Opportunity Title: USDA-ARS Postdoctoral Fellowship in Research on the Generation of Bioactive Pectic Poly/Oligosaccharides From Citrus Peel Waste
Opportunity Reference Code: USDA-ARS-SE-2023-0421

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-SE-2023-0421

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 consists of:

- An application
- Transcripts – 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 2/2/2024 3:00:00 PM Eastern Time Zone

Description ***Applications are 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), Horticultural Research Laboratory in Fort Pierce, Florida. The selected participant will be part of the Citrus and Other Subtropical Products Research Unit at the USDA-ARS Horticultural Research Laboratory. Our research aims to advance value-adding technologies for citrus juice processing co-products.

ARS is the USDA'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: Pectin is a complex polysaccharide present in the cell walls of higher plants. Citrus peel is rich in pectin. Over one million tons of citrus peel waste (CPW) is produced annually by the US citrus juice industry. By-product development is essential for managing CPW and increasing the overall economic health of the citrus industry. The study aims to develop bioactive pectic poly/oligosaccharides from citrus peel waste as a natural health supplement for anticancer and immunoregulation effects. Pectin is traditionally used as a gelling agent, stabilizer, or thickener in foods and beverages. In recent years, a broad range of biological activities of pectin has been revealed, such as anticancer, immunoregulatory, anti-inflammatory, hypoglycemic, and antioxidant activities. Under the guidance of a mentor, the participant will aid in the planned research, where pectic polysaccharides will be released from CPW by steam explosion, and subjected to chemical, enzymatic, or physical modifications. The participant will help evaluate the biological activities of the modified pectic poly/oligosaccharides. The participant will also help to screen and fractionate the pectic poly/oligosaccharides with bioactivity, and characterize their structural features.

Learning Objectives: The participant will learn to: 1) conceive and plan a project based on the academic/practical challenges and literature review; 2) conduct pectin extraction and characterization; 3) analyze bioactivities of pectic poly/oligosaccharides on cultured cells; and 4) write research articles for scientific journal publication. Through mentorship by ARS scientific staff, this opportunity will also provide the participant the opportunity to collaborate with the network of ARS scientists and collaborators, and co-author publication(s) in scientific journals and presentations at scientific conferences.

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

Anticipated Appointment Start Date: **March 1, 2024.** 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. **The current yearly stipend for this opportunity is $64,195 - $70,746.**

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.

Questions: Please visit our Program Website. After reading, if you have additional questions about the application process, please email ORISE.ARS.Southeast@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, or be currently pursuing the degree with completion before the appointment start date.

Preferred Skills:

- Ph.D. with biomedical research experience, proficiency in cell culture, immunoassays, HPLC, affinity chromatography, preparative liquid chromatography.

Eligibility Requirements

- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (3)
  - **Life Health and Medical Sciences** (8)