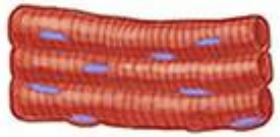
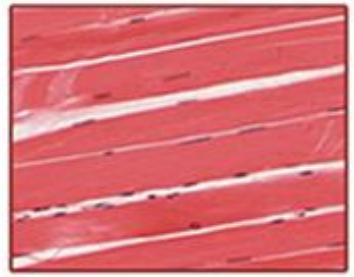
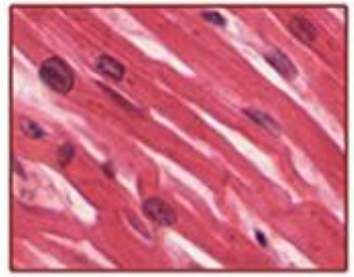
LAB-6-
MUSCULAR AND NERVOUS TISSUES

Msc. Sarah Mussa

Msc. Huda Muhammed

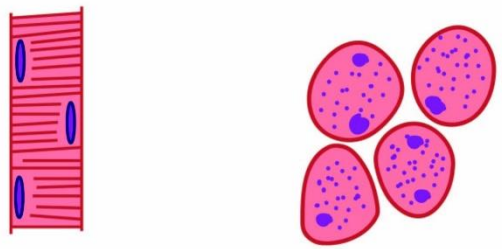
A. MUSCULAR TISSUE

	Main features	Location	Type of cells	Histology
Skeletal muscle	- Fibers : striated, tubular and multi nucleated - Voluntary - Usually attached to skeleton			
Smooth muscle	- Fibers : non-striated, spindle-shaped, and uninucleated. - Involuntary - Usually covering wall of internal organs.			
Cardiac muscle	- Fibers : striated, branched and uninucleated. - Involuntary - Only covering walls of the heart.			

