

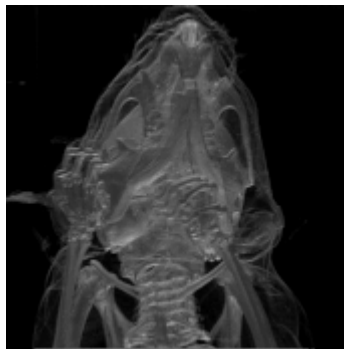
Nervous tissue[ ]

*See also: Neuroanatomy*

Nervous tissue is composed of many nerve cells known as neurons which transmit information. In some slow-moving radially symmetrical marine animals such as ctenophores and cnidarians (including sea anemones and jellyfish), the nerves form a nerve net, but in most animals they are organized longitudinally into bundles. In simple animals, receptor neurons in the body wall cause a local reaction to a stimulus. In more complex animals, specialized receptor cells such as chemoreceptors and photoreceptors are found in groups and send messages along neural networks to other parts of the organism. Neurons can be connected together in ganglia.<sup>[1]</sup> In higher animals, specialized receptors are the basis of sense organs and there is a central nervous system (brain and spinal cord) and a peripheral nervous system. The latter consists of sensory nerves that transmit information from sense organs and motor nerves that influence target organs. The peripheral nervous system is divided into the somatic nervous system which conveys sensation and controls voluntary muscle, and the autonomic nervous system which involuntarily controls smooth muscle, certain glands and internal organs, including the stomach.<sup>[1]</sup>

Vertebrate anatomy[ ]

*See also: Vertebrate § Anatomy and morphology, and Comparative anatomy*



Mouse skull

All vertebrates have a similar basic body plan and at some point in their lives, mostly in the embryonic stage, share the major chordate characteristics: a stiffening rod, the notochord; a dorsal hollow tube of nervous material, the neural tube; pharyngeal arches; and a tail posterior to the anus. The spinal cord is protected by the vertebral column and is above the notochord, and the gastrointestinal tract is below it.<sup>[1]</sup> Nervous tissue is derived from the ectoderm, connective tissues are

derived from mesoderm, and gut is derived from the endoderm. At the posterior end is a tail which continues the spinal cord and vertebrae but not the gut. The mouth is found at the anterior end of the animal, and the anus at the base of the tail.<sup>[1]</sup> The defining characteristic of a vertebrate is the vertebral column, formed in the development of the segmented series of vertebrae. In most vertebrates the notochord becomes the nucleus pulposus of the intervertebral discs. However, a few vertebrates, such as the sturgeon and the coelacanth, retain the notochord into adulthood.<sup>[1]</sup> Jawed vertebrates are typified by paired appendages, fins or legs, which may be secondarily lost. The limbs of vertebrates are considered to be homologous because the same underlying skeletal structure was inherited from their last common ancestor. This is one of the arguments put forward by Charles Darwin to support his theory of evolution.<sup>[1]</sup>