

Opportunity Title: USDA-ARS Postgraduate Research Opportunity in Plant-Microbe Interactions

Opportunity Reference Code: USDA-ARS-MW-2023-0085

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-MW-2023-0085

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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.

Application Deadline 5/12/2023 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) within the National Laboratory for Agriculture and the Environment (NLAE) 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: In collaboration with the mentor, the participant will design and carry out greenhouse and lab experiments to discern controls on the composition and function of nitrifying and denitrifying microbial communities in soil and plant rhizospheres. The aim of the research is to identify plant traits and management solutions to tighten nitrogen cycling and reduce greenhouse gas emissions from agricultural systems.

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Learning Objectives: The participant will learn and gain experience in experimental design and analysis, molecular microbial ecology, culture and handling of ammonia oxidizing organisms, design of bioassays to assess plant inhibition of microbial growth, and skills in quantifying soil nitrogen pools and process rates. Throughout the project, the participant will have the opportunity to collaborate with a multi-disciplinary team of soil microbiologists, soil scientists and plant scientists.

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: April 1, 2023. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for one year 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. **The current stipend for this opportunity is \$42,249-\$57,426/year depending on education level and experience and a health insurance supplement will reimburse up to \$3,381/year to defray costs of a health insurance plan.**

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

Qualifications The qualified candidate should have received a bachelor's or master's degree in a relevant field of soil microbiology, plant-microbe interactions, soil science, biogeochemistry or plant science, or be currently pursuing a master's degree to be received before May 15, 2023.

Preferred skills:

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- Wet lab experience
- Basic molecular biology - DNA extraction, PCR, qPCR
- Isolation and handling of bacterial cultures
- Plant growth and maintenance
- Hydroponics
- Knowledge of statistics and statistical software (R)
- Technical writing in English
- Good interpersonal and public speaking skills
- Enthusiastic, independent and self-motivated

- Eligibility Requirements**
- **Degree:** Bachelor's Degree or Master's Degree.
 - **Discipline(s):**
 - **Earth and Geosciences** ([2](#))
 - **Engineering** ([4](#))
 - **Environmental and Marine Sciences** ([14](#))
 - **Life Health and Medical Sciences** ([17](#))