

Tuesday 9/2/2014

Neurons

- Learning Outcomes
 - Explain the structures of a neuron
- Neurons:
 - Nerve cells; the basic elements of the nervous system
- Receive “messages” from a variety of sources including light, other neurons, and pressure on the skin
- Born with more than 100 billion neurons (most located in the brain)
- Neurons include cell body, axon, and dendrites
 - As brain matures axon lengthens and dendrites proliferate

Neural Impulse

- Electrochemical messages travel within neurons
- Resting potential
 - Neuron is not responding to other neurons
- Action potential
 - Conduction of neural impulse along axon
- All-or-none law
 - Neurons are either on or off; every time a neuron fires, it transmits an impulse of the same strength
- Mirror neurons
 - Neurons that fire when a person enacts a behavior or simply observes another individual carrying out that particular behavior

That the skin is the only barrier between you feeling someone else being touched and you being touched. If you were to remove the skin you could feel someone else being touched.

- Synapse:
 - The space between two neurons where the axon of the sending neuron communicates with the dendrites of the receiving neuron with chemical messages
- Neurotransmitters:
 - The chemical substances involved in the transmission of neural impulses from one neuron to another
 - Each has a unique chemical structure and fits into a specific receptor site
 - Excess or deficiency in neurotransmitters has been linked to psychological disorders
- Acetylcholine (ACh):
 - Controls muscle contractions; prevalent in the hippocampus (involved in the formation of new memories); messages related to muscle movement, memory, and cognitive functions

- Interneurons
 - Connect sensory and motor neurons carrying information between the two

Autonomic Nervous System

- Sympathetic Division
 - The part of the ANS that is the most responsive during emotional responses; spend the body's reserves of energy; "fight -or-flight" response.
- Parasympathetic Division
 - The part of the ANS that acts to calm the body after the emergency has ended. It also directs the body to store energy for emergencies.