

Hopes for reversing age-associated effects in MS patients

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New research highlights the possibility of reversing ageing in the central nervous system for multiple sclerosis (MS) patients. The study is published today, 06 January, in the journal *Cell Stem Cell*.

As we get older, our bodies' ability to regenerate decreases. This is not only true for our skin (which is evident in the wrinkles that develop as we age) but also true for other tissues in the body, including the regenerative processes in the brain. For diseases which often span several decades and are affected by regenerative processes, such as multiple sclerosis, this can have massive implications.

In [multiple sclerosis](#), the insulating layers that protect [nerve fibres](#) in the brain, known as myelin sheaths, become damaged. The loss of myelin in the brain prevents nerve fibres from sending signals properly and will eventually lead to the loss of the nerve fibre itself. However, early in the disease, a regenerative process, or remyelination, occurs and the myelin sheaths are restored. Unfortunately, as people with MS age, remyelination decreases significantly, resulting in more nerve fibres being permanently lost.

However, a new study in mice shows that the age-associated decline in the regeneration of the nerve's [myelin sheath](#), or remyelination, is reversible. The proof of principle study demonstrates that when old mice are exposed to the [inflammatory cells](#) (called monocytes) from young mice, the ageing remyelination process can be reversed.

Professor Robin Franklin, Director of the MS Society's Cambridge Centre for Myelin Repair at the University of Cambridge, said: "What we have shown in our study, carried out in collaboration with Dr Amy Wagers and colleagues at Harvard University, is that the age-associated decline in remyelination is reversible. We found that remyelination in old [adult mice](#) can be made to work as efficiently as it does in young adult mice.

"For individuals with MS, this means that in theory regenerative therapies will work throughout the duration of the disease. Specifically, it means that remyelination therapies do not need to be based on stem cell transplantation since the stem cells already present in the brain and spinal cord can be made to regenerate myelin - regardless of the patient's age."

MS affects approximately 100,000 people in the United Kingdom, 400,000 in the United States and several million worldwide. Symptoms of the disease can include the loss of physical skills, sensation, vision, bladder control, and intellectual abilities.

More information: The paper 'Rejuvenation of regeneration in the aging central nervous system' will be published in the 06 January edition of *Cell Stem Cell*.

Provided by University of Cambridge

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