

Nervous Tissue – Chapter 12
Tortora & Derrickson

1. What are the two structures that form the central nervous system (Fig 12.1)? Their locations?
2. Where is the peripheral nervous system located (Fig 12.1)?
3. What are the three divisions of the peripheral nervous system? Functions?
4. What is unique about the enteric nervous system?
5. What are the three types of functional neurons? (Fig 12.5)
6. What are the four types of structural neurons?
7. What is the most common type of structural neuron?
8. Where are unipolar neurons located? Significance?
9. What structural neuron carry action potentials to the spinal cord in a somatic sensation?
10. What is a resting potential?
11. What is the difference between a local potential and an action potential? Significance?
12. What terms describe the direction of an action potential in the PNS?
13. Do neurons have centrioles? Significance?
14. Are all neurons in G zero? Explain? What are the exceptions?
15. What are the seven neuroglia cells? What are their functions and locations? (Note – five in CNS and two in PNS) (Fig 12.6)
16. What is myelin? Function?
17. What cells make myelin? Their locations? (Fig 12.7)
18. Explain how signals (local potentials and action potentials) are transmitted when you pick up a pencil and decide to write a sentence? (Fig 12.10)
19. What features affect the speed of an action potential?

20. What is the significance of voltage regulate calcium gate at the end of a somatic motor neuron's axon? What does this initiate?
21. How fast do action potentials move across your body? Maximum speed limit?
22. What do we call the separation of charge particles across a plasma membrane?
23. What do we call the flow of charged particles across the surface of a dendrite? Across the soma? Down the axon?
24. What occurs to the resting membrane potential when the plasma membrane is hyperpolarization? Significance? How may this occur? (Fig 12.4)
25. What type of pump restores the plasma membrane to its resting membrane potential after the plasma membrane is hyperpolarized?
26. What terms are used to define an action potentials and a graded potentials? (Fig 12.14, 12.15, and 12.26)
27. What type of tissues may generate action potentials?
28. What ions cross the plasma membrane during an action potential? What is the significance of the sequential flow of sodium and potassium ions in an action potential? (Fig 12.3)
29. What ion moves during the depolarization phase of an action potential? (Fig 12.10)
30. What ion moves during the repolarizing phase of an action potential?
31. What is the major factor contributing to make the inner face of the plasma membrane negative? (fig 12.13)
32. Are action potentials and graded potentials both decremental? Explain
33. What is the significance of an action potential threshold? In a neuron, where are action potentials generated? Be specific.
34. What is the “all or none principle”? What does this apply to?
35. What is the refractory period? How are absolute vs relative refractory periods related?
36. What is the structure of a synapse?
37. Why are synapses described as “electro-chemical” junctions?

38. What is a “pure” electrical synapse called?
39. What are the advantages and disadvantages between an electro-chemical synapse and a chemical synapse?
40. What are neurotransmitters? Where are they produced? Where are they stored? From where are they released? (Fig 12.27)
41. What is a neuromodulator?
42. Explain the function and structure of cholinergic synapses, GABA-ergic synapses, and adrenergic synapses? (see lecture slide)
43. What determines how a neurotransmitter will affect the postsynaptic cell?
44. What happens to the resting membrane potential during an excitatory postsynaptic potential? During an inhibitory postsynaptic potential?(Fig 12.26)
45. What is a “neural circuit” (also called a motor pattern generator)? Function? (Fig 12.28)
46. 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? How may a regeneration tube determine your outcome? (Fig 12.29)