



Message Transmission

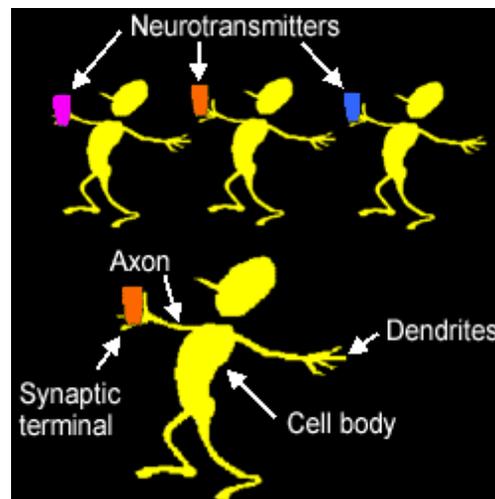
Grades 3-12

Messages can travel in neurons at speeds up to 268 miles/hr! These signals are transmitted from neuron (nerve cell) to neuron across "synapses."

Let's make a chain of neurons...have everyone stand up and form a line. Each person in the line is a neuron. As shown in the figure on the right, your left hand are the dendrites of a neuron; your body is the cell body; your right arm is an axon and your right hand is the synaptic terminal. Your right hand should have a small vial of liquid or some other item, such as a button or pebble, to represent neurotransmitters.

Each person should be about arms length away from the next person. When the leader says "GO," have the person at the beginning of the line start the signal transmission by placing his or her "neurotransmitter" into the hand of the adjacent person. Once this message is received, this second neuron places its neurotransmitter into the dendrite of the next neuron. The third neuron then places its neurotransmitter into the dendrites of the next neuron and the "signal" travels to the end of the line. The transmission is complete when the "signal" goes all the way to the end of the line.

Remember that each "neuron" will pass its own transmitter to the next neuron in line. Each neuron HAS ITS OWN neurotransmitter.



Let's review

- What are the parts of a neuron? The hand that receives the neurotransmitter is the "dendrite." The middle part of your body is the "soma" or "cell body." The arm that passes the neurotransmitter to the next person is the "axon" and the hand that gives the slap is the "synaptic terminal". In between the hands of two people is the "synaptic gap". For more about the parts of a neuron, see [cells of the nervous system](#) and [the synapse](#).
- Measure how long it takes the message to get from the first neuron to the last. Also, measure the distance from the first to the last neuron. Now calculate the speed. How fast did the message travel from first to last neuron? Why do you think the speed of transmission of the model is so slow?



Materials:

- Stopwatch
- [Vials](#) for neurotransmitters



Saltatory Conduction