

# Lichens can survive space conditions for extended periods

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Expose facility. Credit: ESA

A new study shows that a large percentage of hardy lichens exposed to space conditions for one and a half years remain viable after returning to Earth. The lichen *Xanthoria elegans* was part of the lichen and fungi experiment (LIFE) on the International Space Station (ISS).

The lichen had been exposed before on previous experiments such as BIOPAN, but never for such a long period of time.

LIFE was attached to the exterior of the ISS for 1.5 years, exposing the organisms inside to the stresses of low Earth orbit, including ultraviolet irradiation, [cosmic radiation](#) and vacuum conditions. A subset of the lichen samples were also exposed to simulated Mars conditions by adding an analog Mars atmosphere and solar radiation filters to the experimental chambers.

After their journey in space and return to the Earth surface, an impressive 71% of the lichen remained viable.

The study can help astrobiologists understand the mechanisms that living organisms might use to survive on planets other than Earth. These mechanisms provide clues about how life may have originated and evolved in the conditions present on locations like ancient Mars.

The research can also provide insight into a process known as lithopanspermia – the transfer of life from one celestial body to another inside rocks. For more information on this aspect of the LIFE experiment, see the video below from European Space Agency (ESA).

**More information:** Brandt et al. 2014. Viability of the lichen *Xanthoria elegans* and its symbionts after 18 months of space exposure and simulated Mars conditions on the ISS. *International Journal of Astrobiology*, [journals.cambridge.org/action/...  
Id=S1473550414000214](https://journals.cambridge.org/action/showFullText?fromOpenAccess=true&url=https://doi.org/10.1017/S1473550414000214)

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