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IIT-G researchers use silk to design artificial vertebral disc

02 February 2018 | News

The team has developed a fabrication procedure for a silk-based bioartificial disc adopting a directional freezing technique.

Researchers from the Department of Biomaterial and Tissue Engineering at Indian Institute of Technology, Guwahati (IIT-G), have developed a silk-based bioartificial disc that may find use in disc replacement therapy in future. The researchers claim that the use of a silk biopolymer to fabricate a biocompatible disc can reduce the cost of artificial discs in the future.

The team has developed a fabrication procedure for a silk-based bioartificial disc adopting a directional freezing technique. The disc mimics internal intricacy of human disc and its mechanical properties too are similar to those of the native ones. The new disc has been tested in laboratory mice and scientists observed negligible immune response.

At present, therapeutic treatment for degenerative disc disease can only provide symptomatic relief of pain without restoring the functions of discs, while disc replacement surgery is very costly. The researchers believe if the silk-based biodiscs transcends clinical translation, it can be an affordable option for disc replacement therapy in future.