Scheme of muscle tissue

a) skeletal

Muscle fiber

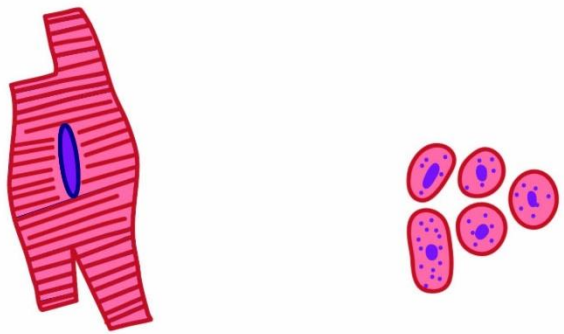


lengthwise

transversaly

b) cardiac

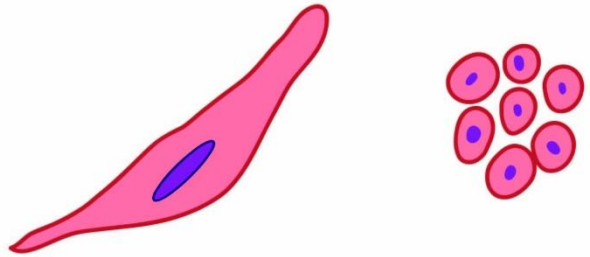
Cardiomyocyt



lengthwise

transversaly

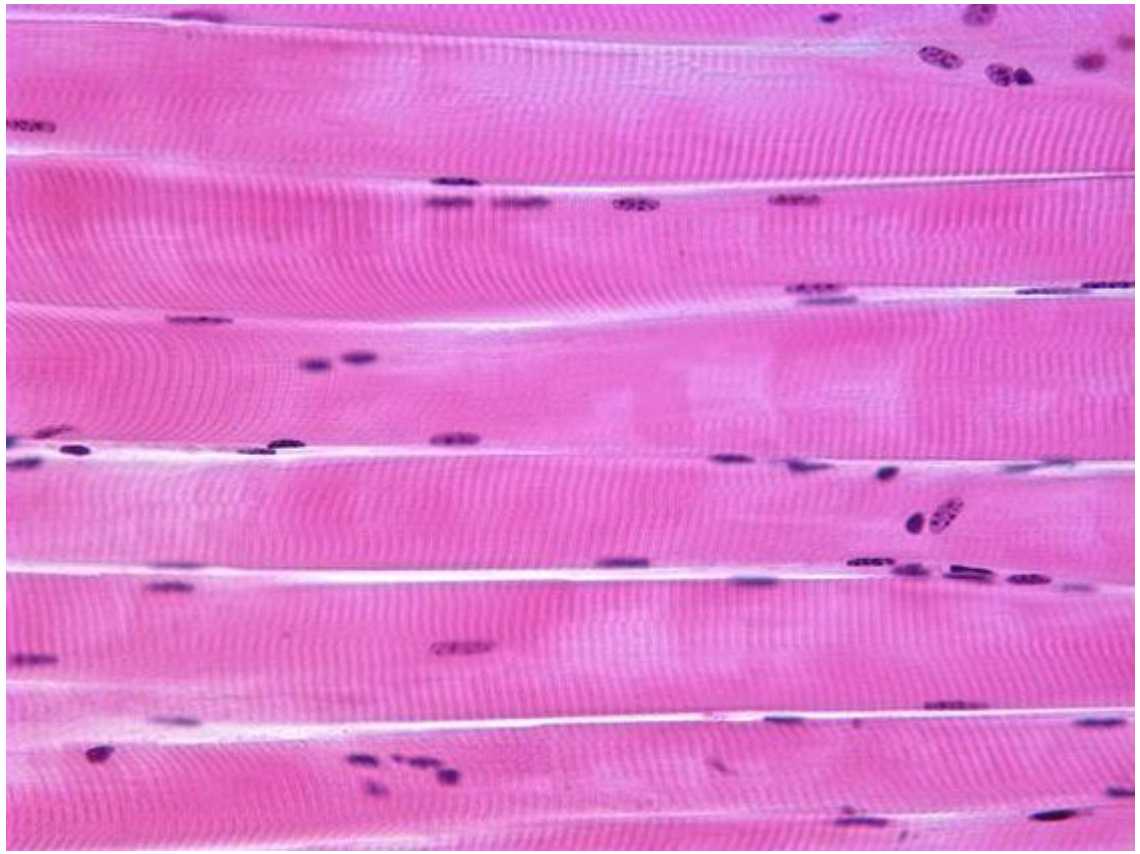
c) smooth muscle

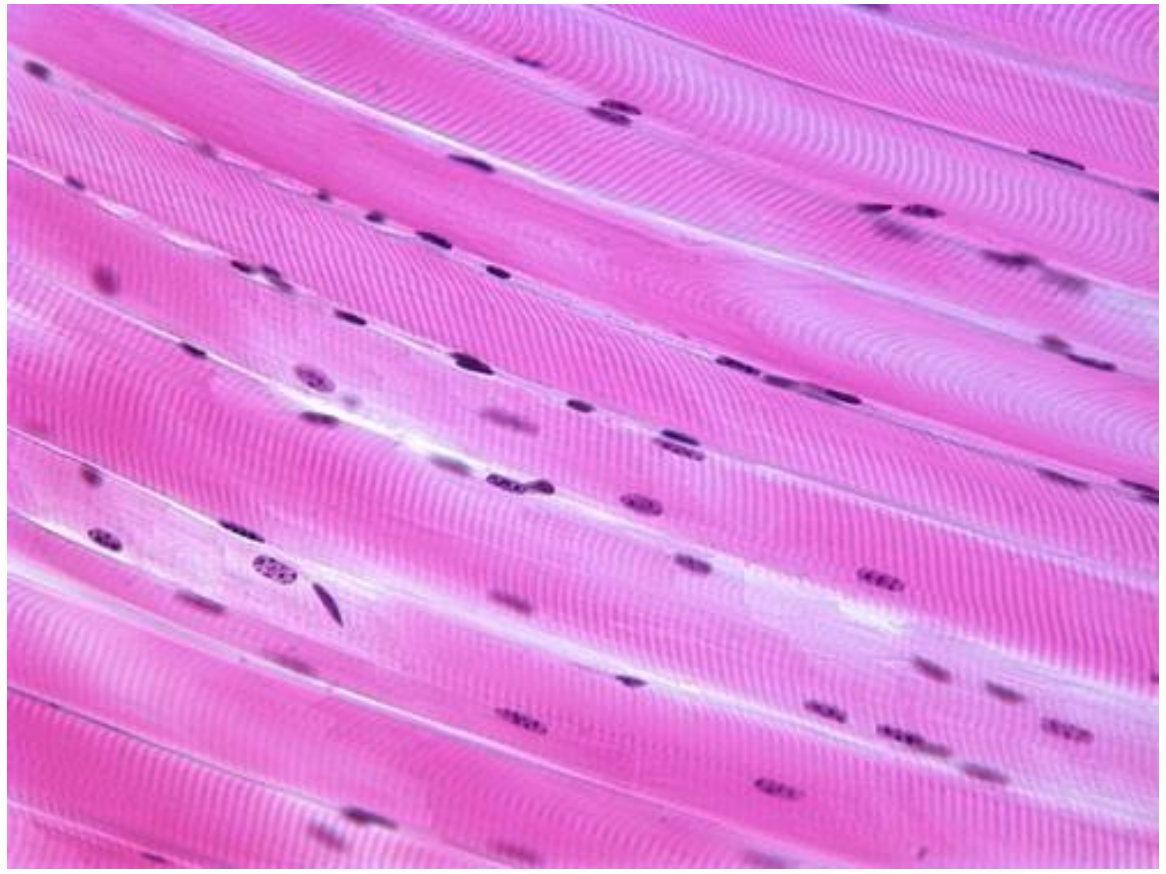


