

Opportunity Title: USDA-ARS Postdoctoral Fellowship in Plant-Microbe Interactions (CERCA)

Opportunity Reference Code: USDA-ARS-2022-0407



Organization U.S. Department of Agriculture (USDA)

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How to Apply **Connect with ORISE...on the GO!** Download the new ORISE GO mobile app in the Apple or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

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

Application Deadline 5/1/2023 3:00:00 PM Eastern Time Zone

Description ***Applications will be reviewed on a rolling basis and a selection may be made before the listed closing date.**

ARS Office/Lab and Location: A postdoctoral research opportunity is available with the National Laboratory for Agriculture and The Environment within the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) located in Ames, Iowa.

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.

The NLAE is a transdisciplinary lab whose mission is to generate information addressing critical problems in agriculture and watershed management to develop innovative solutions which increase the efficiency of agriculture systems and reduce environmental risk.

Research Project: The postdoctoral research fellowship will take place as part of an interdisciplinary team of government, university, and industry scientists within The Circular Economy that Reimagines Corn Agriculture (CERCA) project. The vision of CERCA is to transform US grain farmland into a net-greenhouse gas negative component of a circular bioeconomy. CERCA aims to convert maize to an earlier season annual with reduced environmental impacts through increased uptake and recycling of nitrogen and phosphorus fertilizer and through plant traits that increase agroecosystem nutrient retention. Translational research teams are pursuing three main objectives: (1) Modeling plants, farms, environments, and economics to identify trait combinations and US environments likely to benefit from the new cropping system; (2) trait discovery through testing wild species and maize landraces with promising cold tolerance and nutrient recycling and retention capabilities; (3) trait development through stacking genetic improvements.

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Learning Objectives: In collaboration with the mentor and collaborating scientists, the participant will design and conduct research on plant traits influencing plant-microbe interactions and nitrogen cycling in the rhizosphere and detritosphere among in maize landraces and maize wild relatives. The aim of this research is to 1) identify and develop novel sources of biological nitrification inhibition (BNI) capacity in maize and 2) evaluate the contribution of plant traits, including BNI and nitrogen recycling, to agroecosystem nitrogen use efficiency, nitrogen retention and reductions in nitrous oxide emissions.

Mentor(s): The mentor for this opportunity is Bryan Emmett (bryan.emmett@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: **January 2023.** Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for two years, 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, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the [Guidelines for Non-U.S. Citizens Details page](#) of the program website for information about the valid immigration statuses that are acceptable for program participation.

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.CERCA@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in one of the relevant fields (e.g., Soil Microbiology, Plant-microbe Interactions, Soil Science, Biogeochemistry, Plant Science), or be currently pursuing the degree with completion before May 15, 2023. Degree must have been received within the past five years.

Candidate should have a demonstrated ability to work independently, experience conducting plant or microbial ecology experiments and history of peer-reviewed publications.




Preferred skills

- Lab research experience in molecular microbial ecology
- Expertise in bioinformatics
- Knowledge of statistics and statistical software (R)
- Isolation and handling of bacterial cultures
- Technical writing in English
- Good interpersonal and public speaking skills

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Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 5/15/2023 12:00:00 AM.
- **Discipline(s):**
 - **Earth and Geosciences** (2 )
 - **Environmental and Marine Sciences** (3 )
 - **Life Health and Medical Sciences** (11 )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).