

Motor Neurons (three types!)

1. 3 types of motor neurons.
2. Where are somatic motor neuron cell bodies found?
3. Where are thoracolumbar motor neuron cell bodies found?
4. Where are craniosacral motor neuron cell bodies found?
5. How many neurons does it take to get from the spinal cord to a skeletal muscle?
6. How many neurons does it take to get from the spinal cord (or brainstem) to the cardiac muscle?
7. Compare myelination of somatic motor neurons and autonomic motor neurons.
8. NT released by: somatic, sympathetic, and parasympathetic neurons on targets.
9. Receptor types that receive NT from somatic, sympathetic and parasympathetic targets.
10. Targets of somatic, sympathetic, and parasympathetic motor neurons.
11. Where do most preganglionic sympathetic fibers synapse?
12. Where do most preganglionic parasympathetic fibers synapse?

Answers:

Motor Neurons (three types!)

1. 3 types of motor neurons.
Somatic motor; parasympathetic motor; sympathetic motor
2. Where are somatic motor neuron cell bodies found?
In the ventral horn at every level of the spinal cord and in the brainstem
3. Where are thoracolumbar (AKA sympathetic) motor neuron cell bodies found?
In the ventral horn of the spinal cord between T1-L2.
4. Where are craniosacral (AKA parasympathetic) motor neuron cell bodies found?
Either coming off the brain (to form cranial nerves), or in ganglia formed below the spinal cord (to form sacral nerves)
5. How many neurons does it take to get from the spinal cord to a skeletal muscle?
1
6. How many neurons does it take to get from the spinal cord (or brainstem) to the cardiac muscle?
2
7. Compare myelination of somatic motor neurons and autonomic motor neurons.
Somatic motor neurons are heavily myelinated. Autonomic nerves are lightly myelinated, and sometimes not myelinated at all.
8. NT released by: somatic, sympathetic, and parasympathetic neurons on targets.
Somatic motor neurons and parasympathetic motor neurons release ACh; sympathetic motor neurons release NE.
9. Receptor types that receive NT from somatic, sympathetic and parasympathetic targets.
**Somatic targets have nicotinic cholinergic receptors.
Sympathetic targets have adrenergic receptors (either alpha or Beta).
Parasympathetic targets usually have muscarinic cholinergic receptors.**
10. Targets of somatic, sympathetic, and parasympathetic motor neurons.
**Somatic: skeletal muscles
Sympathetic/Parasympathetic Targets: Smooth and Cardiac muscles.**
11. Where do most preganglionic sympathetic fibers synapse?
Sympathetic chain ganglia (these are located right outside of the spinal cord, so the pre-ganglionic fiber is very short).
12. Where do most preganglionic parasympathetic fibers synapse?
On or near the target organ, so the preganglionic fiber is longer than the postganglionic fiber.