

Dendrites: Definition & Function

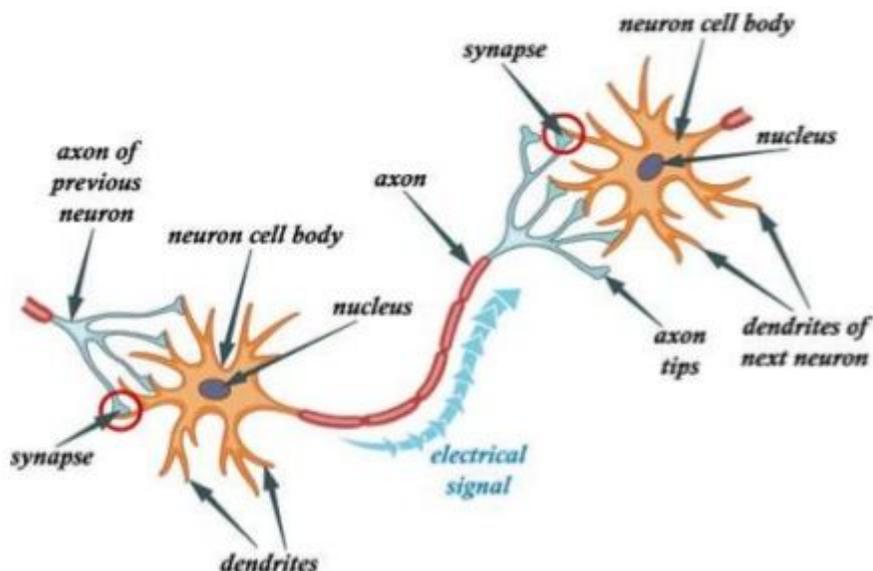
This video will help you understand what dendrites do:

Video @ <https://vimeo.com/598916286> (2:25 minutes)

Dendrites are the structures on a neuron that receive electrical messages which allow the cell to become active.

What is the function of axons and dendrites?

- Dendrites receive (take in) signals from other neurons, or from sensory cells (cells that give information about sight, sound, smell, taste, touch).



The nervous system serves as the manager of the body, since it controls the functions of every other system. It communicates with bodily systems in order to coordinate performance and to meet the needs of the body from moment to moment.

The nervous system uses specialized cells, called neurons, to generate and relay electrical messages, called action potentials, to control these functions. Neurons have several key structures that are necessary for their function, and one of the most important structures in the cell is the dendrite.

Function of Dendrites: In order for neurons to become active, they must receive action potentials or other stimuli. Dendrites are the structures on the neuron that receive electrical messages.

These messages come in two basic forms: excitatory and inhibitory. Excitatory action potentials increase the stimulation of a neuron, while inhibitory action potentials decrease the activity of the neuron. These signals will accumulate in the cell body, or soma, of the neuron after being received by the dendrites.

Once action potentials are received by the dendrites, they will be sent to a portion of the cell body known as the axon hillock, neck region of the cell body. Once the cell receives enough excitatory action potentials, it will become activated and generate an action potential of its own.

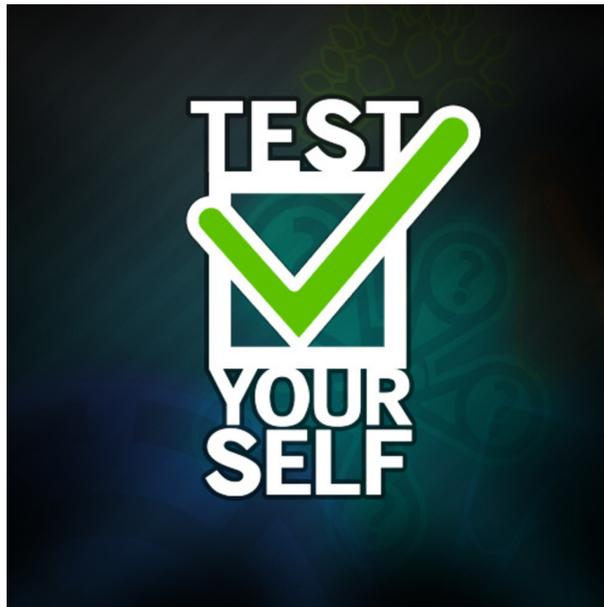
In the nervous system, cell-to-cell communication requires the use of chemical messengers called neurotransmitters. These messengers are designed to bind to the dendrites of the neuron to stimulate action potential formation. Neurotransmitters, however, must use receptors (recognition structures) on dendrites to communicate. This is important in that dendrites, and the types of receptors they contain, will determine which neurotransmitters can stimulate each neuron.

Lesson Summary: Neurons are nervous system cells that are used to coordinate functions within the body. This is done by generating action potentials, or electrical messages. The generation of electrical messages will depend on the amount of action potentials that are received by the dendrites. Dendrites receive action potentials and send them to the cell body and have receptors that bind neurotransmitters to control this process.

(adapted from study.com)



Romans 8:1-2 is a neurospiritual passage because to “walk according to the flesh” involves a neurobiological process of neurons sending and receiving signals to accomplish a sinful desire. To “walk according to the Spirit” also involves a neurobiological process of neurons sending and receiving signals to accomplish a spiritual desire.



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Test and Knowledge

Do dendrites send or receive messages?

Dendrites are the structures on a neuron that receive electrical messages which allow the cell to become active.

What do the Dendrites receive from the Axons?

Function of Dendrites: In order for neurons to become active, they must receive **action potentials or other stimuli**. Dendrites are the structures on the neuron that receive electrical messages.

What do Excitatory action potentials messages do?

What do inhibitory action potentials do?

These messages come in two basic forms: excitatory and inhibitory. Excitatory action potentials increase the stimulation of a neuron, while inhibitory action potentials decrease the activity of the neuron. These signals will accumulate in the cell body, or soma, of the neuron after being received by the dendrites.

What makes Romans 8:1-2 a neurospiritual passage?

¹ *There is* therefore now no condemnation to those who are in Christ Jesus, who do not walk according to the flesh, but according to the Spirit. ² For the law of the Spirit of life in Christ Jesus has made me free from the law of sin and death. Romans 8:1,2

Romans 8:1-2 is a neurospiritual passage because to “walk according to the flesh” involves a neurobiological process of neurons sending and receiving signals to accomplish a sinful desire. To “walk according to the Spirit” also involves a neurobiological process of neurons sending and receiving signals to accomplish a spiritual desire.