Opportunity Title: Development of ground instrumentation in support of a biological mission to the lunar surface
Opportunity Reference Code: 0107-NPP-NOV23-ARC-TechDev

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0107-NPP-NOV23-ARC-TechDev

How to Apply All applications must be submitted in Zintellect

Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description **Description:**

The Lunar Explorer Instrument for Space Biology Applications (LEIA) project at Ames Research Center is investigating the effect of the lunar surface environment on biology in support of a future flight mission to the Moon. The LEIA project uses the model organism budding yeast to quantify cell growth and metabolic activity, and real-time radiation detectors to characterize the radiation environment on the lunar surface. Our research aims to identify and study genetic factors impacting cellular response to lunar surface radiation and partial gravity by probing a series of cell pathways involved in DNA and cell damage response and repair.

To achieve our research aims, the postdoctoral scholar will develop and test instrumentation to measure a series of parameters involved in cell metabolism after response to lunar surface conditions. We will use a sensor-embedded culture apparatus to simultaneously measure oxidation-reduction potential, carbon source and oxygen uptake, metabolite production, cell growth, and optical measurements at different wavelengths. The scholar will design and execute experiments together with the project scientists and develop the necessary bioinformatic tools for data analysis and interpretation.

By studying genetic factors in yeast, LEIA supports sustained human presence in deep space in two ways. First, using yeast as a model organism, we will gain information about conserved tolerance pathways that can be targeted for countermeasures in humans. Second, yeast is a microbial cell factory, and we will test genetic strategies to translate fundamental knowledge to improve space bioproduction.

Field of Science: Technology Development

Advisors:

Sergio Santa Maria
sergio.r.santamaria@nasa.gov
(650) 604-1411

Diana Gentry
diana.m.gentry@nasa.gov
(650) 604-5441

Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at: https://www.nasa.gov/oiir/export-control.

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Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Eligibility Requirements

- **Degree:** Doctoral Degree.