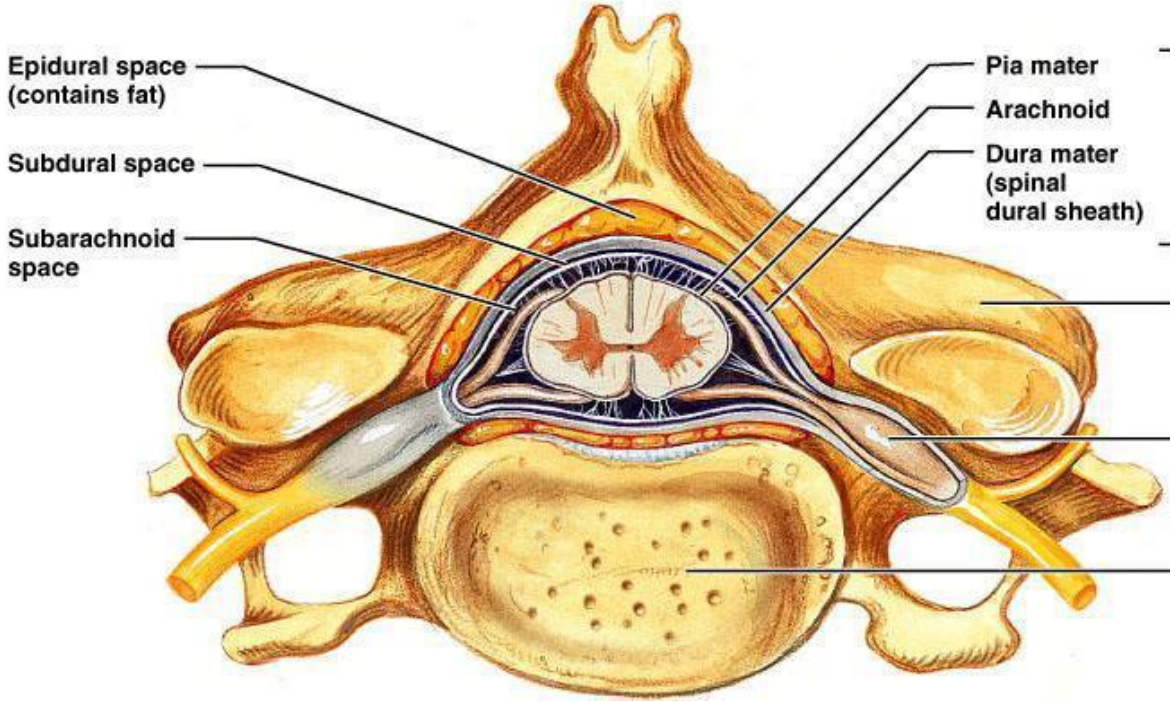
13.13 TS choroid plexus in the fourth ventricle (cat). (1) Ependyma. (2) Capillaries. H & E. ×160.

