

## **Nervous Tissue**

### **Chapter 12 Study Guide**

1. What two structures make up the central nervous system? (Fig 12.1)? Locations?
2. > What are the two subdivisions of the nervous system? (Fig 12.2)?
3. > How may the peripheral nervous system be subdivided into three types of nervous systems? Think target tissues and their functions? (see lecture slide illustration // memorize!)
4. > What ANS division prepares the body for action? For rest and restoration?
5. What is the enteric nervous system? How is it unique?
6. > What peripheral nervous system regulates voluntary muscle contractions?
7. > What are the three functional neurons? (Fig 12.3) What is the function of each neuron? Direction of action potential?
8. What are the four structural neurons?
9. Which one is used in smell and vision?
10. > What is the most common type of structural neuron?
11. > Where are uni polar neurons located? Significance? What type of sensory information is carried by uni polar neurons?
12. > What are the seven neuroglia cells? Describe the function and location of each neuroglia cell. (Note – five in CNS and two in PNS) (Fig 12.6)
13. What is myelin? Function?
14. > What two cells make myelin? Locations? (Fig 12.7)
15. What terms describe the direction of an action potentials in the PNS?
16. Are neurons in G zero? Explain? What are the exceptions?
17. What do we call the separation of charge particles across a plasma membrane?
18. What is the difference between voltage and current?

19. > What is a resting membrane potential? What happens if a cell loses its resting membrane potential?
20. > Draw, label, and describe all the events associated with an action potential. Indicate the sequence in ion movement across the plasma membrane and the direction of flow.
21. > Where within the structure of a neuron are local potentials created?
22. If the local potential is strong enough then what may be created?
23. > Where within a neuron is the action potential initiated? From between what two points does the action potential travel?
24. > What occurs when the action potential reaches the end of an axon? (Two significant events occur)
25. Explain how local potentials and action potentials are transmitted when you pick up a pencil and decide to write a sentence? (see lecture slide)
26. What is the upper speed limit for an action potential?
27. > What features affect the speed of an action potential? (3)
28. What occurs to the resting membrane potential when the plasma membrane is hyperpolarization? Significance? How may this occur? (Fig 12.13)
29. > What type of pump restores the plasma membrane to its resting membrane potential after the plasma membrane is hyperpolarized following an action potential?
30. >What terms are used to define action potentials and local potential? (Table 12.2)
31. Are action potentials and local potentials both decremental? Explain
32. > What two tissue types may generate action potentials?
33. > What two ions cross the plasma membrane during an action potential? What is the significance of the sequential flow of these ions in an action potential? (Fig 12.14)
34. >What ions move during the depolarization phase of an action potential?
35. > What ion moves during the repolarizing phase of an action potential?
36. What is the major factor contributing to make the inner face of the plasma membrane negative?

37. > What is the significance of an action potential threshold?
38. What is the “all or none principle”? What event does this describe?
39. What is the refractory period?
40. How are absolute vs relative refractory periods related?
41. > What is the structure of a chemical synapse? (Note: three components) (Fig 12.20)
42. > Why are synapses described as “electro-chemical” junctions?
43. What is another term used to describe an electrical synapse?
44. > What are the advantages and disadvantages of electro-chemical synapse and a pure electrical synapse?
45. > What are neurotransmitters? Where are they produced? Where are they stored? Where are they released from? (Fig 12.21)
46. What is a neuromodulator?
47. > Explain the function and structure of cholinergic synapses, GABA-ergic synapses, and adrenergic synapses? (see lecture slide)
48. What determines how a neurotransmitter will affect the post synaptic cell?
49. > What happens to the resting membrane potential during an excitatory postsynaptic potential? During an inhibitory postsynaptic potential? (Fig 12.24)
50. What is a “neural circuit” (also called a motor pattern generator)? Function?
51. > Where may neural circuits be located?
52. After a car accident you wake up in a hospital and your legs are paralyzed. But the doctor can not tell you if you will ever walk again. Why?
53. > What is the structure of a regeneration tube? When and how is it formed? Significance? (Fig 12.9)

