

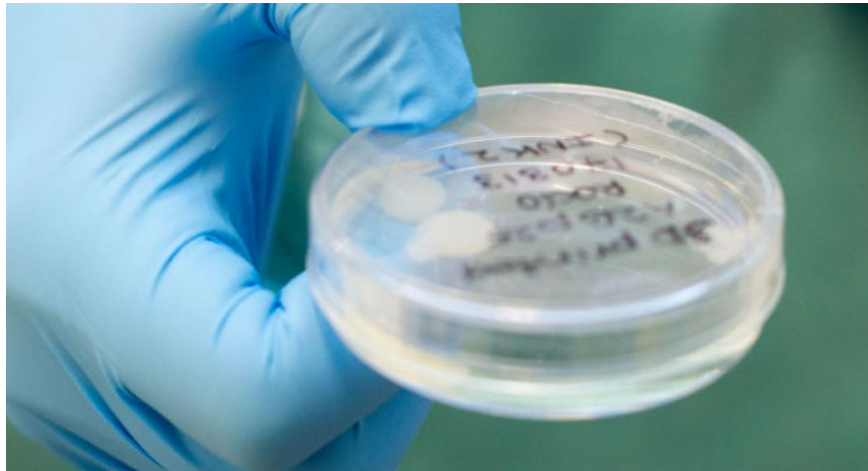
Unbelievable story: Successful creation of stem cells made from stem cells through 3D printing equipment

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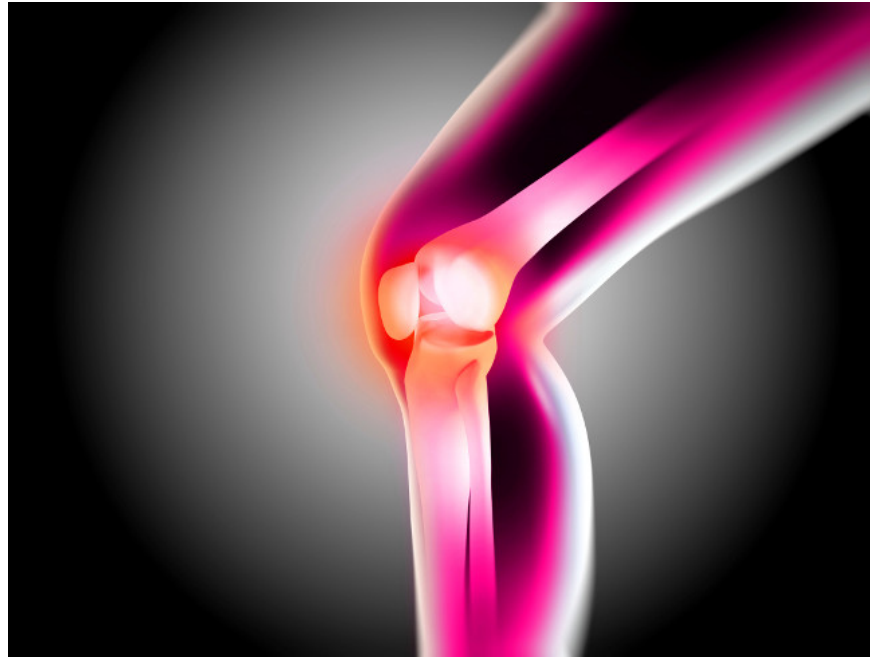
Specifically, researchers from Sahlgrenska Academy, University of Gothenburg, Sweden have announced that they have successfully built a new type of stem cell cartilage through bioprinter 3D biological printing technology.

To do this, the team collected cartilage cells from patients who had surgery on the head. The original cartilage cells are studied, manufactured, restored and make them a more versatile stem cell.



These versatile stem cells are nourished in **cellulose nanofibrillated ingredients** , which are then printed into a structure via bioprinter 3D biological printing device. The cartilage cell sample after being printed will be transplanted, operating in a growth environment and gradually, they will turn into cartilage tissue in the joint of lesions of patients.

Stina Simonsson, Associate Professor of Cell Biology at Sahlgrenska Institute, said: " *We have studied different methods and combined different growth factors for this new cartilage.*" *Each fish stem cell The core is wrapped in nano-cellulose, allowing it to survive more sustainably during printing into 3D structures .*



At the same time, we also have to create a fake growth environment, deceive immune signals to assemble new cartilage tissue made from stem cells after 3D printing. In theory, we fool the cell system in patients who recognize this cartilage tissue as completely benign, coherent and not alone . '

The 3D cartilage is made entirely of stem cells and eventually develops into cartilage very similar to human cartilage. Moreover, this new type of cartilage is not much different from the laboratory-made collagen containing type II collagen and examined under a microscope showing that the new cartilage also has the same structure as the cartilage tissue of people.

The team thinks that the new cartilage can be used to treat cartilage damage and defects as well as to treat osteoarthritis.

However, before that, the team has also developed a new type of cartilage with ' *cellulose structure* ' however it is not optimal to operate in the human body - Simonsson said. " *To get this latest research, they are I have to find the combined capabilities of 3D print cartilage made from stem cells with compatibility to treat patients, and also have to find the type of materials absorbed, accepted and systematic by the body. Endogenous cartilage accepts compatibility. And it is important that the clinical transplant process as well as its recovery efficiency must be truly safe under control . '*

This research has just been published on Scientific Reports.

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