**Opportunity Title:** ICAR - ABOVE & BELOW: AstroBiOlogical inVEstigation of Biosignatures Emblematic of Life on Ocean Worlds
**Opportunity Reference Code:** 0024-NPP-MAR26-ABProg-Astrobio

**Organization** National Aeronautics and Space Administration (NASA)

**Reference Code** 0024-NPP-MAR26-ABProg-Astrobio

**How to Apply** All applications must be submitted in Zintellect

Please visit the NASA Postdoctoral Program website for application instructions and requirements: How to Apply | NASA Postdoctoral Program (orau.org)

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

**Application Deadline** 3/1/2026 6:00:59 PM Eastern Time Zone

**Description** **About the NASA Postdoctoral Program**

The NASA Postdoctoral Program (NPP) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

**Description:**

We are a team of early to late career engineers, geoscientists, astrobiologists, microbiologists, synthetic biologists, and astrochemists with a unified interest in Ocean World exploration and expertise ideally suited for studying the exotic conditions on their surfaces. ABOVE&BELOW (AstroBiOlogical inVEstigation of Biosignatures Emblematic of Life on Ocean Worlds) seeks to address the following central question: *What is the biosignature preservation potential of Ocean World ices exposed to space-like combinations of temperature, pressure, and radiation?* To perform experiments that can answer this fundamental question in astrobiology, we will modify an existing facility (Europa Tower, Stone Aerospace) to provide cryogenic temperatures (80 K), hard vacuum (1E-8 Torr), a large ice column (0.75 m diameter x up to 2.1 m tall), and sources of ionizing and UV radiation (100 KeV electron beam source, 192 KeV X-ray source, hydrogen Lyman alpha source, and DUV source). This platform allows carrying out two classes of tests: (i) one in which candidate biosignatures are mixed and frozen to simulate accreted sub-surface ices transported to the near subsurface and (ii) the flash freezing of ices by depositing microdroplets into vacuum to simulate geyser-derived materials. This capability, and the suite of proposed experiments with microbes, informational molecules, and organics we propose at the NASA Ames ICEE facility, will provide data to test hypotheses related to the differential role that ice impurities may play in cryopreservation and radiation damage and is highly relevant to current and future space missions directed at astrobiological targets on Ocean Worlds.

**Field of Science:** Astrobiology

**Advisors:**

**Opportunity Title:** ICAR - ABOVE & BELOW: AstroBiOlogical inVEstigation of Biosignatures Emblematic of Life on Ocean Worlds
**Opportunity Reference Code:** 0024-NPP-MAR26-ABProg-Astrobio

Brent Christner
xner@ufl.edu
352-392-1179

Steve Benner
sbenner@ffame.org
386-418-8085

Andrew Mattioda
andrew.l.mattioda@nasa.gov
(650) 604-1075

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

**Questions about this opportunity?** Please email npp@orau.org

**Point of Contact** Mikeala

**Eligibility Requirements**

- **Degree:** Doctoral Degree.