

Opportunity Title: Computational exploration of thyroid-hormone related biochemical networks

Opportunity Reference Code: EPA-OCSP-OSCP-2018-01

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

Description The US EPA's Endocrine Disruptor Screening Program (EDSP) seeks to develop a high-throughput screening program for the rapid assessment of large numbers of chemicals for endocrine disrupting potential. To that end, EDSP is identifying critical events within thyroid-related Adverse Outcome Pathways (AOPs) using a data mining literature screening approach to map out molecular initiating events (MIEs) and signaling pathways. The Participant will be able to undertake important research to facilitate completion of these goals. The candidate will have opportunities to learn about cutting edge tools and techniques for systematic reviews of scientific literature and development of alternative testing strategies (ATS)/new approach methodologies (NAMs). A successful candidate must be self-directed and able to work independently. The selected applicant will conduct research closely with endocrine toxicologists, chemists, computational biologists, and cheminformatics specialists.

The Participant may be involved in the following research activities:

- Research on Key Events (KEs) and MIEs: through mining of seminal papers for each biochemical node/edge within the thyroid hormone related networks to create a “fingerprint” from which additional research papers can be identified and evaluated
- Construct a research-based evidence pipeline and prototype a scientific curation effort, to research links between one biochemical event to another
- Translate text into Biological Expression Language/AOPwiki or other biologically and computationally relevant frameworks
- Mining and inventorying research papers for effects, evidence, species, targets, etc.
- Setting up processes to computationally generate templates for extracting data based on the inventory of effects, evidence, species, targets, etc.
- Contribute to the development of research strategies for systematic review including weight of evidence decision making, and meta-analysis
- Prototype a scientific curation effort for extension to the mapping of other endocrine systems
- Translating basic research into programmatic applications

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 EPA. The initial appointment is for one year, but may be renewed upon recommendation of EPA 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 EPA, DOE or the program administrator, and there are no employment-related benefits.

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Qualifications An advanced degree (post-BA/BS) degree in a biological, chemical, or computational science within five years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date.

The project will benefit from a candidate with a background in machine learning, natural language processing, data and text mining, data management (especially relational, NoSQL, or graph databases), chemoinformatics, bioinformatics, statistics (especially meta-analysis) and/or computational toxicology.

Additional experience or understanding of endocrinology, toxicology, cellular or molecular biology, biochemistry or familiarity with systematic review would be helpful.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree received within the last 60 month(s).
- **Discipline(s):**
 - **Computer Sciences** (7 )
 - **Environmental and Marine Sciences** (2 )
 - **Life Health and Medical Sciences** (8 )
 - **Mathematics and Statistics** (2 )
 - **Other Physical Sciences** (7 )