

Opportunity Title: USDA-ARS Postdoctoral Fellowship to Develop a Viability

Assay for Cyclospora and its Surrogates Eimeria

Opportunity Reference Code: USDA-ARS-NE-2023-0274

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 7/7/2023 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 currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), within the Animal Parasitic Disease Laboratory (APDL) 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 of the agency is to provide global leadership in agricultural discoveries through scientific excellence.

Animal Parasitic Disease Laboratory (APDL) in Beltsville, Maryland has fully equipped modern laboratories located on a 6,000-acre campus only 12 miles from Washington, D.C. There are hundreds of scientists conducting agricultural research at the center. The center at Beltsville is one of many centers located throughout the United States. Our laboratory has access to a research dairy herd located within one mile from the main laboratory. We also have fully-equipped facilities housing small and large experimental animals. The University of Maryland at College Park, MD is located 4 miles from our research facility. In addition, the National Institutes of Health, American University, Johns Hopkins University, and Catholic University are in close proximity to our laboratory. This allows access to professional advice on scientific matters, to equipment, and availability to a full array of seminars, workshops, and conferences.



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For more information, please visit <https://www.ars.usda.gov/northeast-area/beltsville-md-barc/beltsville-agricultural-research-center/animal-parasitic-diseases-laboratory/> and <https://www.ars.usda.gov/northeast-area/beltsville-md-barc/beltsville-agricultural-research-center/animal-parasitic-diseases-laboratory/docs/asis-khan/>

Research Project: To understand and mitigate human health risk posed by foodborne pathogens, produce growers and regulators require tools capable of assessing not only their presence, but also their viability. Although being present is a concern, actions to mitigate infection are more urgent if the pathogens are viable. The inability to propagate *Cyclospora*, either in *in vitro* or *in vivo*, hinders viability assessment. Many pathogens repel infiltration of certain dyes only when living. Propidium monoazide (PMA) has proven successful as a basis to establish the viability of other pathogens. Droplet digital PCR (ddPCR) has proven very useful for absolute quantification of nucleic acids, without requiring standard curves. Hence, we proposed to develop a viability assay for *Cyclospora* in produce, combining PMA staining with ddPCR. To accomplish this, we will first optimize conditions and establish performance using *Eimeria* surrogates that infect poultry. We will then evaluate performance with *Cyclospora*. Success would afford the industry, and regulators, a rapid, sensitive, specific, and robust assay to diagnose parasite contamination and to test the presence of viable protozoan pathogens.

Learning Objectives: Throughout the course of this research project, the participant will improve his/her knowledge of molecular parasitology, comparative genomics and cell biology, gene/protein profiling and characterization. The participant will also be encouraged to present the results at scientific meetings.

Mentor(s): The mentor for this opportunity is Dr. Asis Khan (asis.khan@usda.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: November 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 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 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

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(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 and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields (e.g. Parasitology, Molecular Biology, Genetics).

Highly motivated applicants who have a strong background in molecular biology (including PCR, qPCR, ddPCR, and next generation sequencing), genomics, computational biology, and disease ecology research are encouraged to apply.

- Eligibility Requirements**
- **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - Life Health and Medical Sciences ([15](#) )