

Organization of the Nervous System

- The nervous system is the master _____ and _____ system of the body.
- The nervous system has 3 main functions:
 - Uses _____ to **monitor changes** inside and outside of the body.
(_____)
 - _____: Processes and interprets sensory input and makes decision.
 - _____: Responds by muscles or glands.
(_____)

Organization of the Nervous System

- _____ **Nervous System (CNS):**
 - _____ and _____
 - Command center
 - _____ incoming sensory information
 - Make decisions based on _____.
- _____ **Nervous System (PNS):**
 - _____ that extend from the brain and spinal cord.
 - **Sensory (_____) Division:**
 - Deliver impulses _____ from various parts of the body.
 - **Motor (_____) Division:**
 - Carries impulses _____ to muscles and glands.

Neuron

- **Dendrites** _____ the _____ for receiving incoming information.
- **Axon:** Carries information from the _____ to a neighboring neuron.
- **Myelin Sheath:** Insulating _____ that increase the rate of signal transmissions
- **Node of Ranvier:** _____ axon; allows _____ to jump from node to node.
- **Axon Terminals:** Release chemicals called _____.

Supporting Cells: CNS

- 6 Cell Types Total: 4 CNS; 2 PNS
- _____: _____ microorganisms that could be harmful to the CNS. A type of macrophage.
- **Astrocytes:** Most abundant; _____ the neurons in place by attaching to _____. Also serve as a _____ (blood supply) to neurons.
- **Ependymal Cell:** Line the brain & spinal cord _____ (dorsal). Have _____ that help to circulate the cerebro-spinal fluid.
- **Oligodendrocytes:** _____ axons of neurons to form _____ sheaths.

Supporting Cells: PNS

- **Schwann Cells:** Help form _____; also engulf deteriorating cell debris & aid in _____.
- **Satellite Cells:** Surround the _____ and regulate chemical environment.

Resting Potential

- A neuron sends messages _____.
- Ions are _____ & _____ (positive)
- A neuron is at rest when it is not sending a signal and is in a _____ charged state.
- Even at rest, the neuron allows _____ to pass.
- Neuron pumps _____ Na ions out for every _____ K ions it pumps in.
- At rest, there are more _____ ions _____ and more _____ ions _____.

Action Potential

- Occurs when a neuron sends _____ down the _____.
- Electrical activity created by a _____ current.
- A _____ must make the neuron reach its _____ in order to fire an action potential.
- Stimulus causes _____ channels to open and Na⁺ rushes _____ the neuron, depolarizing it.
- _____ rushes out of the cell, _____ the depolarization.

Autonomic Nervous System

- Part of the PNS.
- Has 2 divisions: _____ & _____.
- Controls _____, digestion, respiration rate, salivation, & perspiration.

Sympathetic

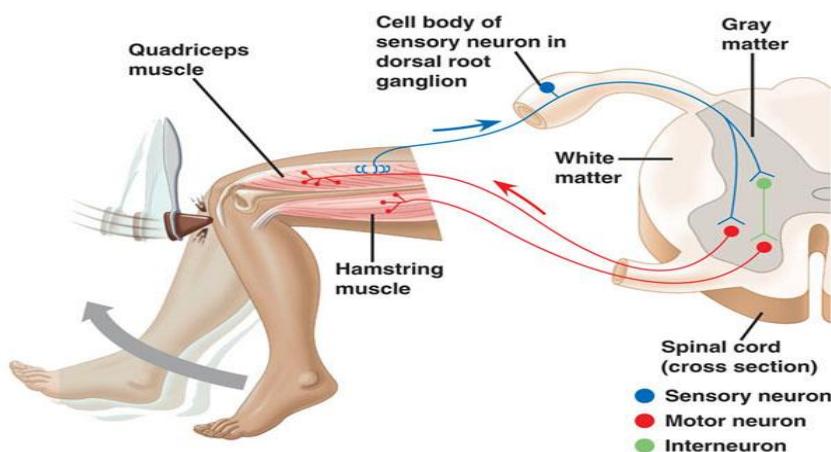
- Neurons begin in the _____ & _____ region of the spinal cord
- Functions in actions that require a _____ response.
- “ _____ ” response.

