Opportunity Title: USDA-ARS Postdoctoral Research Opportunity in Bioinformatics Analyses
Opportunity Reference Code: USDA-ARS-2022-0025

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-2022-0025

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.

Description ***Applications are reviewed on a rolling basis and this posting will remain open until filled.**

ARS Office/Lab and Location: A postdoctoral research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Genome Informatics Facility located at Iowa State University in Ames, Iowa. For more information about the Genome Informatics Facility, visit: https://gif.biotech.iastate.edu/.

This research opportunity is part of the SCINet Fellowship program at ARS. All postdocs will spend time at headquarters for some of their training, but will be based at ARS regional laboratories for more specific training. One of the goals of this research opportunity is to encourage cross-disciplinary, cross-location research; this will be done by placing postdocs in different regional labs based on their skillset and interests in regional locations. The strength of this fellowship program is the collection of postdocs and ARS' collection of regional labs.

The SCINet/Big Data Program at ARS offers research opportunities to motivated postdoctoral participants interested in solving agricultural- and natural resource-related problems at a range of spatial and temporal scales, from the genome to the continent, and sub-daily to evolutionary time scales. One of the goals of the SCINet Initiative is to develop and apply new technologies, including artificial intelligence (AI) and machine learning, to help solve complex agricultural problems that also depend on collaboration across scientific disciplines and geographic locations. In addition, many of these technologies rely on the synthesis, integration, and analysis of large, diverse datasets that benefit from high performance computers (HPC). The objective of these opportunities is to facilitate cross-disciplinary, cross-location research through collaborative research on problems of interest to each participant and amenable to or required by the HPC environment. Training will be provided in specific AI, machine learning, deep learning, and statistical software needed for the HPC.

Research Project: High throughput sequencing technology has become increasingly affordable. An increasing number of USDA ARS research units are developing genomic resources (genomes, transcriptomes, SNPs, etc.) for organisms of significant economic importance in agriculture, and for the pests that hinder the full potential of crops, livestock, and aquaculture. This kind of genomic resource development is important for the continued yield performance and for development of pest management strategies. While the acquisition of sufficient sequencing data is now possible, the analysis of these data is not always straight forward as there are assumptions

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and limitations to the biology, sequencing technology, and software used in each project.

The participant will be trained in the following research activities:

- Contribute to and improve tutorials in the bioinformatics workbook (https://bioinformaticsworkbook.org/)
- Participate in the development of and co-lead workshops on data analysis for USDA scientists
- Collaborate with USDA scientists to analyze high-throughput sequencing datasets that lead to publication of collaborative, peer-reviewed publications

Learning Objectives: The selected participant will have the opportunity to learn a diverse array of bioinformatic analyses, to develop speaking, writing, and networking skills through workshop development, and to actively engage in the solving of biological questions that will lead to first author publications. The participant will have the opportunity to present their data at national/international meetings involving researchers, regulatory officials, and stakeholders.

Mentor(s): The mentor for this opportunity is Andrew Severin (severin@iastate.edu). If you have questions about the nature of the research, please contact the mentor(s).

Anticipated Appointment Start Date: **As soon as a qualified candidate is identified.** The 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, but arrangement for reduced hours to accommodate coursework, etc., is possible if agreed to and supported by the participant's mentor.

Participant Stipend: The participant(s) will receive a monthly stipend commensurate with educational level and experience.

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.SCINet@orau.org and include the reference code for

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this opportunity.

Qualifications

The qualified candidate must have received a doctoral degree in one of the relevant fields before the start date of their appointment.

Preferred skills:

- Experience with Unix and HPC using SLURM submission scheduling
- Experience with GitHub
- Experience with high throughput sequencing data analysis
- Strong computational and analytical skills
- Strong communication skills in speaking and documented writing ability

Eligibility Requirements

- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (4 👁)
  - **Earth and Geosciences** (1 👁)
  - **Environmental and Marine Sciences** (5 👁)
  - **Life Health and Medical Sciences** (10 👁)
  - **Mathematics and Statistics** (2 👁)