

NAME _____

LAB TIME/DATE _____

REVIEW SHEET
EXERCISE

15

Histology of Nervous Tissue

1. The basic functional unit of the nervous system is the neuron. What is the major function of this cell type?

To generate and transmit nerve impulses.

2. Fill in the blank with the correct type of neuroglia.

oligodendrocytes 1. forms the myelin sheath in the CNS

ependymal cells 2. lines CSF-filled cavities

satellite cells 3. surrounds the cell body of a neuron found in the PNS

microglial 4. act as a phagocyte in the CNS

Schwann cells 5. forms the myelin sheath in the PNS

astrocytes 6. controls the chemical environment around neurons in the CNS

3. Match each description with a term from the key.

Key:

| | | |
|---------------------------|----------------------|------------------------------|
| a. afferent neuron | e. interneuron | i. nucleus |
| b. central nervous system | f. neuroglia | j. peripheral nervous system |
| c. efferent neuron | g. neurotransmitters | k. synaptic cleft |
| d. ganglion | h. nerve | l. tract |

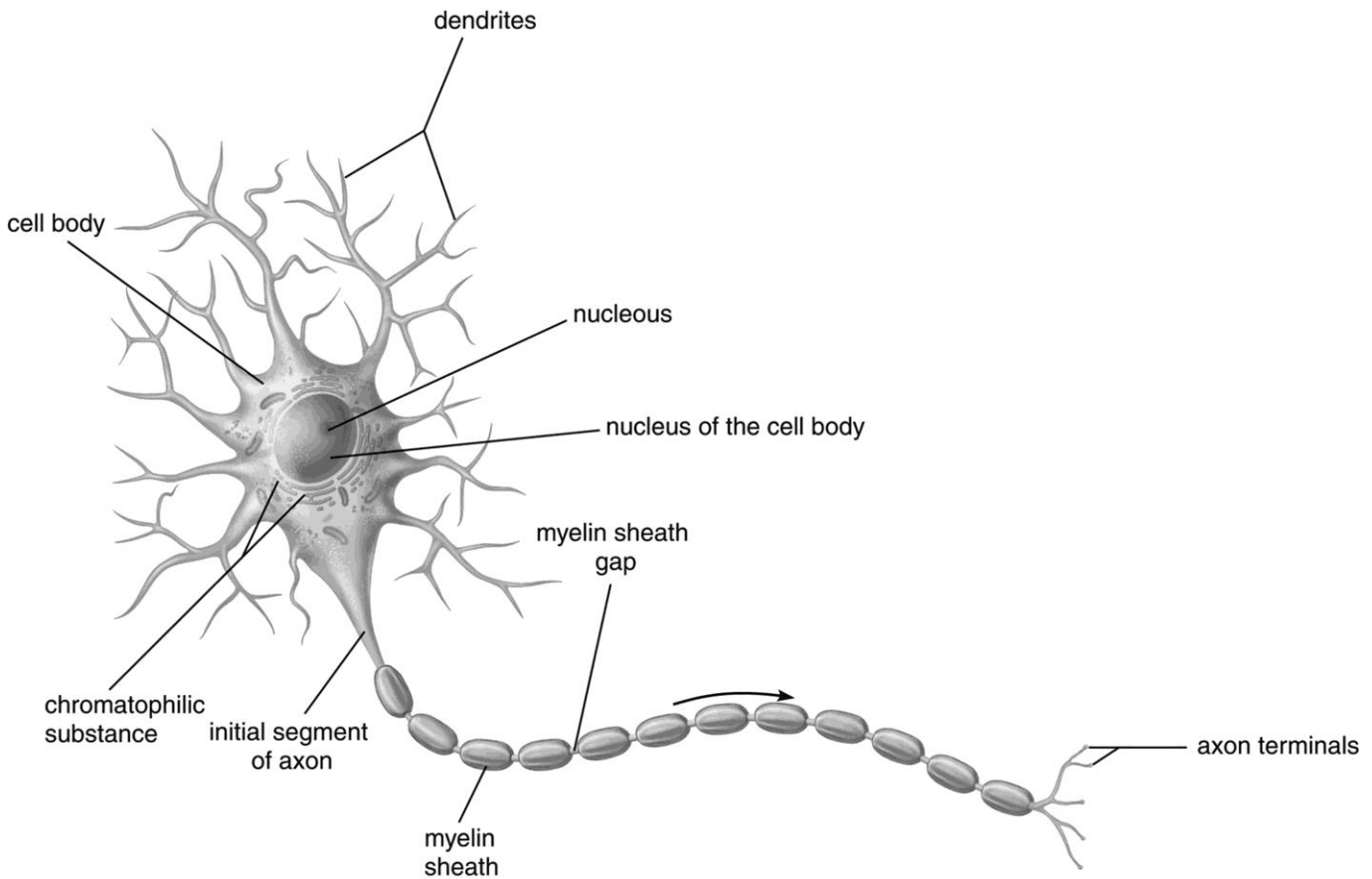
| | |
|-------------------------------------|--|
| <u>b; central nervous system</u> | 1. the brain and spinal cord collectively |
| <u>f; neuroglia</u> | 2. specialized supporting cells in the nervous system |
| <u>k; synaptic cleft</u> | 3. junction or point of close contact between neurons |
| <u>h; nerve</u> | 4. a bundle of axons in the CNS |
| <u>e; interneuron</u> | 5. neuron serving as part of the conduction pathway between sensory and motor neurons |
| <u>j; peripheral nervous system</u> | 6. ganglia and spinal and cranial nerves |
| <u>i; nucleus</u> | 7. collection of neuron cell bodies found within the CNS |
| <u>c; efferent neuron</u> | 8. neuron that conducts impulses away from the CNS to muscles and glands |
| <u>a; afferent neuron</u> | 9. neuron that conducts impulses toward the CNS from the body periphery |
| <u>g; neurotransmitters</u> | 10. chemicals released by neurons that stimulate or inhibit other neurons or effectors |
| <u>d; ganglion</u> | 11. collection of neuron cell bodies found in the PNS |
| <u>l; tract</u> | 12. bundle of axons inside the CNS |

