

Afferent and efferent pathways

Communication between afferent and efferent neurons occurs in the form of electrochemical signals. Afferent neurons carry nerve impulses from receptors or sense organs toward the central nervous system, so the body can produce a response. Afferent neurons communicate with specialized interneurons, the opposite activity of direction or flow is efferent. Efferent neurons or motor neurons receive information from other neurons and sends that information to effectors (muscles,glands), which produce a response.

In the nervous system there is a closed loop system of sensation, decision, and reactions. This process is carried out through the activity of afferent neurons, interneurons, and efferent neurons.

A touch or painful stimulus, for example, creates a sensation in the brain only after information about the stimulus travels there via afferent nerve pathways. The structure of an afferent neuron contains a single long dendrite and a short axon; the shape of the cell body of an afferent neuron is smooth and rounded. Just outside the spinal cord, thousands of afferent neuronal cell bodies are aggregated in a swelling in the dorsal root known as the dorsal root ganglion.

Homeostasis

The endocrine system produces hormones. To maintain homeostasis, the controlled features are body temperature, water content and blood sugar levels. However, to include the endocrine system, only the blood sugar levels is involved.

If the blood sugar level increases, the pancreas detects this. Insulin is then released to act on the liver which allows the excess glucose to be converted to glycogen.

When blood sugar levels decrease, the pancreas detects it, releases glucagon which act on the liver. The excess glycogen is then converted to glucose.

Positive and Negative

Using the example of a cut, the positive feedback would be the platelets increasing and clotting the blood because they were triggered by enzymes. The enzymes were leaked from the torn blood vessel which is was the stimulus. The negative feedback of this would be the brain sending out signals to reduces the platelets and avoid further problems, such as deep vein thrombosis