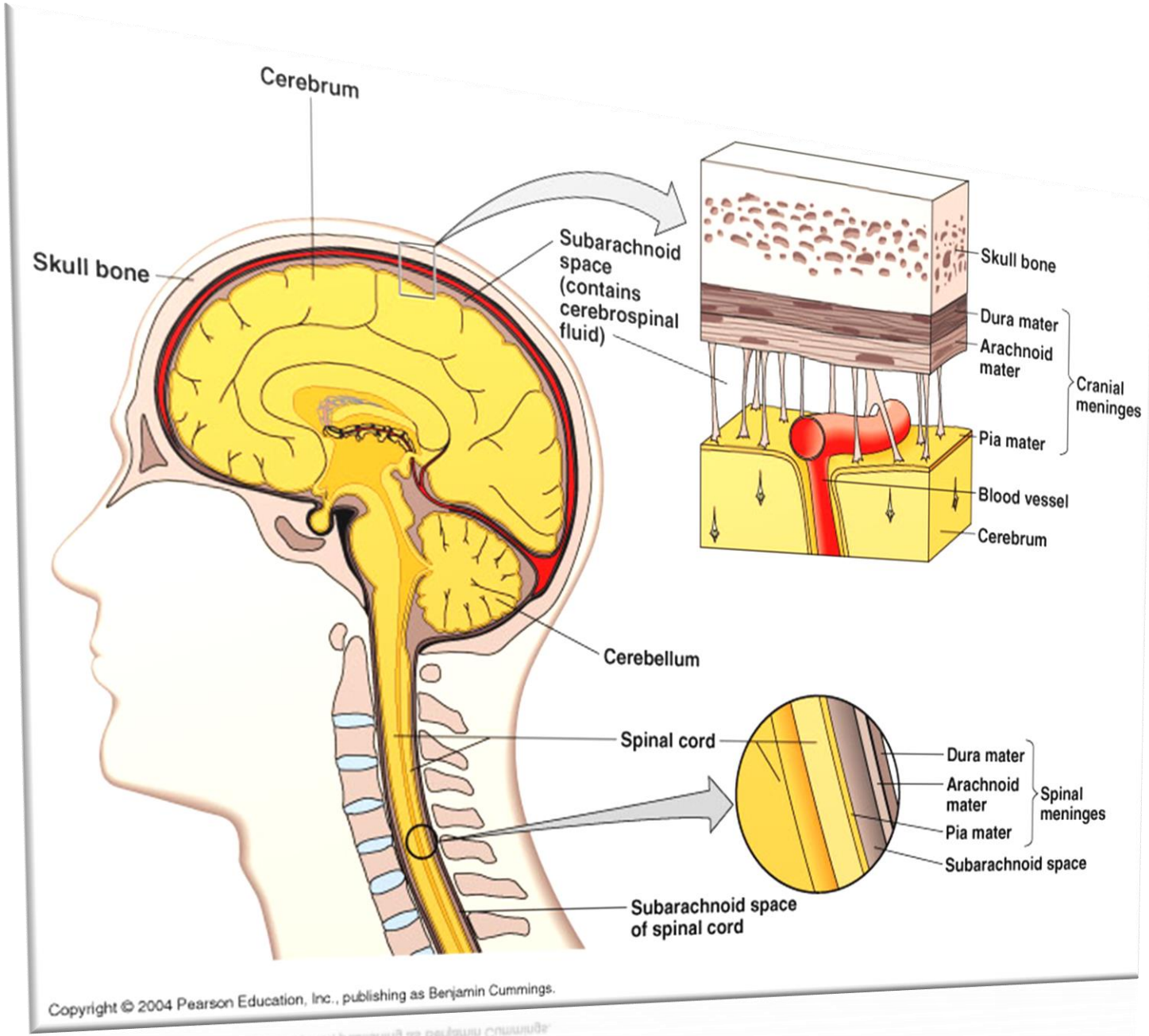
CNS
Meninges



OVERVIEW FIGURE–CENTRAL NERVOUS SYSTEM ■ The central nervous system is composed of the brain and spi
cord. A section of the brain and spinal cord is illustrated here with their protective connective tissue layers called menin
(dura mater, arachoid, and pia mater).


Spinal Canal
Piamatter
Arachnoid
Duramatter
Epidural Space
Subarachnoid Space
Subdural Space
Spinal Cord


Epidural space (contains fat)
Subdural space
Subarachnoid space
Pia mater
Arachnoid
Dura mater (spinal dural sheath)


Cerebrum
Skull bone
Subarachnoid space (contains cerebrospinal fluid)
Skull bone
Dura mater
Arachnoid mater
Cranial meninges
Pia mater
Blood vessel
Cerebrum
Cerebellum
Spinal cord
Dura mater
Arachnoid mater
Spinal meninges
Pia mater
Subarachnoid space
Subarachnoid space of spinal cord
Copyright © 2004 Pearson Education, Inc., publishing as Benjamin Cummings.

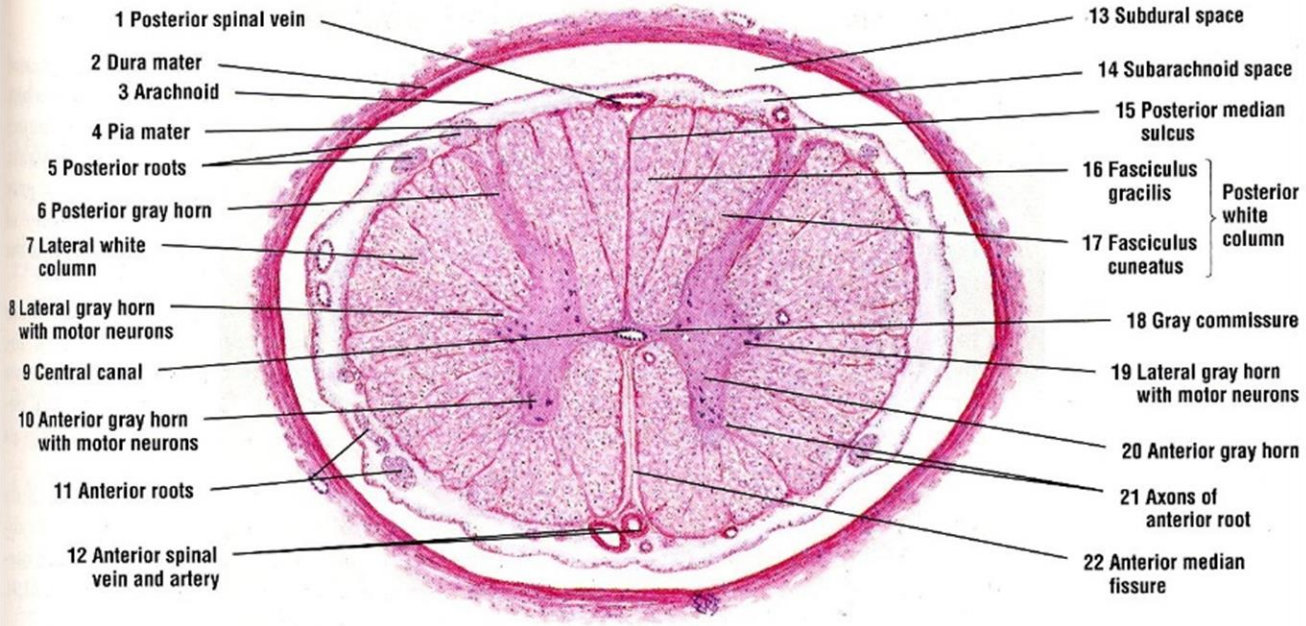


FIGURE 7.1 ■ Spinal cord: midthoracic region (transverse section). Stain: hematoxylin and eosin. Low magnification.

