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Opportunity Title: USDA-ARS Fellowship on Improvement of Disease Resistance in Spring Oat Using Genomics and Phenomics
Opportunity Reference Code: USDA-ARS-P-2023-0439

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-P-2023-0439

How to Apply ***Connect with ORISE...on the GO!*** Download the new ORISE GO mobile app in the Apple App Store 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. 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 12/22/2023 3:00:00 PM Eastern Time Zone

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

ARS Office/Lab and Location: A postdoctoral 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 (ETSARC) 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, oat, 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 Cereal Crops Research Unit is currently working to develop a diverse oat germplasm base that will improve yield, milling quality, and disease resistance. Major objectives of our research program are to characterize the genetic diversity of oat, improve agronomic and end-use quality traits

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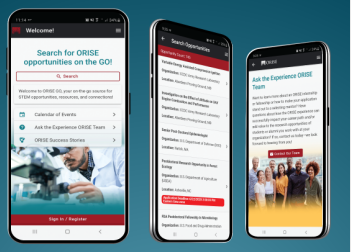
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through breeding, and to identify genetic loci and molecular mechanisms associated with disease resistance.

Research Project: The participant will contribute to a research project focused on understanding of the interaction between cultivated oat and the fungal plant pathogen's oat crown rust (*Puccinia coronata* f. sp. *avenae*) and stem rust (*Puccinia graminis* f. sp. *avenae*). These fungi cause disease, substantial economic loss, and reduce grain quality on susceptible varieties. Specifically, under the guidance of a mentor, the participant will study different phenotyping methods on a diverse set of oat germplasm for rapid identification of rust disease traits. The research project will involve evaluation of oat lines exhibiting tolerance or sensitivity to crown and stem rusts, physiological characterization of the mechanisms of resistance, and whole genome and transcriptome profiling of oat responses to rust infection. This research will make an important contribution to a broader effort to develop oat germplasm resources with improved resistance to rust diseases.

Learning Objectives: The participant will receive training, mentoring, and experience in plant breeding, plant genetics and genomics, and high-throughput phenotyping, with specific emphasis on plant disease caused by biotrophic fungi and quantitative disease resistance. The participant will gain experience collaborating in a non-model crop disease pathosystem. Additionally, the participant will gain experience in genetic mapping, transcriptomics, bioinformatics, and quantitative genetics of large datasets. The participant will have career development opportunities such as presenting research results at national and international meetings. The participant will also receive mentoring in grantsmanship, writing and submission of research publications, and presenting research to other scientists and stakeholder groups.

Mentor(s): The mentor for this opportunity is Craig Carlson (craig.h.carlson@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: 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 for up to two additional years 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 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 doctoral degree in one of the relevant fields. Degree must have been received within the past ten years.

Preferred skills:

- Background in plant breeding and/or plant genetics
- Experience with developing and/or evaluating plant populations for agronomic, quality, or disease traits
- Experience with general molecular biology techniques such as nucleic acid isolation
- Experience with genomics, next-generation sequencing, and related bioinformatics analyses and software tools

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree received within the last 120 month(s).
- **Discipline(s):**
  - **Life Health and Medical Sciences** (51 👁)