

Opportunity Title: USDA-ARS Fellowship in Evaluation of the Mucosal Immune Response in Channel Catfish to Novel Flavobacterium Covae Recombinant Protein Vaccines

Opportunity Reference Code: USDA-ARS-2022-0342

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.

Application Deadline 11/30/2022 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), Aquatic Animal Health Research Unit (AAHRU) in Auburn AL.

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 specific research objectives of the AAHRU prevention program are development of vaccines, rapid detection tests and fish diets that will enhance disease resistance to infectious bacteria and parasites. The Unit's research also determines pathogen and host factors that influence virulence and immune response.



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Research Project: The catfish industry, comprised of channel and hybrid catfish, is the largest sector of US aquaculture (\$420 million in food fish in 2021). Flavobacterium covae, one of the causative agents of columnaris disease produces substantial mortality during the production of freshwater farmed finfish species. According to statistics for the USDA-ARS National Warmwater Aquaculture Research Center, this bacterium remains one of the top disease issues among catfish production accounting for an average of ~40% of fish disease cases over the last ten years. F. covae is ubiquitous in the aquatic environment and is often triggered during the summer months of the production cycle. As food fish production continues to increase, the frequency of columnaris disease will only continue to rise within the aquaculture industry. Add to this an increase in the regulation of treatments and resistance to available antibiotics means that alternative methods of disease protection will be required.

To meet the needs for continued growth and sustainability of the aquaculture industry and to increase its profitability, the Aquatic Animal Health Research Unit is developing strategies that will prevent large economic losses in the aquaculture industry caused by different fish pathogens. This research opportunity will involve studying the catfish mucosal adaptive immune response to both F. covae infection and after vaccination using novel vaccines that have been developed by ARS scientists.

Learning Objectives: Using different immunological techniques, the participant will learn to evaluate adaptive immune responses during natural infection or induced by vaccination or other immune-stimulating treatments. Under the guidance of a mentor, the participant will be involved in running studies in the natural host and teleost fish models to elucidate the importance of the different aspects of the immune response during infection and the mechanisms involved in protection during vaccination or treatment. The applicant will have the opportunity to present this research at field relevant scientific conferences. This research fits into the USDA-ARS National Program 106 (Aquaculture) action plan component to improve the efficiency and sustainability of catfish aquaculture.

Mentor(s): The mentor for this opportunity is Miles Lange (miles.lange@usda.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: January 2023. Start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for two years, but may be renewed upon recommendation of ARS and is contingent on the availability of funds.

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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, 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@ornl.gov and include the reference code for this opportunity.

Qualifications **Preferred Qualifications for the Ideal Applicant:** Applicants must have received or be completing a doctoral degree in Microbiology, Immunology, Molecular Biology, Virology, Epidemiology, Computational Biology, or other discipline related to fish health. Degree must have been received within the past six months.

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 6 months or anticipated to be received by 1/2/2023 12:00:00 AM.
- **Discipline(s):**
 - **Life Health and Medical Sciences** (10 👁)