lengthwise

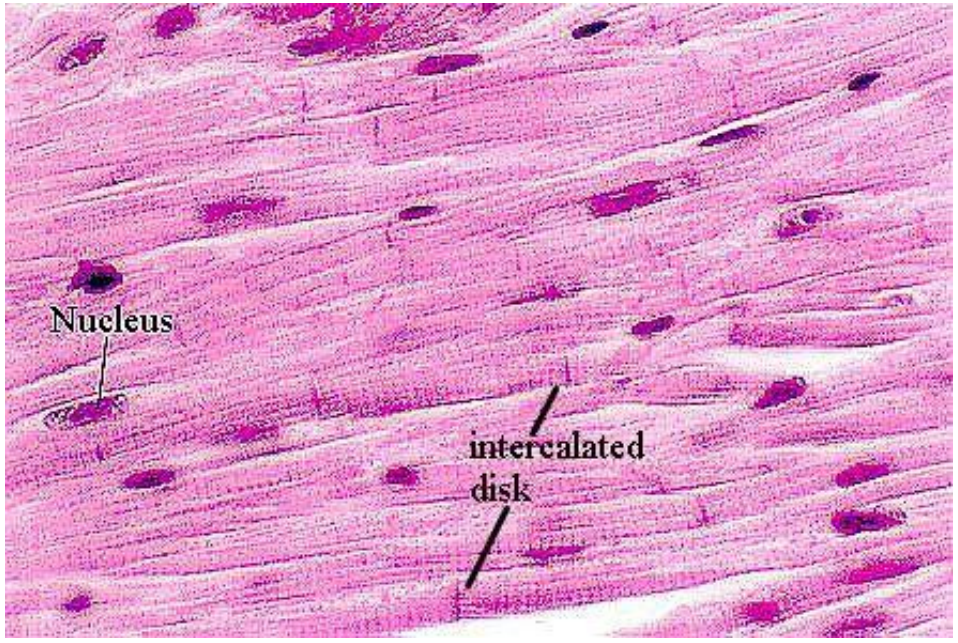
transversaly

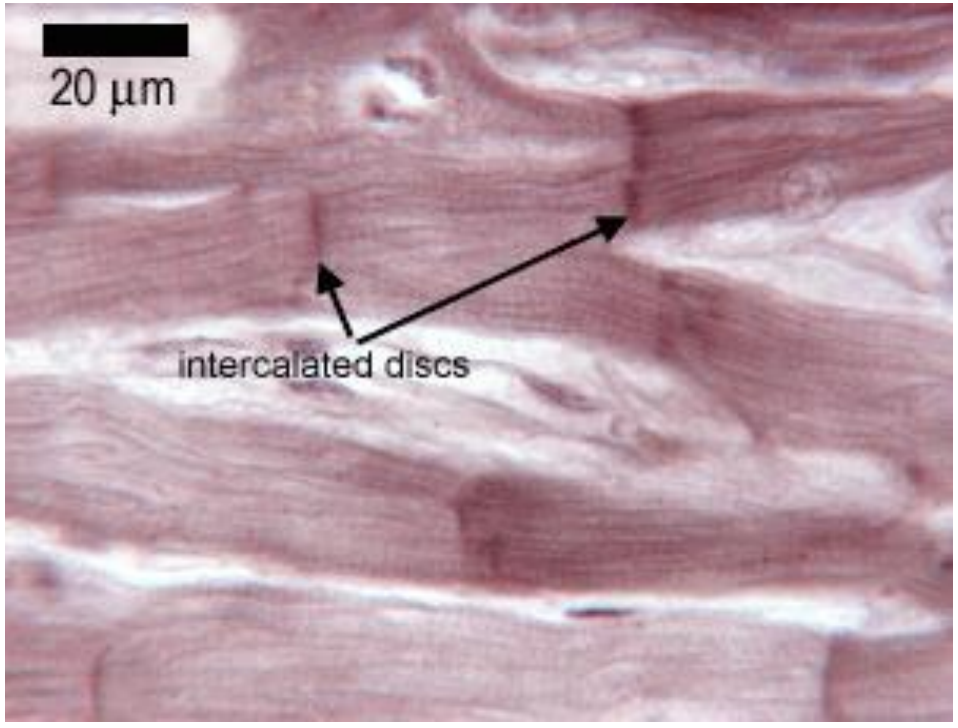
1. Skeletal Muscle Tissue



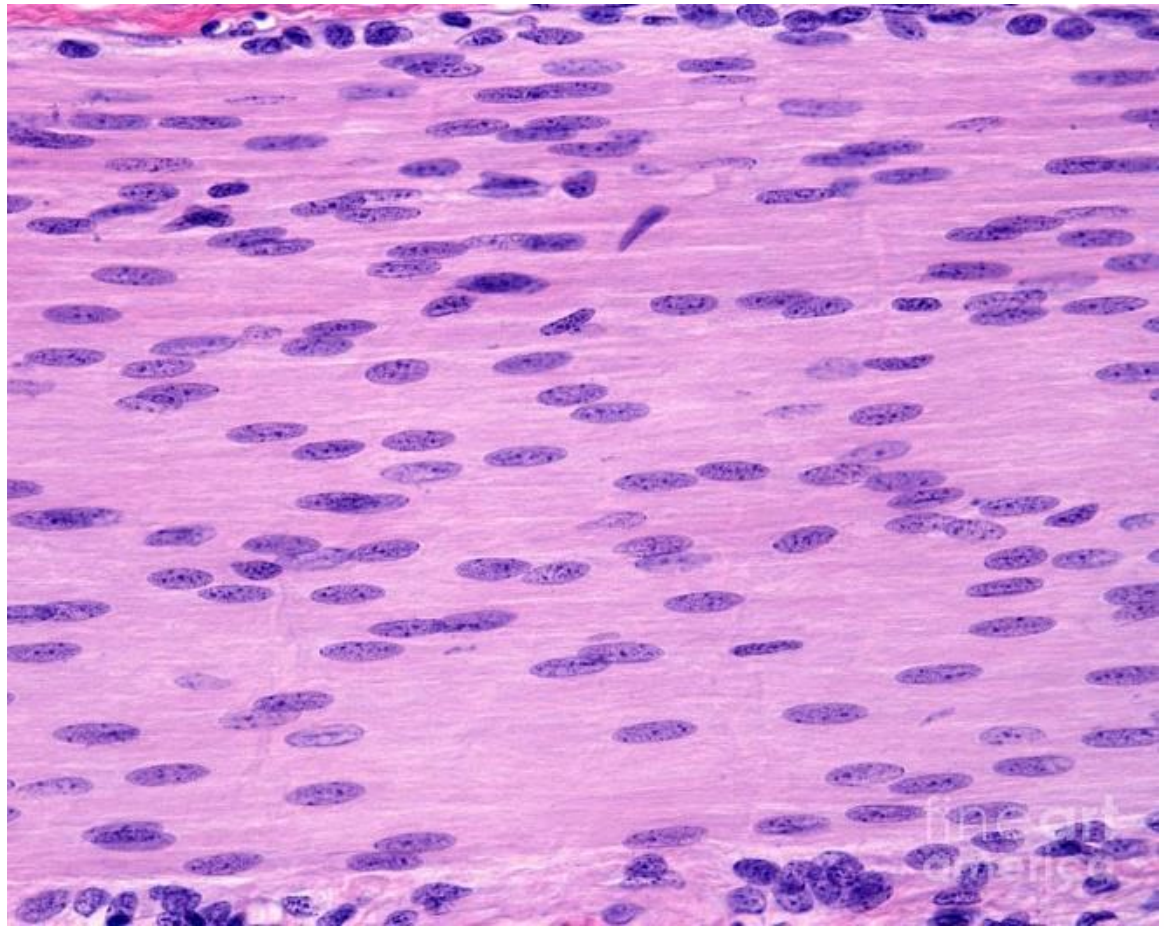


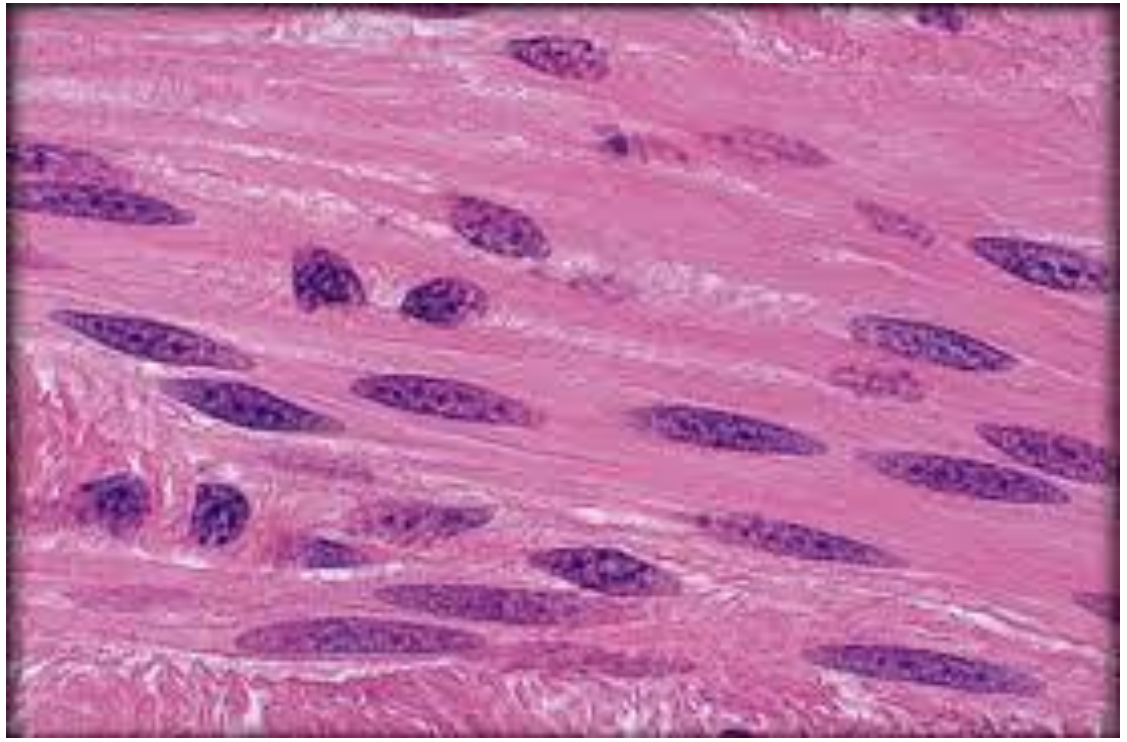
2. Cardiac Muscle Tissue

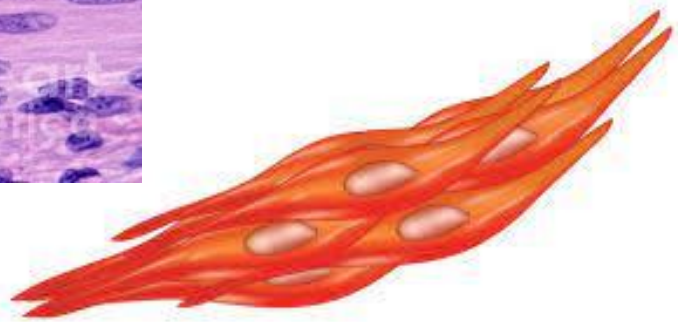




