

**PhD scholarships  
at the Laboratory of Radiobiology of Accidental Exposure,  
Institut de Radioprotection et de Sûreté Nucléaire,  
Fontenay aux Roses, France.**

**The DNA damage response in the maintenance of myofiber stability  
upon exposure to ionizing radiation (ref SAN22-3)**

A PhD position is available from October 2022 onwards in the Laboratory of Radiobiology of Accidental Exposure (LRAcc), within the Department of Research in Radiobiology and Regenerative Medicine at the Institute of Radioprotection and Nuclear safety (IRSN).

**Project description**

"The response to ionizing radiation-induced DNA damage in an *in vitro* differentiation system that generates myofibrillogenetic cells". **Background:** Ionizing particles interacting with matter produce a variety of damage in cells, particularly into the DNA molecule. Eukaryotic cells have developed a set of multi-protein mechanisms to repair most of the DNA damage and thus maintain the integrity of genetic and epigenetic information. Therefore, proteins involved in DNA damage response and chromatin plasticity are potentially key players in cell fate (general cell dysfunction, induction of cell death, etc...) following exposure to ionizing radiation. **Project description:** The aim of this project is to understand how myotubes, multinucleated cells of the skeletal muscle tissue, maintain their cellular functions when one or more of their nuclei are irreversibly damaged by ionizing radiation. In particular, the project will focus on the cellular response to DNA double strand breaks and chromatin plasticity, using (i) cellular models of ectopic expression of GFP-coupled proteins of interest, (ii) an *in vitro* myofibrillogenesis differentiation system, and (iii) technologies that allow the specific targeting of a single or multiple myonuclei. This study will aim to investigate the dynamic behavior of the proteins of interest using real-time imaging techniques in different myogenic cell types, mono or multinucleated, proliferative or post-mitotic, in order to highlight differential cellular responses. **Interest:** This subject is part of the research programs conducted by the IRSN aiming to increase our knowledge on the mechanisms that are the origin of undesirable biological effects induced by ionizing radiation. This project will allow the student to acquire solid knowledge in radiobiology, cell biology and molecular biology, as well as in immunofluorescence and confocal microscopy techniques.

**Place of work**

Our laboratory is located on the site of Fontenay aux Roses, in a multidisciplinary environment. The site is only 10 km away from the Center of Paris and easily accessible with public transportation.

<https://www.irsn.fr/EN/Research/Research-organisation/Research-units/human-radiation-protection-unit/LRAcc/Pages/Radiobiology-Accidental-Exposure-Laboratory.aspx>.

**How to apply?**

We are seeking for highly motivated individuals, with a strong background in cellular and molecular biology, and good knowledge of immunofluorescence microscopy techniques.

Application, including a cover letter briefly describing research accomplishments, a detailed CV and at least one recommendation letter should be sent to Céline Baldeyron ([celine.baldeyron@irsn.fr](mailto:celine.baldeyron@irsn.fr)).