

New stem cell gel applied to site of injury 'can regenerate broken spinal cord nerves to an astonishing degree'

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- Gel made by embedding neural stem cells in a mixture of blood clotting protein and growth chemicals

By [Graham Smith for MailOnline](#)

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A stem cell gel developed by scientists can regenerate broken spinal cord nerves, research has shown.

The gel is applied to the site of an injury. In rats with completely severed spinal cords, it produced an 'astonishing degree' of nerve growth, U.S. scientists said.

Treated animals which were previously paralysed experienced 'significant' functional improvement and were able to move all the joints of their affected legs.



Breakthrough: A stem cell gel developed by scientists can regenerate broken spinal cord nerves, research has shown

The gel was made by embedding neural stem cells in a mixture of blood clotting protein and growth chemicals.

Lead researcher

Professor Mark Tuszynski, from the University of California at San Diego, said: 'Using this method, after six weeks the number of axons (nerve fibres) emerging from the injury site exceeded by 200-fold what had ever been seen before.

'The axons also grew ten times the length of axons in any previous study, and, importantly, the regeneration of these axons resulted in significant functional improvement.'

Similar results were obtained in the laboratory using human stem cells.

Cells were tagged with a fluorescent protein so that their progress could be monitored.

Scientists watched them grow, become neurons, and sprout axons.

In June, it was announced that researchers had successfully grown living bones in a laboratory using stem cells.

That technique could in future be used to replace shattered limbs, treat osteoporosis and arthritis and fix defects such as cleft palate, it was claimed.

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The researchers took around a month to transform stem cells originally taken from fat tissue into sections of fully-formed bone up to several centimetres long.

Standard bone grafts involve two procedures, to cut bone from elsewhere in the patient's body before transplanting it into the damaged area, which carry the risk of infection and complications.

Bone can also be obtained from donations, but this brings the chance of rejection.

The new method would allow bones to be custom made to shape outside the body, using the patients own stem cells, removing the need for a potentially traumatic operation and reducing the likelihood of rejection.

So far the research has been carried out only on animals but a patient trial is planned for later this year.

That Israeli technology, developed by biotech company Bonus BioGroup and researchers at the Technion Institute of Research, involves growing the bone to fit the exact shape and size of the damaged area.