

Growing Cartilage from Stem Cells

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(PhysOrg.com) -- Damaged knee joints might one day be repaired with cartilage grown from stem cells in a laboratory, based on research by Professor Kyriacos Athanasiou, chair of the UC Davis Department of Biomedical Engineering and his colleagues.

Using adult stem cells from bone marrow and skin as well as human embryonic [stem cells](#), Athanasiou and his group have already grown [cartilage](#) tissue in the lab. Now they are experimenting with various chemical and mechanical stimuli to improve its properties.

Cartilage is one of the very rare tissues that lacks the ability to heal itself. When damaged by injury or osteoarthritis, the effects can be long-lasting and devastating.

“If I cut a tiny line on articular cartilage (the cartilage that covers the surfaces of bones at joints), it will never be erased,” Athanasiou said. “It’s like writing on the moon. If I go back to look at it a year later, it will look exactly the same.”

Work that Athanasiou's group began in the early 1990s at Rice University has resulted in the only FDA-approved products for treatment of small lesions on articular cartilage. (In total, Athanasiou's patents have resulted in 15 FDA-approved products.)

"This will be live, biological cartilage that will not only fill defects, but will potentially be able to resurface the entire surface of joints that have been destroyed by osteoarthritis," Athanasiou said. Currently, joint

replacements using metal and plastic prosthetics are the only recourse for the one in five adults who will suffer major joint damage from [osteoarthritis](#).

Provided by UC Davis ([news](#) : [web](#))

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