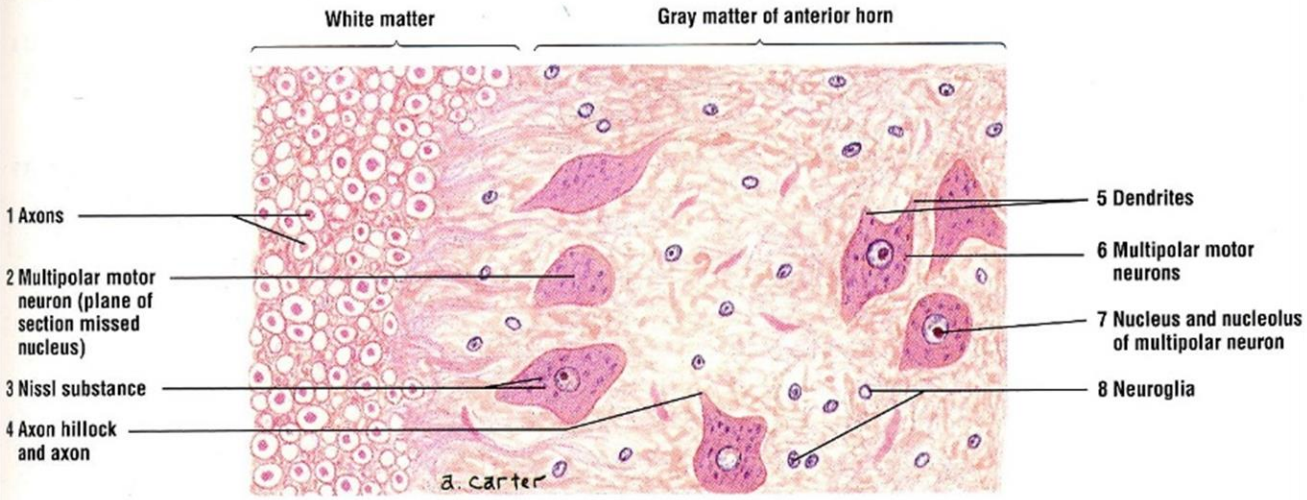


FIGURE 7.2 ■ Spinal cord: anterior gray horn, motor neurons, and adjacent white matter. Stain: hematoxylin and eosin. Medium magnification.