Neuron Anatomy

4. Match the following anatomical terms (column B) with the appropriate description or function (column A).

| Column A | | Column B |
|-------------|---|-----------------------------|
| <u>c</u> | 1. region of the cell body from which the axon originates | a. axon |
| <u>b</u> | 2. secretes neurotransmitters | b. axon terminal |
| <u>g, d</u> | 3. receptive regions of a neuron (2 terms) | c. axon hillock |
| <u>h</u> | 4. insulates the nerve fibers | d. cell body |
| <u>d</u> | 5. site of the nucleus and most important metabolic area | f. chromatophilic substance |
| <u>i</u> | 6. involved in the transport of substances within the neuron | g. dendrite |
| <u>f</u> | 7. essentially rough endoplasmic reticulum, important metabolically | h. myelin sheath |
| <u>a</u> | 8. impulse generator and transmitter | i. neurofibril |

5. Label the following structures on the diagram of a multipolar neuron shown below: cell body, nucleus, nucleolus, chromatophilic substance, dendrites, initial segment of axon, myelin sheath, myelin sheath gaps, and axon terminals.

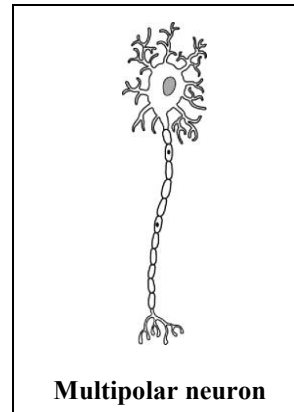
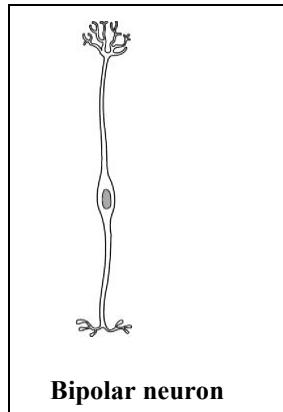
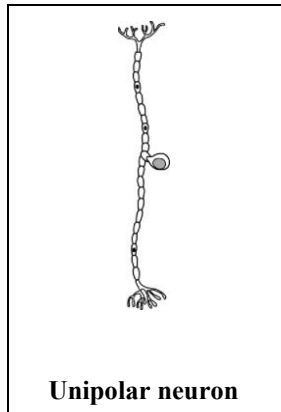


