Opportunity Title: Exploration of Meteoritic Peptides and their Relevance for the Origin of Life
Opportunity Reference Code: 0211-NPP-NOV23-GSFC-Astrobio

Organization National Aeronautics and Space Administration (NASA)

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

Description The exogenous delivery of prebiotic organic compounds to Earth likely played a role in the chemical evolution that gave rise to the origin of life. Meteorite studies have demonstrated that the chemical building blocks of life were likely to have been delivered to the primordial Earth by small solar system bodies. While simple organic monomers, such as amino acids, have been heavily studied in the meteorite literature, the polymerization products of these compounds, namely peptides, have been understudied in the literature. Exploring the peptide content of meteorites will better constrain to what extent small solar system bodies may have delivered larger, more complex biomolecules to the early Earth, and thus if meteorites may have expanded the prebiotic chemical inventory on the path to the formation of primitive proteins. To address this need, this NPP opportunity will focus on the development of new, sensitive analytical tools to search for a wide array of peptides. Example analytical techniques that may be implemented include liquid chromatography, mass spectrometry, and optical absorbance. These new techniques will then be applied to explore the peptide chemical space in a suite of meteorites. The implications of this NPP opportunity will be directly relevant for the soluble organic analyses of samples returned from the NASA OSIRIS-REx mission.

Location:
Goddard Space Flight Center
Greenbelt, Maryland

Field of Science: Astrobiology

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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.

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

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pending status

Eligibility Requirements

- **Degree:** Doctoral Degree.