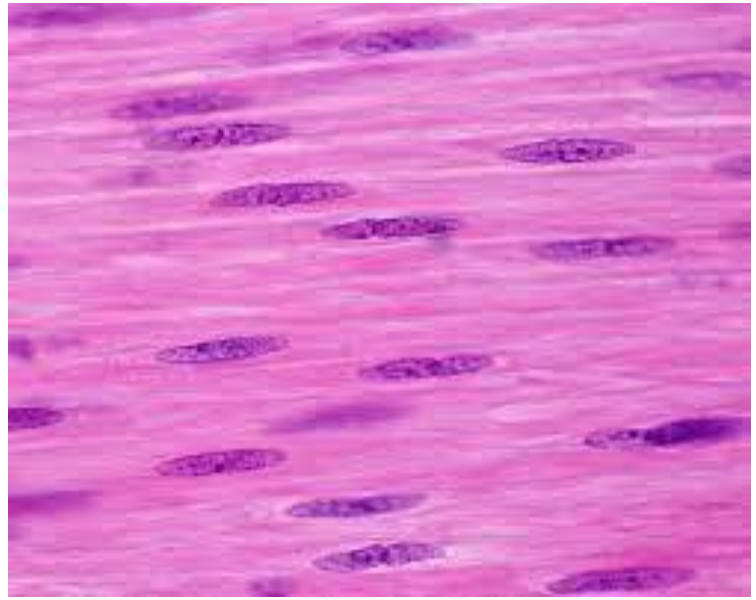
3. Smooth Muscle Tissue







Smooth muscle



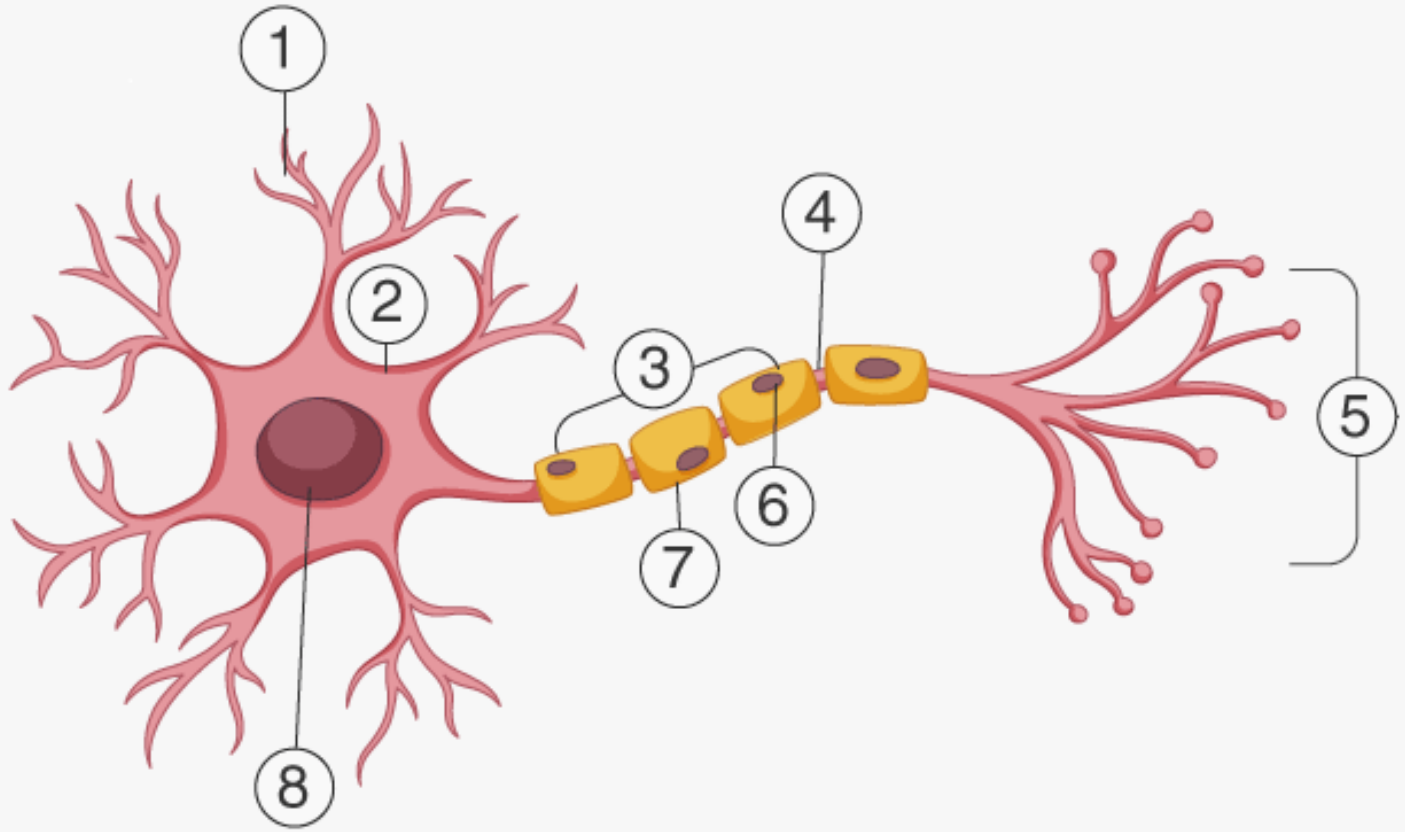
B. Nervous Tissue

- Nervous or the nerve tissue is the main tissue of our nervous system. It monitors and regulates the functions of the body. Nervous tissue consists of two cells:

