

**Opportunity Title:** USDA-ARS Salmon Reproduction Fellowship

**Opportunity Reference Code:** USDA-ARS-NE-2023-0332

**Organization** U.S. Department of Agriculture (USDA)

**Reference Code** USDA-ARS-NE-2023-0332

**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

All documents must be in English or include an official English translation.

**Application Deadline** 7/28/2023 3:00:00 PM Eastern Time Zone

**Description** \*Applications may be reviewed on a rolling-basis.

**ARS Office/Lab and Location:** A research opportunity is available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), within the National Cold Water Marine Aquaculture Center (NCWMAC) located in Franklin, Maine.

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 National Cold Water Marine Aquaculture Center (NCWMAC) in Franklin, Maine supports the U.S. cold water marine aquaculture industry by developing genetically improved North American Atlantic Salmon. NCWMAC is a family based breeding program designed to systematically improve through the use of sibling phenotypes and individual genotyped breeding values. The objectives of the salmon selection program are:

1. Improve commercially important traits including:
  - Carcass weight
  - Fillet color
  - Fat content
2. Develop salmon which are sea lice resistant.



**Opportunity Title:** USDA-ARS Salmon Reproduction Fellowship

**Opportunity Reference Code:** USDA-ARS-NE-2023-0332

**Research Project:** While much focus has been on growth and disease resistance there has been little reproductive research on North American Atlantic salmon. However, many reproductive issues plague this industry. The primary issue is the consistent linear decline in eye-up rate (a metric used to determine live embryos) causing a shortage in genetically improved Atlantic salmon. The ORISE student will collaborate with their mentor on the issue of declining eye-up rate through the measurement of steroid hormones in endocrine tissues of spawning adults, fertilized embryos and water systems.

The ORISE student will be trained in:

1. Extraction of Atlantic salmon tissues and water for steroid hormones
2. Analysis of extracted samples utilizing liquid chromatography tandem mass spectrometry to identify a suite of steroid hormones.
  - This will include method optimization, instrument maintenance and a general education in analytical chemistry.
3. Data organization and compilation of results

**Learning Objectives:** The ORISE student will learn:

1. Basic laboratory techniques
2. Appropriate extraction techniques for various matrices
  - Liquid/liquid extraction
  - Solid Phase Extraction
  - Protein precipitation
3. The use of an LC-MS/MS instrument for the measurement of small compounds
4. Endocrine pathways of North American Atlantic salmon and how they relate to salmon reproduction

The ORISE student will have the opportunity to learn basic principles of aquaculture by participating in an aquaculture facility, analytical chemistry techniques by working with an LC-MS/MS, reproductive physiology and endocrinology of Atlantic salmon and will be trained in the preparations required for writing scientific papers.

**Mentor:** The mentor for this opportunity is Erin Legacki ([erin.legacki@usda.gov](mailto:erin.legacki@usda.gov)). If you have questions about the nature of the research please contact the mentor.

**Anticipated Appointment Start Date:** July 2023. 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 extended upon recommendation of ARS and is contingent on the availability of funds.

**Level of Participation:** The appointment is full-time.

**Participant Stipend:** The participant(s) will receive an annual stipend of \$37,696, 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.

**Opportunity Title:** USDA-ARS Salmon Reproduction Fellowship




**Opportunity Reference Code:** USDA-ARS-NE-2023-0332

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.Northeast@ornl.gov](mailto:ORISE.ARS.Northeast@ornl.gov) and include the reference code for this opportunity.

**Qualifications** The qualified candidate should be currently pursuing or have received a bachelor's degree in one of the relevant fields.

- Eligibility**

**Requirements**
- **Citizenship:** U.S. Citizen Only
  - **Degree:** Bachelor's Degree.
  - **Discipline(s):**
    - **Chemistry and Materials Sciences** ([2](#) )
    - **Environmental and Marine Sciences** ([2](#) )
    - **Life Health and Medical Sciences** ([4](#) )