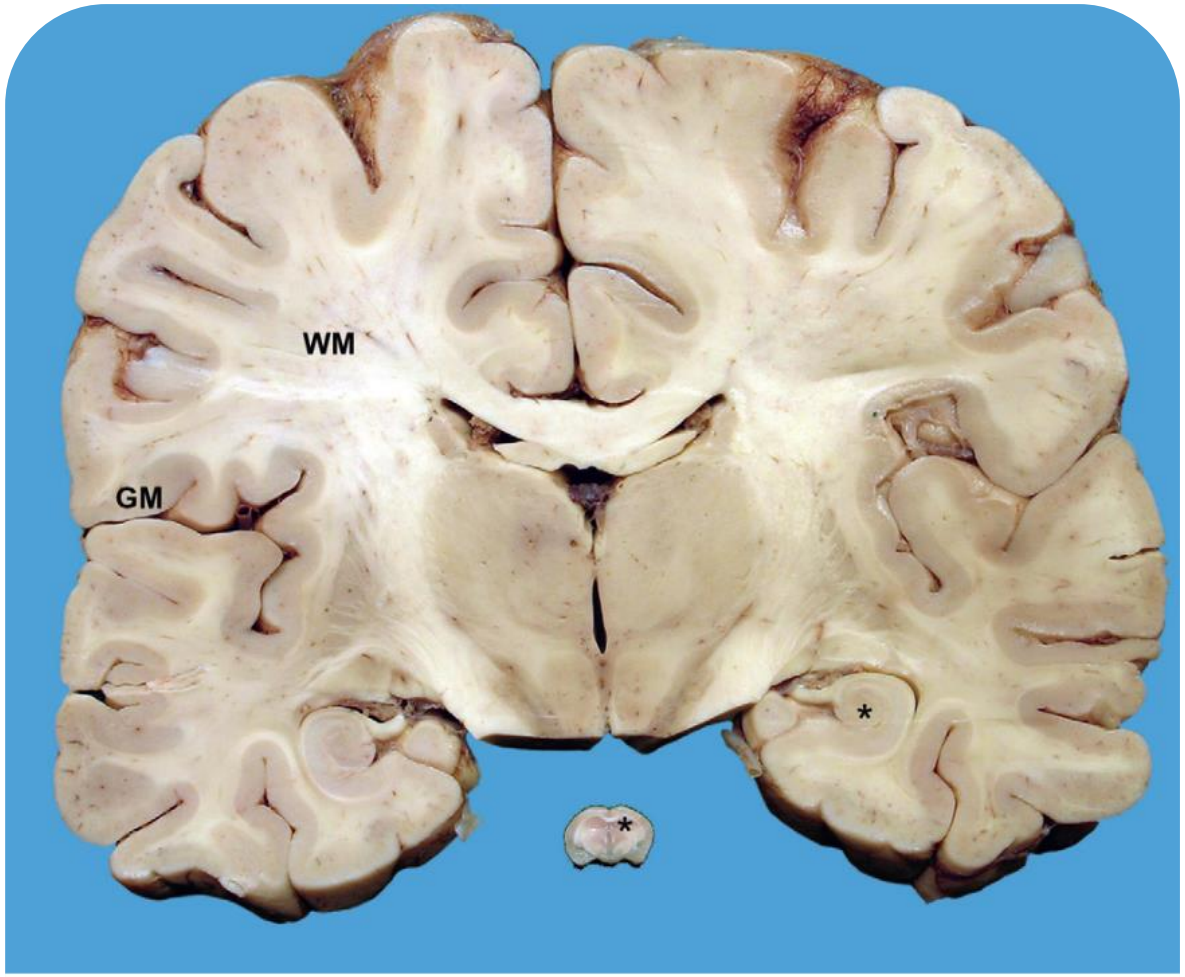
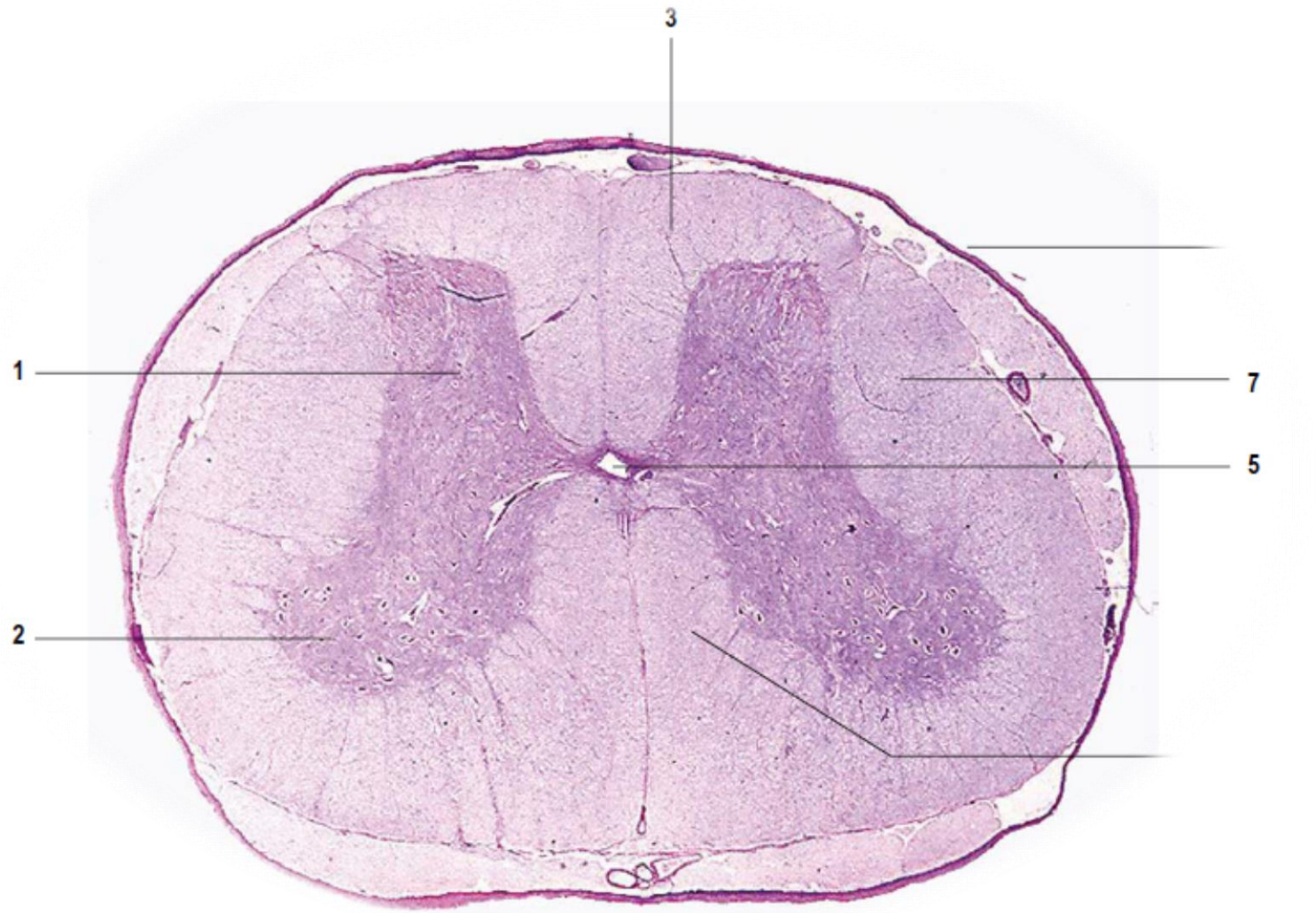
