

Opportunity Title: Postgraduate Research Opportunity in Parasitology and Bioinformatics

Opportunity Reference Code: ARS-APDL-2018-165-0009-02

Organization U.S. Department of Agriculture (USDA)

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How to Apply 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.

If you have questions, send an email to USDA-ARS@orau.org. Please include the reference code for this opportunity in your email.

Description A postdoctoral research opportunity is available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Beltsville Agricultural Research Center (BARC), Animal Parasitic Diseases Laboratory (APDL) in Beltsville, Maryland.

Avian coccidiosis is a parasitic disease caused by protozoa in the genus *Eimeria*. The disease incurs an estimated \$ 350 million loss to the U.S. poultry industry; worldwide losses exceed \$ 1billion. The disease is controlled by the medication of feed with anticoccidial drugs or by immunization of newly-hatched chicks with low doses of *Eimeria* oocysts. How the *Eimeria* population responds to drug treatment or immunity is unknown, but is important to devising controls and avoiding problems of drug-resistance or antigenic variation. The participant will study the epidemiology of avian coccidiosis by applying metagenomic analyses of *Eimeria* recovered during field sampling. The goal of this research is to compare *Eimeria* genotypes during different coccidiosis control programs and determine if there is selection for immune-evasion or drug-resistance.

The participant will primarily be involved in isolating *Eimeria* oocysts, extracting *Eimeria* DNA, performing gene-specific PCR followed by MiSeq DNA sequencing and bioinformatics analyses. The participant will also be involved in other aspects of coccidiosis research, such as genomics and transcriptomics of different strains of *Eimeria maxima*, immune-mediated protection elicited by recombinant *Eimeria* antigens coupled to nanoparticles, and improving delivery of *Eimeria* oocyst vaccines to chicks.

The participant will learn the biology and molecular biology of *Eimeria* and related protozoa. The participant will learn how to apply proteomic and genomic analyses to the study of *Eimeria*. The participant will learn about practical ways to prevent coccidiosis using anticoccidial drugs and vaccination.

This opportunity will expose the participant to research being conducted by leaders in the field of avian coccidiosis through collaborative efforts, and expose the participant to other approaches taken by scientists working on



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related protozoan parasites such as *Toxoplasma gondii* and *Cryptosporidium parvum*. The participant will learn how to collaborate with other scientists and how to formulate research hypotheses and plans.

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. The initial appointment is for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits.

This opportunity is available to U.S. citizens only.



For more information about the ARS Research Participation Program, please visit the [Program Website](#).

Qualifications Applicants should have a M.S. or Ph.D. in biological sciences with emphasis on parasitology or microbiology and an interest in biology and epidemiology of infectious diseases with experience in metagenomic analyses.

Preferred Skills:

- Experience in molecular techniques is desirable, but not required
- Experience in bioinformatics analysis software
- Interest in biology and epidemiology of infectious diseases

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree.
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** ([1](#) )
 - **Life Health and Medical Sciences** ([8](#) )