

Opportunity Title: Genomic Selection and Sensor-Based Phenotyping for Space-Relevant Plant Research

Opportunity Reference Code: 0006-NPP-NOV26-KSC-Interdisc

Organization National Aeronautics and Space Administration (NASA)

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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 11/1/2026 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:

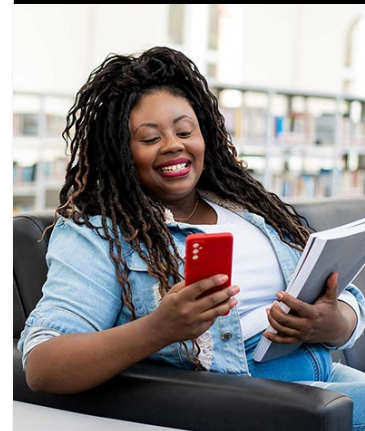
NPP Opportunity Description: Genomic Selection and Sensor-Based Phenotyping for Space-Relevant Plant Research

The participant may submit a scientific proposal for an original research project exploring how genomic selection approaches can identify plant cultivars with improved performance in space exploration environments.

This research focuses on controlled-environment agriculture (CEA) experiments where plants are grown under ground-based spaceflight analogs. These analog stressors include modified atmospheric pressure, elevated carbon dioxide, specialized LED spectral profiles, and constrained root- or edible biomass-zone conditions. The project aims to identify genetic biomarkers for trait selection or genome editing, and/or to evaluate candidate cultivars engineered with beneficial "space traits."

Through this experience, the participant will gain hands-on training in sensor-based phenotyping and environmental simulation methods. These skills directly support NASA's efforts to develop resilient crops for bioregenerative life support systems and future exploration missions.

The ideal participant brings prior knowledge of genomic selection and prediction techniques from applied agricultural sciences. In this role, the



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participant may collect and analyze phenotypic and genetic data across multiple crop cultivars to evaluate how genomic prediction supports plant performance in non-traditional environments.

Participants are encouraged to leverage multi-sensor datasets including hyperspectral (reflectance and fluorescence), lidar, and thermal imaging to characterize plant structural and physiological responses. By incorporating these imaging-derived traits into genomic prediction workflows, the participant will explore how high-throughput phenotyping strengthens selection models.

While this specific project focuses on ground-based studies, NASA intends to eventually adapt these imaging-based phenotyping platforms for CEA systems on future Moon bases. Ultimately, these workflows will provide critical decision-support tools for crew members to optimize crop productivity in space.

Field of Science: Interdisciplinary/Other

Advisors:

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

Qualifications A candidate applying for this opportunity should have an educational background in plant biology, genetics, plant physiology, agronomy, horticulture, bioinformatics, computational biology, or a related field. A doctoral degree in one of these areas is recommended for participation.

It would be favorable for a candidate to have experience in quantitative genomics, genomic selection, or statistical genetics, along with familiarity in analyzing genotype–phenotype relationships. Experience with controlled-environment plant cultivation or studies involving environmental stress responses would also be beneficial.

Skills in computational modeling, data science, or simulation-based research may support participation in activities that integrate genomic prediction with crop growth modeling. Familiarity with hyperspectral imaging, lidar, thermal imaging, or other sensor-based phenotyping approaches would be advantageous, as would experience with image analysis or machine learning applied to plant traits.

Candidates with strong quantitative skills, interest in interdisciplinary collaboration, and motivation to explore crop performance in novel environments may find this opportunity particularly aligned with their

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background and professional development goals.

Point of Contact [Mikeala](#)

Eligibility • **Citizenship:** LPR or U.S. Citizen

Requirements • **Degree:** Doctoral Degree.