

The Spinal Cord, Spinal Nerves and Somatic Reflexes

Chapter Thirteen Study Guide

1. What is the anatomy of the spinal cord (lecture and lab objective)? (Fig 3.1)
2. > Define the following structures: anterior horn, posterior horn, lateral horn, anterior root, posterior root, rootlets, dorsal root ganglia, spinal nerve, commissure, central canal. (Fig 13.2)
3. > What is the meninges membrane? What are the three layers? Where is fluid located within the meninges membranes? (13.2a)
4. > What special structures are formed by the pia mater (3)? Function?
5. > What tissue is between the spinal cord and bony vertebrae? What is this space called? Clinical significance?
6. In the spinal cord, how is the white and grey matter organized? What neuron structures are found in the white and grey areas (Fig 13.3)?
7. > What functional neurons are found in the grey matter?
8. What terms describe the direction of the action potentials in the spinal cord (Fig 13.4)?
9. What are spinal tracts? How are they arranged in the spinal cord?
10. How are these terms used to describe the movement of action potentials in the spinal cord? (decussation, ipsilateral, contralateral)
11. > How many neurons are between the stimulus and its destination in the post central gyrus? What terms are used to describe these neurons? How many neurons are between the precentral gyrus and a skeletal muscle? What terms are used to describe these neurons?
12. > The sensory pathway action potential will transit through a group of 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?
13. > What is the only sensation that does not pass through this structure? Significance?
14. > How many neurons are there between the somatic motor pathway origin and its destination? What are these neuron's names? What are their destinations?
15. What is the nickname for the somatic motor pathway structure? How is this structure spatially arranged
16. > What is an upper motor neuron? What are the two different types of UMN? Final destination for each UMN AP?
17. > What is a lower motor neuron? Where is the LMN's soma and dendrite located?

18. Why is a spinal nerve called a “mixed nerve”?
19. > How is the connective tissue arranged around a spinal nerve? (Fig 13.8)?
20. What happens to a spinal nerve when it exits from the intervertebral foramen? What is a rami? (Fig 13.11 & Fig 13.12)?
21. What is a nerve plexus? Where are they located? Significance? (Fig 13.3)
22. > What are the for properties of a a somatic reflex? (Fig 13.20)
23. > What is a muscle spindle? Location? What is its function? What sensation is created by muscle spindles? (Fig 13.21)
24. > What muscles are the extensors and flexors at the elbow and knee joints?
25. What is the difference between an ANS reflex and a somatic reflex?
26. What is a monosynaptic reflex arc?
27. What is a polysynaptic reflex arc?
28. What is the path traveled by a somatic reflex arc (i.e. withdrawl reflex)?
29. > What is the stretch reflex? How do we use this type of reflex? Examples? (Fig 13.14)
30. > What is an flexor reflex? (Fig 13.16)
31. What is an flexor crossed extensor reflex?
32. > What is the Golgi tendon reflex? Significance? (Fig 13.15)
33. > What is the difference between a ganglia and a nuclei? Their locations?
34. > What is the difference between a direct nerve pathways and an indirect nerve pathways?
35. > What is the significance of the vestibulospinal pathway? Is this a direct or indirect pathway?
36. What is the significance of the tectospinal pathway? Is this a direct or indirect pathway?
37. > The spinalthalamic and spinalcerebellar tracts both carry proprioception sensations. What is the difference between these tracts? Significance of each?
38. > What type of information is carried by the corticospinal tract?

