

To understand how cocaine impacts a person's brain, we have to know something about the human body's nerves and their system of sending messages. What happens when our nerves send signals to our brains? If those signals are interrupted, or altered, how does the change impact us?

This graphic depicts the structure of a neuron. Neurons act as transmitters in the human body. They are part of the body's communication system.

Neurons operate within the body's electrical system. Neurons, for the most part, receive electrical stimuli. In turn, they produce an electrical response.

This graphic shows us that the electrical potential can be measured. "The measured electrical potential is due to ionic concentration gradients (of sodium, potassium and calcium) across the cell membrane."

To help us understand the graphic, we turn to Drexel University:

*The peripheral nervous system (PNS) links the central nervous system (CNS) to the body's limbs and internal organs and consists of both afferent (sensory) neurons and efferent [motor] neurons. [From a directional standpoint, "afferent" neurons approach the brain while "efferent" neurons exit the brain.]*

*The visceral nervous system, comprised of the sympathetic and parasympathetic systems, is the autonomic division of the PNS and controls contraction and secretion in various internal organs.*

*Neurons are the functional units of the nervous system that carry electric signals throughout the body. Dendrites extend out from the cell body and receive incoming signals, and axons carry outgoing information towards other cells.*

*In peripheral sensory neurons, the cell body is usually located near the cell body, and long dendrites and axons outward toward limbs and organs. The axons bundle together into nerves, which run from the CNS to the target. The cell body acts as the control center of the neuron and is crucial to its survival.*

*If a nerve is severed, the portion distal to the cell body will be unable to synthesize essential proteins, resulting in paralysis.*

*Usually, peripheral neurons have one long axon, which can range in length from micrometers to meters. At the end of the axon, the axon terminal contains high concentrations of mitochondria and neurocrine-filled vesicles, which translate the electric signal from the axon to a chemical signal to be transferred across the synaptic cleft to another neuron, muscle, or gland.*

Our neuron transmitting system works well, sending out these types of signals, when nothing interferes with the process.

Cocaine substantially interferes with the process.

Click on the image for a better view.

Credits:

Image online, courtesy Montana State University's [Department of Mathematical Sciences](#).

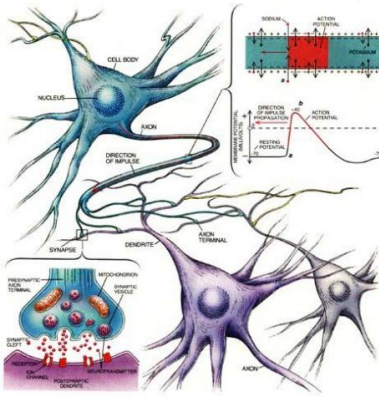
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## Media Stream



### Neurotransmitters - Travel Patterns in Body

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