

NOVEL 'BIONIC MUSHROOMS' CAN PRODUCE ELECTRICITY

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Cyanobacteria 3D-printed on a white button mushroom.

Scientists, including those of Indian origin, have created a bionic device that generates green power by 3D-printing clusters of cyanobacteria on an ordinary white button mushroom.

The research by the Stevens Institute of Technology in the U.S. is part of a broader effort to better improve our understanding of cells biological machinery and how to use them to fabricate new technologies and useful systems for defence, healthcare and the environment.

The researchers took an ordinary white button mushroom from a grocery store and made it bionic, supercharging it with clusters of cyanobacteria that create electricity and swirls of graphene nanoribbons that can collect the current.

"In this case, our system — this bionic mushroom — produces electricity," said Manu Mannoer, an assistant professor at Stevens.

"By integrating cyanobacteria that can produce electricity, with nanoscale materials capable of collecting the current, we were able to better access the unique properties of both, augment them, and create an entirely new functional bionic system," he said.

Cyanobacteria's ability to produce electricity is well known. However, researchers have been limited in using these microbes in bioengineered systems because cyanobacteria do not survive long on artificial bio-compatible surfaces.

"We showed for the first time that a hybrid system can incorporate an artificial collaboration, or engineered symbiosis, between two different microbiological kingdoms," said Sudeep Joshi, a postdoctoral fellow.

"With this work, we can imagine enormous opportunities for next-generation bio-hybrid applications," Mr. Mannoer said.

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