Opportunity Title: USDA-ARS Detecting Aging During Genebanking of Seeds from US Native Species
Opportunity Reference Code: USDA-ARS-PA-2024-0354

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-PA-2024-0354

How to Apply ***To submit your application, scroll to the bottom of this opportunity and click APPLY.***

A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. Click here for detailed information about acceptable transcripts.
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations

All documents must be in English or include an official English translation.

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Application Deadline 12/20/2024 3:00:00 PM Eastern Time Zone

Description ***Applications may be reviewed on a rolling-basis.**

ARS Office/Lab and Location: A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) National Laboratory for Genetic Resources Preservation (NLGRP) in Fort Collins, Colorado.

The Agricultural Research Service (ARS) is the U.S. Department of Agriculture's chief scientific in-house research agency with a mission to find solutions to agricultural problems that affect Americans every day from field to table. ARS will deliver cutting-edge, scientific tools and innovative solutions for American farmers, producers, industry, and communities to support the nourishment and well-being of all people; sustain our nation's agroecosystems and natural resources; and ensure the economic competitiveness and excellence of our agriculture. The vision of the agency is to provide global leadership in agricultural discoveries through scientific excellence.

Research Project: NLGRP houses a collection of seeds and other plant propagules that encompass the genetic diversity of crops grown around the world. These propagules are dried and stored at low temperatures and are expected to survive for decades if they have high initial quality. Plants native to the US can be distant relatives of crops and so we seek to preserve their seeds. However, little is known about how seeds from species native to the US respond to the storage conditions used at NLGRP. The project will involve research on seed quality of diverse plant species native to the US. Under the guidance of a mentor, the participant will

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examine diverse seed species and learn to distinguish seeds that fail to germinate because they are dormant from those that are not viable due to either poor pollination, immaturity or aging. While ability to germinate is the 'gold standard' used to evaluate seed quality, aging occurs during storage and slight changes in seed quality are not detectable using germination assays. Hence, this project is designed to compare seed longevity (time the seed stays alive) with biophysical and biochemical assays that appear to correlate with longevity. One example is measuring the integrity of RNA within seed cells.

Learning Objectives: The participant will learn about seed morphology, germination requirements, long-term storage treatments, quality and quantity of RNA in seeds, degradation of molecules critical to seed viability and indicative of aging, and record keeping for biological collections.

Mentor(s): The mentor for this opportunity is Christina Walters (christina.walters@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: 2025. Start date is flexible and will depend on a variety of factors. Start date is expected to be November or December, as soon as building access and background check is completed.

Appointment Length: The appointment will initially be for eight months, but may be renewed upon recommendation of ARS and is contingent on the availability of funds.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience.

Citizenship Requirements: This opportunity is available to U.S. citizens only.

ORISE Information: This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and ARS. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

Questions: Please visit our Program Website. After reading, if you have additional questions about the application process, please email ORISE.ARS.Plains@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a bachelor's degree in one of the relevant fields (e.g., Biology). Most recent degree must have been received within the past two years.

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Preferred Skills:

- Experience performing in a laboratory (e.g, making solutions and weighing using an analytical balance)
- Experience with micropipetting techniques
- Experience with aseptic technique
- Experience working with seeds and seed germination
- Experience with seed dissection, verifying presence of an embryo
- Botany experience sufficient to know a cross section of botanical families and some representative species within those families
- Candidate can take careful notes of experimental procedures and can record data accurately
- An excellent candidate will have experience extracting RNA using Qiagen extraction kits

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree.
- **Discipline(s):**
  - **Life Health and Medical Sciences** (51 👁)
- **Age:** Must be 18 years of age
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).