

Opportunity Title: USDA-ARS Postdoctoral Fellowship in Machine Learning, Protein Structure, and Functional Annotations

Opportunity Reference Code: USDA-ARS-PW-2024-0008

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-PW-2024-0008

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
- 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.

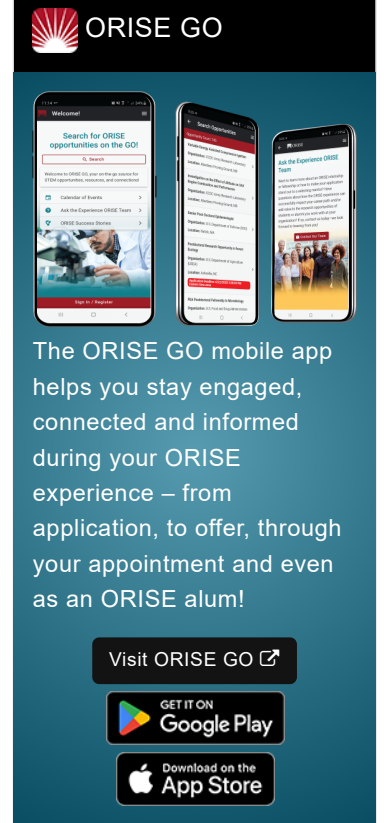
Description *Applications are reviewed on a rolling-basis.

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 Albany, California.

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: Under the guidance of a mentor and in a highly collaborative environment, the participant will have the opportunity to gain experience about hybrid machine learning approaches, including large language models, and cutting-edge protein tertiary structure predictions to develop and apply AI methods to enhance the functional annotation space of multiple species by predicting protein dynamics and protein interactions with the aim of supporting the improvement of agronomically-important traits. The participant will be part of the GrainGenes (<https://wheat.pw.usda.gov>) biological database project located in the beautiful San Francisco Bay Area.


Learning Objectives: The participant will learn the relationships between protein structure, dynamics, and function, recent advances in machine learning and their applications in agricultural research. The participant will


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have the opportunity to collaborate with multiple USDA ARS scientists on using machine learning approaches and comparative genomic approaches in small grains and to write scientific papers applying these approaches.

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

Anticipated Appointment Start Date: 2024. 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 participant will receive an estimated annual stipend of \$80,000, health insurance stipend supplement of \$8,000 per year, a science and research travel allowance up to \$3,000 per year.**

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.PacificWest@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a doctorate degree in one of the relevant fields. Degree must have been received within the past five years or anticipated to be received by 6/30/2024 12:00:00 AM.

Preferred skills:

- Experience in computer science, bioinformatics, or computational biology
- Experience in machine learning and artificial intelligence
- Experience with working with genetics and genomic data

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- Experience working with large, diverse datasets and data mining approaches
- Proficiency in Linux and computational programming
- Strong computational and analytical skills
- Strong oral and written communication skills

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 6/30/2024 12:00:00 AM.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#))
 - **Communications and Graphics Design** ([2](#))
 - **Computer, Information, and Data Sciences** ([17](#))
 - **Earth and Geosciences** ([21](#))
 - **Engineering** ([27](#))
 - **Environmental and Marine Sciences** ([14](#))
 - **Life Health and Medical Sciences** ([51](#))
 - **Mathematics and Statistics** ([11](#))
 - **Physics** ([16](#))
 - **Science & Engineering-related** ([2](#))
 - **Social and Behavioral Sciences** ([29](#))