

Opportunity Title: FDA CDRH Postdoctoral Fellowship in Biomedical Optics

Opportunity Reference Code: FDA-CDRH-2023-06

Organization U.S. Food and Drug Administration (FDA)

Reference Code FDA-CDRH-2023-06

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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
- One educational or professional recommendation. Your application will be considered incomplete and will not be reviewed until one recommendation is submitted.

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

If you have questions, send an email to ORISE.FDA.CDRH@rau.org. Please include the reference code for this opportunity in your email.

Application Deadline 4/30/2023 3:00:00 PM Eastern Time Zone

Description *Applications will be reviewed on a rolling-basis.

A research opportunity is available in the Office of Science and Engineering Laboratories (OSEL), within the Center for Devices and Radiological Health (CDRH), Food and Drug Administration (FDA) located in Silver Spring, Maryland.

The fellow will have an opportunity to train with established experts in Biomedical Optics while using their scientific skills to make contributions towards reducing racial disparities in a widely used, critical medical technology. Specifically, this project focuses on development, validation and implementation of phantom-based test methods to assess the effect of variations in skin pigmentation and other factors on the performance of pulse oximeters. Results of this project have the potential to directly impact international standards used by companies to evaluate pulse oximeters and other emerging technologies such as wearable sensors.

Training activities will include performing a rigorous survey of scientific literature, leveraging prior methods and developing new ones to fabricate more realistic tissue phantoms, incorporating phantoms into an existing flow loop, performing experiments to elucidate the effect of biological and environmental/use factors on the accuracy of pulse oximeters. The fellow will also have the opportunity to participate in discussions with regulatory review staff and international academic/clinical/industry committees researching to optimize the performance of pulse oximeters. The




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fellow will research with advisors to identify Best Practices for performance testing of pulse oximeters, and present research results at international conferences and author journal articles.

Learning objectives include: (1) understanding factors that impact light-tissue interactions in skin and how melanin impacts optical device performance, (2) developing the ability to create effective performance test methods for preclinical device evaluation, including through the use of novel/custom 3D printing approaches, (3) analyzing performance test data to extract quantitative insights into factors that impact device performance and developing/communicating Best Practices for testing optical diagnostic devices.

Anticipated Appointment Start Date: April 2023; start date is flexible

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 FDA. **The initial appointment is for one year to 18 months, but may be renewed upon recommendation of FDA 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 on-site for laboratory research at FDA in the Silver Spring, Maryland, area. Participants do not become employees of FDA, DOE or the program administrator, and there are no employment-related benefits.

Completion of a successful background investigation by the Office of Personnel Management (OPM) is required for an applicant to be on-boarded at FDA. OPM can complete a background investigation only for individuals, including non-US Citizens, who have resided in the US for a total of three of the past five years.

FDA requires ORISE participants to read and sign their FDA Education and Training Agreement within 30 days of his/her start date, setting forth the conditions and expectations for his/her educational appointment at the agency. This agreement covers such topics as the following:

- Non-employee nature of the ORISE appointment
- Prohibition on ORISE Fellows performing inherently governmental functions
- Obligation of ORISE Fellows to convey all necessary rights to the FDA regarding intellectual property conceived or first reduced to practice during their fellowship
- The fact that research materials and laboratory notebooks are the property of the FDA
- ORISE fellow's obligation to protect and not to further disclose or use non-public information

Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields (Biomedical Engineering or related technical field and scientific laboratory research experience). Degree must have been received within the past five years.

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Preferred skills/ knowledge:

- Candidates should have substantial experience in laboratory research in biomedical engineering; especially in the fields of optical spectroscopy and imaging
- Excellent writing and communication skills
- Possess an academic background that includes graduate level coursework in biophotonics, medical imaging, physiology, biology, electronics and computer engineering
- Biomedical Optics, Oximetry, Light-tissue interactions and Skin optics
- Experience in tissue phantom fabrication and optical property measurements
- Presenting research and writing scientific papers

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
 - **Engineering** (27 👁)
 - **Physics** (16 👁)
- **Age:** Must be 18 years of age

Affirmation

Have you lived in the United States for at least 36 out of the past 60 months? (36 months do not have to be consecutive.)