

GCSE Biology – The structure and function of the nervous system - Transcript

The nervous system enables humans to react to their surroundings and coordinate their behaviour, like dodging a wasp when it gets too close.

To understand why, you need to know about the structure and function of the nervous system. The nervous system is made up of three main parts. Receptors, coordination centres and effectors.

They each play a role that acts a bit like a relay, passing the baton on. Information from receptors passes along specialised cells, neurones, as electrical impulses to the central nervous system, the CNS. The CNS then coordinates the response and sends impulses to the effectors.

Let's look at each of these steps in a bit more detail.

Receptors are groups of specialised cells. Their job is to detect a stimulus, a change in their environment, and then stimulate electrical impulses in response. Sense organs such as the nose, eyes, ears, tongue and skin contain groups of receptors that respond to specific stimuli.

The CNS is the brain and spinal cord. Its job is to coordinate the response needed to react to the stimulus by telling effectors what to do. Effectors are the muscles and glands. Muscles contract to cause movement, for example to move you away from a wasp.

And glands release hormones, like adrenaline when you get a fright.

Nerves transmit electrical impulses all over the body. They are made of bundles of neurones connected to each other. There are three different types of neurones.

Sensory neurones carry impulses from the receptors to the CNS. Relay neurones connect sensory and motor neurones within the CNS And motor neurones transmit impulses from the CNS to the effectors

All neurones share some key features, like dendrons. These are tiny branches that allow one neurone to connect with lots of others and receive their impulses. And to allow an impulse to travel up and down the body. Some neurones have a long axon, insulated with a fatty myelin sheath

So our nervous system and all its functions give us the split second edge we need to react, like escaping from that wasp.