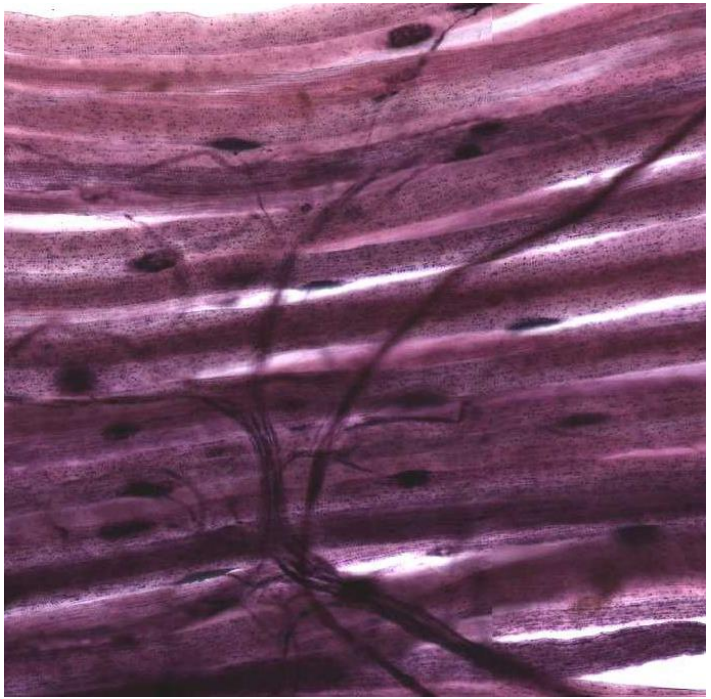
The Somatic Nervous System
Introduction and structure



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Somatic Nervous System

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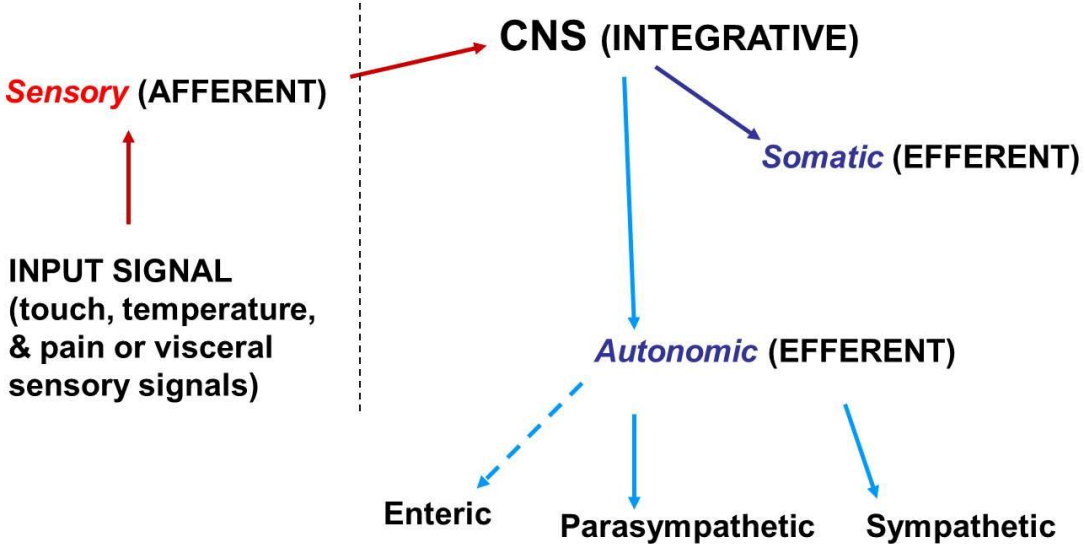
Review of general principles
Spinal cord structure
Define motor unit
Neuromuscular junction