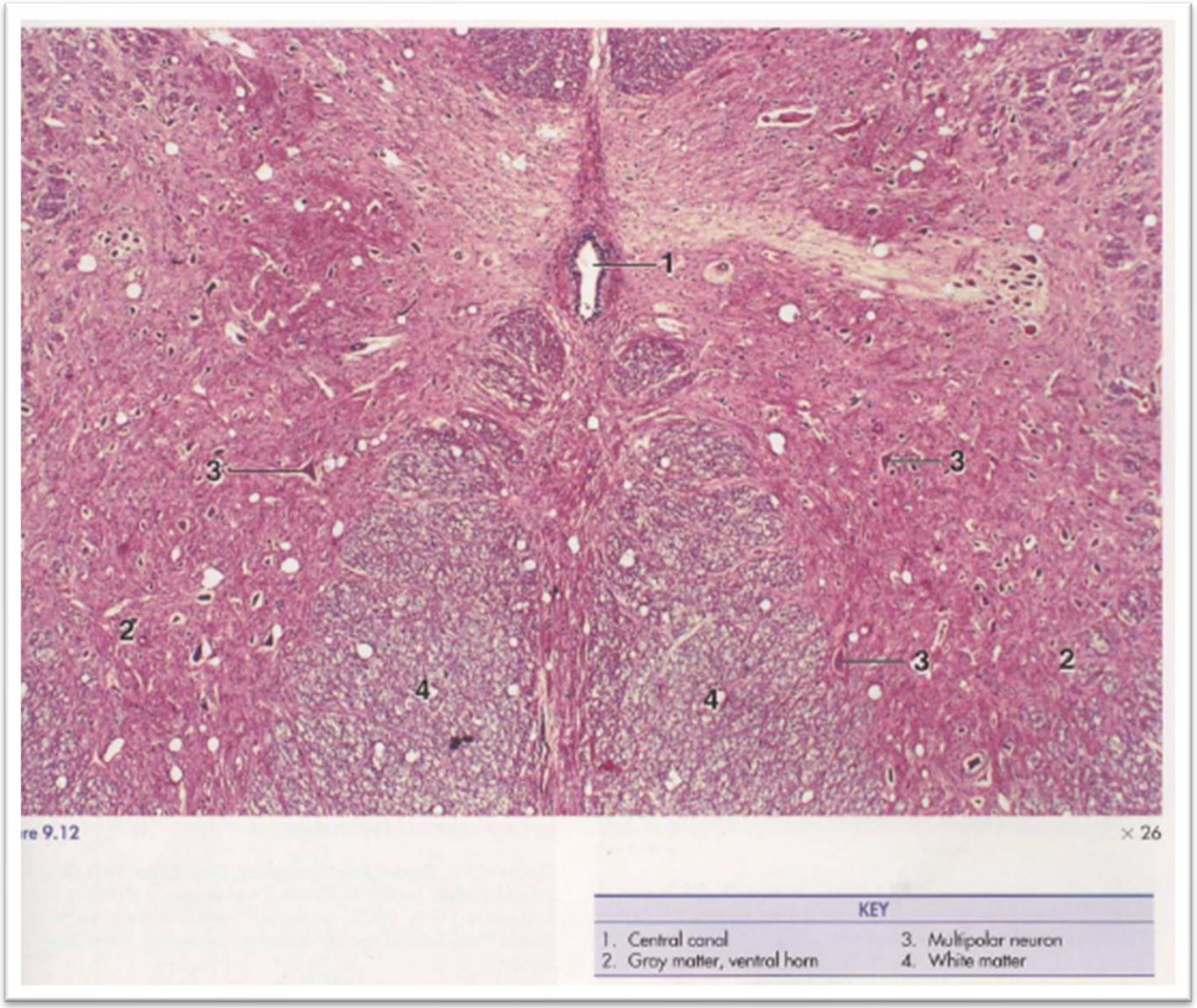


