Opportunity Title: USDA-ARS Postdoctoral Fellowship to Improve Nutritional Quality of Crops
Opportunity Reference Code: USDA-ARS-PA-2025-0135

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-PA-2025-0135

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
- A copy of an abstract or reprint of an article

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

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Application Deadline 12/28/2025 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 College Station, Texas.

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 Responsive Agricultural Food Systems Research Unit (RAFSRU) located at Texas A&M University has research training opportunities for highly motivated postdoctoral fellows in prevention of diet-related chronic diseases, plant genetics & biofortification and mechanistic studies in nutrition health associations. https://www.ars.usda.gov/plains-area/college-station-texas-rafsru/responsive-agriculturalfood-systems-research-unit/

The research of the Responsive Agricultural Food Systems Research Unit

(RAFSRU) is conducted under the USDA ARS Human Nutrition National Program (NP107). The unit's mission is to prevent and mitigate nutrition-associated chronic diseases through innovations in the food and nutrition environment. RAFSRU conducts targeted research on human health and nutrition across all life stages, generating fundamental knowledge on the interplay among agriculture, food systems, the environment, and human health. Our research environment is guided by collaboration, mentorship, and a supportive culture that encourages personal and professional growth.

Research Project: Current research is aimed at increasing nutritional qualities in grain, fruit, vegetable and tree crops using multi-omics, genetics and molecular biology techniques. Specific studies will be conducted to analyze phytochemicals such as polyphenols, which have known antioxidant properties, and also micronutrients such as iron and zinc in several crop species. Studies conducted in collaboration with USDA and university principal investigators will examine both genetic and environmental contributions to nutrient accumulation. Studies will use conventional breeding and targeted genetic approaches to achieve biofortification of nutrients that are beneficial to human health. Under the guidance of a mentor, the postdoctoral fellow will develop hypotheses and experimental studies to quantify phytonutrient accumulation in edible parts of crops and use genomic tools to understand the genetic basis and gene regulation underlying accumulation of nutrients.

Learning Objectives: Under the guidance of a mentor, the fellow will have the opportunity to:

- Develop understanding of metabolomic and genomic approaches to quantify nutrients and the regulation of transport and accumulation.
- Develop hypothesis based on multi-omic studies using plant samples collected in greenhouse and field experiments for functional genetics studies.
- Receive training in advanced molecular techniques such as cloning, gene editing (e.g., CRISPR), plant transformation, and knock-out mutations to quantify effects on plant phenotypes.
- Learn statistical and molecular techniques such as single cell and spatial transcriptomics, and spatial metabolomics in crops tissues such as grains, seeds and fruits.
- Learn methods to isolate phytochemicals to be used in dietary studies using pre-clinical models and humans.

Mentor(s): The mentor for this opportunity is Dr. Tim Paape (timothy.paape@usda.gov). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: 2025/2026. Fellowship is available immediately, but 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 anticipated stipend range is $68,000 - $75,000 annually.**

Citizenship Requirements: This opportunity is available to U.S. citizens and Lawful Permanent Residents (LPR) 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.Plains@orau.org and include the reference code for this opportunity.

Qualifications

The qualified candidate should have received a doctoral degree in one of the relevant fields. Degree must have been received with in the past five years.

Preferred Foundational Experience

Candidates with prior experience in one or more of the following areas are encouraged to apply for this training opportunity:

- Hands on experience designing experiments using crops to measure metabolite or micronutrient accumulation.
- Experience analyzing metabolomics, ionomics and/or transcriptomics data in crops.
- Analysis of genomic data using nucleotide markers (e.g., SNPs) for quantitative genetics or genome wide association studies of traits such as nutrient accumulation.
- Experience growing one or more crop species in greenhouse and/or field conditions.
- Basic molecular biology experience such as DNA/RNA isolation, PCR and qPCR.

Stipend

$68,000.00 – $75,000.00 Yearly

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.
- **Discipline(s):**

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- **Life Health and Medical Sciences** (14 👁)
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).