Opportunity Title: Microbiology Fellowship - CDC
Opportunity Reference Code: CDC-DCHPP-2016-0034

Organization Centers for Disease Control and Prevention (CDC)

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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 references

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

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

Description The fellowship opportunity is available with the Molecular Pathology and Microbiology Team in the Infectious Disease Pathology Branch (IDPB), Division of High Consequence Pathology/Infectious Disease Pathology Branch (DHCPP) at the Centers for Disease Control and Prevention (CDC), in Atlanta, GA.

Project title is "Development of Laser Microdissection-Based Assays for Molecular Identification and Characterization of Pathogens from Formalin-Fixed, Paraffin Embedded Tissues."

The IDPB serves as the primary CDC program to provide tissue-based diagnosis of infectious diseases involving wide-range of pathogens. Formalin-Fixed, Paraffin-Embedded (FFPE) tissues are invaluable resource for prospective and retrospective diagnostic and clinical research and can be particularly useful in several diagnostic situations: (1) For the cases of sudden, unexplained deaths associated with clinical suspicion of infectious disease of unknown etiologies (2) The cases with initial suspicion of non-infectious conditions such as lung carcinoma, lymphoma or sarcoidosis. No culture or infectious agent testing is generally performed on initial invasive/surgical tissue biopsies of these cases and obtaining second biopsy can be expensive, challenging for patients and delay diagnosis. The Molecular Pathology Laboratory of IDPB is one of the very few facilities in the United States which has uniquely developed more than 150 PCR-based assays for the detection and characterization of wide-array of pathogens from FFPE tissues. Laser Microdissection (LMD)-based assays combine conventional histopathology and advanced molecular technologies.

The fellow will gain experience by:

- Developing/optimizing of Laser Capture Microdissection technique for FFPE tissues
- Developing and standardizing nucleic acids extraction protocols for micro-dissected tissue specimens

- Evaluating nucleic acid integrity and quality control protocols for LMD specimens
- Validating LMD-based PCR assays for detection and characterization of wide array of pathogens
- Developing of in-situ hybridization (ISH) assays for various pathogens and performing microdissection assays on ISH slides to study microbial pathogenesis/cell tropism
- Maintaining LMD lab, inventories, electronic and hard copy records, and in preparation of protocols, project summaries, case reports etc.

Intended outcome/impact:

This unique approach of integration of microscopic visualization with advanced molecular analysis will greatly expand diagnostic opportunities for diverse pathogens, enhance accuracy of identification for etiologic agents and improve understanding of tissue tropism and pathogenesis of emerging, re-emerging and novel pathogens. ?

In addition, there will be opportunities to attend CDC seminars, training courses and DHCPP weekly seminars to enhance existing knowledge in microbiology/biological sciences, epidemiology and public health. International travel is not anticipated for this position but, the fellow may have the opportunity to attend and present original work in scientific seminars or meetings.

All research conducted by the ORISE fellows while at CDC will be governed by CDC IRB policies and procedures.

The Fellow will have opportunities to learn cutting edge, "state of the art" techniques such as laser microdissection, next generation sequencing and in-situ hybridization, and may get a chance to be involved in the outbreak or epidemiologic case investigations as a part of the multidisciplinary team of scientists including molecular biologists, microbiologists, epidemiologists and pathologists.

This program, administered by ORAU through its contract with the U.S. Department of Energy to manage the Oak Ridge Institute for Science and Education, was established through an interagency agreement between DOE and CDC. The initial appointment is for one year, but may be renewed upon recommendation of CDC 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 at CDC in the Atlanta, Georgia, area. Participants do not become employees of CDC or the program administrator, and there are no fringe benefits paid.

Qualifications Applicants must have completed the requirements for a bachelor's or master’s degree in microbiology, biology, or related field that included at least 20 semester hours in microbiology or other subjects related to the study of microorganisms within five years of the start date of the

appointment, or expect to complete all requirements for such a degree prior to starting the fellowship.

Experience and proficiency in using various molecular biology techniques, including DNA and RNA extractions, conventional and real-time PCR/RT-PCR, gel electrophoresis, gel purification and DNA sequencing is required. Additional knowledge/experience of specialized techniques/tools, including in-situ hybridization, sectioning of paraffin-embedded tissue blocks, pyrosequencing, knowledge of sequence and data analysis software, scientific database search tools and reference management programs is also desirable.

Eligibility Requirements

- **Degree:** Bachelor's Degree or Master's Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Life Health and Medical Sciences** (6 👁)