

Scientists move towards stem cell therapy trials to mend shattered bones

February 18 2008

The UK Stem Cell Foundation, the Medical Research Council and Scottish Enterprise, in partnership with the Chief Scientist's Office, are funding a £1.4 million project to further the research at the University of Edinburgh with a view to setting up a clinical trial within two years.

The initiative could have a major impact on treating conditions such as osteoarthritis as well as treating trauma victims whose bones have been shattered beyond repair.

It involves using a "bioactive scaffold" made to protect the stem cells and simulate their growth into bone or cartilage once they are placed in the affected area. The scaffold consists of a fairly rigid mesh structure, coated or impregnated with a drug that affects the patients cells.

Dr Brendon Noble, of the University of Edinburgh's MRC Centre for Regenerative Medicine, said: "This is a novel approach in terms of treating damaged bones and cartilage. The aim is to translate the knowledge we have gained from bone biology studies into tangible treatments for patients."

Researchers will also work with clinicians, headed by Hamish Simpson, professor of orthopaedics and trauma at the University of Edinburgh, with a view to eventually translating their findings into treatments for patients.

As well as using cells derived from bone marrow, the scientists will work

in collaboration with the Scottish National Blood Transfusion Service to culture bone forming cells derived from blood.

The advantage of these blood-sourced cells is that they can be extracted without the need for surgery. The use of a patient's own stem cells means that they are also unlikely to be rejected.

Dr Anna Krassowska, research manager for the UK Stem Cell Foundation said: “In the UK hip fractures kill 14,000 elderly people every year - more than many cancers. The worldwide market for orthopaedic devices alone represents some \$17 billion. This research has the potential not only to impact on a significant number of people's lives but to open up one of the largest stem cell markets in the industry.”

For nearly a decade, scientists have known broadly the right chemical conditions required to encourage undifferentiated stem cells taken from a patient's bone marrow to change into bone and cartilage cells in the laboratory. However, the use of the “bioactive scaffold” being developed at the University of Edinburgh aims to enable these cells to grow within the human body. The initial clinical trial, resulting from the laboratory work is likely to involve around 30 patients.

Source: University of Edinburgh

Citation: Scientists move towards stem cell therapy trials to mend shattered bones (2008, February 18) retrieved 4 July 2024 from <https://phys.org/news/2008-02-scientists-stem-cell-therapy-trials.html>

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