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Discovery could repair nerve damage caused by MS

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Scientists are hailing a significant development in the treatment of multiple sclerosis after they repaired the damage caused by the disease.

At present there are no drugs available that can restore myelin, the protective coating which covers the nerves and is destroyed by MS. However, a research team at Edinburgh University has found a receptor in the brain and spinal cord which can kick-off repairs. They used it to reverse the damage in mice.

The team believes that the discovery opens the door to new treatments that could help MS patients recover from painful symptoms and regain movement.

The same molecule also has the potential to help babies who suffer nerve damage at birth to heal, possibly sparing children from disability.

Veronique Miron, principal investigator on the study, said: "This is an exciting development for us and we hope that it could lead to a new therapy."

More than 11,000 people in Scotland suffer from MS, making the condition more common among Scots than most other nationalities in the world.

It occurs when the sufferer's immune system attacks the myelin protecting nerve fibres. This causes scarring which in turn affects the way nerve messages travel between the brain and the rest of the body. Patients can lose their ability to walk and their sight.

Dr Miron and her team at Edinburgh University's MRC Centre for Reproductive Health had previously discovered a protein called activin-A. They knew that this protein was important in myelin repair but were not sure how it worked.

Now they have found that it binds to a receptor — called activin receptor 2a — on cells which make myelin, causing them to switch on where there is damage. Examining the brains of patients who had died with MS and infants who had suffered brain injuries, they discovered that those who had higher levels of activin receptor 2a also had more myelin. In laboratory experiments, the team also found that they could use the receptor in mice to repair myelin damage.

Dr Miron said: "There was one where we caused damage to the myelin similar to what happens in MS. Then we stimulated the receptor to see if we could get more myelin repair and we did."

The research team, whose findings are reported in the journal *Acta Neuropathologica*, are now working on finding drugs which can mimic this effect in patients with the disease. Longer term, they also hope a treatment could be developed for babies who have suffered myelin damage at birth. At present cooling the infant's head — known as therapeutic hypothermia — was the only remedy she said.

Susan Kohlhaas, director of research at the MS Society, said: "We're thrilled to be supporting Dr Miron's groundbreaking work. Many of the 100,000 people living with MS in the UK still don't have any treatment options. Finding new targets like this receptor mean we'll be able to develop more effective treatments and stop MS faster."