

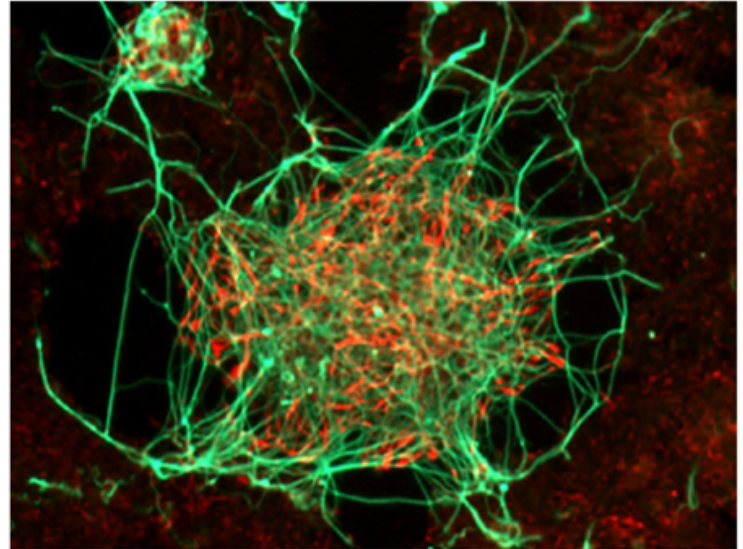
Spinal cord injuries: how could stem cells help?

What do we know?

The spinal cord is a collection of millions of nerve cells (neurons) inside our spine that sends signals to and from the brain. Damage to this important and delicate tissue is often permanent and can result in paralysis.

There are presently no effective treatments for restoring spinal cord function.

However, several current clinical studies are testing the safety and effectiveness of stem cells as treatments. These treatments hope to at least partially restore function to the spinal cord. Several studies have shown promising results, but definitive outcomes are still unknown.



Neurons are the main cell type found in the spinal cord
Image: Sally Lowell, MRC-CRM, University of Edinburgh

What are researchers investigating?

Inflammation and toxins released by damaged cells at the site of a spinal injury often cause further harm to surrounding cells. Researchers are developing treatments that reduce inflammation and soak up toxins and free radicals to minimise additional damage.

Spinal cord injuries often damage neurons and the supporting cells that wrap & insulate neurons. Damaging the supporting cells can cause otherwise functional neurons to die. Researchers are studying how stem cells might be used to replace neurons and their supporting cells to greatly improve a patient's chances for recovering function.

What are the challenges?

Most stem cell treatments presently in clinical trials rely on transplanted stem cells to automatically repair damaged areas of the spinal cord. It's not known how reliable and reproducible this treatment will be for different patients and types of injuries.

Stem cell treatments for spinal cords are thought to work best if offered in the short time-frame after an injury. Scarring at the site of injury can hinder the effectiveness of a treatment, so this also needs to be addressed.

It isn't yet clear how much function can be restored with the stem cell treatments presently in clinical trials.