EuroStemCell

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Stroke: how could stem cells help?

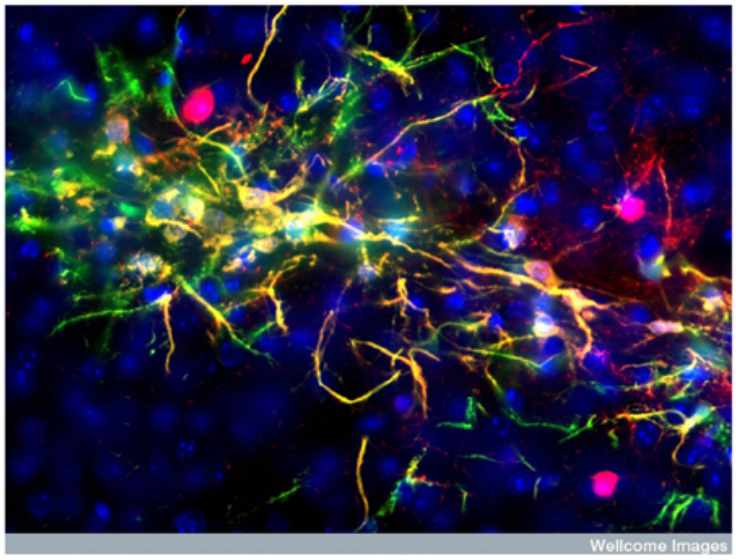
What do we know?

Severe reductions in blood flow that occur in strokes can seriously damage parts of the brain or could even be fatal.

Anyone of any age can have a stroke, but age, family health history and lifestyles can affect the risk of having a stroke.

The best treatment for someone suffering a stroke is to get treatment as quickly as possible to restore blood flow.

Brain (neural) stem cells can make any cell in the brain and will naturally repair small amounts of brain damage. Researchers hope that neural stem cell treatments might be able to help stroke victims by partially repairing brain damage.



Mouse neural stem cells that have been transplanted into a mouse brain and are developing into neurons.

Image: Yirui Sun. Wellcome Images.

What are researchers investigating?

Scientists want to understand the signals controlling neural stem cells in order to design better treatments.

Researchers are working to develop medications that promote neural stem cells already in the brain to multiply, migrate towards damaged areas and start the repair process.

There are limited numbers of neural stem cells in our brains. Although large numbers of neural stem cells can be made in laboratories with iPSCs, these cells could cause tumours and more brain damage if incorrectly made. Further studies must show that lab-made cells are both safe and effective.

What are the challenges?

Neural stem cell therapies aiming to rebuild parts of the brain will also require rebuilding the vascular system (to supply blood flow) and reforming the intricate and complex networks between nerve cells. Natural repair processes of neural stem cells may be able to do some of this, but researchers will need to learn much more to assist neural stem cells in this rebuilding process.

Strokes damage large areas of the brain. Although therapies and stem cell treatments may help to restore patients' motor function and repair parts of the brain, severely damaged areas may be permanently destroyed.

For more information visit: **www.eurostemcell.org/stroke**