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Opportunity Title: USDA-ARS Postdoctoral Fellowship in Bioinformatics/Computational Biology
Opportunity Reference Code: USDA-ARS-2021-0232

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-2021-0232

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 research opportunity is currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Genetic Improvement for Fruits and Vegetables Lab 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 the agency is to provide global leadership in agricultural discoveries through scientific excellence.

Research Project: The Genetic Improvement for Fruits and Vegetables Lab studies multiple microbial pathogens of potato to develop novel disease management tools. Common scab is major biotic constraint of potato throughout much of the world. The disease is caused by pathogenic species of Streptomyces bacteria. Genomic, transcriptomic, molecular biology, and basic plant pathology approaches are employed to identify and characterize the diversity of plant-associated Streptomyces and identify potato genes involved in plant response to the pathogen. Specifically, the participant will participate in using the tools of computational biology and bioinformatics to generate and use whole-genome sequence data (from Illumina, PacBio, and MinIon platforms) to characterize the diversity of plant-associated *Streptomyces,* identify novel species, and identify putative virulence-associated genes. The participant will analyze transcriptomes of host plants inoculated with pathogens and treated with chemicals associated with differential disease outcomes. The participant will also analyze microbial transcriptome data to identify the regulatory pathways of virulence-associated toxin biosynthesis and production of biological antimicrobials. The participant will also have the opportunity to collaborate on molecular biology and plant pathology assays in the lab to develop additional wet lab skills.

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Learning Objectives: The participant will learn and use multiple bioinformatics tools for the analysis of genomic and transcriptomic data including: genome assembly, novel species identification and characterization, comparative genomics for identification of virulence genes and antimicrobial genes, plant transcriptomics, microbial transcriptomics, genome sequencing (Illumina, PacBio, and MinION). The participant will also have the opportunity to collaborate on molecular biology and plant pathology assays in the lab to develop additional wet lab skills.

Mentor(s): The mentor for this opportunity is Christopher Clarke (Christopher.clarke@usda.gov). 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.** 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.

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.

Questions: Please visit our Program Website. After reading, if you have additional questions about the application process please email USDA-ARS@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.

Preferred skills:

- Knowledge of genomics, transcriptomics, basic plant pathology, genetics, microbiology, and molecular biology
- Demonstrated skill and practical experience in bioinformatic analysis of genomic and transcriptomic data, development of computational biology tools, molecular biology techniques (e.g., nucleic acid purification)
- Demonstrated experience in design of experiments and development of laboratory protocols
- Ability to recognize the significance of unexpected results, and to make minor modifications to ensure validity of testing and data
- Ability to work independently as well as part of a team, with good communication skills to keep team members informed and disseminate results at meeting and in refereed journals

Eligibility

- **Citizenship:** U.S. Citizen Only

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Requirements

- **Degree:** Doctoral Degree.
- **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** (46 👁)
  - **Mathematics and Statistics** (10 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (1 👁)
  - **Social and Behavioral Sciences** (28 👁)