

The Spinal Cord, Spinal Nerves and Somatic Reflexes
Chapter Thirteen Study Guide
Tortora & Derrickson

1. What is the anatomy of the spinal cord (Fig 13.1 & 13.2)?
2. In the spinal cord, how is the white and grey matter organized? What “neuron structures” are in the white and grey areas (Fig 13.3)?
3. What functional neuron is found in the grey matter?
4. What terms describe the direction of the action potentials for sensory and motor impulses within the spinal cord (Fig 13.4)?
5. What are spinal tracts? How are they arranged in the spinal cord (Fig 13.12)?
6. How are these terms used to describe the action potentials movement in the spinal cord? (decussation, ipsilateral, contralateral)
7. In ascending tracts, how many neurons are between the stimulus and the destination in the cerebral cortex? What names are given to these neurons?
8. In the sensory pathway, the action potential will transit through nuclei at the top of the brainstem. What is the name of this structure? What is its significance? What is the structure's nick-name?
9. What is the “gateway” to the cerebrum?
10. In descending tracts, how many neurons are between the origin of the somatic motor pathway and the skeletal muscle? What is the name given to the location of the origin? Significance?
11. What is an upper motor neuron? Origin?
12. What are the two types of upper motor neurons? Their destinations?
13. What is a lower motor neuron? Location(s)? Commonly referred to as what?
14. What is the structure of a spinal nerve? What is inside of a spinal nerve? Why is it called a “mixed nerve”? (Fig 13.5)
15. How is the connective tissue arranged around a spinal nerve? (Fig 13.5 & 13.6)?
16. What happens to a spinal nerve when it exits from the intervertebral foramen? What is a rami? (Fig 13.6)?
17. What is a nerve plexus? Where are they located? Significance? (Fig 13.8)
18. What is the nature of reflexes? (Fig 13.13)

19. What is the difference between an ANS reflex and a somatic reflex?
20. What is the path traveled by a somatic reflex arc?
21. What is a muscle spindle? What is its function?
22. What sensation is associated with the muscle spindle?
23. What is the stretch reflex? How do we use this type of reflex? Examples? (Fig 13.14)
24. What is a monosynaptic reflex arc?
25. What is a polysynaptic reflex arc?
26. What is an extensor reflex? What muscles are extensors? (elbow and knee joints) (Fig 13.16)
27. What is a flexor reflex? What muscles are flexors? (elbow and knee joints)
28. How is the action of flexor and crossed extension reflexes coordinated?
29. What is the Golgi tendon reflex? (Fig 13.15)
30. What is the difference between a ganglia and a nuclei? Location?