Opportunity Title: USDA-ARS Alfalfa Germplasm, Population Genetics & Breeding Fellowship
Opportunity Reference Code: USDA-ARS-HQ-2026-0031

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-HQ-2026-0031

How to Apply ***To submit your application, scroll to the bottom of this opportunity and click APPLY.***

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.

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Application Deadline 5/22/2026 3:00:00 PM Eastern Time Zone

Description ***Applications are 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), located in Prosser, Washington.

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.

Research Project: Alfalfa is the world's most important forage legume crop, and its plant genetic resource (PGR) collections lack systematic and thorough characterization. With the recent development of an alfalfa 3K DArT SNP panel, a standardized high-throughput technology has been optimized to overcome previous genotyping limitations.

Objective: Genotype the USDA ARS National Plant Germplasm System (NPGS) alfalfa collection (~4,100 accessions). Ensuing goals will be to measure relationships and variability within the collection; phenotype a core subset and develop marker trait associations; with all data becoming publicly available.

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Approach: Participant will collaborate closely with Breeding Insight (BI) and other established USDA ARS/academic collaborators in CA, MN, WA, and WI while conducting research. The alfalfa collection will be grown, and young leaflet tissue will be bulked for DArT genotyping. Data receipt and initial quality assessment will be coordinated with BI. Participant will receive sequence/genotype data, conduct analyses to survey variation, calculate relationships, and identify core subset for subsequent phenotyping evaluations. Core subset will be evaluated for biotic and/or abiotic resistance following standard protocols. The same core subset will be field established for field phenotyping highly heritable traits. There will be close coordination with BI to implement data collection using the BrAPI compliant Field Book application will facilitate associating data with germplasm in GRIN-Global. Our goals are to interact with our collaborators to either upload DArT genotype data directly into GRIN-Global or to link genotype data via external platforms (e.g., Legume Information System) for public access. The program has office, laboratory, greenhouse, field space, equipment, and supplies for planned experiments. Team members, collaborators, and lead scientists will mentor participant in technical aspects of project.

Expected Results: The in-depth characterization of the alfalfa germplasm would help promote its efficient use. Including:

1. Estimating genetic diversity and population structure among and between accessions in the collection
2. The development of a genetically representative core collection
3. Correct accession taxonomic assignments
4. Redundancy identification leading to rationalization
5. Gaps in coverage revealed leading to targets for acquisition, and;
6. Aptly characterized PGR accessions in collections that can be used to identify subsets of variation for in-house and stakeholder mining of beneficial alleles in pre-breeding addressing, among other things, adaptation to changing weather patterns and resilience

Alfalfa collection genotyping results would generate some additional benefits. When all accessions are genotyped, stakeholders could request any subset and phenotype them, allowing marker trait associations via GWAS for all traits and will thus be a valuable tool for others to exploit in their projects. Characterization of the alfalfa collection can aid in effective management of this important resource while improving and promoting its use by stakeholders.

Learning Objectives: As a result of this experience, the participant will

1. Learn about the genetic diversity in the USDA National Plant Germplasm System alfalfa collection
2. Gain skills using phenotyping approaches in greenhouse and field experiments
3. Acquire knowledge around genotyping and data analysis using the Diversity Array Technologies (DArT) platform

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4. Learn approaches used for marker traits associations in a polyploid legume crop, and;
5. Develop skills in communication (writing, presenting, etc.) and in conducting collaborative research in a scientific community.

Mentor(s): The mentor for this opportunity is Brian Irish (brian.irish@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: Summer 2026. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will be for two years.

Level of Participation: The appointment is full time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience. **The anticipated stipend is $89,508 annually.**

Citizenship Requirements: This opportunity is available to U.S. citizens only.

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.HQPostdoc@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 the one of the relevant fields. Degree should have been received within the past four years or is anticipated to be received by the appointment start date.

Preferred skills:

- Experience with agricultural plant sciences, plant genetic resources, forage legumes, plant genetics, plant breeding, molecular biology, bioinformatics, and data management.
- Organizational capacity for curating, cataloging, and storing large amounts of data, samples, such as seeds, plants or DNA.
- Experience caring for plants in the field, greenhouse, and growth chamber.
- Attention to detail in data collection and record keeping.
- Team player and comfortable with communication through phone, email, and in person to coordinate with collaborators locally and in other offices and states.

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- Consistency, timeliness, and independence.

Stipend $89,508.00 Yearly

Point of Contact Janeen

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Life Health and Medical Sciences** (5 👁)