

Cartilage that repairs itself? New research reveals important clues

July 30 2008

A strain of mice with the natural ability to repair damaged cartilage may one day lead to significant improvements in treatment of human knee, shoulder and hip injuries.

Researchers at Oregon Health & Science University have discovered males from a strain of mice called MRL/MpJ have the innate ability to repair their own knee cartilage. "We think there is something special about these mice," said Jamie Fitzgerald, Ph.D., assistant professor of orthopedics and rehabilitation in the OHSU School of Medicine. "They have the ability to regenerate cartilage."

"Knee pain is one of the most common musculoskeletal complaints that bring people to their doctor," Fitzgerald said. Cartilage is a key culprit. "Human cartilage injuries heal poorly and can lead to cartilage degeneration and osteoarthritis. This is an enormous clinical problem. It is estimated that one quarter of the adult population will have some kind of arthritis by 2020."

Knee injuries are a significant issue for professional athletes. The National Football League Charities provided the initial grant to launch the study. "Cartilage injuries can be career-ending for football players," Fitzgerald said.

Greg Oden missed his rookie season with the Blazers because of a cartilage injury. Although it's not his primary injury, champion golfer Tiger Woods was sidelined for two months this spring after surgery to

deal with damaged cartilage in his left knee.

Fitzgerald and his fellow OHSU researchers Andrea Herzka, M.D., and Cathleen Rich studied knee injuries in 150 mice. Three months after the cartilage in their knees was damaged, male MRL mice had replaced a significant amount of the injured tissue with healthy cartilage. The results of their study were recently published in *Osteoarthritis and Cartilage*.

Chris Little, director of the Raymond Purves Bone and Joint Research Laboratories in Sydney, Australia, and one of the scientists involved in the project, says the finding is significant for human health. "The research we have published is an early, but important step in unraveling the important pathways that will facilitate development of new treatments."

The next step is understanding why these mice are able to restore the cartilage in their knees. "If we can identify what genes or proteins are necessary for cartilage to heal, we can work toward finding similar genes and proteins in humans," Herzka says. An actual treatment, however, "is many years away."

Fitzgerald became interested in studying the MRL strain of mice in 2005 while working at the Murdoch Childrens Research Institute in Melbourne, Australia. His work followed the observation that MRL mice had the ability to heal ear wounds without scarring, including replacing cartilage, hair follicles, skin and blood vessels. Little helped design the experiments and taught Fitzgerald and the OHSU team surgical techniques used in the effort.

Source: Oregon Health & Science University

Citation: Cartilage that repairs itself? New research reveals important clues (2008, July 30)
retrieved 23 April 2024 from

<https://medicalxpress.com/news/2008-07-cartilage-reveals-important-clues.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.