

## Bugs in orbit unlock secret to life in space

By Emily Bourke

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**Microbes taken from a cliff in a small fishing village in Britain have survived the hostile conditions of space and could hold the key to human life beyond Earth.**

For humans to live in space for any length of time oxygen is essential, and a previously unknown bacteria might just provide the key.

The bacteria were living inside a rock that was bolted to the outside of the International Space Station during an experiment.

More than a year later many were still alive.

The origin of the microbes is a fishing village and popular holiday town called Beer in the south-west of Britain.

Professor Charles Cockell from Britain's Open University says the rugged coastal cliff face is one of the least hospitable places on Earth.

"For the microbes living on the cliff they're exposed to seawater, solar radiation, periodic desiccation," he said.

"So in fact on those cliffs is a community of microbes that can survive quite extreme conditions.

"So we thought that perhaps this was a good community to send into space and would give us a high chance of finding something completely new that would survive the extreme conditions of outer space."

Professor Cockell says in 2008 scientists took a sample of the rocks and the bacteria in them, blasted them into orbit and put them to the test.

"They were launched into space on a space shuttle and they were carried during a space walk to the outside of the International Space Station," he said.

"They were bolted on the outside for a year-and-a-half."

Professor Cockell says the micro-organisms were exposed to the cold vacuum of space and cosmic radiation.

"Everything died on that rock, apart from this one particular type of microbe that survived in outer space," he said.

"It's growing in the rocks naturally. It's just that we didn't know it was there before.

"And this was the only thing that survived out of the whole community these extreme cold and desiccating conditions of space."

### Life support

It is the first time a micro-organism has proved resilient enough to survive in space.

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Professor Cockell points to the bacteria's unique ability to produce oxygen.

"This photosynthetic microbe can produce oxygen which people, of course, can breathe," he said.

"So we think this microbe could be used in life-support systems to sustain people on the Moon and Mars where there is no oxygen.

"You have to produce it by microbes in order to live on the surface of those planetary bodies."

That would require breeding massive colonies of microbes.

"You could envisage a situation in the future where you would simply grow these things in vats that would produce oxygen that would then be funnelled into a habitat where people were living and would provide them with the sustenance they need to survive there," Professor Cockell said.

"This is not speculation. People have designed these life-support systems in the European Space Agency and at NASA and they work very well."

It might sound like science fiction, but the cliffs of Beer could unlock the secret to making human habitation in space possible.

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