



# WHAT IS THE NERVOUS SYSTEM?

*Electrical impulses are constantly traveling from our brain to all parts of our body through a network of nerves. This network is called the Nervous System, and it is the way that our brain sends and receives the messages that allow our bodies to function, and to react to the world around us.*

## Central Nervous System

The Central Nervous System is made up of our brain and spinal cord. It sends messages from our brain through our spinal cord to all parts of our body. Some crucial body functions are controlled by automatic messages so that they keep working 24 hours a day, every day, even when we are asleep - this is how we keep breathing and keep digesting food; and how our hearts keep beating.

## The Peripheral Nervous System

The Peripheral Nervous System is the network of nerves that the brain uses to connect the Central Nervous System to the rest of our body.

Messages from the brain are transmitted through the network as electrical impulses. When we feel something - such as heat from a fire - the nerves in our fingers send a message through all the nerves in the pathway until it reaches our brain.

Our brain decodes the message ('Hot!'), and decides upon a reaction ('Move the finger!') and sends a response back, which tells our muscles to move the finger away from the flame. This whole process takes just a fraction of a second.

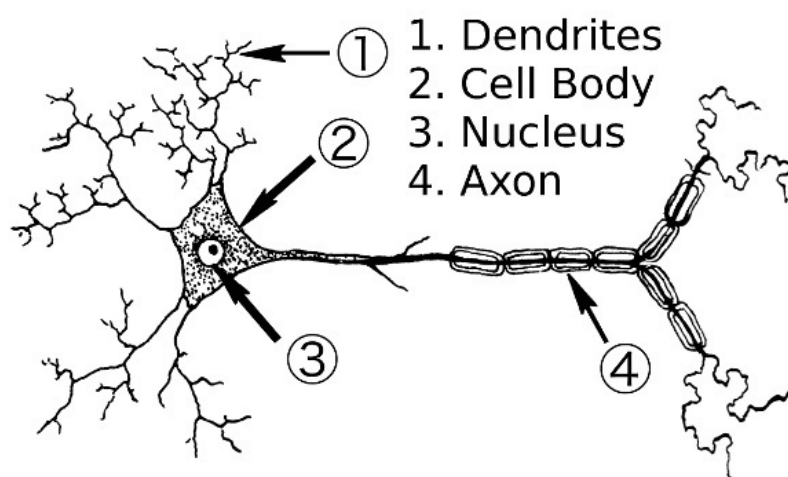


## How a 'nerve' works

A nerve cell is called a 'neuron'. It is made in the same way as many other cells in our bodies, but it has some important differences. There are finger-like projections towards one end, called 'dendrites'. At the other end, there is a longer projection which branches out into smaller ones, and this structure is called an 'axon'.

An electrical impulse (a 'message') from our brain is transmitted through the neuron by entering the dendrites, moving through the cell, and leaving from the axon. It jumps to the next neuron's dendrites, and then to the next - and in this way, messages from our senses reach our brain.

Our brain sends responses back along the same pathways. Some axons can be very long - for example, one reaches from the big toe to the base of the spine.



### References

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With support from  JSB Education

LET NZ 2 April 2015

