

Stem cells offer cartilage repair hope for arthritis sufferers

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Research being presented today at the UK National Stem Cell Network Annual Science Meeting in Edinburgh could offer hope that bone stem cells may be harnessed to repair the damaged cartilage that is one of the main symptoms of osteoarthritis.

Scientists at Cardiff University have successfully identified stem cells within articular cartilage of adults, which although it cannot become any cell in the body like full stem cells, has the ability to derive into chondrocytes - the cells that make up the body's cartilage – in high enough numbers to make treatment a realistic possibility. The team have even been able to identify the cells in people over 75 years of age.

Osteoarthritis affects over 2M people in the UK and occurs when changes in the make up of the body's cartilage causes joints to fail to work properly. At its worse it can cause the break up of cartilage, causing the ends of the bones in the joint to rub against each other. This results in severe pain and deformation of the joint. One current treatment to treat damaged cartilage due to trauma in younger patients is to harvest cartilage cells from neighbouring healthy cartilage and transplant them into the damaged area. Unfortunately, only a limited number of cells can be generated.

The research team, funded by the Arthritis Research Campaign and the Swiss AO Foundation, have identified a progenitor, or a partially derived stem cell in bovine cartilage that can be turned into can be turned into a chondrocyte in culture. Their breakthrough came in identifying a similar

cell in human cartilage that was more like a stem cell with characteristics that they could be used to treat cartilage lesions due to trauma but also mark the onset of osteoarthritis

Lead researcher Professor Charlie Archer from the Cardiff School of Biosciences said: “We have identified a cell which when grown in the lab can produce enough of a person’s own cartilage that it could be effectively transplanted. There are limitations in trying to transplant a patient’s existing cartilage cells but by culturing it from a resident stem cell we believe we can overcome this limitation.

“This research could have real benefits for arthritis sufferers and especially younger active patients with cartilage lesions that can progress to whole scale osteoarthritis.”

Prof Archer commented: “We have embarked on the next stage which is to conduct an animal trial which is a necessary pre-requisite to a clinical trial which we hope to start next year if the results are positive”

Source: Biotechnology and Biological Sciences Research Council

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