

## Lichens survived ground simulation tests before integration on board of the EXPOSE R2 mission

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Ground simulation tests are necessary for selection of the most promising biological organisms for flight experiments in Low Earth Orbit or other space destinations: Simulation of the environmental parameters of the mission, as well as of sample assembly and disassembly, need to be performed, allowing the qualification of the experiment and facilitating the post-flight analysis of the exposed biological material and thus, a deeper understanding of the individual and synergistic effects of space.

This work is a presentation of the results obtained with the lichen species *Circinaria gyrosa*, after the Experiment Verification tests (EVT) and Space Verification tests (SVT) in the frame of the EXPOSE-R2 Mission Preflight Test Program, performed at DLR (Cologne, Germany), as part of the EXPOSE-R2 Mission Preflight Test Program. The high vitality and resistance capacity of *C. gyrosa*, demonstrated with the PSII values measured after reactivation in the laboratory and the CLSM (Confocal Laser Scanning Microscopy) results confirm the high survival potential of these species to space and Mars conditions, taking part of the BIOMEX experiment (Biology and Mars Experiment, EXPOSE R-2, ISS, 2016-2018) and contributing to our understanding of extremotolerance and the Lithopanspermia hypothesis.