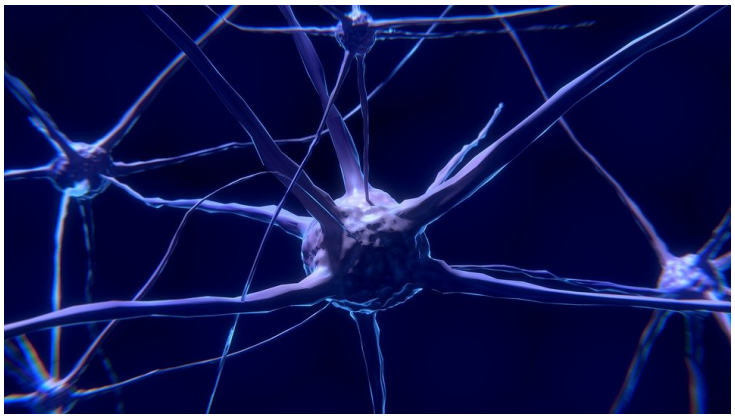
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IIT researchers successfully regenerate damaged nerve

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A team led by Prof. Utpal Bora from the Department of Biosciences and Bioengineering at IIT Guwahati synthesised nerve conduits by electrospinning a mixture of silk fibroin protein and electrically conductive polymer called polyaniline.



Researchers at the Indian Institute of Technology (IIT) Guwahati have taken the first successful step in treating peripheral nerve damage which can result from traumatic injuries caused by accidents, physical conflict, bullet wounds as well as during surgical intervention.

The nerve conduits synthesised by the researchers and implanted in rats with sciatic nerve injury showed excellent functional recovery one year after implantation.

A team led by Prof. Utpal Bora from the Department of Biosciences and Bioengineering at IIT Guwahati synthesised nerve conduits by electrospinning a mixture of silk fibroin protein and electrically conductive polymer called polyaniline. To produce tubular shaped nerve conduits, the researchers rolled the electrospun sheets multiple times over a stainless steel spindle.

Nerves are like electrical wires where the conducting portion of the nerves is covered with myelin (a fatty white substance) sheath secreted by specialized cells called Schwann cells that forms an insulating layer. To fabricate a conduit that mimics this native architecture, the Schwann cells, which surround the axons, were cultured on the conduits. The Schwann cells were found to grow between the multiple layers of silk fibroin-polyaniline composite, and also on the surface and inside of the conduit.

The next step is to conduct trials on pigs, which are genetically and physiologically closer to humans. There is a growing demand for nerve implants with increasing number of road accidents but there are no indigenously developed nerve conduits available in India. Scientists at IIT have taken the first step to make locally developed nerve implants available in India.