Opportunity Title: Cardiac Electrophysiology Computational Modeling Fellowship - CDER
Opportunity Reference Code: FDA-CDER-2017-0090

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

Reference Code FDA-CDER-2017-0090

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 FDArpp@orau.org. Please include the reference code for this opportunity in your email.

Description A research opportunity is available at the Food and Drug Administration (FDA), Center for Drug Evaluation and Research (CDER) in the Office of Translational Sciences.

The Comprehensive In vitro Proarrhythmia Assay (CiPA) initiative is a global collaboration between regulatory, academic and industry scientists to develop and validate a new approach to assessing the cardiac safety of new drugs, replacing the current clinical Thorough QT (TQT) study. The CiPA initiative integrates the standardized assessment of drug effects on multiple human cardiac ion channels in vitro with an in silico model of the human adult ventricular cardiomyocyte to predict the level of proarrhythmia risk compared to a set of standard drugs with known risk. FDA is leading the CiPA computer modeling effort by developing cardiac models and quantitative metrics to predict drugs' relative risk levels of causing arrhythmia. The development activities include, but are not limited to, implementing/optimizing ventricular cardiomyocyte models to integrate in vitro ion channel drug block data, developing ion channel models to catpure drug-channel interaction, using advanced statistical methods to quantify uncertainty/variability in experimental data, and developing mechanistic biomarkers/metrics to classify drugs into different arrhythmia risk categories. The Cardiac Electrophysiology Computational Modeling Fellow will have opportunities to take part in some or all of these efforts to implement CiPA as a new regulatory paradigm.

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

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interagency agreement between DOE and the FDA. The initial appointment is full-time for twelve (12) months, but may be renewed upon recommendation of the 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 at the FDA in the Silver Spring, Maryland area. Participants do not become employees of the FDA or the program administrator, and there are no fringe benefits paid.

Qualifications

A Doctoral degree in computational biology/bioinformatics, biomedical engineering, systems biology/pharmacology, biophysics or related fields with a strong emphasis on programming, scientific computing, and dynamic modeling using ordinary differential equations (ODEs). Qualified Masters level degrees may also be considered provided that the candidate demonstrates strong experience in mechanistic modeling of ion channels and/or cardiac myocytes.

Strong experience in R/Matlab programming and previous experience/knowledge in developing ordinary differential equations-based dynamic models are necessary. Experience with developing Hodgkin-Huxley or Markovian models to simulate ion channels and/or cardiac myocytes is highly desirable. Basic knowledge of pharmacology, toxicology and electrophysiology useful. Previous experience with highly parallelizable problems and developing in high performance computing environments is a strong plus.

Eligibility Requirements

- **Degree:** Master's Degree or Doctoral Degree.
- **Academic Level(s):** Postdoctoral or Post-Master's.
- **Discipline(s):**
  - **Environmental and Marine Sciences** (1 👁)
  - **Life Health and Medical Sciences** (45 👁)
  - **Mathematics and Statistics** (1 👁)