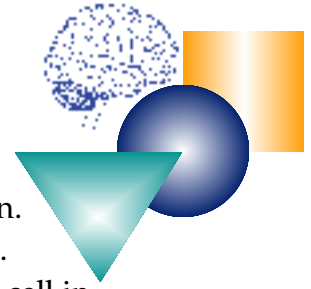


# You've Got a Lot of Nerve: Cells of the Brain and Nervous System

## Student Pages Activity 1C



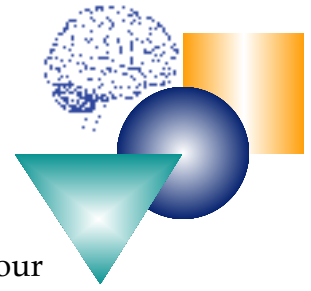
Before reading the student background, observe the images in the first column. In the second column, record your inferences, based upon your observations. After reading the background information, record the actual function of each cell in the third column.

IMAGE	INFERENCE	ACTUAL FUNCTION
	<p>Based on the branching dendrites and the long axon, what do you <i>think</i> the function of this neuron is?</p>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
	<p>Based on the shape, location, and connections, what do you <i>think</i> the function of glial cells might be?</p>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
	<p>Based on the shape, location, and connections, what do you <i>think</i> the function of microglial cells might be?</p>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

**The Brain: It's All In Your Mind**

# You've Got a Lot of Nerve: Cells of the Brain and Nervous System

## Student Pages Activity 1C



### Introduction:

Have you ever wondered how your body knows how to move? How does your body know to move one foot in front of the other to walk? What tells your foot to kick a soccer ball? How do your fingers push the buttons to text your friend? All of these things are controlled by your brain.

### Background:

The brain is an organ of the body which serves as a control center in the nervous system. It is located right under your skull. Like all organs of the body, it is made up of cells. The brain is made of many types of cells. For this activity, you will learn about three of those cells – *neurons*, *glial cells*, and *microglial cells*.

### NEURONS:

Have you ever run in a relay race? In a relay race, a runner takes the baton and runs a certain distance. Then, that runner passes the baton to the next runner in the relay. That runner then runs a certain distance. This continues until the baton gets to the finish line. *Neurons* are cells in the nervous system. They act like runners in a relay race. They carry a message (the baton) and the message can only reach its destination when it is passed to other neurons to reach the “**finish line**”. The messages that are sent to and from the brain are called *impulses*. Neurons work together to deliver messages by forming specific pathways called nerves. Nerves can carry messages from the brain to other parts of the body. Nerves can also carry messages from parts of the body to the brain.

The brain is made up of about 100 billion neurons. Neurons relay messages about what you're thinking, feeling, or doing. There are two types of neurons: motor and sensory. *Motor neurons* carry impulses *from* the brain to muscles. *Sensory neurons* carry impulses from sensory nerves *to* your brain. When you feel something hot, your sensory neurons sense the temperature change. Those sensory neurons send a message to your brain to tell your brain it is hot. Your brain then sends a message to the muscles in your hand so you can move your hand away. All of this happens very quickly- up to 268 miles an hour!

### GLIAL CELLS:

The brain contains trillions of glial cells. That's a lot of cells! *Glial cells* are support cells for the neurons. The word “glial” comes from the Greek word for “glue”, which we know holds things together. *Glial cells*:

1. hold neurons in place,
2. provide nutrients to keep neurons healthy,
3. and some glial cells provide the *myelin sheath* around the neuron. The *myelin sheath* wraps around the long parts of the neuron to help speed up messages.



LESSON 1  
ACTIVITY 1C

## MICROGLIAL CELLS:

Immune cells keep the body healthy. They take the harmful or dead cells out of your body to keep you healthy. *Microglial cells* are special immune cells found in the brain. They detect damaged or unhealthy neurons. They also eliminate bacteria and viruses that may be harmful to the brain. This is very important because if we didn't have these special cells in our brain, we would be more likely to develop illnesses that would prevent us from doing our everyday activities.



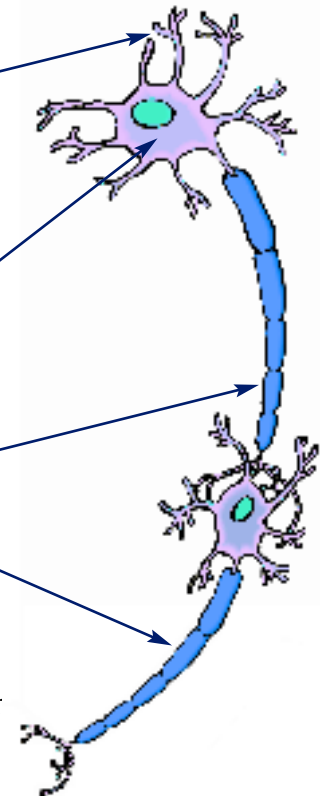
## ANATOMY OF THE NEURON:

Neurons are comprised of three major parts: *Dendrites, the Cell Body, and Axons.*

**Dendrites** extend out from the cell body and receive messages from other neurons. They look something like tree branches.

The **Cell body** is the central part of the neuron and contains the cell nucleus. The cell body processes the message it receives and then continues to send the message down the axon of the neuron.

**Axons** conduct impulses away from the cell body. Some axons are covered with the myelin sheath to speed and shield the impulses.



### Instructions:

After reading the background information, compare this information to the inferences you made from observing the pictures of cells found in the nervous system.

Use the background information to complete the last column of your chart entitled *Actual Function*.

It is surprising how much you can figure out about the function of things just by looking at how they are made!