6. What substance is found in synaptic vesicles of the axon terminal? Neurotransmitters

7. What anatomical characteristic determines whether a particular neuron is classified as unipolar, bipolar, or multipolar?

The number of processes issuing from the cell body.

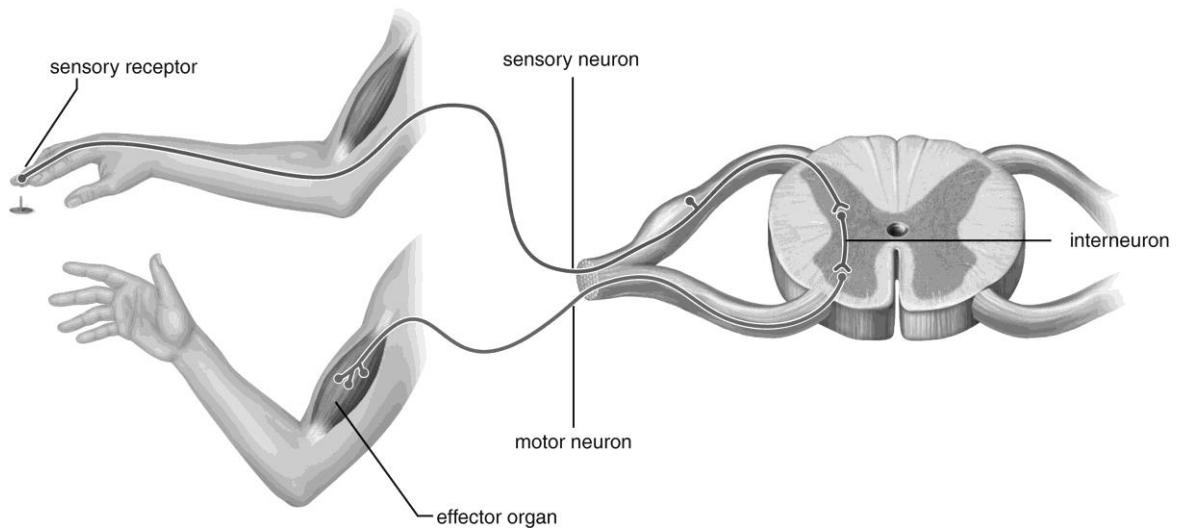
Make a simple line drawing of each type here.



8. Correctly identify the sensory (afferent) neuron, interneuron, and motor (efferent) neuron in the figure below.

Which of these neuron types is/are unipolar? Sensory (afferent)

Which is/are most likely multipolar? Motor neuron (efferent), interneuron



9. Describe how the Schwann cells form the myelin sheath encasing the nerve fibers.

Schwann cells begin to wrap themselves around the axon in jelly roll fashion, thus forming a tight coil of membranous material, which forms the myelin sheath.

Structure of a Nerve

10. What is a nerve? A bundle of axons wrapped in connective tissue. It extends to and/or from the CNS and body viscera or peripheral structures.
11. State the location of each of the following connective tissue coverings.
- endoneurium: Surrounds axons.
- perineurium: Surrounds a bundle of axons.
- epineurium: Surrounds all of the axons contributing to a nerve.
12. What is the function of the connective tissue wrappings found in a nerve? To protect and insulate the delicate nerve fibers.
13. Define mixed nerve. Nerve containing both motor (efferent) and sensory (afferent) fibers.
14. Identify all indicated parts of the nerve section.

