

In A Nutshell
March 2019

Remyelination

This is about the fourth “In a Nutshell” that I have done relating to myelin repair. I truly believe that this area of research will be the hope of returning function to what we have lost due to this disease.

Multiple sclerosis (MS) can be defined as the demyelination, or erosion, of the myelin coating of central nervous system neurons by a rogue immune system. Remyelination describes the repair of myelin. A healthy brain can replace lost or damaged myelin if given time and opportunity. But for someone with MS, disease progression interferes with these efforts.

Remyelination therapy, ideally, could offset progression and potentially reverse disability for some.

Remyelination can restore nerve function, prevent further damage, and reduce the risk for clinical disability

- **Myelin regulation** involves “running interference” for remyelination to take effect. Strategies include pharmacological modulation of signal pathways, cleaning up myelin debris, providing metabolic support for neurons, and inflammation control.
- **Myelin repair and restoration** enlists a “repair crew” to enter the neuron to patch or replace damaged myelin, restoring signal pathways so messages can be delivered without disruption in signal speed or quality.
- **Improved measurement of remyelination in clinical trials** can deliver proof of effective remyelination therapy

Oligodendrocytes (February “In a Nutshell”) are responsible for the myelination of neurons. The process is dynamic, requiring these special cells to regulate myelin production in every neuron, then maintain it through oligodendrocyte progenitor cells (OPCs).

OPCs fail to perform in the brains of people with MS. Causes include lesion load, blood-brain barrier disruption, the presence of cytokines, and other processes

New imaging technologies are under development to measure remyelination efficacy, including:

- Diffusion tensor imaging (DTI)
- magnetized transfer imaging (MTI)
- myelin water fraction imaging (MWF)
- positron emission tomography (PET)

Just For Fun

Some remyelination substances currently under observation include the following:

Cleistine, GSK239512, Opicinumab, Ocrelizumab, GNBAC1, Simvastatin, Biotin, Quetiapine fumarate, IRX4204, Kappa opioid, Domperidone, Spingosine-1-phosphate receptor modulators, Antisemaphorin 4D (VX15/2503), The γ -secretase inhibitor quercetin, Teriflunomide.

Please google these for details.

https://multiplesclerosisnewstoday.com/2019/02/21/need-to-know-remyelination-therapy-resources/?utm_source=Multiple+Sclerosis&utm_campaign=b42dba27b9-RSS_US_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_b5fb7a3dae-b42dba27b9-71589013

<https://journals.sagepub.com/doi/pdf/10.1177/1352458518800827>