

The Neuron Book

Neuron

A neuron (American English), neurone (British English), or nerve cell, is an excitable cell that fires electric signals called action potentials across

A neuron (American English), neurone (British English), or nerve cell, is an excitable cell that fires electric signals called action potentials across a neural network in the nervous system. They are located in the nervous system and help to receive and conduct impulses. Neurons communicate with other cells via synapses, which are specialized connections that commonly use minute amounts of chemical neurotransmitters to pass the electric signal from the presynaptic neuron to the target cell through the synaptic gap.

Neurons are the main components of nervous tissue in all animals except sponges and placozoans. Plants and fungi do not have nerve cells. Molecular evidence suggests that the ability to generate electric signals first appeared in evolution some 700 to 800 million years ago, during...

Motor neuron

A motor neuron (or motoneuron), also known as efferent neuron is a neuron that allows for both voluntary and involuntary movements of the body through

A motor neuron (or motoneuron), also known as efferent neuron is a neuron that allows for both voluntary and involuntary movements of the body through muscles and glands. Its cell body is located in the motor cortex, brainstem or the spinal cord, and whose axon (fiber) projects to the spinal cord or outside of the spinal cord to directly or indirectly control effector organs, mainly muscles and glands. There are two types of motor neuron – upper motor neurons and lower motor neurons. Axons from upper motor neurons synapse onto interneurons in the spinal cord and occasionally directly onto lower motor neurons. The axons from the lower motor neurons are efferent nerve fibers that carry signals from the spinal cord to the effectors. Types of lower motor neurons are alpha motor neurons, beta motor...

Mirror neuron

mirror neuron is a neuron that fires both when an animal acts and when the animal observes the same action performed by another. Thus, the neuron "mirrors" the behavior;

A mirror neuron is a neuron that fires both when an animal acts and when the animal observes the same action performed by another. Thus, the neuron "mirrors" the behavior of the other, as though the observer were itself acting. Mirror neurons are not always physiologically distinct from other types of neurons in the brain; their main differentiating factor is their response patterns. By this definition, such neurons have been directly observed in humans and other primates, as well as in birds.

In humans, brain activity consistent with that of mirror neurons has been found in the premotor cortex, the supplementary motor area, the primary somatosensory cortex, and the inferior parietal cortex. The function of the mirror system in humans is a subject of much speculation. Birds have been shown...

Neuron (software)

Neuron models individual neurons via the use of sections that are automatically subdivided into individual compartments, instead of requiring the user

Neuron is a simulation environment for modeling individual and networks of neurons. It was primarily developed by Michael Hines, John W. Moore, and Ted Carnevale at Yale and Duke.

Neuron models individual neurons via the use of sections that are automatically subdivided into individual compartments, instead of requiring the user to manually create compartments. The primary scripting language is hoc but a Python interface is also available. Programs can be written interactively in a shell, or loaded from a file. Neuron supports parallelization via the MPI protocol.

Neuron is capable of handling diffusion-reaction models, and integrating diffusion functions into models of synapses and cellular networks. Parallelization is possible via internal multithreaded routines, for use on multi-core computers...

Biological neuron model

Biological neuron models, also known as spiking neuron models, are mathematical descriptions of the conduction of electrical signals in neurons. Neurons (or

Biological neuron models, also known as spiking neuron models, are mathematical descriptions of the conduction of electrical signals in neurons. Neurons (or nerve cells) are electrically excitable cells within the nervous system, able to fire electric signals, called action potentials, across a neural network. These mathematical models describe the role of the biophysical and geometrical

characteristics of neurons on the conduction of electrical activity.

Central to these models is the description of how the membrane potential (that is, the difference in electric potential between the interior and the exterior of a biological cell) across the cell membrane changes over time. In an experimental setting, stimulating neurons with an electrical current generates an action potential (or spike)...

Sensory neuron

Sensory neurons, also known as afferent neurons, are neurons in the nervous system, that convert a specific type of stimulus, via their receptors, into

Sensory neurons, also known as afferent neurons, are neurons in the nervous system, that convert a specific type of stimulus, via their receptors, into action potentials or graded receptor potentials. This process is called sensory transduction. The cell bodies of the sensory neurons are located in the dorsal root ganglia of the spinal cord.

The sensory information travels on the afferent nerve fibers in a sensory nerve, to the brain via the spinal cord. Spinal nerves transmit external sensations via sensory nerves to the brain through the spinal cord. The stimulus can come from exteroceptors outside the body, for example those that detect light and sound, or from interoceptors inside the body, for example those that are responsive to blood pressure or the sense of body position.

