

Bio-orthogonal chemistry for the study of copper homeostasis in mammalian cells

One-year post-doctoral position funded by the CNRS is available in Grenoble, capital of the French Alps, at the Laboratory of Chemistry and Biology of Metals (CEA/CNRS/UGA), CEA Grenoble. Salary depends on the experience.

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Project.

Copper (Cu) is essential for human life. To avoid a detrimental oxidative stress due to Cu redox activity, Cu homeostasis mechanisms tightly control Cu distribution within the cell. In the team, we are interested in the study of these mechanisms in healthy human cells as well as the disruptions of these mechanisms in diseases such as in the Wilson disease and in some cancers.

To understand the molecular details of Cu homeostasis mechanisms in the cellular context, we are developing various methods such as synchrotron radiation X-ray fluorescence microscopy at the ESRF. In the framework of this project, we plan to implement bio-orthogonal chemistry to enable the specific labelling of the Cu chaperone Atox1 that is central for Cu intracellular trafficking. The methodology will enable to perform super resolution fluorescence microscopy in a first step. However, the ultimate goal will be to assess the possibility to perform *in cell* dynamic nuclear polarization-enhanced nuclear magnetic resonance (DNP-NMR) in collaboration with the group of Gaël De Paëpe (<http://www.dnpgrenoble.eu/>).

In this context, the selected post-doctoral fellow will be involved in the implementation of bio-orthogonal chemistry, super resolution fluorescence microscopy on Atox1 and sample preparation for preliminary experiments of DNP-NMR on purified isotopically-labeled Atox1 alone and in presence of crude cell extract.

Methods: Cellular and molecular biology, bio-orthogonal chemistry, super resolution fluorescence microscopy, bacterial production of $^{13}\text{C}/^{15}\text{N}$ -isotopically labeled protein, NMR.

Candidate profile: We are looking for a highly motivated PhD interested by a project at the interface between biology, chemistry and physics. Previous experience in bio-orthogonal chemistry and in metal homeostasis will be an asset.

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Documents needed to apply: – Cover letter
– Resume
– Reference contacts