

Opportunity Title: USDA-ARS Postdoctoral Research Opportunity in Plant

Breeding/Genetics/Genomics

Opportunity Reference Code: USDA-ARS-2022-0377

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-2022-0377

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 package 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
- Two educational or professional recommendations. Applications need at least one recommendation submitted in order to be viewed by the mentor.

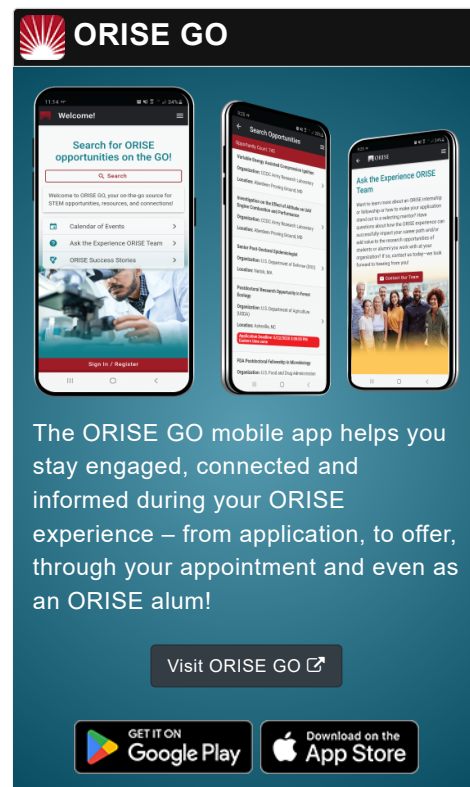
All documents must be in English or include an official English translation.

Application Deadline 12/19/2022 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), Appalachian Fruit Research Station (AFRS), Innovative Fruit Production, Improvement, and Protection Unit located in Kearneysville, West Virginia. The facility is located approximately one and a half hours northwest of Washington D.C and west of Baltimore, MD. The station is located in the Shenandoah Valley in a historical orchard area. In the near vicinity, are vibrant small towns and cities including Charles Town, WV; Frederick, MD; and Winchester, VA which are home to Civil War Memorials and Battlefields, art galleries, numerous restaurants, parks, and other amenities. Additionally, the entrance to Shenandoah National Park is an hour drive south and the Appalachian Trail is 15 minutes east.

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



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economic competitiveness and excellence of our agriculture. The vision of the agency is to provide global leadership in agricultural discoveries through scientific excellence.

Research Project: The participant will be joining a multi-disciplined research team that conducts integrated basic and applied research to improve and protect temperate tree fruit production. The participant will be involved with a research project to characterize wild crop relatives of apple for resilience to abiotic stress and production efficiencies. The goal of the project is to harness desirable genetics from wild apple species for the improvement of cultivated apple and, ultimately, develop climate-resilient apple cultivars. The objectives of the project that the participant will be involved with are:

1. Phenotype a diverse set of wild seedling populations for tolerance to high temperatures and drought conditions that simulate the anticipated changes in the climate of apple productions regions
2. Genotype the wild seedling populations using a whole genome resequencing approach
3. Evaluate associations between genetic variants and the phenotype to identify quantitative trait loci and, potentially, develop genetic markers for abiotic stress resilience
4. Create interspecific hybrids between wild apple species and the cultivated apple to introgress desirable genetics using traditional and advanced breeding methods

Learning Objectives: During the ORISE appointment, the research objectives of the participant will include:

1. Identify individual wild apples with high tolerance to abiotic stress
2. Identify genes, genetic loci, or genomic regions associated with abiotic stress resilience
3. Introgress abiotic stress resilience through interspecific hybridization

Education Objectives: During the ORISE appointment, education objectives of the participant will include:

1. Development new research skills related to methods involved in phenotyping and trait association mapping
2. Development of skills in science communication, collaborating with teams, and co-leading research projects
3. Development of professional skills through participation in seminars and workshops
4. Development skills communicating science to stakeholder groups and industry

Program and resources: The participant will be appointed to the USDA-ARS Appalachian Fruit Research Station (AFRS), a governmental research facility research facility that home to two research project units: 1) Improving Fruit Crop Traits Through

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Advanced Genomic, Breeding, and Management Technologies and 2) Integrated Orchard Management and Automation for Deciduous Tree Fruit Crops. Combined the units include 10+ scientists and support scientists, 15 technicians, five post-doctorate researchers, and additional support staff. AFRS is comprised of ten independent PI labs conducting research on applied and basic research goals. Expertise of the labs include: agricultural engineering, applied horticulture, biotechnology, entomology, genetics and genomics, plant breeding, plant pathology, and soil sciences. Our research facility also provides a wide range of laboratory space, greenhouses, newly renovated reach-in and walk-in growth chambers, tissue culture facilities, over 400 acres of orchard/farm space, and computational resources that are available through the ARS SciNet platform and local machines. Our location provides early career scientists' an outstanding horticultural focused research environment, consisting of collaborative research groups, extensive stakeholder networking opportunities, and a supportive technical staff.

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

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 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 USDA-ARS@ornl.gov and include the reference

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Qualifications The qualified candidate should have received a doctoral degree in one of the related fields (e.g., Agronomy and Crop Sciences, Genetics, Horticulture, Plant Biology, Plant Breeding, Plant Pathology) or currently pursuing the degree with completion by January 15, 2023.

Preferred skills:

- Experience in genome-wide analysis studies and/or high-throughput phenotyping.
- Experience using standard laboratory equipment and methods: freeze-dryers, spectrometers, fluorimeters, multispectral photosynthesis measurement devices, electrophoresis, genomic analysis software, and other computational methods (AI/ML).
- Willingness to learn new applied or basic biological techniques to breed improved apple cultivars.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Life Health and Medical Sciences** (20 👁)