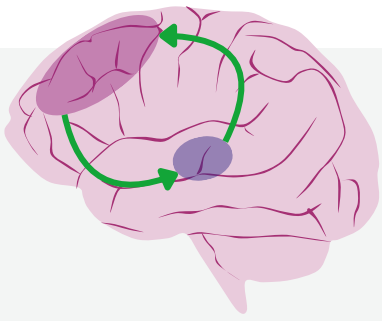
Missing piece of myelin disturbs the brain's rhythm

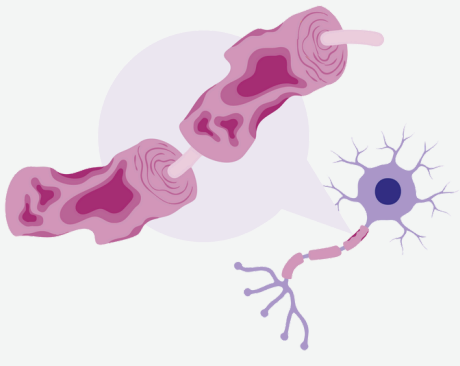
Our nerve cells are surrounded by a protective layer (myelin). This protective layer allows signals to pass between cells incredibly quickly. But what happens when goes this layer goes missing from cells that transfer signals over longer distances?

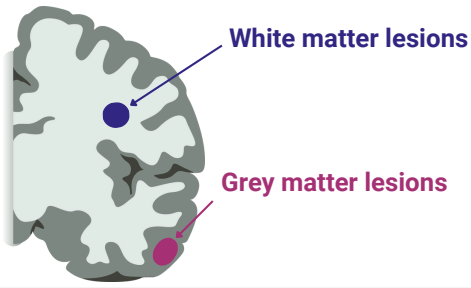


Processing sensory information requires continuous communication between the **cerebral cortex** and the **thalamus**. These interactions are known as the **corticothalamic loops**.

These loops play an important role in processing sensory information. In people with **Multiple Sclerosis (MS)**, the breakdown of myelin in these loops can cause **cognitive impairments**.

To explore the role of myelin in the process of transferring information to the thalamus, researchers administered a **toxic substance that breaks down myelin**. Surprisingly, this degradation only occurred in the parts **located closest to the cell body**.



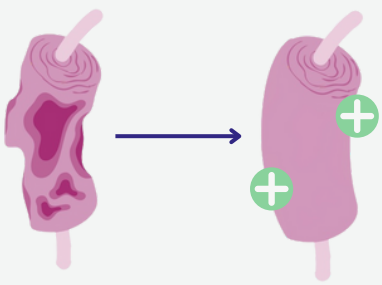


This means that this method mostly imitates how MS develops in areas where the cell bodies are located: the so-called **grey matter lesions**. With such lesions, the cognitive impairments are often more severe and the prognosis worse.

The researchers discovered that the missing piece of myelin caused the **first wave of signals** to no longer be sent to the thalamus. This is as if you scan a **barcode** but skip the first black stripe, making the product unrecognisable.

The signals still reached the thalamus, but **less precisely**, disrupting communication with the cortex. As a result, mice were less precise in detecting **what and where** their whiskers touched.

In the future, they want to investigate how myelin damage in this area could be **recovered**. That way, the severe symptoms associated with the **grey matter lesion** in MS can one day be alleviated.



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