

Opportunity Title: Development of Complementary Assay Systems and Analysis Techniques

Opportunity Reference Code: EPA-ORD-NCCT-2016-06

Organization U.S. Environmental Protection Agency (EPA)

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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 EPArpp@oraui.org. Please include the reference code for this opportunity in your email

Description A postdoctoral research opportunity is currently available at the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD). The appointment will be served with the National Center for Computational Technology (NCCT) in Research Triangle Park, NC.

NCCT is responsible for developing new computational tools and providing quantitative analysis for improving environmental risk assessments and regulatory decisions pertaining to chemical safety and sustainability. NCCT has newly formed an experimental arm with the focus of developing new high-throughput and/or high-content assays as well as exploring increasingly complex cell culture systems that more accurately reflect human physiology. This project aims to develop a library of cell cultures to be readily available for large-scale screening of chemicals and biomolecules for the purpose of performing high-throughput whole genome transcriptomics as well as develop additional complex cell culture systems and analysis techniques for future applications.

The participant will collaborate with a multidisciplinary research team including scientists at EPA and other partners. The participant will be involved in the following activities:

- developing a library of stable, high quality and reproducible cell cultures
- developing protocols for chemical and biomolecule screening of these cell cultures with libraries containing hundreds to thousands of test articles
- developing experimental protocols which support concentration-response assessments of transcriptomic and other cell-based assay endpoints
- developing complementary *in vitro* analysis techniques and strategies to aid in chemical screening and targeted follow-up studies
- developing or adapting complex culture systems for future screening applications.

The participant's research will be in accordance with a research project



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plan; guidance will be provided by the research mentor(s). S/he will have latitude in exercising independent initiative and judgment in the research commensurate with the level of training. The ToxCast research program has generated bioactivity data on thousands of chemicals across roughly one thousand assay endpoints. It is recognized that although these assays cover a large swath of biology they are not exhaustive and do not always provide a diverse cellular context. The goals of this project are to develop a diverse collection of in vitro test systems for high-throughput transcriptomic and/or cell phenotypic screening and expand the predictive knowledge-base of in vitro transcriptomic data in support the chemical prioritization and safety assessment process.

The participant will be collaborating with a multidisciplinary research team including scientists at EPA and other partners. A research plan will be developed and the project will be conducted under the guidance of a mentor. The participant will have latitude in exercising independent initiative and judgment in the research commensurate with the level of training.

Through this project, the participant will gain experience in the general areas of cell culture experimentation, high-throughput screening of large chemical libraries, high-content imaging, laboratory robotics, global transcriptomics (specifically RNA-Seq) and other complementary molecular biology techniques. Research findings will be communicated through peer-reviewed publications, national meetings of professional societies, and work-in-progress seminars. The training the participant will receive, coupled with a productive publishing record, should make it possible for them to move into any of these areas or continue down a transdisciplinary career path at their discretion. The research participant will be involved in highly visible predictive toxicology efforts as part of the computational toxicology research projects and will be engaged with researchers world-wide.

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 EPA.

Qualifications Applicants must have received a doctoral degree in biology, biochemistry, genetics, toxicology or a related field within five years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date. Knowledge of cell culture techniques and methodology used to evaluate the effects of chemicals on mammalian cells in culture is desired. Basic knowledge of key concepts underlying the mammalian cell culture as well as isolation and analysis of nucleic acids (i.e. RNA and DNA) will enhance this research opportunity.

The appointment is full-time for one year and may be renewed upon recommendation of EPA and contingent on the availability of funds. The participant will receive a monthly stipend. Funding may be available to reimburse the participant's travel expenses to present the results of his/her research at scientific conferences. No funding will be available to cover





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travel costs for pre-appointment visits, relocation costs, tuition and fees, or participant's health insurance. The participant must show proof of health and medical insurance. **The participant does not become an EPA employee.**

The mentors for this project are Joshua Harrill (harrill.joshua@epa.gov).
The desired start date is January 3, 2017.

- Eligibility Requirements**

- **Degree:** Doctoral Degree received within the last 60 month(s).
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([1](#) )
 - **Environmental and Marine Sciences** ([2](#) )
 - **Life Health and Medical Sciences** ([6](#) )
 - **Mathematics and Statistics** ([1](#) )