Lower motor neuron

Lower motor neurons (LMNs) are motor neurons located in either the anterior grey column, anterior

nerve roots (spinal lower motor neurons) or the cranial

Lower motor neurons (LMNs) are motor neurons located in either the anterior grey column, anterior nerve roots (spinal lower motor neurons) or the cranial nerve nuclei of the brainstem and cranial nerves with motor function (cranial nerve lower motor neurons). Many voluntary movements rely on spinal lower motor neurons, which innervate skeletal muscle fibers and act as a link between upper motor neurons and muscles. Cranial nerve lower motor neurons also control some voluntary movements of the eyes, face and tongue, and contribute to chewing, swallowing and vocalization. Damage to lower motor neurons often leads to hypotonia, hyporeflexia, flaccid paralysis as well as muscle atrophy and fasciculations.

Anaxonic neuron

An anaxonic neuron is a type of neuron where there is no axon or it cannot be differentiated from the dendrites. Unlike typical neurons that possess a

An anaxonic neuron is a type of neuron where there is no axon or it cannot be differentiated from the dendrites. Unlike typical neurons that possess a single axon transmitting signals away from the cell body, anaxonic neurons have processes that are all morphologically similar. Being loyal to the etymology of anaxonic there are two types of anaxonic neurons in the human nervous system, the undifferentiated anaxonic neuron where the axon cannot be differentiated from the dendrites, and the unipolar brush cell (UBC), that has no axon and only a dendritic arbour. This structural peculiarity suggests specialized roles in neural circuits, particularly in modulating and integrating information rather than transmitting it over long distances.

Motor neuron diseases

Motor neuron diseases or motor neurone diseases (MNDs) are a group of rare neurodegenerative disorders that selectively affect motor neurons, the cells

Motor neuron diseases or motor neurone diseases (MNDs) are a group of rare neurodegenerative disorders that selectively affect motor neurons, the cells which control voluntary muscles of the body. They include amyotrophic lateral sclerosis (ALS), progressive bulbar palsy (PBP), pseudobulbar palsy, progressive muscular atrophy (PMA), primary lateral sclerosis (PLS), spinal muscular atrophy (SMA) and monomelic amyotrophy (MMA), as well as some rarer variants resembling ALS.

Motor neuron diseases affect both children and adults. While each motor neuron disease affects patients differently, they all cause movement-related symptoms, mainly muscle weakness. Most of these diseases seem to occur randomly without known causes, but some forms are inherited. Studies into these inherited forms have led...

List of animals by number of neurons

The following are two lists of animals ordered by the size of their nervous system. The first list shows number of neurons in their entire nervous system

The following are two lists of animals ordered by the size of their nervous system. The first list shows number of neurons in their entire nervous system. The second list shows the number of neurons in the structure that has been found to be representative of animal intelligence. The human brain contains 86 billion neurons, with 16 billion neurons in the cerebral cortex.

Neuron counts constitute an important source of insight on the topic of neuroscience and

intelligence: the question of how the evolution of a set of components and parameters ($\sim 10^{11}$ neurons, $\sim 10^{14}$ synapses) of a complex system leads to the phenomenon of intelligence.

https://uk.fulldoc.me/slide/vz162609/ZV59047822225146/toyota_yaris-2008_owner-manual.pdf

https://uk.fulldoc.me/course/5147B7K/9416B7241K/master_microbiology_checklist-cap.pdf

https://uk.fulldoc.me/text/9J566679F2/9J6324F/adec-2014-2015_school-calendar.pdf

https://uk.fulldoc.me/pub/97492JJ/160926/toledo_8572_scale_manual.pdf

https://uk.fulldoc.me/doc/409OI00450/259OI35/the_remains-of-the_day_2nd-edition-york-notes_advanced.pdf

https://uk.fulldoc.me/slide/vm/3147V68M45260916/fifty_great_short_stories.pdf

https://uk.fulldoc.me/chap/225146/45VI912/lacan-at_the_scene.pdf

https://uk.fulldoc.me/short/225146/5557E0Y/perez_family-case_study_answer_key.pdf

https://uk.fulldoc.me/pub/61L9370V67/43L140V/a_beautiful-mess-happy_handmade_home-by_elsie-larson-2014-10_07.pdf

https://uk.fulldoc.me/edu/407LH19/160926/solution_manual_baker_advanced_accounting.pdf