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Opportunity Title: ICAR - What life wants: Exploring the Natural Selection of Elements
Opportunity Reference Code: 0033-NPP-NOV24-ABProg-Astrobio

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0033-NPP-NOV24-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 11/1/2024 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 U.S. and non-U.S. 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:

The MUSE (Metal Utilization and Selection across Eons) team explores the natural selection of the chemical elements during the coevolution of life and environment on early Earth, focusing on the history of metal use in the biological nitrogen (N) cycle. Our research program addresses the limitations in our understanding by studying the evolution of metal use in nitrogen fixation over Earth s history. On any Earth-like world, life will need to obtain nitrogen from inorganic sources. But will the same metals be required in all cases? By deepening our ability to answer this question, our program will help us understand what makes an environment habitable, which is of high astrobiological importance.

Our research approach integrates the traditionally disparate fields of geochemistry, geobiology, paleogenetics, experimental evolution, and artificial biology toward a common goal of understanding the evolution of metal requirements in biological nitrogen fixation. These field-based, experimental, and in silico investigations connect the planetary and molecular scales, as well as independent geochemical and molecular records of ancient life. We test specific hypotheses targeting currently unknown metal availabilities of the early Earth environment, the metal demands of early life, and the plausibility of alternative evolutionary scenarios in the metal requirements of nitrogen fixation.

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Applicants who apply for this research opportunity and are subsequently selected for an NPP award are expected to attend the Astrobiology Graduate Conference (AbGradCon) and/or the Astrobiology Science Conference (AbSciCon) using the travel funds that are conferred as part of the NPP award.

Field of Science: Astrobiology

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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

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

Eligibility Requirements

- **Degree:** Doctoral Degree.