

In A Nutshell

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Myelin

The wire, or axon, that conducts electrical and chemical signals between nerves is covered by myelin, an insulating material that protects the axons and ensures the swift and efficient conduction of electrical impulses.

In MS, inflammation damages myelin and oligodendrocytes (cells that form myelin). As the myelin is removed—a process called demyelination—the axon can become damaged. The demyelinated nerves become vulnerable and signal for help, which comes from cells called oligodendrocyte progenitor cells. They move to the damaged area and morph into more mature oligodendrocytes, which can generate new myelin, a process known as remyelination. Blocking factors such as proteins also can interfere with the ability of oligodendrocyte progenitor cells to become mature myelin-forming cells and move to the area that needs repair. All of this results in thinner, less protective myelin sheaths.

Remyelination therapies

1. Remove damaged myelin
2. Stimulate oligodendrocyte progenitor cells to proliferate and migrate into the damaged area.

Remyelination Research Trials

1. Bexarotene (Targretin)—a drug used to treat cancer—could trigger remyelination in humans. Serious side effects
2. A diabetes drug metformin (Glucophage) along with the antihistamine clemastine can produce remyelination with fewer side effects.
3. A monoclonal antibody was tested—binding to the surface of oligodendrocytes and triggering remyelination in experimental models of MS
4. Sabetirome, a synthetic compound has promoted remyelination in mice. It seems to not only reduce inflammatory activity in cells in the

- brain and spinal cord but it encourages remyelination and it also can prevent demyelination.
5. Chloroindazole (IndCl) was about 50 percent effective in repairing myelin in mice, protecting nerve fibers, and increasing visual function.

6. Another estrogen receptor modulator, bazedoxifene, has been shown to promote remyelination in animals and is now being tested in humans.
7. Mice were injected with theophylline, an asthma drug. Theophylline speeds up remyelination and helps repair or reduce MS lesions by activating an enzyme called HDAC2

[Can Myelin Repair Lead to the Reversal of Multiple Sclerosis?](#)
[\(brainandlife.org\)](#)

[Study reveals key molecule involved in myelin repair](#)
[\(azolifesciences.com\)](#)

Just for Fun

New research indicates that new brain cells are continuously formed in response to physical exercise, injury, and mental stimulation. Glial cells, particularly the ones known as oligodendrocyte progenitors, are extremely responsive to external signals and injuries. These cells can identify changes in the nervous system and subsequently form new myelin

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