

Opportunity Title: USDA-ARS Post-baccalaureate Internship in Molecular Plant Pathology

Opportunity Reference Code: USDA-ARS-2022-0399

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-2022-0399

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 3/31/2023 3:00:00 PM Eastern Time Zone

Description *Applications may be reviewed on a rolling-basis and this posting could close before the deadline.

ARS Office/Lab and Location: A research opportunity is available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) located in Fargo, North Dakota.

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 Edward. T. Schafer Agricultural Research Center in Fargo, ND is one of the largest USDA facilities in the Plains Area of the US with research ranging from animal toxicology, protecting, rearing, storing and transporting bee species for pollination of valuable crops, to developing and improving numerous agronomic crops including corn, wheat, barley, sunflower and potato.

Scientists at the ETSARC conduct research in many scientific fields including, but not limited to, conventional and molecular breeding, biotechnology, molecular genetics, genomics and proteomics, plant pathology, entomology, and plant physiology. The USDA-ARS Sunflower and Plant Biology Research Unit is currently working to develop a diverse sunflower germplasm base that will improve oil quality and reduce the use of chemicals for disease and insect control. Major objectives of our research program are to improve genetic resistance of sunflower to prevalent diseases, to identify genetic loci and molecular mechanisms associated with disease resistance, and to characterize the genetic and pathogenic diversity of relevant pathogen populations.

Research Project: The participant will contribute to a research project focused on molecular and physiological understanding of the interaction between cultivated sunflower and the fungal plant



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pathogen *Sclerotinia sclerotiorum*. This fungus causes disease and economic loss on many important crop plants and can cause several distinct diseases on cultivated sunflower. Specifically, the participant will contribute to research on the role of tolerance to the toxic metabolite oxalic acid, produced by *S. sclerotiorum*, in sunflower resistance to *Sclerotinia* basal stalk rot. This research opportunity is designed to provide an interested candidate with in-depth experience in carrying out laboratory and greenhouse research on plant diseases. The research project will make an important contribution to a broader effort to develop sunflower germplasm resources with improved resistance to *Sclerotinia* diseases.

Learning Objectives: The participant will receive training and experience in numerous fundamental laboratory skills and techniques, as well as specialized techniques for research on plant diseases. Specifically, the participant will gain experience in nucleic acid isolation, quantification, and quality assessment, PCR, analysis of gene expression, assessment of plant disease resistance, evaluation of biochemical changes during disease development, statistical analyses of research data, and record keeping in the research environment. The participant will receive extensive training in plant pathology, molecular genetics, microbiology, and genomics. Finally, the participant will have opportunities to develop contacts with other research professionals and industry partners through participation in scientific conferences and meetings.

Mentor(s): The mentor for this opportunity is William Underwood (William.underwood@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: 2022 or early 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 initial stipend for this opportunity is \$3,355 per month plus \$563 per month towards the purchase of an individual or family health insurance plan.**

Citizenship Requirements: This opportunity is available to U.S. citizens and Lawful Permanent Residents (LPR).

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 be currently pursuing or have received a bachelor's degree in one of the relevant fields (e.g., Biological Sciences, Plant Pathology, Microbiology, Biotechnology, Plant

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Sciences). Degree must have been received within the past five years.

Preferred skills:

- Knowledge in the use of common laboratory equipment (PCR thermocycler, agarose gel electrophoresis, micropipettes)
- Experience with sterile techniques for microbiology
- Accurate record keeping and data entry
- General knowledge of laboratory safety
- Excellent attention to detail
- Ability to work individually and as a member of a team
- Motivated to learn new skills

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Bachelor's Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
 - **Life Health and Medical Sciences** ([15](#) )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).