

Ingénieur de Recherche (IR) on peripheral neuropathy

KEY WORDS: oxaliplatin, chemotherapy-induced-peripheral neuropathy, dorsal root ganglion

WORKING PLACE: Ecole Normale Supérieure/ Laboratoire "Chimie Physique et Chimie du Vivant"

CITY: Paris

COUNTRY: France

DETAILS OF THE OFFER:

Project:

Platinum-based anticancer drugs are widely used in chemotherapy regimens in clinical practice. Combination treatments involving Oxaliplatin (Ox) have emerged as the standard therapeutic solutions for metastatic colorectal cancer, the second most frequent cause of cancer-related mortality in developed countries. The main adverse side effects of Pt-based drugs are however their dose-limiting toxicities. Ox-induced peripheral neuropathy (OIPN) affects nerves causing pain and impaired sensation and movement in a majority of patients. The associated mechanisms are complex and no clinically effective treatment or prevention therapy exist.

This project is based on a multiscale approach against OIPN using redox modulation, which includes synthetic chemistry then chemical, cellular and *in vivo* analyses. Our approach aims at providing a detailed picture of the preventive mode of action of redox modulators in neuropathies and will help to better define the etiology of OIPN. This study will identify the most effective and less toxic molecules capable of reducing the side effects of Ox without affecting its antitumoral efficacy.

Missions:

Within the Laboratory of Physical Chemistry and Chemistry of Life (CPCV), the agent will work within the Metals in Biology and Redox Homeostasis team (Methrox, <https://ens-bic.fr>). The recruited agent (M/F) will be in charge of the design, choice, and implementation of cell biology techniques (neuronal cells) within the framework of the indicated scientific project. He/she will also be train and supervise the students involved in the project on these aspects, and will participate in the development of the best strategies to implement in cell biology. The agent will use suitable characterization techniques: classical techniques in biology, in imaging, and for the quantification of metals in a biological context.

Main tasks:

- Implement and develop 2D cellular models of neuronal cells (e.g. Dorsal root ganglion neuronal cells culture). Guarantee the implementation of cell cultures and the maintenance of collections;
- Conduct, by adapting experimental conditions, a set of techniques (western-blot, immunostaining, RT-QPCR, RNAseq, confocal imaging);
- Manage and organize technical resources within the framework of a scientific project;
- Participate in the implementation of analytical approaches for metal cations in biological environments: biological activity, analysis (ICP-MS and X-Ray Fluorescence imaging);
- Process data, analyse, interpret, validate results. Write experimental or study reports, technical notes;
- Participate in the dissemination and promotion of results in the form of oral presentations and publications;
- Ensure scientific monitoring and discuss it to develop projects;
- Train students and staff in the various biological techniques involved in the project.
- Apply and enforce the health and safety rules specific to the activities. Set up and maintain regulatory requests (cells).

Main skills:

Knowledge:

- Biology (in-depth knowledge)
- Health and safety regulations

- Legal and ethical framework
- English language (international environment)

Know-how:

- An expertise in neuronal cells, if possible in dorsal root ganglion neuronal cells.
- Design experimental set up in cellular biology (eukaryotic cells, neuronal cells).
- Implement biological techniques
- Use software specific to the activity
- Write scientific documents
- Work collaboratively in an interdisciplinary context
- Know how to manage an experiment schedule established with several stakeholders

Soft skills:

- Autonomy
- Rigor
- Ability to communicate and report on the progress of projects
- Ability to transmit the required knowledge and skills
- Appetite for the development of new expertise

Qualifications:

The candidate must be independent, motivated and very enthusiastic, with:

- PhD in Cellular biology or neurosciences

Context / Environment:

This project will be conducted within a team of chemists and biologists from the "Metal and redox homeostasis" (METHROX) group (<https://ens-bic.fr/>) of the Laboratoire "Chimie Physique et Chimie du Vivant" (CPCV). The whole team comprises four chemists and three biologists and studies the biological activities of inorganic complexes. The candidate will be in a very dynamic workplace and a stimulating international scientific and social environment. The candidate will benefit from the environment of the biotechnology laboratory (LBT), which is a cell culture platform set up by the ENS chemistry department.

TYPE OF JOB: Research scientist

TYPE OF CONTRACT: CDD (temporary/ up to 3 years)

APPLICATION DEADLINE: 02/28/2025

How to apply: send CV to christine.rampon@ens.psl.eu and helene.bertrand@ens.psl.eu

EMPLOYMENT START DATE: spring 2025