1. nerve cells or neurons
2. and glial cells.

which helps transmit nerve impulses and also provides nutrients to neurons.

NERVE CELL

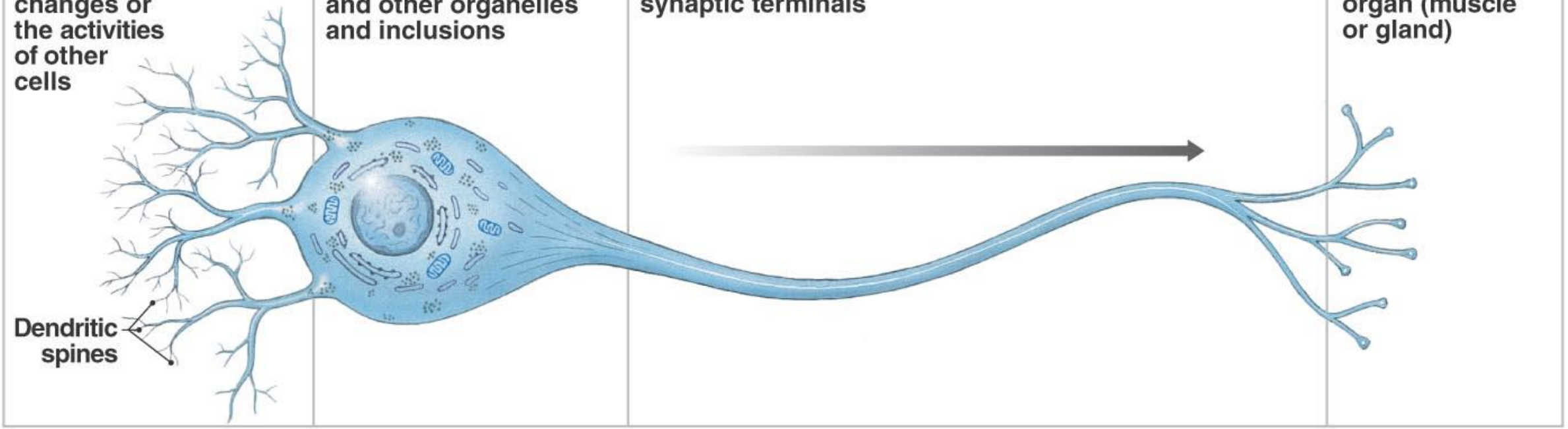


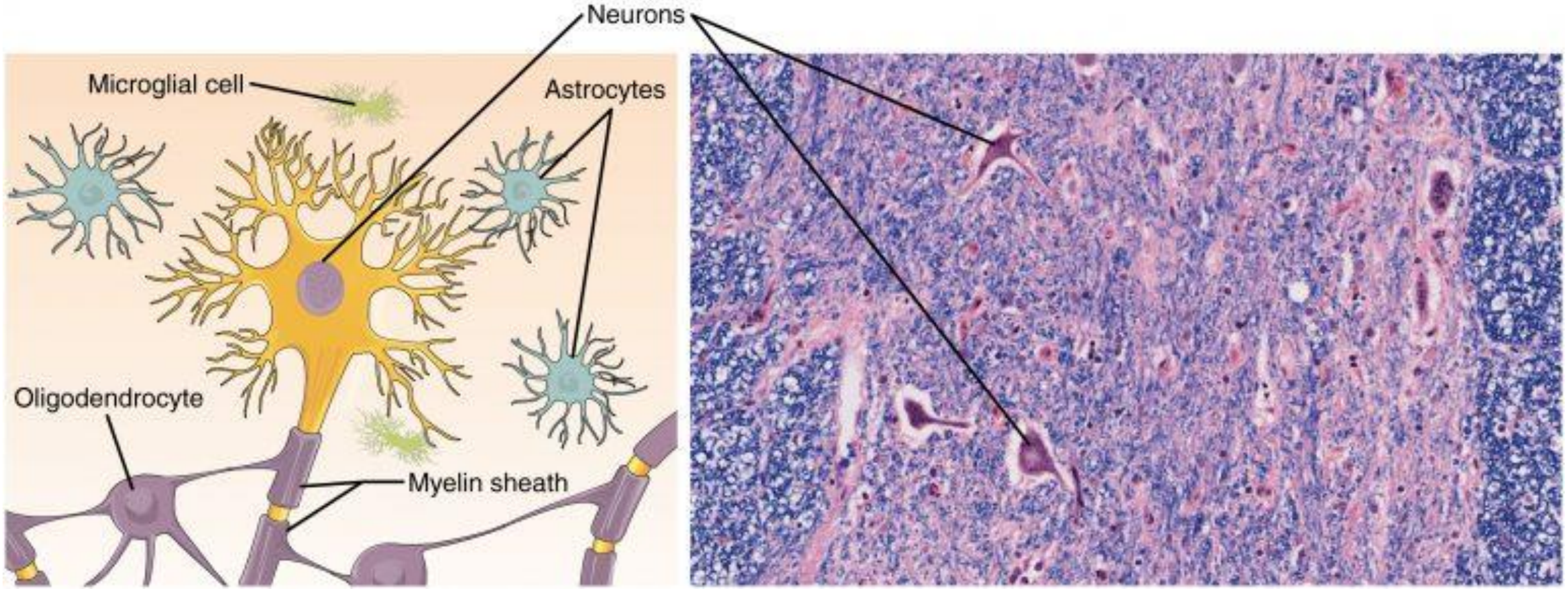
1 Dendrite | 2 Soma | 3 Axon | 4 Node of Ranvier

