

Opportunity Title: USDA-ARS Research Fellowship for Nutrients and Phytochemical Analysis in Leafy Greens from Controlled Environmental Agriculture
Opportunity Reference Code: USDA-ARS-NEA-2026-0122

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-NEA-2026-0122

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 5/8/2026 3:00:00 PM Eastern Time Zone

Description *Applications are reviewed on a rolling-basis.

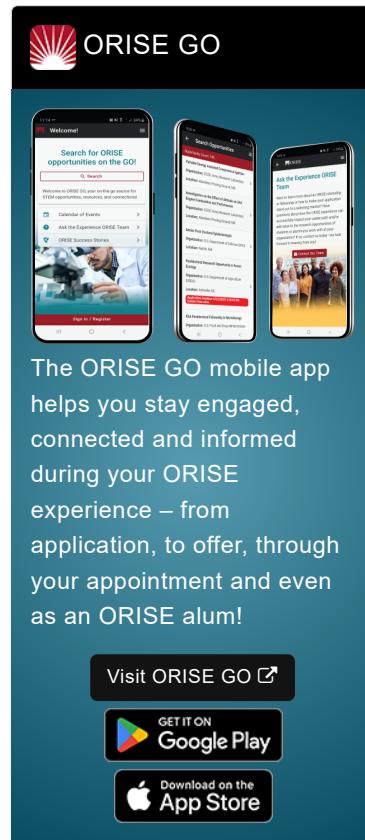
ARS Office/Lab and Location: A research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), located in Beltsville, Maryland.

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: You will have the opportunity to contribute to collaborative research between the Methods and Applications of Food Composition Laboratory and the Food Quality Laboratory. The project focuses on enhancing health-promoting compounds in leafy greens through optimized nutrient delivery and controlled lighting conditions. We will evaluate how tailored modifications to a standard hydroponic fertilizer solution influence plant growth and chemical composition. Metabolomic profiling will be used to identify key metabolites involved in the biosynthetic pathways of carbohydrates, organic acids, flavonoids, and glucosinolates.





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Sensory quality, phytochemical content, and important physiological parameters related to photosynthesis and secondary metabolism will also be assessed.

1. Metabolomic profiling of the phytochemicals for the leafy greens grown in controlled environments with the modulation of different light and nutrients delivery system.
2. Determining the impact of different growing conditions on the nutrient compounds and plant secondary metabolites.
3. Developing non-targeted metabolomic methodologies using different LC/MS or GC/MS based techniques.

Learning Objectives: As a result of this training, you will gain knowledge and experience in:

- Liquid chromatography, gas chromatography, and the hyphenated techniques with high-resolution mass spectrometry for the analysis of phytochemicals.
- Hand-on experiences on growing agricultural products in controlled environmental agriculture (CEA)
- Analytical method validation, including assessment of analytical figures of merit, robustness, and method detection limits.
- Chemometric methods used for non-targeted metabolomic profiling.

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

Anticipated Appointment Start Date: June 1, 2026; as soon as possible. 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 \$7,500 - \$8,000 monthly.**

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.

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Questions: Please visit our [Program Website](#). After reading, if you have additional questions about the application process, please email ORISE.ARS.Northeast@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

Stipend \$7,500.00 – \$8,000.00 Monthly

Point of Contact [Janeen](#)

- Eligibility**
- **Citizenship:** U.S. Citizen Only
- Requirements**
- **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#) )