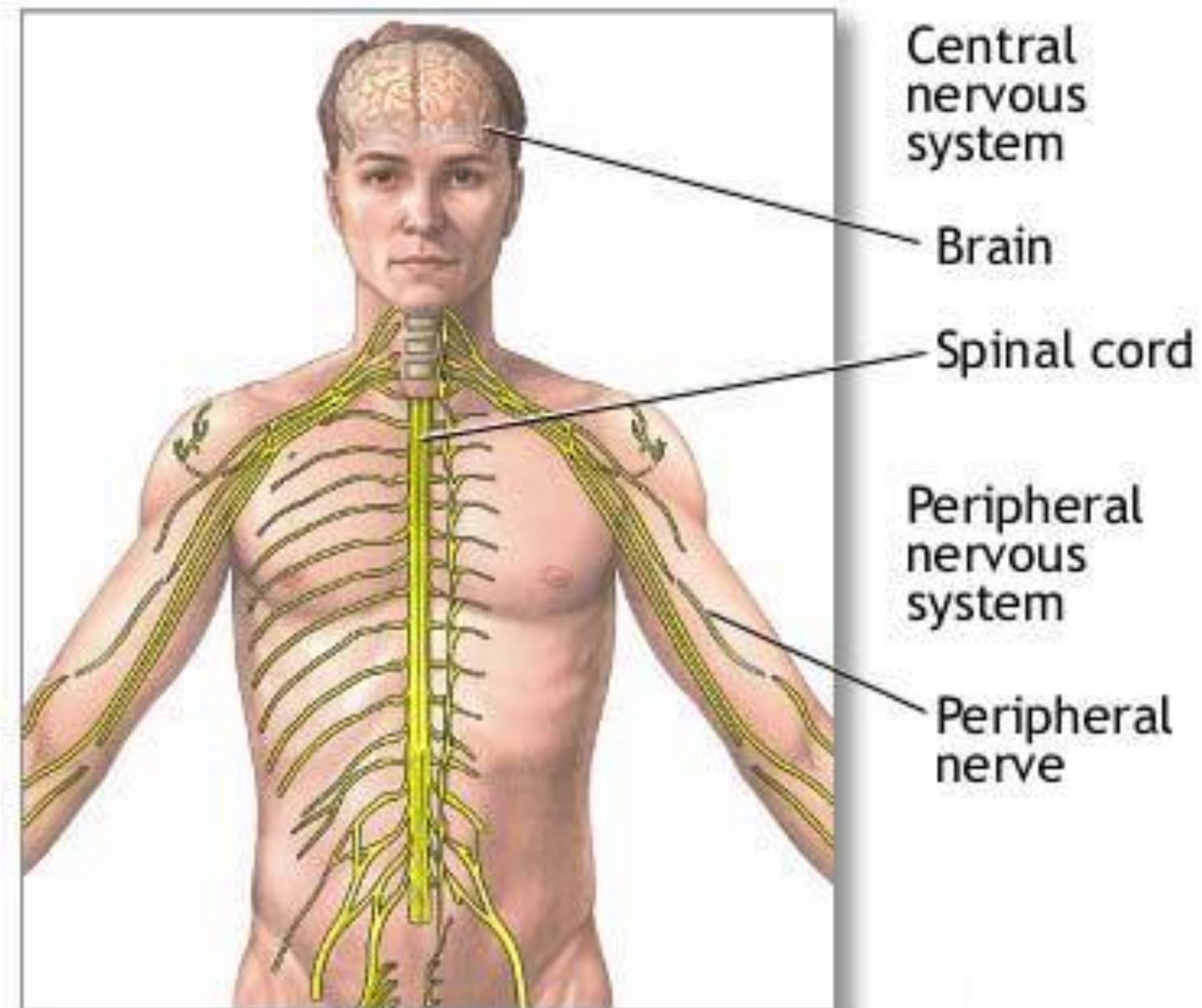
The Nervous System

allows communication between the brain and all other parts of the body.

Nerves transmit messages back and forth to every organ, tissue and cell. It consists of the Central Nervous System (CNS) and the Peripheral Nervous System (PNS).