5 Axon Terminal | 6 Schwann Cell | 7 Myelin Sheath | 8 Nucleus

A Review of Neuron Structure

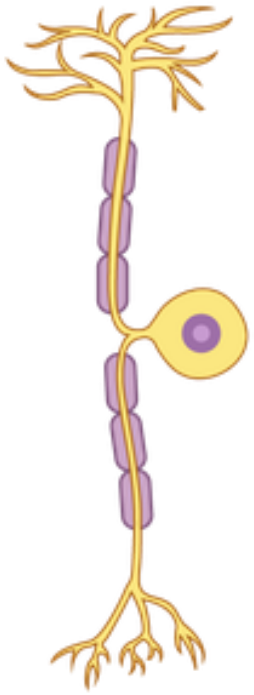
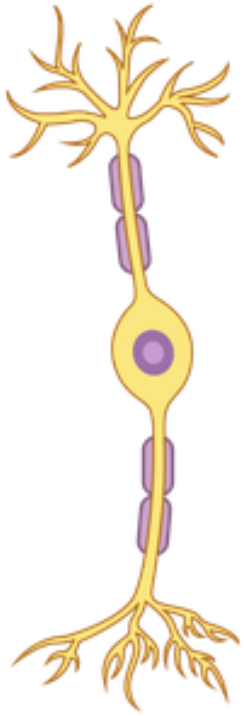
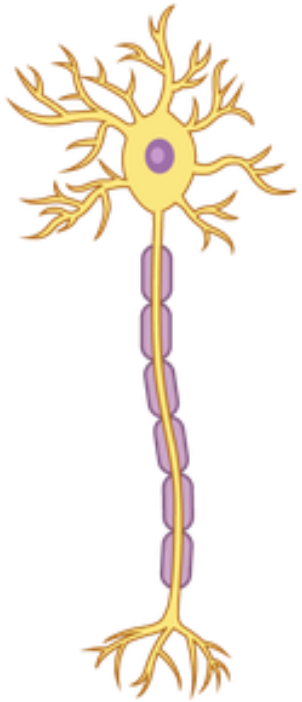
Dendrites	Cell body	Axon	Terminal boutons
Stimulated by environmental changes or the activities of other cells	Contains the nucleus, mitochondria, ribosomes, and other organelles and inclusions	Conducts nerve impulse (action potential) toward synaptic terminals	Affect another neuron or effector organ (muscle or gland)



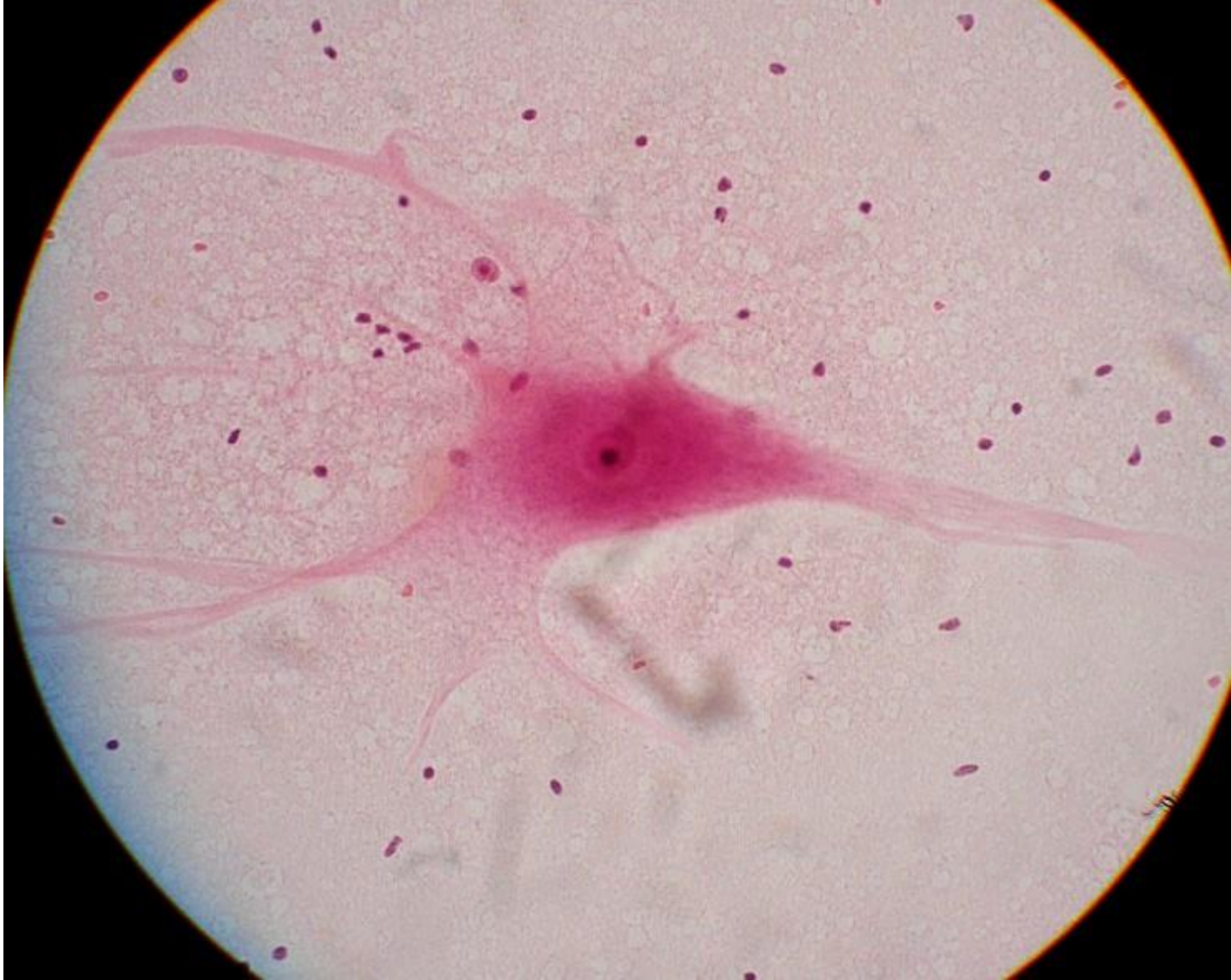


Nervous Tissue: Nervous tissue is made up of neurons and neuroglia. The cells of nervous tissue are specialized to transmit and receive impulses

Structural classification of neurons

Unipolar neuron	Bipolar neuron	Multipolar neuron
A single elongated process, with the cell body located off to the side.	Two processes separated by the cell body.	Have more than two processes, a single axon and multiple dendrites.
		

