Opportunity Title: Cytogenetic Biodosimetry Laboratory
Opportunity Reference Code: ORISE-RE

Organization ORAU

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Description

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The Cytogenetic Biodosimetry Laboratory of REAC/TS (Radiation Emergency Assistance Center/Training Site) is one of the two federally funded laboratories in the U.S.A that has the expertise to perform the “Gold Standard” Dicentric Chromosome Assay (DCA) for estimating the absorbed radiation dose (biodosimetry) in humans after accidental or incidental exposure to ionizing radiation. REACTS is an asset of US Department of Energy/National Nuclear Security Administration (DOE/NNSA) and the primary mission of REACTS is to support DOE/NNSA in radiological and nuclear emergency response and preparedness measures. REACTS CBL has been developing several automated high throughput platforms for various biodosimetry tools to achieve a rapid triage for prioritizing the exposed population for urgent medical care. Besides, REACTS CBL has been collaborating with several academic institutions to advance the field of radiation biodosimetry by developing novel biodosimetry techniques to achieve an effective medical triage rapidly. The main goal of REACTS CBL is to enhance our nation’s emergency response and preparedness measures by developing automated high throughput platforms to provide rapid biodosimetry for several hundreds and thousands of exposed humans after large-scale radiological/nuclear incidents. This opportunity will have a weekly stipend starting at $700.

What will I be doing?

The selected candidate, under the guidance of a mentor, will gain hands-on experience in multiple cytogenetic biodosimetry techniques including Giemsa and fluorescence *in situ* hybridization (FISH) based analysis of stable and unstable chromosome aberrations, genome wide analysis of chromosome translocations by multicolor FISH, inversion analysis by multicolor BAND and micronuclei analysis by cytokinesis blocked micronuclei assay. Additionally, the individual will learn how to perform automated dicentric chromosome and micronuclei analyses and absorbed radiation dose estimation using multiple algorithms of BioDose, CABAS and Dose Estimate. The candidate will learn all the theoretical and practical aspects of radiation biodosimetry and their applications for predicting short and long-term health effects of exposed human population. The candidate will also work with samples irradiated with multiple complex exposure scenarios involving low dose, high dose and ultra-high dose rates of radiation mimicking nuclear improvised device and radiation dispersal device.

What are the benefits?

The internship will provide an opportunity to learn several radiation biodosimetry techniques and to engage with technical expert(s) in developing novel ideas for the field of radiation biodosimetry. Further, the learning will help in building up the future generation of radiation biologists since radiation biology is a specialty field for which there is no curriculum currently in most universities.

Qualifications

Pursuing or recent graduate with a Bachelor’s degree biology or related disciplines with a minimum of 3.0 GPA. A Bachelor’s degree in any area of fundamental biology is desirable but not a prerequisite.

Applicants must be a current student at or have received a degree from a ORAU member school https://orau.org/university-partnerships/consortium-members.html.

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree received within the last 60 months or currently pursuing.

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- **Overall GPA:** 3.00
- **Discipline(s):**
  - **Life Health and Medical Sciences** (9 👁)
- **Age:** Must be 18 years of age