FIGURE 1 Coronal brain slices from an adult human and adult mouse demonstrating the marked differences in organ size and organization. Gray matter (GM) includes neuron cell bodies, glia, and blood vessels. White matter (WM) consists of myelinated axons and myelinating cells. The hippocampal formation on the right side of each slice is marked with an asterisk. Many of the photos and diagrams in this chapter have been adjusted in size to provide optimal anatomical and cellular comparisons.

Spinal cord





re 9.12 × 26

KEY	
1. Central canal	3. Multipolar neuron
2. Gray matter, ventral horn	4. White matter

Cerebellum

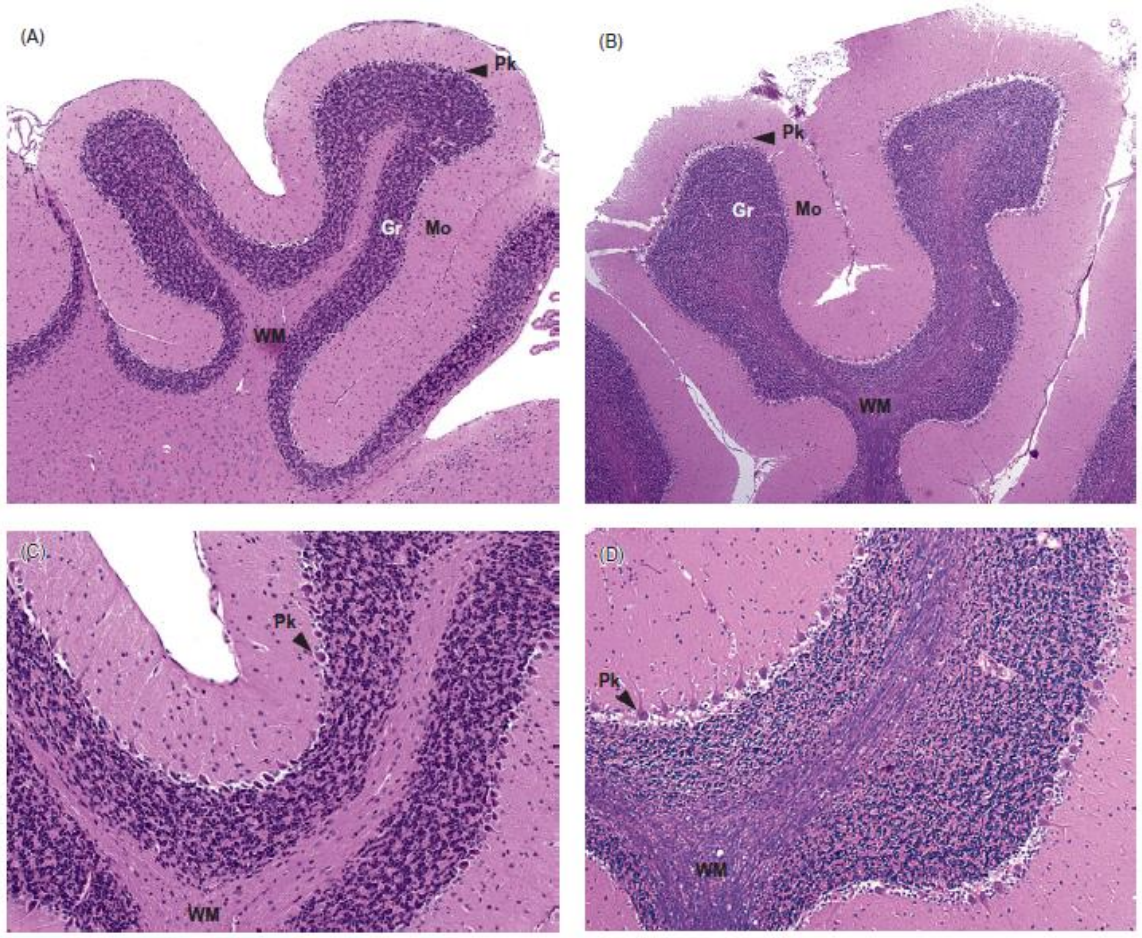


FIGURE 17 Cerebellum of the adult mouse (A, C, and E; H&E) and human (B, D, and F; H&E with LFB). The region is uniformly organized in three layers, which are (from outside to in) the molecular layer (Mo), Purkinje cell layer (Pk, with arrowheads), and the granular layer (Gr). The molecular layer is a broad expanse of densely packed neuronal processes with few neuronal bodies. The Purkinje cell layer is a single layer of large, torpedo-shaped cells with prominent apical processes extending into the molecular layer; the cells in the mouse are smaller and have less cytoplasm (E) relative to human cells (F). The granular layer is packed with small, dark, round granule cells, and it is more cellular in the human than in the mouse. The white matter (WM) core of each cerebellar folium (meaning "leaf") is visible in both species. Mouse and human micrographs are shown at different magnifications to better illustrate the cytoarchitectural features of each species.

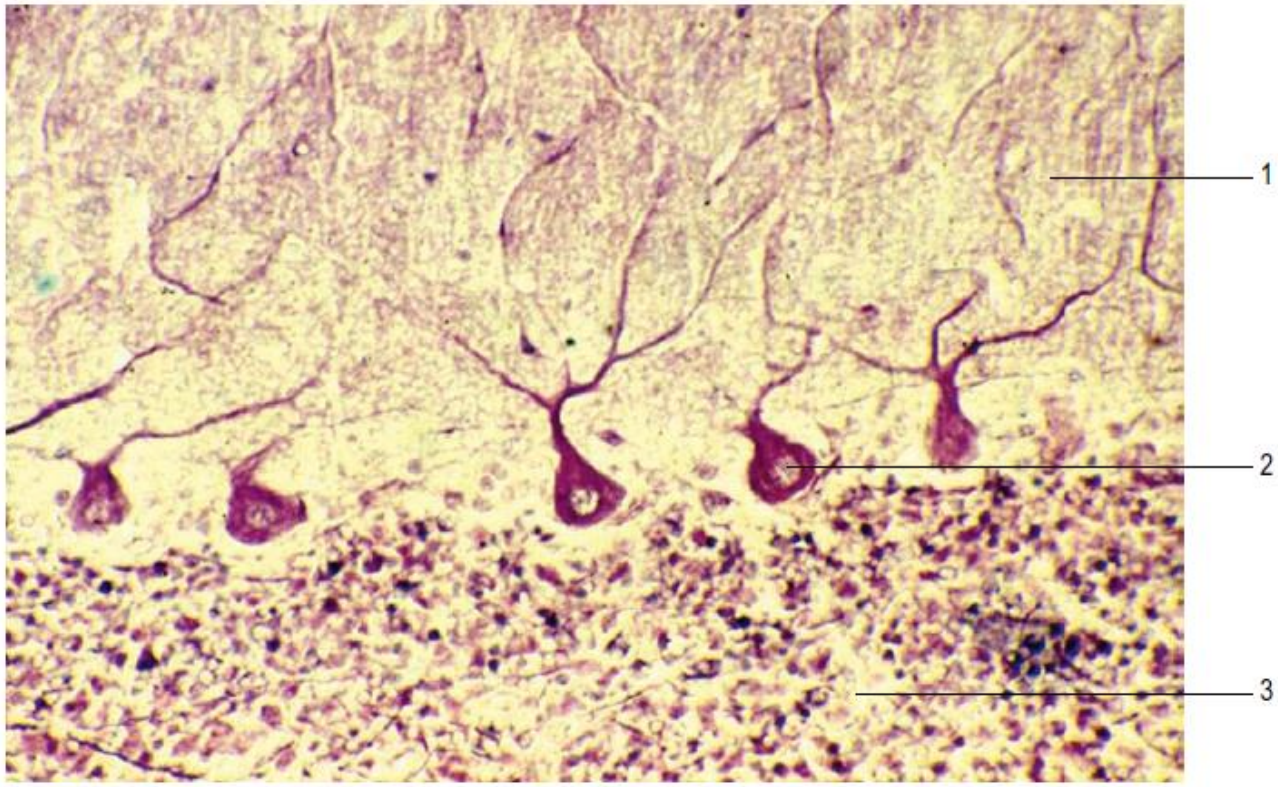


Fig. 10-20: Histological section through the differentiated cerebellar cortex of an adult dog. 1: Molecular layer; 2: Purkinje cell layer; 3: Granular layer.