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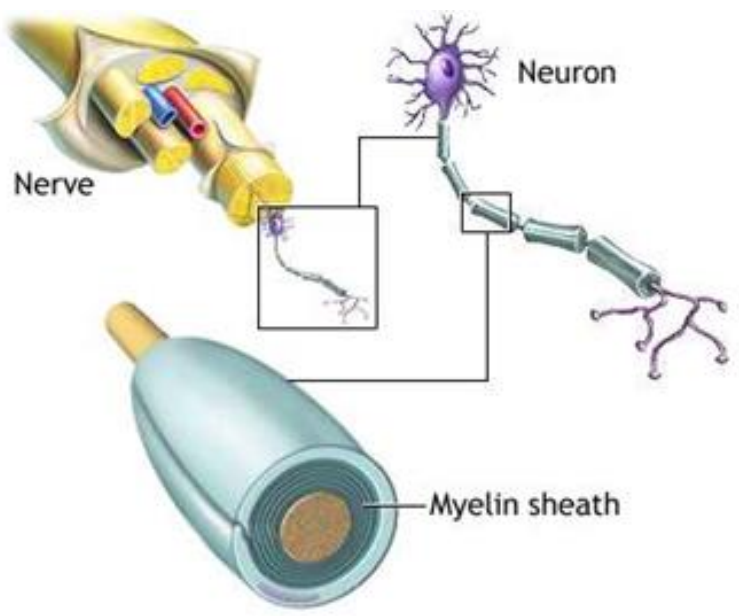


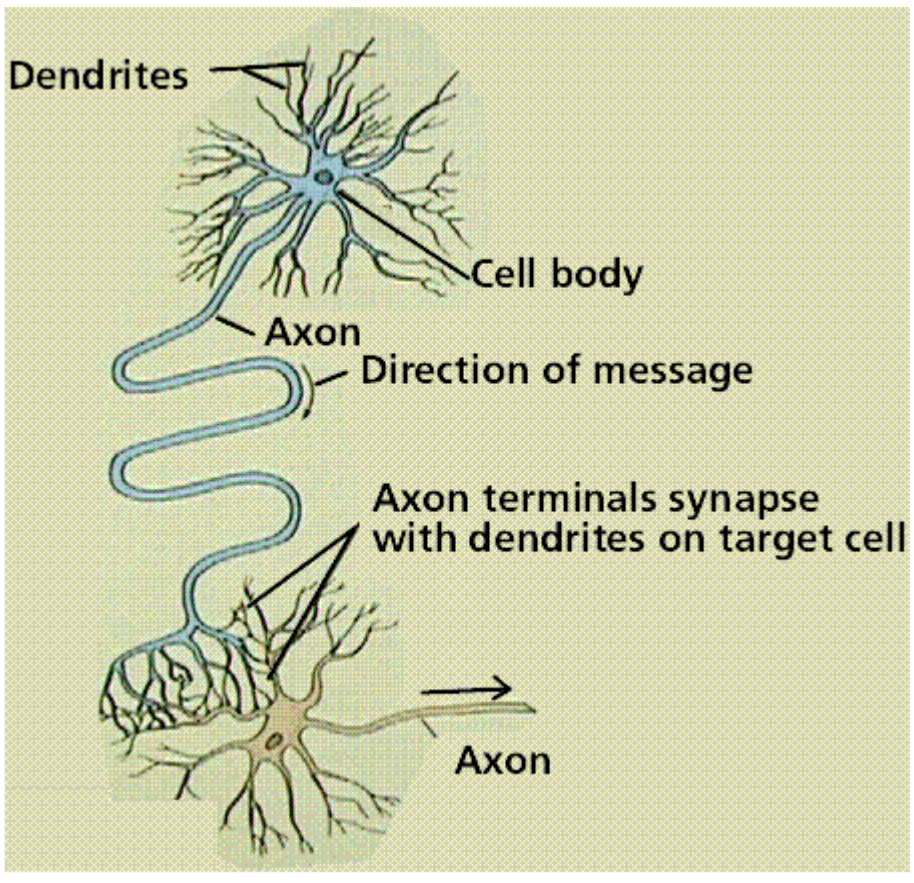
The PNS carries messages from the between the CNS and the rest of the body. There are two categories of nerves and sensory receptors in the PNS:

– **Autonomic** – controls digestion, heart rate, and other involuntary functions that speed up body functions (Sympathetic Nervous System) or slow down body function (Parasympathetic Nervous System)

– **Somatic** – relays messages in the eyes, ears, nose, tongue and skin, which sends messages to skeletal muscles…

