

NAME _____

NEURON MODELS

BACKGROUND INFORMATION: Our nervous system controls the body. The nervous system consists of the brain, spinal cord and nerve cells.

Cells of the nervous system are called *neurons*. The human brain has about 100 billion neurons. These neurons carry messages through an electrochemical process.

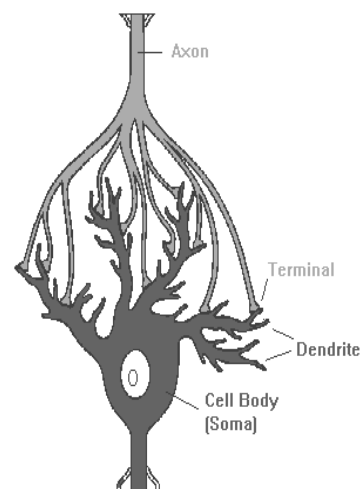
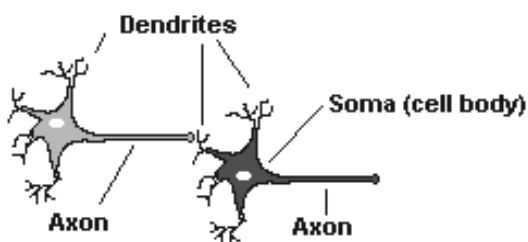
Neurons come in many sizes and shapes. The smallest neurons are only 4 microns wide, the largest are 100 microns wide. A micron = 1/1000 of a millimeter.

Neurons are like all other cells in that they are surrounded by a membrane, have a nucleus that contains genes, and they have cytoplasm, mitochondria and other organelles.

Neurons are different from other cells in that they have special parts known as *axons* and *dendrites*. Axons carry information away from the cell body of the neuron to other nerves or the rest of the body. The *axon terminal* is the end part of the axon that makes a synaptic contact with another cell. Dendrites carry information in to the cell body of the neuron. Any message carried by a neuron is called an *impulse*.

There are three types of neurons in your body: *sensory neurons*, *motor neurons*, and *interneurons*. Sensory neurons receive information and send impulses to the spinal cord or brain. Interneurons are nerve cells in the brain and spinal cord that act as a relay between sensory neurons and motor neurons. There are more interneurons than either motor or sensory neurons. Motor neurons take impulses from the brain or spinal cord to muscles or glands in the body. Together the three types of neurons act as a team moving impulses through your body from stimulus to response.

Neurons do not touch each other. To move from one neuron to the next, an impulse jumps across a space called a *synapse*. When an impulse reaches the end of an axon, a chemical, called a *neurotransmitter*, is released by the axon. The neurotransmitter diffuses across the synapse and starts an impulse in the next neuron. This is how an impulse moves from one neuron to another.



PROBLEM: To build an anatomically correct model of a neuron.

MATERIALS: 4 colors of modeling clay
Map pencils

PROCEDURE:

1. Chose a color of clay to represent each of these neuron parts:
Cell body (soma)
Dendrites
Axon
Axon terminal
2. Build a model of a neuron using the colors you have chosen.
3. Have your teacher check your model for accuracy.
4. Draw, label, and color a diagram of your model.
5. On your diagram, draw in arrows to show the pathway of an impulse.

Neuron Model Diagram