

# Don't replace, just repair knee joints now

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**KANPUR:** Painful and costly knee replacement surgeries may soon become a thing of the past.

Indian Institute of Technology (IIT), Kanpur scientists are working on its alternative -- natural neo-cartilage. The neo-cartilage can repair damaged cartilages on the knee joints, which have been de-shaped because of

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**SUMRITA BHAT**

Scientist

osteoarthritis or other reasons.

The neo-cartilage works on the concept of cell therapy. It

catalyses natural generation of cells responsible for formation of cartilages.

"Neo-cartilage starts working as soon as it is implanted in the joints (through a small incision), helping the cells to grow and thus begin the repair process," said Professor Ashok Kumar of the Biological Sciences Department.

It takes six to eight weeks for production in the laboratory conditions and can be

used for replacing the whole or small lesions in the damaged cartilage, he said.

The team of scientists involved in the medical breakthrough used advance tissue engineering concept for acquiring the key ingredient for the cartilage -- chondrocytes -- from knee joints of people and tested it on other people suffering from knee problems. Chondrocytes are cells from sinival fluid and cartilage.

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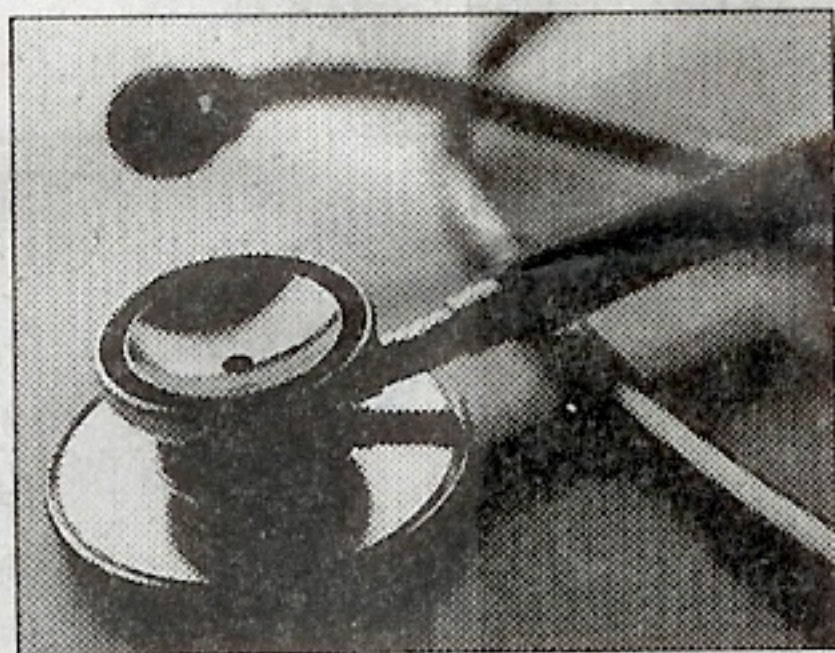
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Prof Kumar and his team comprising Anuj Tripathi, Sumrita Bhat and Deepti Singh have developed a novel approach using 'cryogel' -- a macroporous polymer matrix for the synthesis of neo-cartilage.

"We extracted chondrocyte cells and put them on polymer matrix, where we noticed that they started growing themselves. The newly-grown cells synthesised natural material and subsequently they formed cartilage as are found in human joints," said Prof Kumar.

At present surgeons use conventional approaches of treatment like allogenic or autologous chondrocyte transplants, prosthesis transplantations (Atal Behari Vajpayee was operated upon with this process) mostly for osteoarthritis patients requiring knee replacement etc.

Team member Sumrita Bhat said: "The neo tissue is made of collagen and glycosamino-



glycans (components of extra cellular matrix). We take out small part of human cartilage and grow it on polymer matrix. Once the cartilage is made it is implanted into the damaged knee joints of a person and there it repairs the damaged joints, itself."

Prof Kumar said, "Talks are on with CSMMU, Lucknow and soon we would start final clinical trials there."

He said, "At present cells are imported from mainly Singapore and implanted in knee joints at AIIMS but that treatment is not affordable for a large section of people. The neo-cartilage would do wonders in medical sciences."