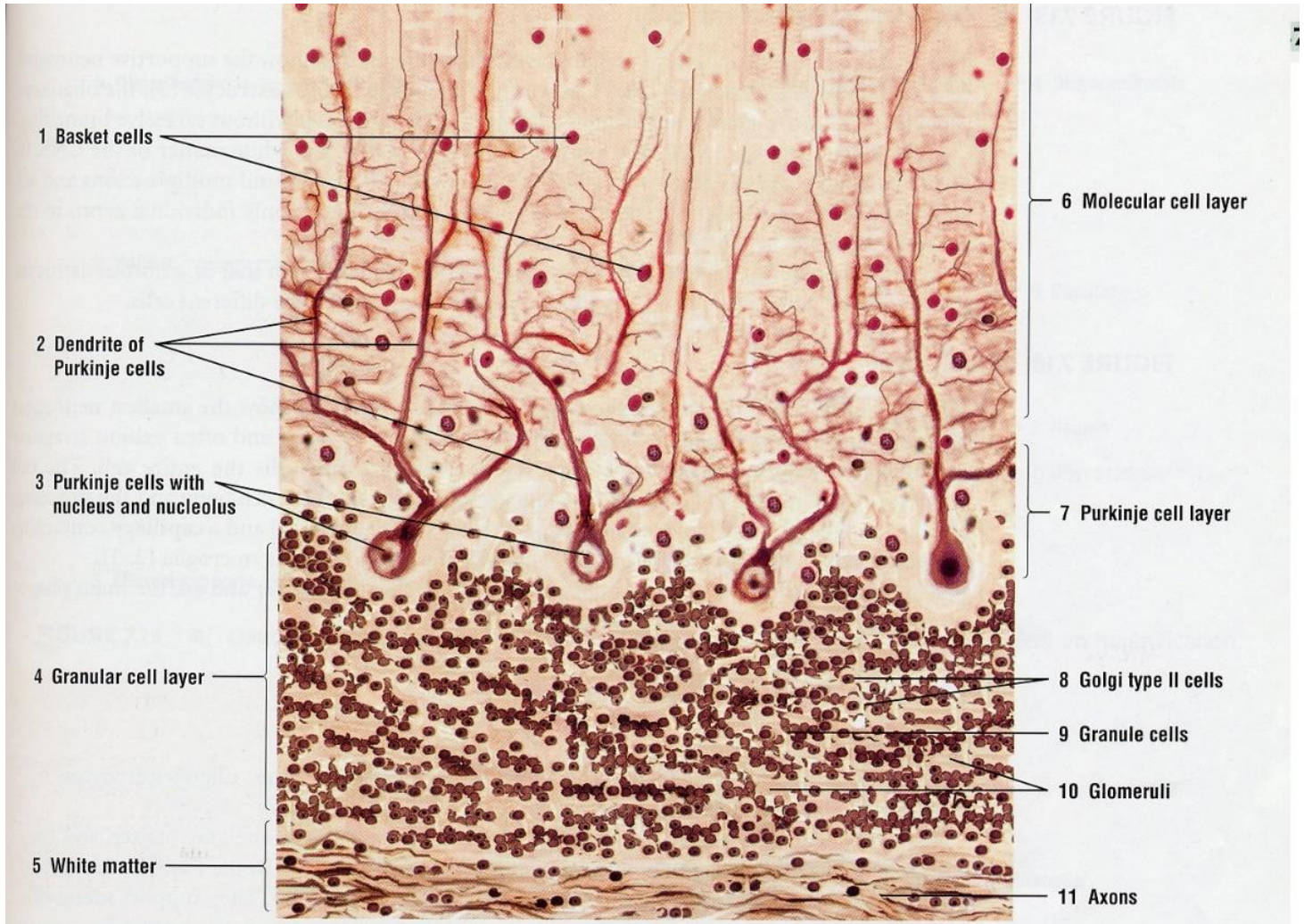


FIGURE 7.11 ■ Cerebellar cortex: molecular layer, Purkinje cell layer, and granular cell layer. Stain: silver impregnation (Cajal's method). High magnification.