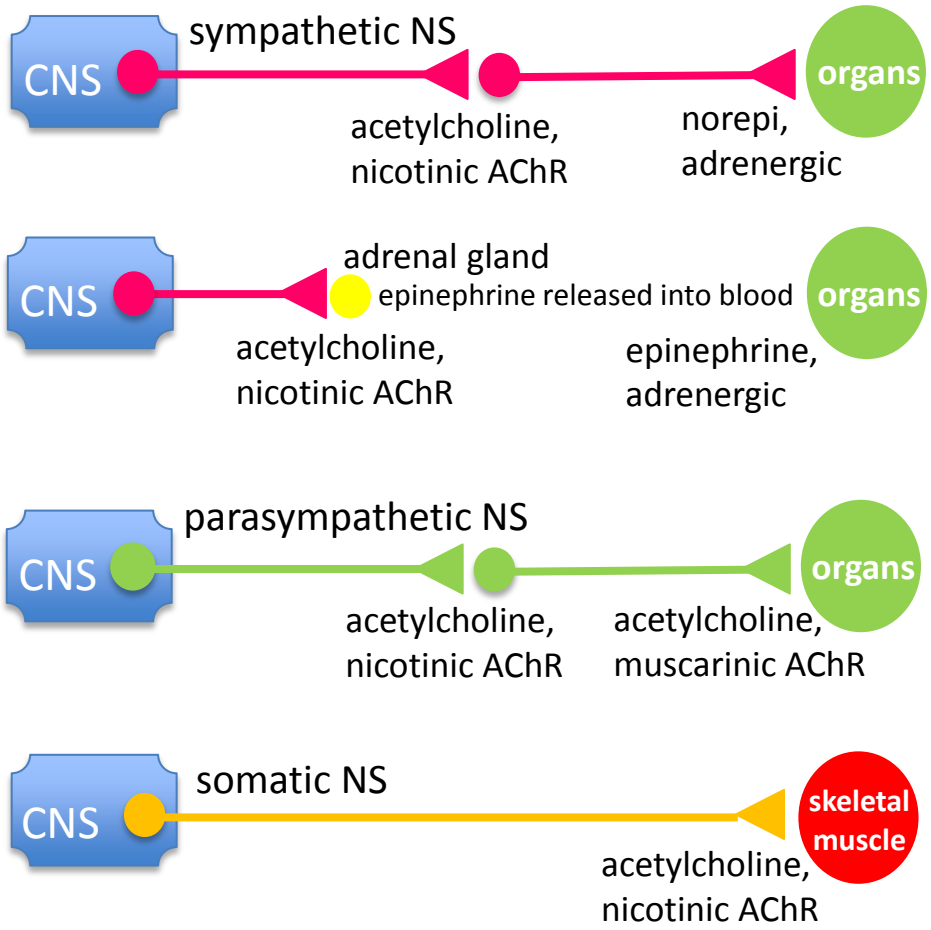
Control of Movement
- **Types of lower motor neurons**
- **Types of muscle sensory receptors**

- **Reflexes**
- **Locomotion**

Nervous System Organization

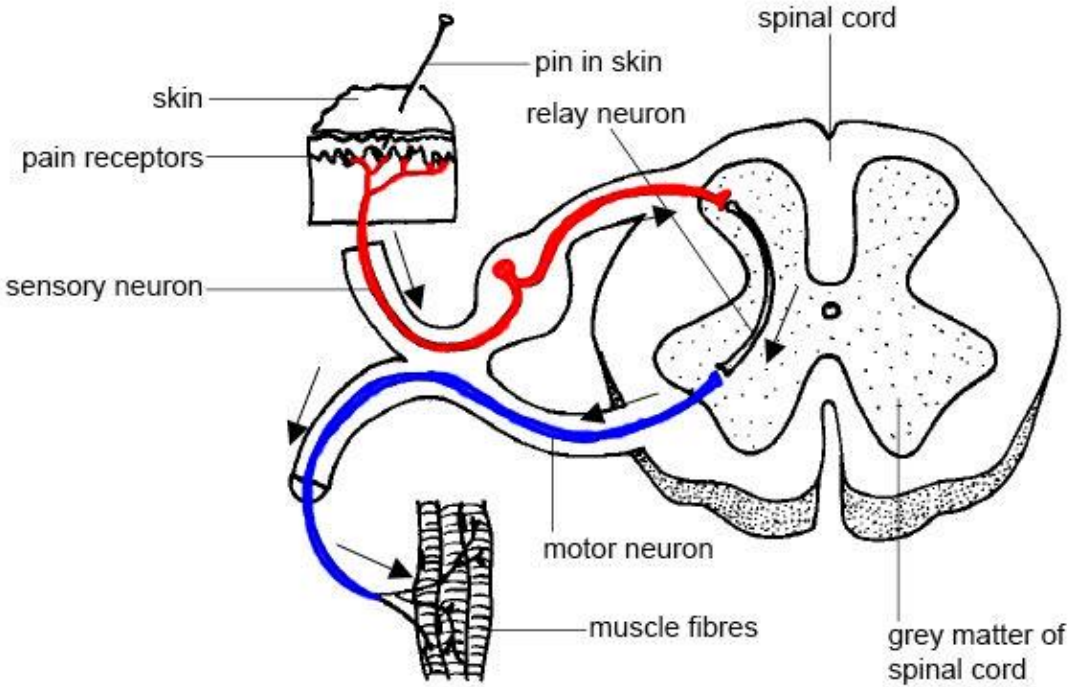


Somatic Nervous System



Somatic motor programs serve essential needs (i.e., locomotion, posture, breathing) and range from involuntary actions (withdrawal reflexes) to complex voluntary activities.

