

Mycelium Could Be the Future of Healing Architecture

A Penn team is 3D-printing living materials from fungus—no synthetic glue needed.

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THE DATA

3D-printed building materials composed solely of organic matter

Material Composition

The team developed a composite using only mycelium and plant-based paste, eliminating synthetic binders.

This innovation represents a paradigm shift in biomaterials: instead of treating living organisms as inputs, the team engineered a process where the organism itself—grey oyster mushrooms—becomes the structural architect. The material is both firm and flexible, self-healing, and fully biodegradable.

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<https://curf.upenn.edu/about-us/student-news/Where-Biology-Meets-Architecture>



01

AI Can't Design What Biology Already Knows

When AI treats biological systems as data points to be optimized, it misses the deeper logic of adaptation and resilience. The real breakthrough isn't the 3D printer—it's the decision to let the organism guide the design.



02

Failure Is the Algorithm

In AI-driven healthcare, failure is often treated as noise to be filtered out. But in this project, failure was the training data. The system wasn't trained on success—it was trained on the iterative, non-linear process of biological emergence.

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