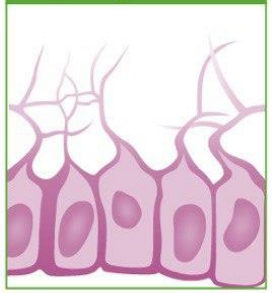
Neuronal cell under light microscope



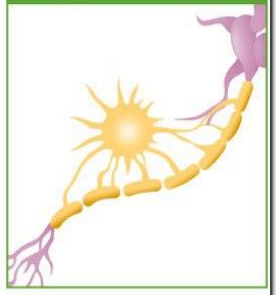
Types of Neuroglia

Central Nervous System

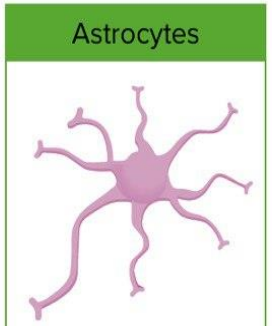
Ependymal cells



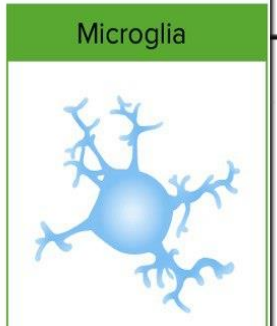
Oligodendrocytes



Astrocytes

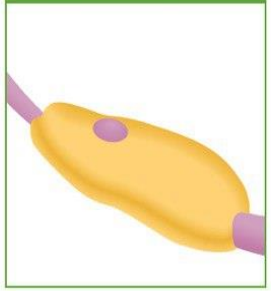


Microglia

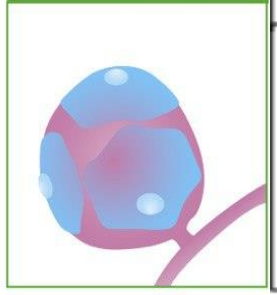


Peripheral Nervous System

Schwann cells

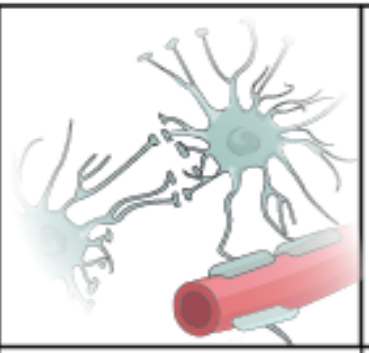
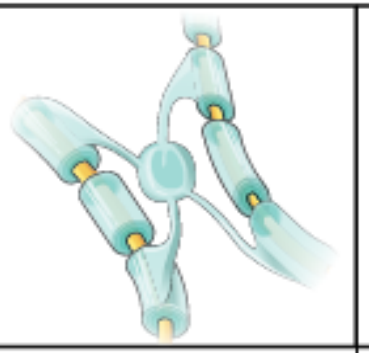
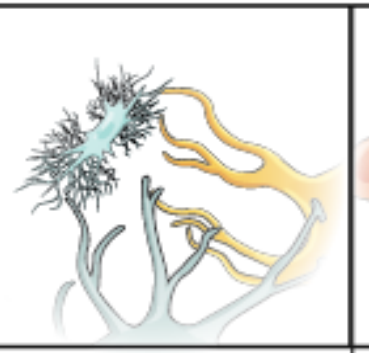
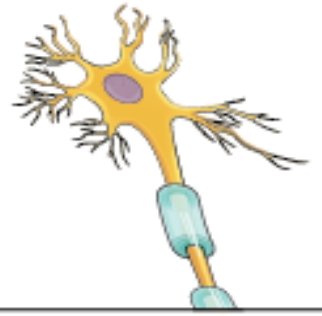


