

Opportunity Title: USDA-ARS Postdoctoral Fellowship in Plant Genetics

Opportunity Reference Code: USDA-ARS-2022-0374

Organization U.S. Department of Agriculture (USDA)

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

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

ARS Office/Lab and Location: Two research opportunities are available within the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) with the Crop Improvement and Genetics Research Unit located in Albany, California.

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.

For more information about the ARS Research Participation Program, please visit the Program Website <https://orise.ora.gov/usda-ars>

Research Project: The research project is focused on identification, introgression and cloning of genes for increased yield and resistance to major disease and insect pests in wheat, including tan spot, Hessian fly, greenbug, and aphids in a collection of sequenced *Aegilops tauschii* accessions using the k-mer based association mapping pipeline established by Gaurav et al. (Nature Biotechnology 40:422-431, 2022). The major research activities of the participants include developing mapping populations and molecular markers, sequencing the target regions to identify candidate genes, developing and screening ethyl methanesulfonate-induced mutant populations of synthetic wheat,



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performing Agrobacterium-mediated transformation, conducting CRISPR/Cas-9 genome editing, analyzing data, and publishing research results. The participants will also develop functional DNA markers for marker-assisted selection of the genes in wheat breeding.

Learning Objectives: As a result of this training the participant will learn new technologies for alien gene introgression and quick identification of functional genes for resistance to biotic and abiotic stresses from wild relatives of wheat and improve their skills in transcriptome analysis, QTL/gene mapping, Agrobacterium-mediated transformation, and CRISPR/Cas-9 genome editing. The participant will have the opportunity to collaborate with multiple USDA ARS scientists on high-throughput genotyping/phenotyping approaches and recombinant protein technologies.

Mentor: The mentor for this opportunity is Steven Xu (steven.xu@usda.gov). If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: November 2022. Start date is flexible and selected candidate can begin earlier or as soon as available.

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. **The participant will receive a supplement for health and medical insurance which can be obtained through ORISE.**

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.

While participants will not enter into an employment relationship with ARS, this position requires a pre-appointment check and a full background investigation.

Questions: Please visit our [Program Website](#). After reading, if you have additional questions about the application process please email USDA-ARS@ornl.gov 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., Plant Genetics, Plant Biotechnology).


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Preferred Skills:

- Demonstrated experience in plant genetics and biotechnology research (e.g., Transcriptome, NGS data analysis, QTL mapping, alien gene introgression, plant tissue culture, fluorescent in situ hybridization, molecular marker development, doubled haploid production, Agrobacterium-mediated transformation, growth of plants in chambers and greenhouses)
- Demonstrated skill and practical experience in molecular biology techniques (e.g., nucleic acid purification, gene amplification and cloning, bioinformatic analysis of genomic data, qRT-PCR, microbial transformation, growth and manipulation)
- Knowledge and experience in plant biology, genetics, plant physiology, genomics, microbiology, statistics, and/or molecular biology
- Demonstrated experience in design of experiments, development of laboratory protocols and keeping a thorough and detailed laboratory notebook
- Ability to research independently as well as part of a team, with good oral and written communication skills to keep team members informed and disseminate results at meetings and in refereed scientific journals

- Eligibility Requirements**

- **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Life Health and Medical Sciences** ([10](#) )