

# The Human Nervous System





Waving one's arms is a voluntary response.

## What Does the Nervous System Do?

Although your body's systems work together, each one has a special job. The job of the nervous system is to manage the other systems.

Your nervous system is made up of your brain, spinal cord, and nerves. Your brain is the control center of your body. Your spinal cord joins your brain to your nerves. Your nerves receive information from inside and outside your body and carry it to your brain. They also carry information from your brain to your muscles so that you can respond.

Your body has two types of responses. One is a conscious response. You think before making conscious responses, like answering a question. The other type of response is an unconscious response. Jerking your hand away from a flame is an unconscious response. Your muscles respond before your brain tells you the flame is hot.

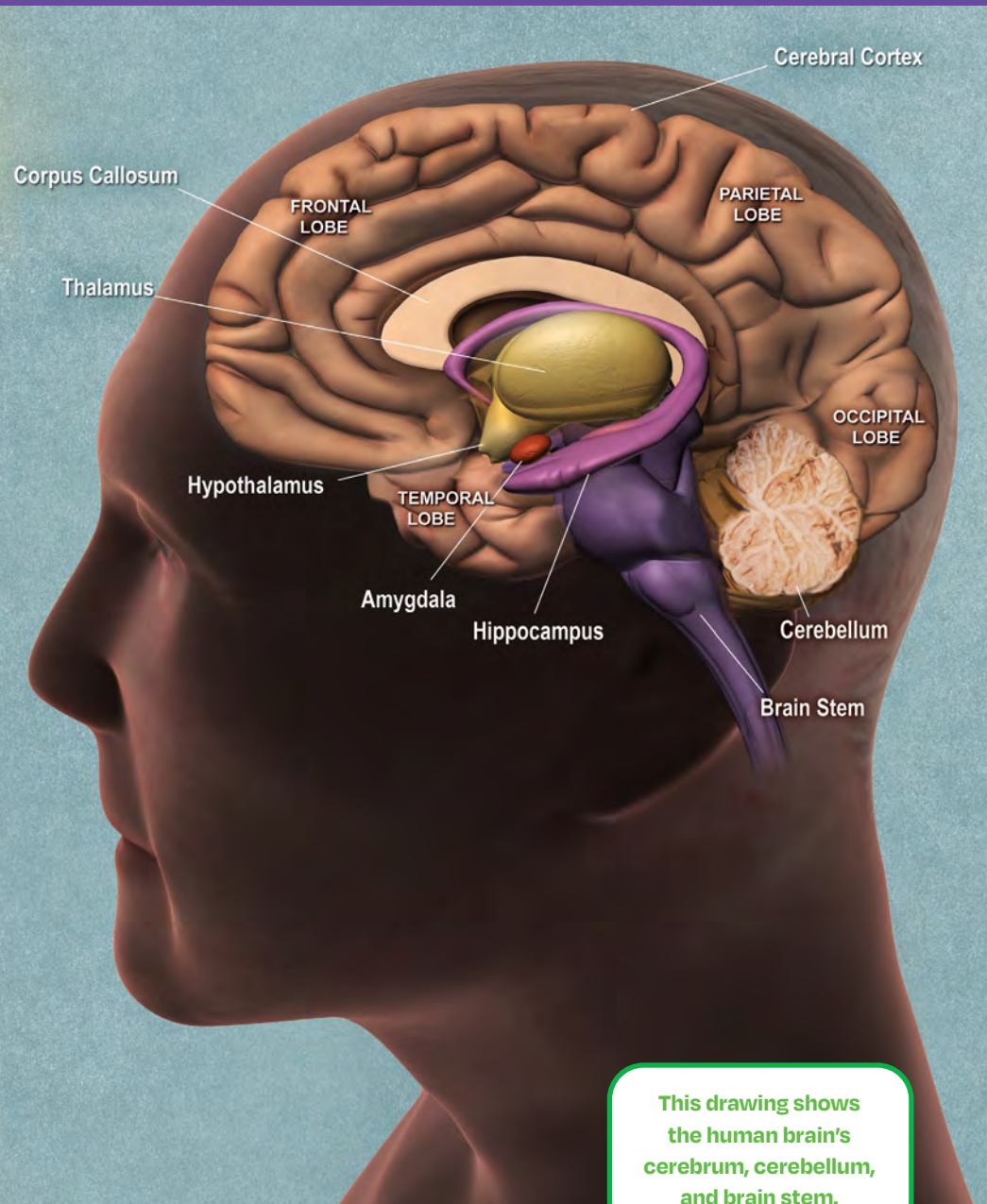
### Key Notes:

What is your brain's job in your nervous system?

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## The Control Center

The human brain, which weighs about 3 pounds, is not the largest brain on Earth. However, it is the largest when it is compared to the size of the body it is in.

The human brain is also the most complex brain on Earth. It thinks about what is going on around it, and it plans what to do in response. Thinking is a complex process. It allows humans to decide how to respond to things. It allows humans to change themselves and the world around them. It also lets humans create things.

