

Glossary

Allogenic means taken from different individuals of the same species.

Alpha Motor Neurons are nerve cells, the cell bodies of which are found in the CNS, with axons that extend toward the periphery to innervate muscle and cause muscle contraction.

Apoptosis is a form of programmed cell death that occurs in multicellular organisms.

Autonomic nervous system controls the function of organs and glands; is separated into sympathetic and parasympathetic components.

Axon is a long, slender projection of a nerve cell that typically conducts electrical impulses known as action potentials away from the nerve cell body.

Axotomy refers to severing of an axon.

Biofabrication is the production of complex biologic products from living cells, matrices, biomaterials, and molecules.

Bioinks are carrier materials used to produce an engineered tissue using 3D printing.

Bioprinting is the utilization of 3D printing techniques to combine cells, growth factors, and/or biomaterials to fabricate biomedical parts, often with the aim of imitating natural tissue characteristics.

Blood-brain barrier is a highly selective semipermeable border of endothelial cells that prevents solutes in the circulating blood from nonselectively crossing into the extracellular fluid of the central nervous system where neurons reside.

Central nervous system (CNS) is the part of the nervous system consisting primarily of the brain and spinal cord.

Central pattern generator refers to neural circuits that produce rhythmic motor behavior without rhythmic input in activities such as walking or breathing.

Chemotactic is the movement of an organism or entity in response to a chemical stimulus toward the source of the stimulus.

Contusion injury is a tissue injury where the capillaries are damaged by trauma, causing localized bleeding that extravasates into the surrounding interstitial tissues.

Critical gap length is defined as a nerve gap over which no recovery will occur without the use of nerve grafting or bridging.

Critical-sized defects are defined as those that will not heal spontaneously within a patient's lifetime.

Distal refers to the (injured) part of the tissue away from the neuron cell body.

Donor site morbidity refers to complications and functional restrictions that the patient has to undergo because of harvesting tissue from a healthy donor site.

Fascicle-to-fascicle repair is a surgical technique to precisely match fascicles to recover nerve function.

Full transection is a complete interruption of white matter tracts, segmental gray matter, and associated nerve roots in the spinal cord.

Gamma Motor Neurons are nerve cells, the cell bodies of which are also found in the CNS, that take part in the process of muscle contraction by monitoring muscle length and stretch.

Glia are nonneuronal cells of various types that perform a wide range of support functions in the peripheral nervous system (PNS) and normal CNS.

Hemisection spinal cord injury (SCI) model is a tissue injury model characterized by damage to one half of the spinal cord.

In situ means the location where it occurs under normal circumstances.

Intrathecal space is the fluid-filled area located between the innermost layer of covering (the pia mater) of the spinal cord and the middle layer of covering (the arachnoid mater).

Microenvironment is the micrometer range environments of cells.

Minimal invasive surgery is a surgical technique that limits the size of incisions needed to lessen wound healing time, associated pain, and risk of infection.

Myelin is the insulation around axons that speeds up the conduction of nerve impulses.

Necrosis is unprogrammed cell death due to cellular damage or infiltration by pathogens, as opposed to orderly programmed cell death via apoptosis.

Nerve guides are conduits between the severed proximal and distal nerve stumps to provide structural and trophic support.

Neuropathological condition is a disease of the nervous system.

Neurotrophic factors are a family of biomolecules that support the growth, survival, and differentiation of both developing and mature neurons. Neurotrophic factors are sometimes called neurotrophins.

Oligodendrocytes are a type of neuroglia whose main function is to provide support and insulation to axons in the central nervous system.

Parenchyma is the functional part of the tissue. In the nervous tissue, the parenchyma excludes, for example, fluid-filled spaces, blood vessels, or meningeal tissue (tissue that protect the brain and spinal cord).

Peripheral and Cranial Nerves contain nerve fibers (axons) that interconnect the central nervous system (CNS) to the periphery.

Peripheral nerve injuries (PNIs) occur when nerves of the peripheral nervous system are damaged due to physical or environmental factors or disease (e.g., accidents, falls, trauma, or diabetes).

Peripheral nervous system (PNS) consists of the nerves and ganglia outside the brain and spinal cord that reach organs and tissues like the heart, intestines, bones, and muscles.

Proximal is the (injured) part of the tissue closer to the neuron cell body.

Retrograde degeneration is a pattern of neuron destruction following axonal injury that spreads backwards along the axon, toward, and then into the nerve cell body.

Schwann cells are the myelin producing cells in the peripheral nervous system.

Sensory Neurons are nerve cells that carry sensory information from the body extremity to the CNS.

Spinal cord injury is damage to the spinal cord.

Spinal injury scar develops after spinal cord injury and consists of multiple cells and extracellular debris, with axonal growth inhibitory molecules to form a physical and chemical barrier for regenerating axons.

Wallerian degeneration is an active process of degeneration that results when a nerve fiber is cut or crushed and the part of the axon distal to the injury (i.e., farther from the neuron's cell body) degenerates.

Xenogeneic a tissue or organ that is derived from, originating in, or being a member of another species.

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