

## **Characterization and quantification of proteins associated with neurodegenerative diseases by high-resolution mass spectrometry.**

The laboratory LI-MS (Laboratory of Innovation in Mass Spectrometry for health) at CEA Saclay, France, in collaboration with the Institute of Memory and Alzheimer's Disease, the neuropathology department, and the Department of Metabolic Biochemistry at University Hospital Pitié-Salpêtrière (Paris), invites application for a position of Postdoctoral Researcher.

Neurodegenerative diseases have in common the accumulation of proteins, notably tau, synuclein, amyloid or TDP43, in the form of toxic aggregates found in the brain parenchyma of patients. The accumulated proteins show numerous post-translational modifications along the amino-acid sequence. The abundance of modified forms (proteoforms) in brain deposits, such as phosphorylated tau in Alzheimer's patients, suggests a role in toxic aggregation. A diversity of post-translational modifications of tau are reported (e.g., phosphorylations, acetylations, or ubiquitinations) and the toxicity, role in pathology, and connectivity between these modifications need to be clarified for the understanding of molecular mechanisms and identification of relevant biomarkers for positive diagnosis.

In this objective, the Postdoctoral Researcher will develop innovative high-resolution mass spectrometry techniques related to the project, in particular in the fields of quantitative top-down and bottom-up mass spectrometry, in order to precisely characterize the proteoforms and post-translational modifications of biomarkers in tissues and biological fluids from patients with neurodegenerative diseases. As a consequence, he/she has expertise in analytical technics, including mass spectrometry, applied to proteins in tissues and biological fluids. The project will require writing scientific articles or reports.

The position is available for a period of 12 months, possibly extendable to 24 months, with an expected starting date in October 2022, and is located at laboratory LI-MS (Saclay, 20 km south of Paris, France). Core activity of the laboratory is the development of innovative analytical methods based on mass spectrometry (*Viodé A et al, Front Neurosci. 2018, Dubois C et al, J Proteome Res. 2020 ; Azevedo R et al, Cells, 2022 ; Lefebvre D et al, J Proteome Res. 2022*). Further information on CEA at:

[https://joliot.cea.fr/df/joliot/Pages/Entites\\_de\\_recherche/medicaments\\_technologies\\_sante/SPI/lms.aspx](https://joliot.cea.fr/df/joliot/Pages/Entites_de_recherche/medicaments_technologies_sante/SPI/lms.aspx)

### Requirements

The candidate will hold a doctoral degree in analytical chemistry or analytical biochemistry. Prior experience in qualitative or quantitative proteomics is required. Enthusiasm for interdisciplinary research, ability to work in a team and good English skills are expected

Applications should be written in English or French comprising a statement of motivation and research interests, a CV, a full publication list, and the name of a referee. These files should be sent by email to: [sandrine.leblois@cea.fr](mailto:sandrine.leblois@cea.fr) and [francois.becher@cea.fr](mailto:francois.becher@cea.fr)