Exercise 15 Review Sheet

Histology of Nervous Tissue

Name _____ Lab Time/Date _____

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

   _____

   _____

2. Match each statement with the correct type of neuroglia by filling in the blank.

   _____ 1. forms the myelin sheath in the CNS

   _____ 2. lines CSF-filled cavities

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

   _____ 4. act as a phagocyte in the CNS

   _____ 5. forms the myelin sheath in the PNS

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

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

Key:

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

_____ 1. the brain and spinal cord collectively

_____ 2. specialized supporting cells in the nervous system

_____ 3. junction or point of close contact between neurons

_____ 4. a bundle of axons inside the PNS

_____ 5. neuron serving as part of the conduction pathway between sensory and motor neurons

_____ 6. ganglia and spinal and cranial nerves

_____ 7. collection of neuron cell bodies found within the CNS

_____ 8. neuron that conducts impulses away from the CNS to muscles and glands

_____ 9. neuron that conducts impulses toward the CNS from the body periphery

_____ 10. chemicals released by neurons that stimulate or inhibit other neurons or effectors

_____ 11. collection of neuron cell bodies found in the PNS

_____ 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).

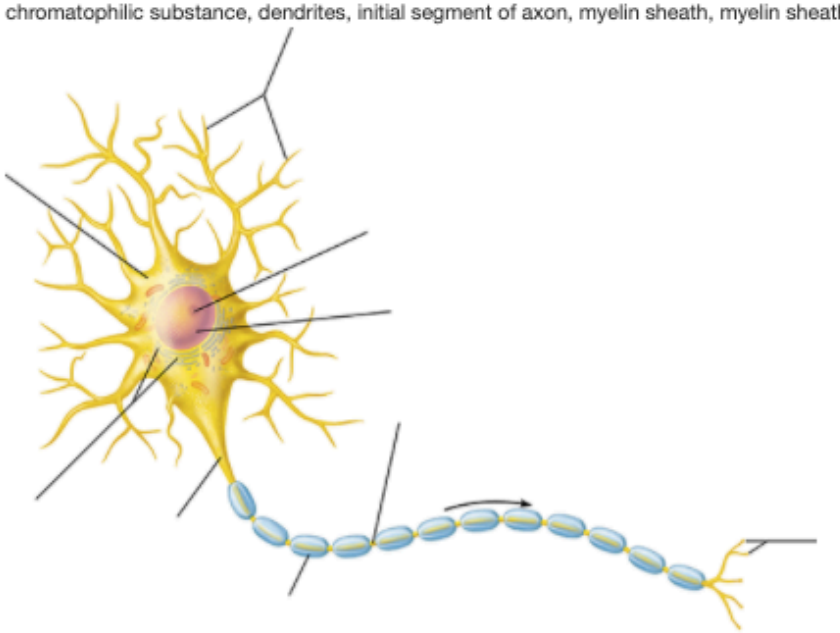
Column A

_____ 1. region of the cell body from which the axon originates
_____ 2. secretes neurotransmitters
_____ 3. receptive regions of a neuron (2 terms)
_____ 4. insulates the nerve fibers
_____ 5. site of the nucleus and most important metabolic area
_____ 6. involved in the transport of substances within the neuron
_____ 7. essentially rough endoplasmic reticulum, important metabolically
_____ 8. impulse generator and transmitter

Column B

a. axon
b. axon terminal
c. axon hillock
d. cell body
e. chromatophilic substance
f. dendrite
g. myelin sheath
h. 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? _____

