

Gray matter is composed largely of cell bodies and interneurons, whereas white matter is composed largely of myelinated axons.

The 2 dorsal arms of the spinal gray matter are called the dorsal horns and the 2 ventral arms are called the ventral horns.

Pairs of spinal nerves are attached to the spinal cord one on the left and one on the right - at 31 different levels of the spine. Each of 62 spinal nerves divides as it nears the cord and its axons are joined to the cord via one of two roots: the dorsal root and ventral root.

All dorsal root axons, whether somatic or autonomic, are sensory unipolar neurons, with their cell bodies grouped together just outside the cord form the dorsal root ganglia.

The neurons of the ventral root are motor multipolar neurons with their cell bodies in the ventral horns.

Functions -

The spinal cord is the conduit between the brain and the rest of the body. It sends motor commands from the motor cortex to the muscles of the body and sensory information from the afferent fibres to the sensory cortex.

Additionally, the spinal cord can act without signals from the brain in certain instances. The spinal cord independently coordinate reflexes using reflex arcs. Reflex arcs allow the body to respond to sensory information without waiting for input from the brain.

The reflex arc starts with signal from a sensory receptors which is carried to the spinal cord via a sensory nerve fibre, synapsed on a interneuron, carried over to the motor neuron, which stimulates an effector muscle or organ.

The spinal cord also has central pattern generators, which are interneuron that form the neural circuits, which control rhythmic movements.