Cerebrum

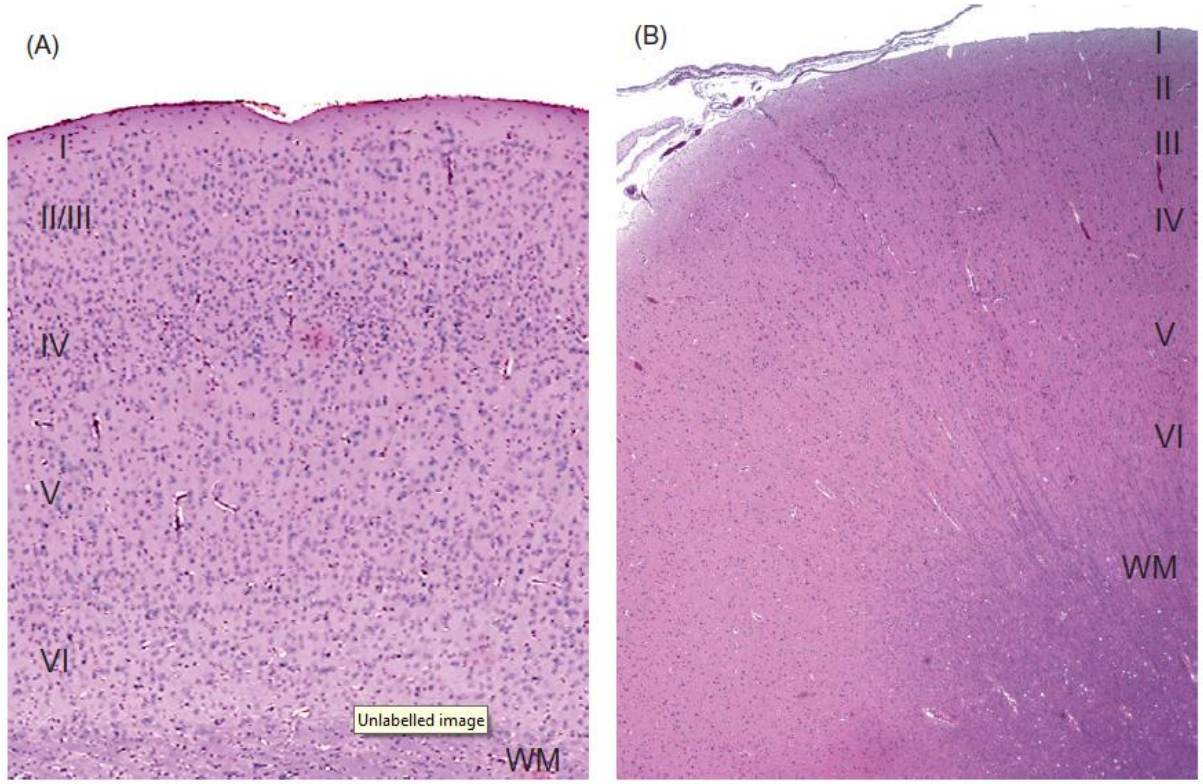


FIGURE 12 Neuronal organization in the cerebral cortex of an adult mouse (A) and human (B). The cortex contains six layers, although in the mouse, layers II and III are merged together as layer II/III. Layer I (molecular layer) lies beneath the meninges and contains neuropil and few neuron cell bodies. The remaining strata are layers II (external granular cell layer), III (external pyramidal cell layer, composed of small pyramidal cells), IV (internal granular cell layer), V (internal pyramidal cell layer, containing large pyramidal cells), and VI (multiforme layer, with elongate fusiform neurons). To highlight cellular detail of each species, the mouse image is presented at a higher magnification. WM, white matter.

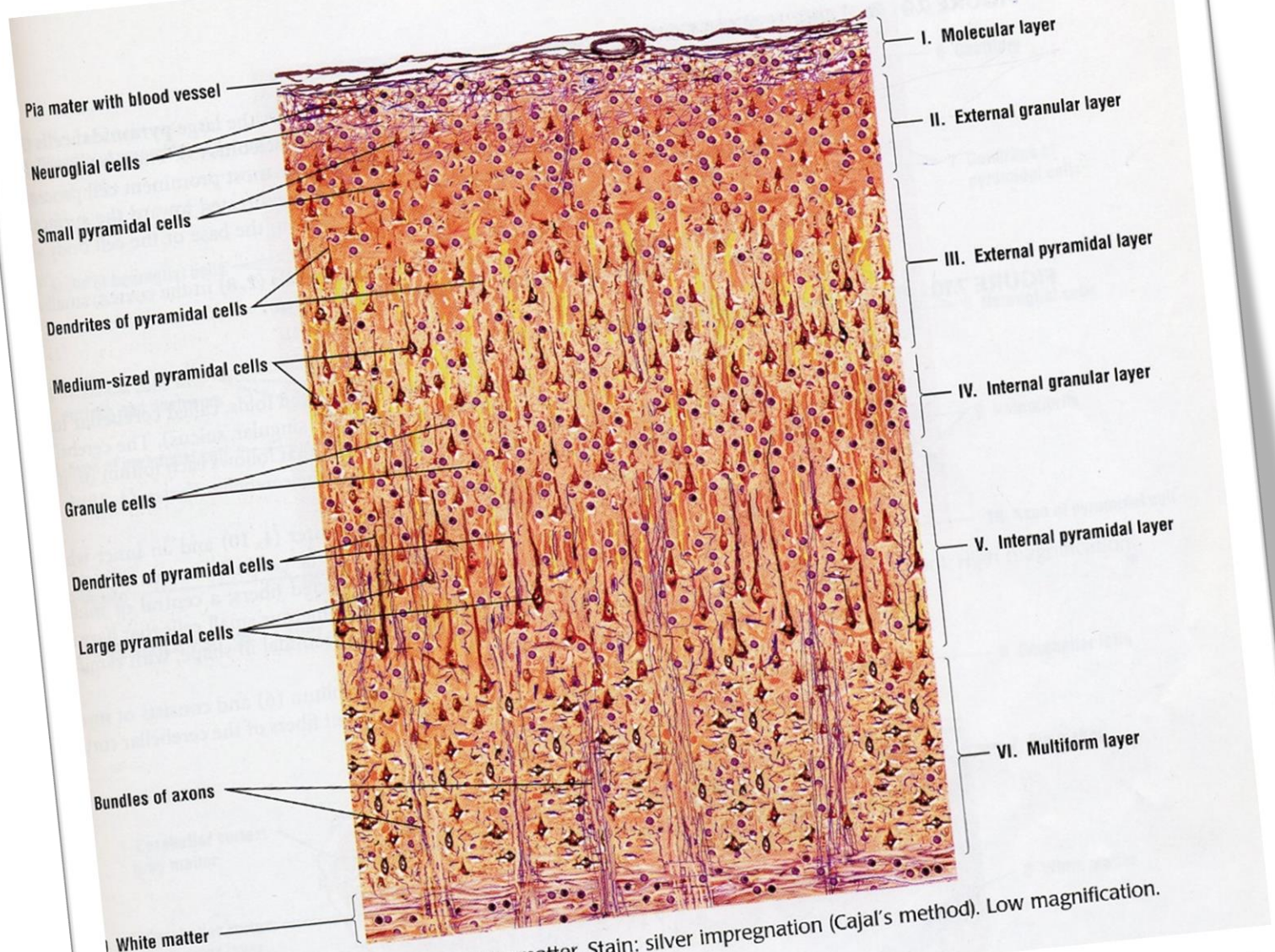


FIGURE 7.8 ■ Cerebral cortex: gray matter. Stain: silver impregnation (Cajal's method). Low magnification.