

Unit Two Video Homework

C13 Spinal Cord

Spinal Reflex Arc (31 sec)

1. Where is the information processed in a reflex arc?
2. What is important to understand about the role of the brain in a reflex arc?

Flexor Reflex (5 min)

1. How many synapses are involved in this reflex? Called?
2. What type of sensor is activated by stepping on a tack?
3. What muscle flexes the leg at the knee?
4. What root is the pathway for the sensory signal to enter the spinal cord?
5. How many spinal nerves are involved in this example? Why?
6. What phrase describes this flexor reflex?
7. What type of nerve makes this possible?
8. How many motor spinal nerves are used in this reflex? Why?
9. What happens because of reciprocal innervation?

Stretch Reflex (5 min)

1. Why is this called a monosynaptic reflex?
2. What type of nerve is not used in this reflex?
3. What is the function of the muscle spindle? Location?
4. In this example, how is the muscle spindle “stretched”?
5. What two terms are used to describe the reflex arc to the quadriceps muscle?
6. What happens when the sensory nerve branches in the posterior horn?
 - a. What type of nerve will this synapse on?
 - b. Is this pathway monosynaptic or polysynaptic?
 - c. What is the purpose for this pathway?
 - d. What muscle will this pathway influence? Significance?

Cross Extensor Reflex (5 min)

1. What must happen when you move one leg after stepping on a tack?
2. What sensory impulse is used to activate the extensor muscle ?
3. What happens to the contralateral leg?
4. What type of nerve is stimulated by the inter-neuron on the contralateral side?
5. How is the crossed extensor reflex described?

Golgi Tendon Organ Reflex (4 min)

1. Location of receptor?
2. Stimulus?
3. Signal pathways? Number of neurons?
4. Purpose?
5. How is GTO reflex different than spinal cord reflex?

6. What neurotransmitter is released to cause inhibition?
 - a. What type of potential is created?
 - b. What two types of ions may move across the membrane?
7. What neurotransmitter will cause an EPSP?

TED Talk by Dr. David Eagleman:

Can We Create New Senses for Humans? (20 min)

1. How much of the electromagnetic radiation are we able to detect?
2. Why are we not able to detect most of this radiation?
3. How is the reality of different types of animals different than human reality?
4. What is the German word to describe this?
5. What is the “big secret”? What is the brain seeing?
6. What is the PH Model of evolution? Significance?
7. What is sensory substitution? Significance?
8. What is the key as we move into the future?