# 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. Neurotropic 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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