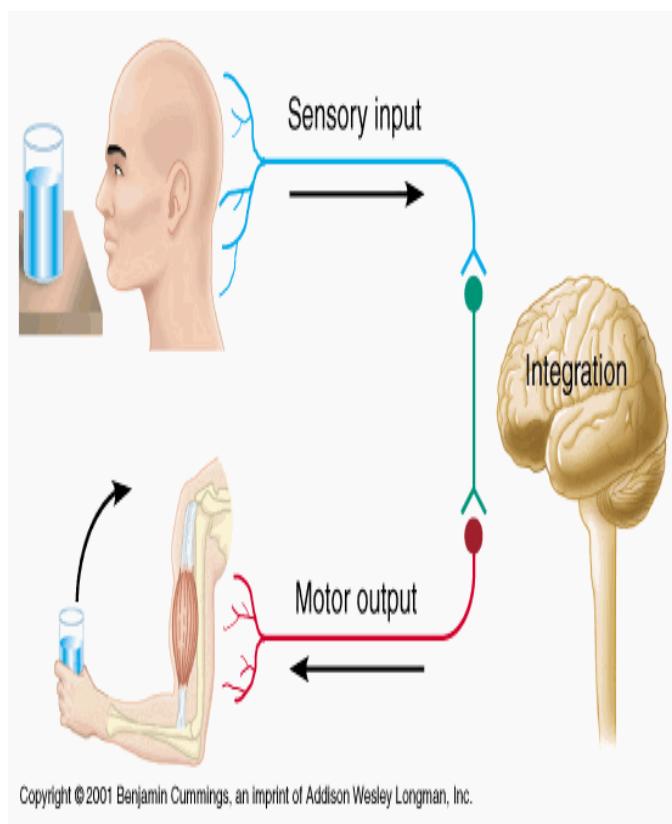
Parasympathetic

- Neurons begin in the _____ & _____ regions of the spinal cord.
- Functions in actions that do not require an immediate _____.
- “ _____ ”
- Constant _____ to Sympathetic N.S.

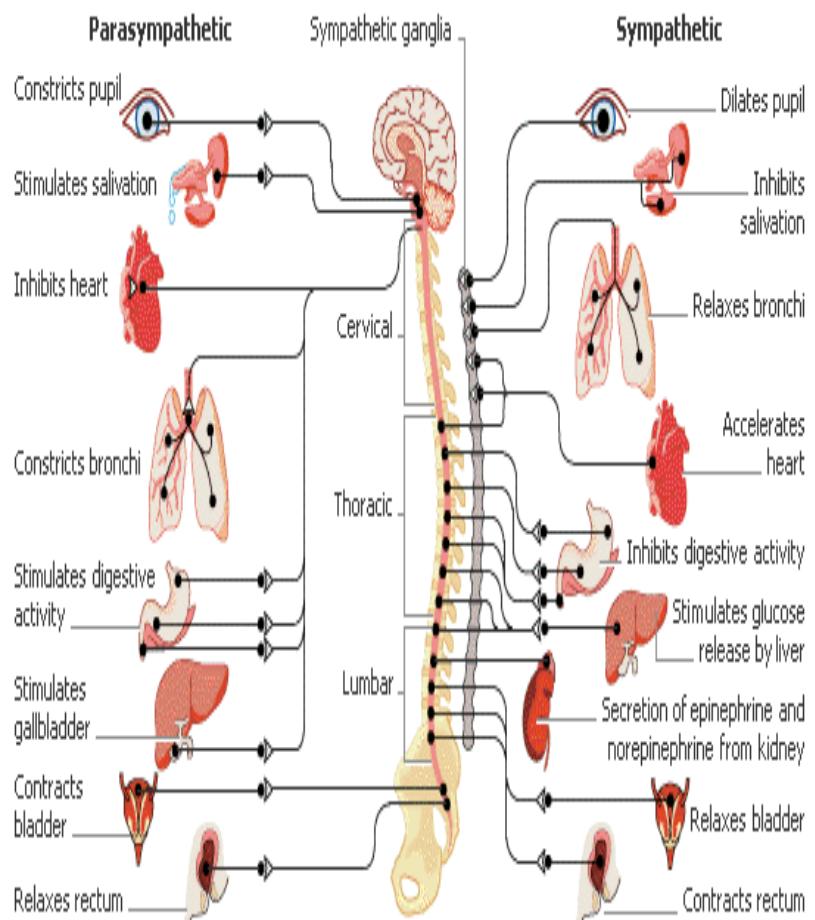
Reflexes

- _____, rapid actions; usually for survival.
- Most reflexes don't have to travel to the _____, as they need to happen quickly.
 - _____:
 - Receptors are _____.
 - Signal travels along _____ neuron to _____.
 - Signal is passed onto a _____.
 - _____ is stimulated.





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Structure of a Typical Neuron