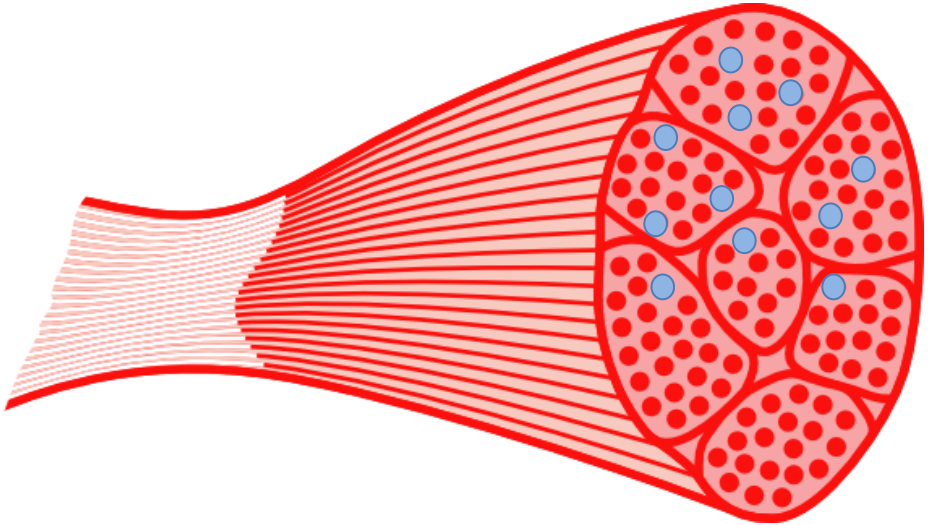
Spinal Cord Structure



Motor Unit

one neuron can control from 3-1000 fibers, all will be in the same muscle, usually spread out

a muscle fiber is usually innervated by a single neuron



A MOTOR UNIT consists of a motor neuron and all of the muscle fibers it controls.

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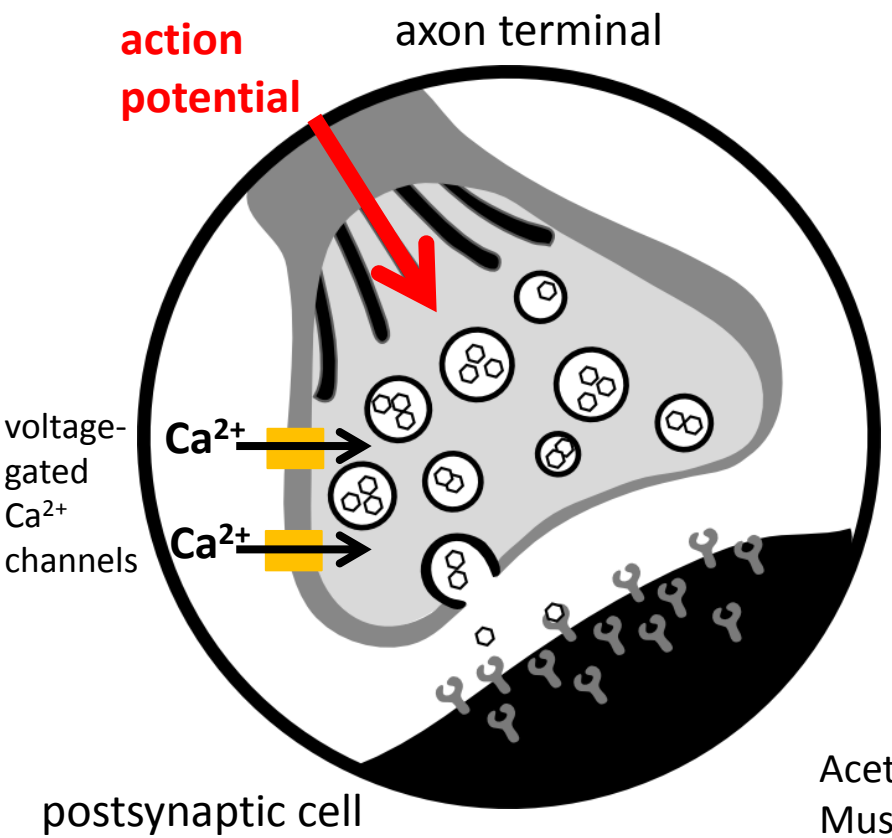
Neuromuscular Junction



Acetylcholine released by somatic motor neuron
Muscle motor end plate contains nicotinic AChR
Sarcolemma (muscle PM) contains voltage-gated channels

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Key Concepts

Somatic nervous system controls locomotion, fine movements, body posture, and equilibrium by acting on motor neurons in the spinal cord that innervate skeletal muscles.

A motor neuron and the muscle fibers that it innervates constitute a motor unit.

Motor neurons have cell bodies located in grey matter of the ventral horn of the spinal cord. The spinal cord contains interneurons which play a role in coordinating the responses of antagonistic and synergistic muscles to carry out intended movements as well as reflexive movements initiated by sensory receptors.