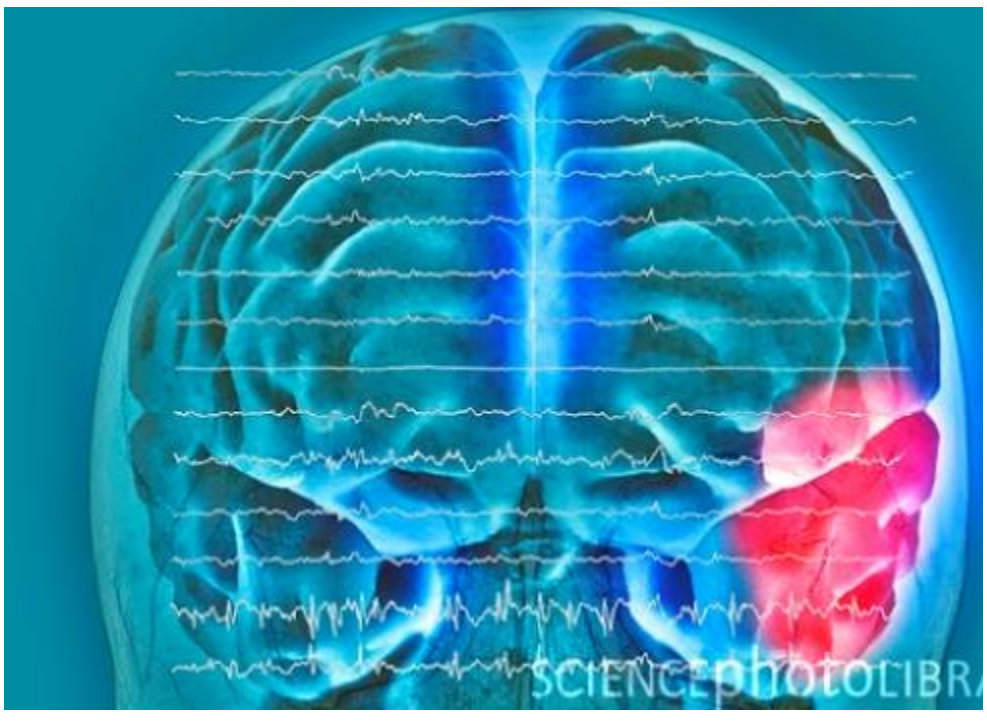
But they all perform the function of carrying electrical and chemical messages.





Your nervous system contains millions of nerve cells, called neurons. **Neurons** are highly specialised to transmit messages from one part of your body to another.

All neurons have a **cell body** and one or more fibers. These fibers vary in length from microscopic to over 1 metre. There are two different kinds of nerve fibers: fibers that carry information towards the cell body, called **dendrites**, and fibers that carry information away from it, called **axons**. Nerves are tight bundles of nerve fibers.



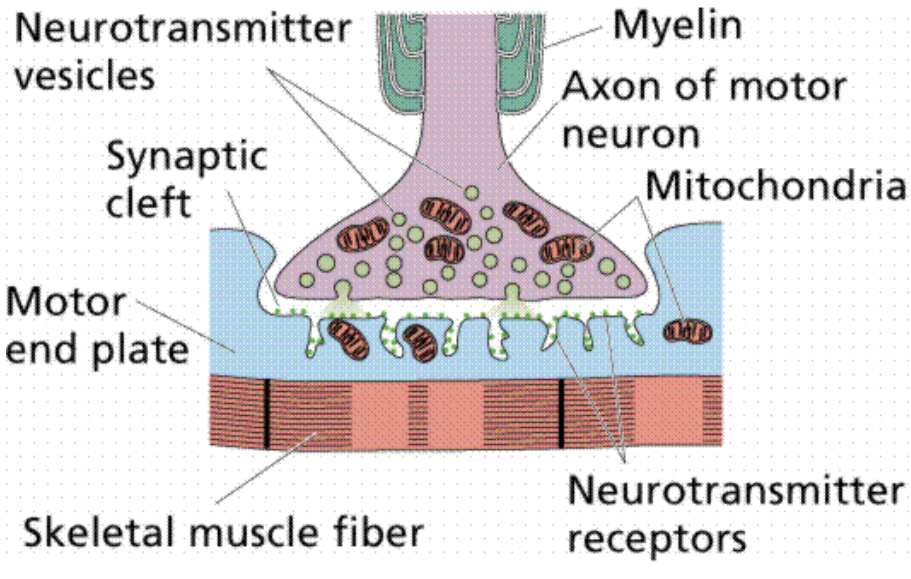
The brain is the power station for a magnificent electrical system through the nerves, with electronic and chemical transmitters.

The neuron transmits electric signals like an electric wire. The **cell body** is the neuron central part. **Dendrites**, short branches, extend from the neuron. These input channels receive information from other neurons or sensory cells (cells that receive information from the environment). A long branch, the axon, extends from the neuron as its output channel. The neuron sends messages along the **axon** to other neurons or directly to muscles or glands

Neurons must be linked to each other in order to transmit signals. The connection between two neurons is a synapse. When a nerve impulse (electrical signal) travels across a neuron to the **synapse**, it causes the release of **neurotransmitters**. These chemicals carry the nerve signal across the synapse to another neuron.

The synapse is where electrical messages

are transferred by chemical reaction to our muscles:



The neuron acts like an insulated electrical wire.

