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ALCYONE

Autonomous Living Cell analYsis ON-chip for Evaluation of space Environment Effects

Funded by
the European Union

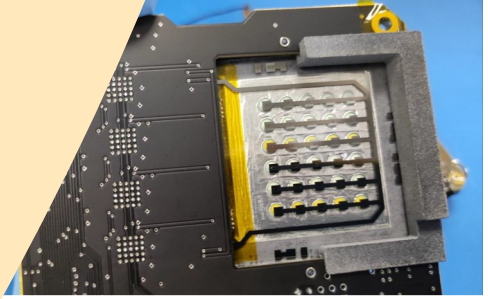
ALCYONE

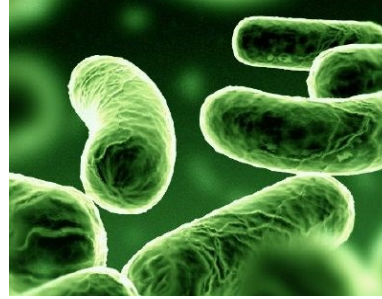
Long-term missions in space are inefficient and dangerous for humans due to the risks of high **radiation exposure**. Unfortunately, solutions have yet to be found.

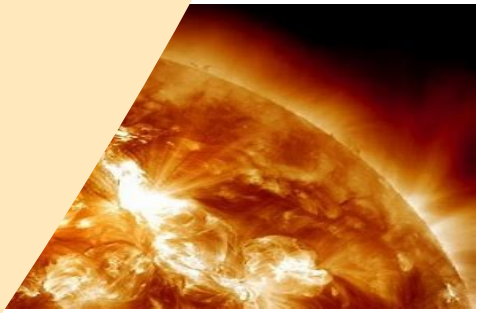
The EU-funded ALCYONE project aims to develop an **innovative analytical platform** for studying the effects of space environment on **living cells**.

The project will design a **lab-on-chip** that will implement a **micro-incubator** to study cell cultures and radiation effects on them during space missions using **bioluminescence**.

ALCYONE will allow for *in situ* evaluation of **space environment effects** on model biological systems and further contribute to the search for novel shielding solutions.







OBJECTIVES

BIOLOGY

Produce genetically engineered prokaryotic and eukaryotic cells to express bioluminescent reporters in response to ionizing radiations.

Set up an experimental protocol for evaluating the effects of space conditions on cells by real-time monitoring of their bioluminescence emission.

TECHNOLOGY

Develop a micro-fabricated incubator with on-chip thin-film sensors and actuators able to host and monitor cell cultures in real-time.

Develop an ultra-low power dosimeter system for monitoring the radiation environment during the course of the experiment.

EXPLOITATION

Produce breadboard analytical device that includes all the developed subsystems and test it in laboratory environment.

Devise a roadmap for identifying potential space applications and spinoffs for ground-based applications of the ALCYONE technologies.