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

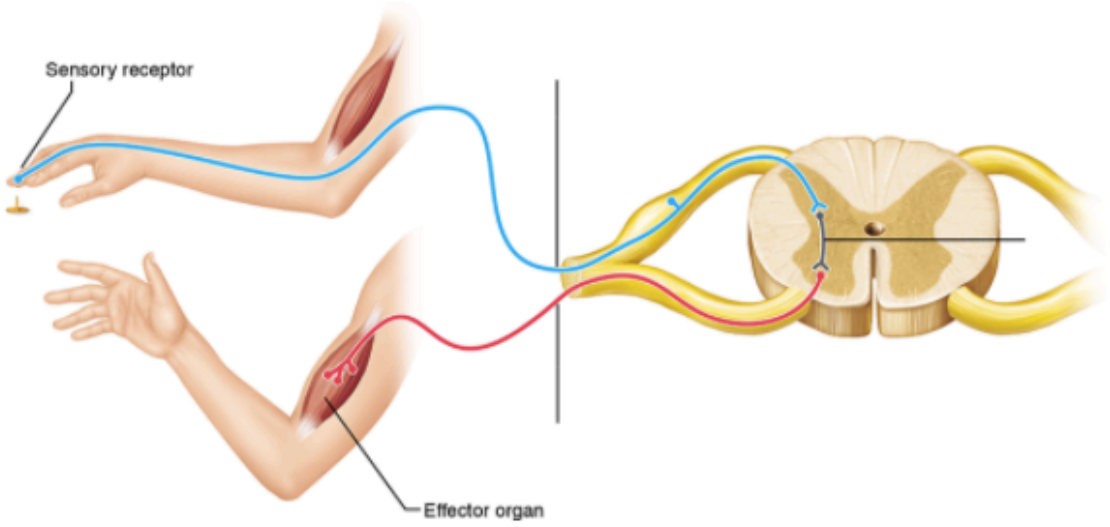
_____

Make a simple line drawing of each type here.

Unipolar neuron	Bipolar neuron	Multipolar neuron

8. Correctly identify the sensory (afferent) neuron, interneuron, and motor (efferent) neuron in the figure below.
Which of these neuron types is/are unipolar? _____

Which is/are most likely multipolar? _____



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

_____

_____

Structure of a Nerve

10. What is a nerve? _____

11. State the location of each of the following connective tissue coverings.
    endoneurium: _____

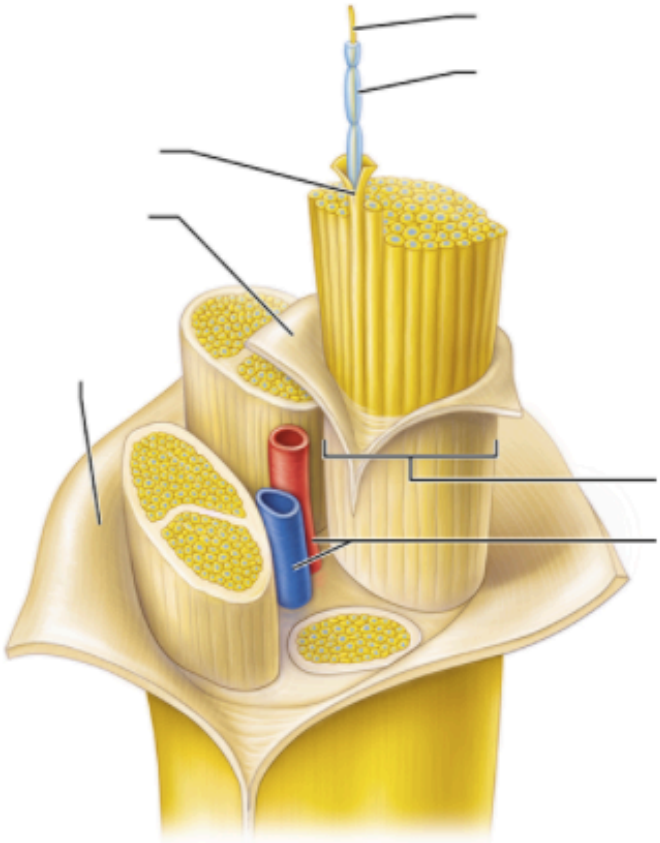
    perineurium: _____

    epineurium: _____

12. What is the function of the connective tissue wrappings found in a nerve? _____

13. Define *mixed nerve*. _____

14. Identify all indicated parts of the nerve section.



15. **Clinical/Critical Thinking** Amyotrophic lateral sclerosis is a neurodegenerative disease in which motor neurons are progressively destroyed. Excess levels of the neurotransmitter glutamate have been implicated in this process. Which type of neuroglia would play a role in controlling glutamate levels in the chemical environment of neurons?

_____

_____

16. **Clinical/Critical Thinking** Peripheral neuropathy has a variety of causes. Worldwide, the most common cause is leprosy, also known as Hansen's disease. Would you expect peripheral neuropathy to cause damage to tracts or to nerves? _____

Why? _____

_____