Satellite cells

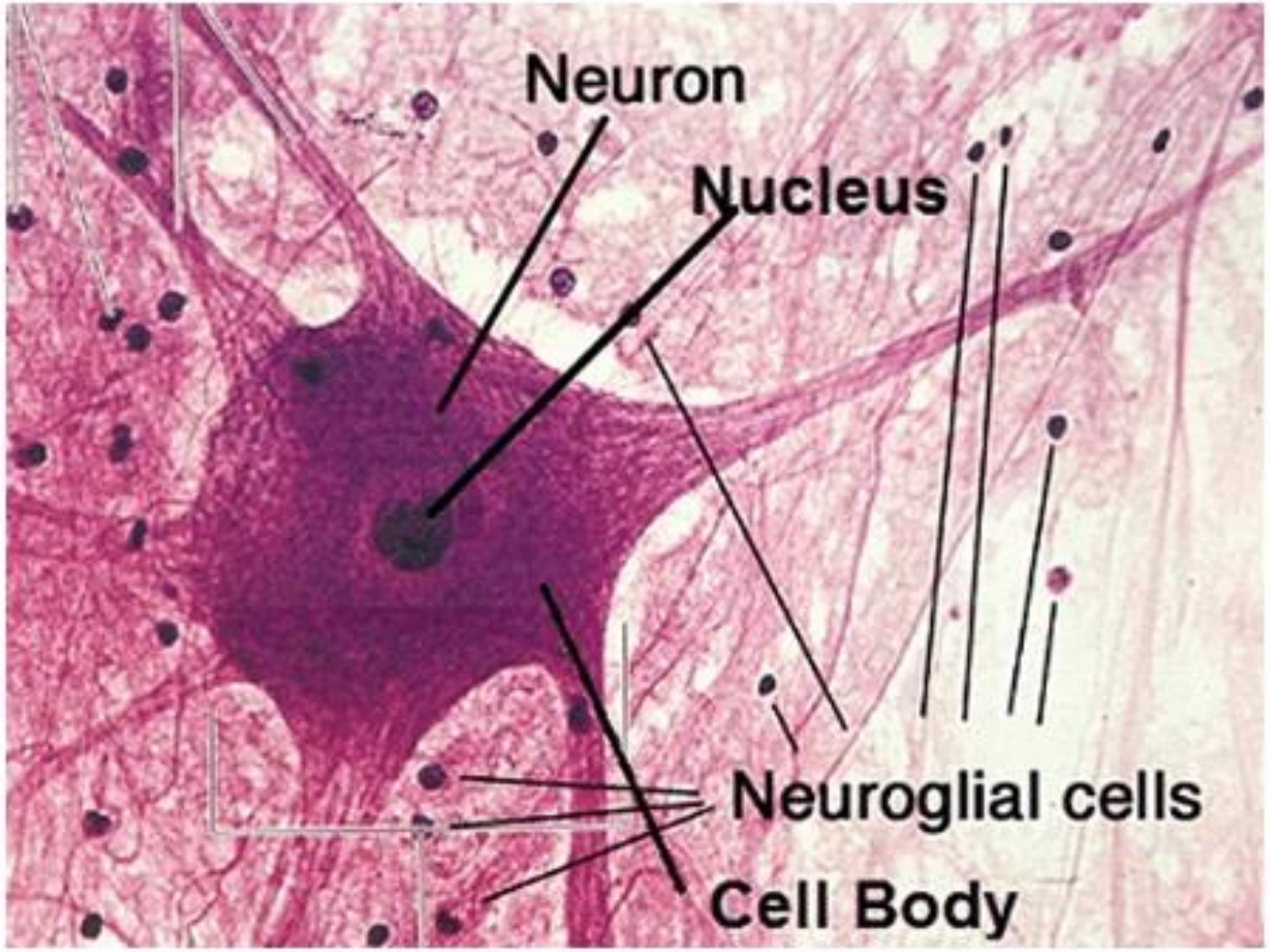


There are six types of glial cells. Four of them are found in the CNS and two are found in the PNS.

Table 2. Glial Cell Types by location and Basic Function

CNS glia	 Astrocyte	 Oligodendrocyte	 Microglia	 Ependymal cell
				
PNS glia	Satellite cell	Schwann Cell	--	--
Functions	Maintain extracellular environment, remove excess neurotransmitter, direct neural growth, induce blood-brain barrier in CNS (astrocyte only)	Create myelin	Immune surveillance and phagocytosis	Create and circulate Cerebrospinal fluid (CSF)

Nervous Tissue



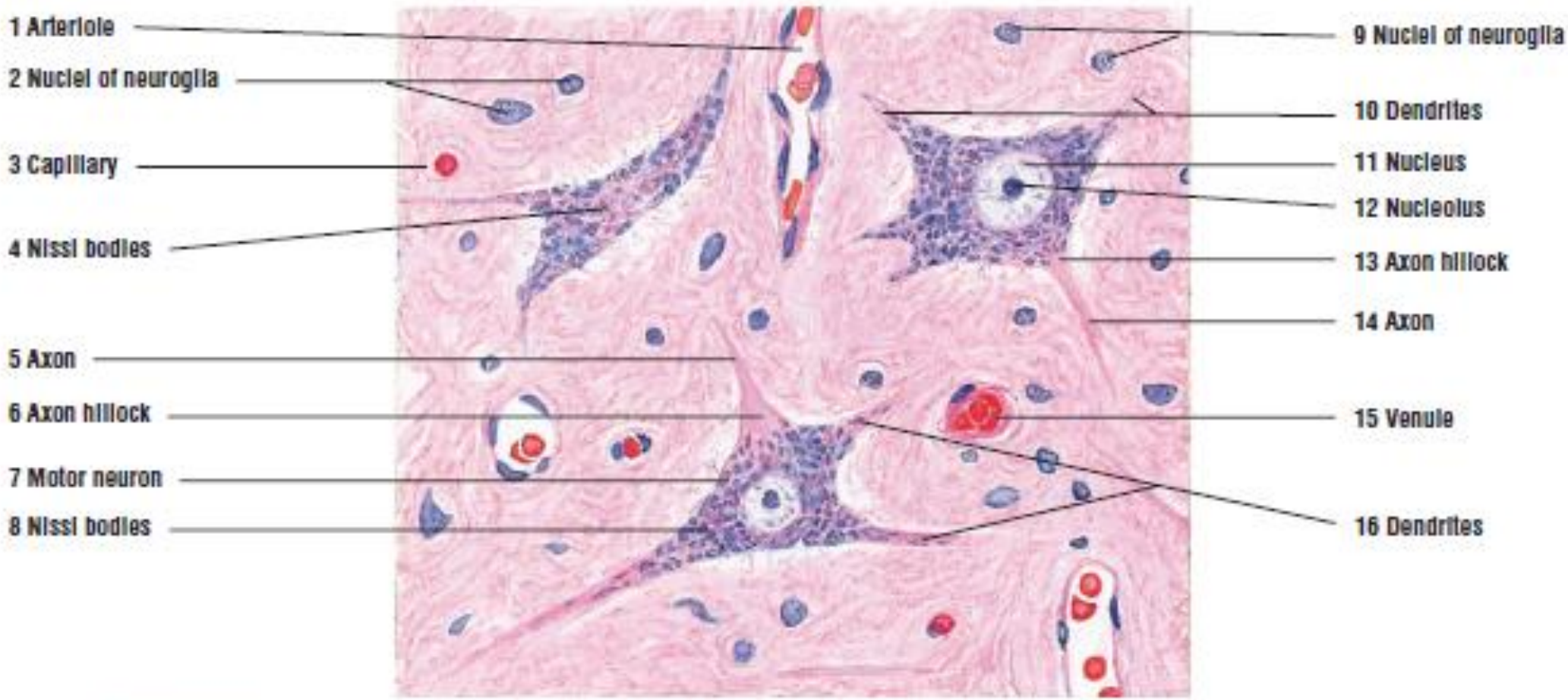


FIGURE 7.5 ■ Motor neurons: anterior horn of spinal cord. Stain: hematoxylin and eosin. High magnification.