

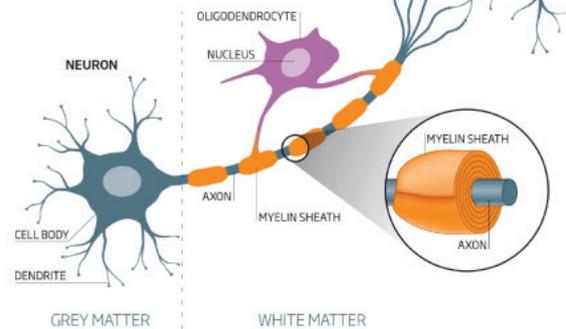
The Magic of Myelination

Buddha, wrote, "It is wrong to think that misfortunes come from the east, or from the west. They originate within one's mind. Therefore, it is foolish to guard against misfortunes from the external world and leave the inner mind uncontrolled."

That is why mastering our mindset is so important and that's where the magic of myelination comes in.

Under wraps

The myelin sheath insulates the axon, allowing electrical signals to zip faster through the brain. We are now discovering it also plays a vital role in learning.



Myelin is a fatty white substance that surrounds the axon of some nerve cells, forming an electrically insulating layer. It is essential for the proper functioning of the nervous system. The production of the myelin sheath is called myelination. In humans, myelination begins early in the third trimester. Although little myelin exists in the brain at the time of birth, during infancy myelination occurs quickly, leading to a child's fast development, including crawling and walking in the first year. Myelination continues through the adolescent stage of life.

Myelin is considered a defining characteristic of the vertebrates and was discovered in 1854 by Rudolph Virchow. Myelin is made by different cell types and varies in chemical composition and configuration but performs the same insulating function. Myelinated axons are white in appearance. Hence, the white matter of the brain.

Myelin helps to insulate the axons from electrically charged atoms and molecules. These charged particles (ions) are found in the fluid surrounding the entire nervous system. Under a microscope, myelin looks like a string of sausages. The main purpose of a myelin layer or sheath is to increase the speed at which impulses propagate along the myelinated fiber. Along unmyelinated fibers, impulses move continuously as waves, but in myelinated fibers, they hop or propagate by saltatory conduction.

Myelin decreases capacitance and increases electrical resistance across the cell membrane. Thus, myelination helps prevent the electric current from leaving the axon. However, the myelin layer does not ensure a perfect regeneration of the new fiber. Some regenerated nerve fibers do not find the correct muscle fibers and some damaged motor neurons of the peripheral nervous system die without regrowth. Damage to the myelin sheath and nerve fiber is often associated with increased functional insufficiency.

In short, the myelin sheath insulates the axon, allowing electrical signals to zip faster through the brain, and we are now discovering it also plays a vital role in learning. The role of pruning and linking the myelinated pathways in our brain is crucial to creating new results. Myelin is the magic we can utilize to live the life of our dreams.