

Synthetic biology in space: Mushrooms could be used to build extraterrestrial habitats

In a new “astromycological” venture [launched in conjunction with NASA](#), [Paul] Stamets and various research teams are studying how fungi can be leveraged to build extraterrestrial habitats and perhaps someday even terraform planets.

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[Scientific American:] How can Earth’s fungi help with the development of human habitats or even entire ecosystems on other planets?

[Stamets:] [Plants that support terraforming] need minerals, and pairing fungi up with the plants and debris from humans [causes them to] decompose into a form that then creates rich soils that could help generate the foods that astronauts need. It’s much easier to take one seed and grow your food than it is to take a ton of food to space, right?

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[Scientific American:] In addition to generating healthy soil, there are teams investigating how fungi might be used to grow structures on other worlds. Could you tell me more about how this sort of so-called mycotecture might work?

[Stamets:] We grow lots of reishi mycelium, for instance. We grow reishi blocks.... [T]hey could then not only insulate you from the cold on the Martian or asteroid surface, but the house itself becomes a giant battery for power because they’re so rich in carbon fibers. So that, to me, is really cool.

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