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IIT Guwahati produces cardiac proteins to fix damaged heart

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Researchers have come up with a technique that can convert skin cells into heart cells



A research team from the Indian Institute of Technology Guwahati (IIT-G) has developed a ‘Recombinant Protein Toolbox’ comprising of six special proteins, which can be used to convert healthy skin cells or any somatic cells from an adult human body into heart cells, specifically cardiomyocytes.

The heart cells created using this toolbox can have the same function as the original heart cells and can be used to regenerate damaged heart tissues. Importantly, this toolbox can facilitate the generation of autologous heart cells in a lab.

The team has collaborated with Dr Vishwas Kaveeshwar from the Central Research Laboratory at SDM College of Medical Sciences and Hospital in Dharwad, Karnataka, to validate the biological activity of the recombinant fusion proteins.

Explaining the details of their work, Dr Rajkumar P. Thummer, Assistant Professor, Department of Biosciences & Bioengineering, IIT Guwahati said, “Recombinant protein based cellular reprogramming is a promising alternative and the safest approach among other available non-integration approaches. As these proteins do not modify or alter the genome of the cells, the cells generated using this reprogramming approach have a high cell therapeutic value. Several challenges associated with the heterologous production of these recombinant proteins have been addressed in our six research publications in different journals.”

According to Krishna Kumar Haridhasapavalan, Research Scholar at IIT Guwahati, and first author of the papers published by the team, “The recombinant proteins can be delivered to target sites without the need of any harmful reagents. In addition to cardiac repair, these proteins can be studied for their role in various cancers as suppressors or promotors of tumour growth.”