

Opportunity Title: USDA-ARS Postdoctoral Fellowship in Bioinformatics:

Functional Annotation of Salmonid Genomes

Opportunity Reference Code: USDA-ARS-2022-0394

Organization U.S. Department of Agriculture (USDA)

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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.

Description ***Applications may be reviewed on a rolling-basis, and this posting will remain open until filled.**

ARS Office/Lab and Location: A postdoctoral research opportunity is available with the Genomics Unit at the National Center for Cool and Cold Water Aquaculture (NCCCWA), located in Leetown, West Virginia in collaboration with Dr. Christine Elsik from the University of Missouri-Columbia (MU). The appointment will be physically located in the Animal Sciences Research Center at the MU campus in Columbia, Missouri.

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.

The mission of the NCCCWA is to enhance the nation's aquaculture production of cool and cold-water fish species by developing improved germplasm and technologies that increase farm efficiency, product quality, and environmental sustainability. Research encompasses genetics, genomics, physiology, aquatic animal health, and aquaculture engineering.

Research Project: The selected candidate will conduct research contributing to our team efforts to develop pan-genome reference to salmonid species. This will be done by developing a bioinformatic pipeline for genome annotation and use it to annotate protein coding genes in genome assemblies from several lineages of different salmonid species,



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including Atlantic salmon, rainbow trout and cutthroat trout. In addition, the selected candidate will use the annotation of the genomes for in-silico functional comparative genomics between genetic lineages within species and between species.

Learning Objectives: The participant will gain useful experience in developing and running bioinformatic pipelines for eukaryotic genome annotation and comparative genomic analyses. The research will be done under the mentorship of experienced leaders in the fields of genome annotation in agricultural animals and genomics of aquatic species.

Mentor(s): The co-mentors for this opportunity are Drs. Yniv Palti (yniv.palti@usda.gov) and Guangtu Gao from USDA and Dr. Christine Elisk from the University of Missouri-Columbia (MU). Please contact Dr. Palti if you have questions about the nature of the research. The appointment will be physically located in the Animal Sciences Research Center at the MU campus in Columbia, Missouri. The participant will collaborate with the Elisk group which has extensive experience in genome annotation and will have opportunities to interact with others on campus working in genomics, bioinformatics and research computing.

For examples of recent published genome assemblies from the USDA group see *bioRxiv*: 2022.09.28.509896. DOI 10.1101/2022.09.28.509896 and *G3 Genes|Genomes|Genetics*, 11. DOI 10.1093/g3journal/jkab052. The Elisk group has recently developed AquaMine (<http://aquamine.org/>), a data mining system that integrates genome assemblies and gene annotation data for aquatic eumetazoan species of importance to US aquaculture and fisheries, with the goal of enabling researchers to create customized annotation datasets integrated with their own data.

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, 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,

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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.Midwest@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 and will reach completion by the start date of the appointment. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Proficiency in scripting languages (e.g., perl, python, bash)
- Experience with open-source bioinformatics tools
- Experience with genomic data and high throughput sequence analysis
- Experience with Linux/Unix and HPC
- Strong computational and analytical skills
- Strong communication skills in speaking and documented writing ability

**Eligibility
Requirements**

- **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 5/1/2023 12:00:00 AM.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#) )
 - **Communications and Graphics Design** ([6](#) )
 - **Computer, Information, and Data Sciences** ([17](#) )
 - **Earth and Geosciences** ([21](#) )
 - **Engineering** ([27](#) )
 - **Environmental and Marine Sciences** ([14](#) )
 - **Life Health and Medical Sciences** ([48](#) )
 - **Mathematics and Statistics** ([11](#) )
 - **Other Non-Science & Engineering** ([10](#) )
 - **Physics** ([16](#) )
 - **Science & Engineering-related** ([2](#) )
 - **Social and Behavioral Sciences** ([28](#) )
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).