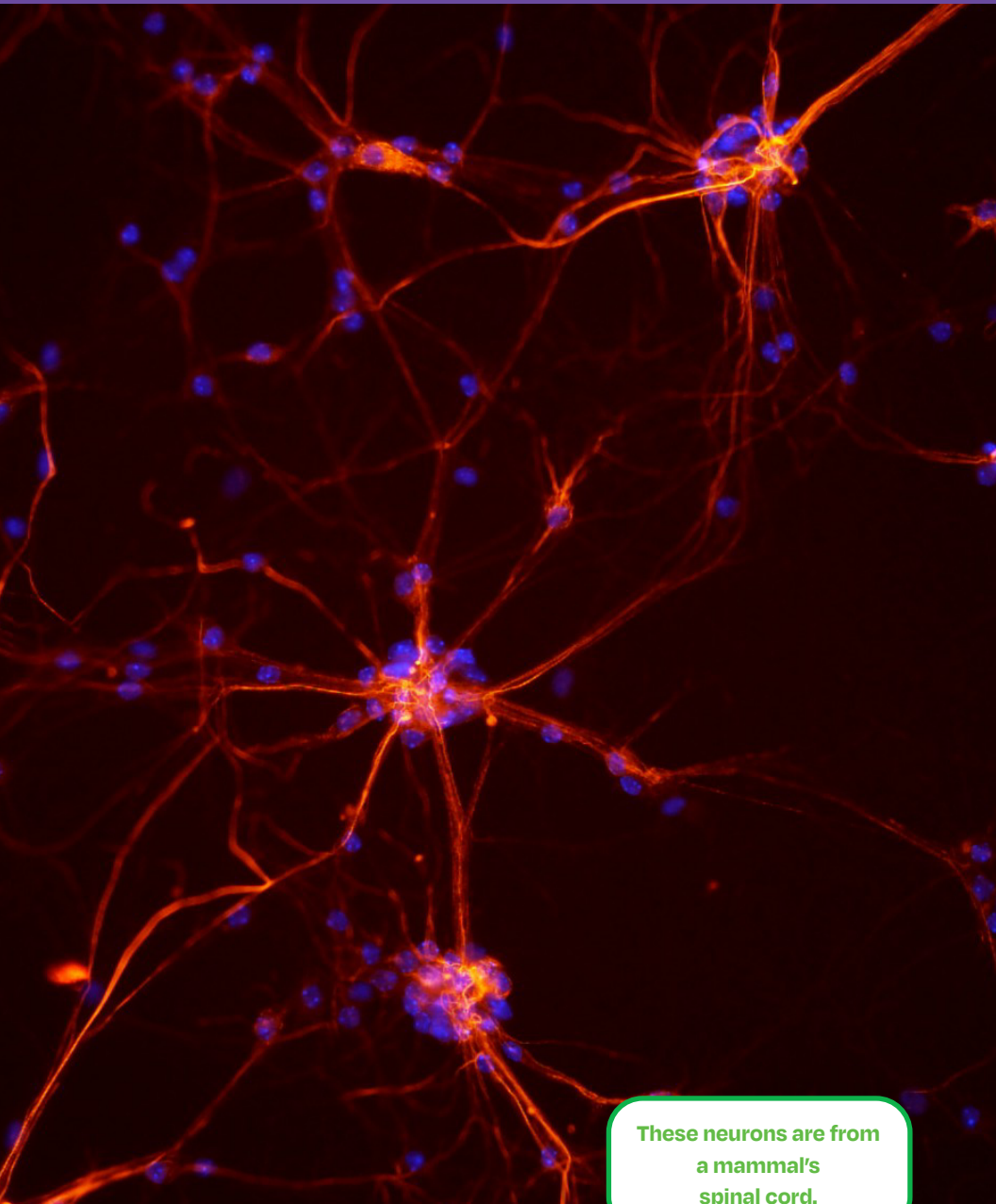
The three main parts of the brain are the cerebrum, the cerebellum, and the brainstem. Thinking and learning take place in the cerebrum. The cerebrum controls muscle movement. It also controls balance, keeping the body steady and stable. The brainstem manages basic life jobs, such as breathing and blood pressure.

### Key Notes:

What does the human brain do?

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These neurons are from  
a mammal's  
spinal cord.

## Sending Messages

Nerves are made up of cells called neurons. There are two kinds of neurons: sensory neurons and motor neurons. Sensory neurons send information from the senses to the brain, telling the brain what is happening. For example, they tell the brain that the hand has just touched something sharp or the eye has just seen something big. Motor neurons send messages from the brain to the muscles, telling the muscles how to respond to the information.

Neurons are different sizes and shapes. They can range in size from a fraction of an inch to about 3 feet in length. Most neurons look like an insect with thin legs and a long tail.

A neuron's "legs" pick up information in the form of electrical signals. The signals travel through the neuron to its "tail," where they jump to the next neuron. Some signals can travel very quickly, at about 250 miles per hour.

### Key Notes:

What are the two kinds of neurons?

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Nerves connect  
feeling in the toes  
to the brain.

## The Super-Highway

The human nervous system is like a super highway that runs through the body. The spinal cord, which is made up of bundles of nerves, starts at the brain and extends about 18 inches down the back, through a hollow part of the backbone. All along the spinal cord, nerves branch off and extend to different parts of the body, connecting the body to the brain.

The nerves at the bottom of the spinal cord connect the legs to the brain. If the bottom of the spinal cord is damaged, messages cannot go from the legs to the brain, and a person could be paralyzed. People who are paralyzed might be unable to walk at all.

The nerves at the top of the spinal cord control unconscious tasks, such as breathing. If the top of the spinal cord is damaged, these unconscious tasks can stop, and the person can die.

### Key Notes:

What does the spinal cord do?

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