

POST-DOCTORAL POSITION IN CHEMICAL BIOLOGY

TITLE: Synthesis of biomimetic copper complexes to understand the role of Met-rich domains in copper homeostasis.

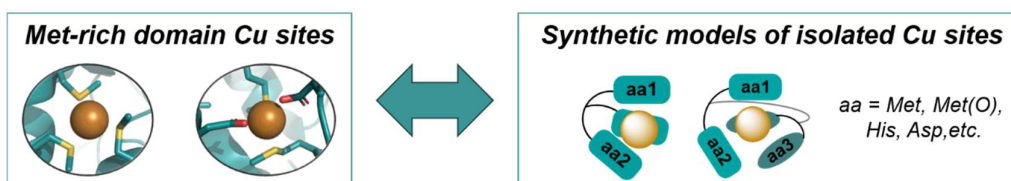
LOCATION: SyMMES laboratory at CEA-Grenoble, France (<https://www.symmes.fr/Cibest>)

KEYWORDS: Organic chemistry, bioinorganic chemistry, copper

EXPECTED STARTING DATE: September 1st, 2022 at the latest

APPLICATION DEADLINE: April 30th, 2022

PROJECT:



The postdoctoral fellow will be involved in the MetCop project, which associates chemists, biochemists and geneticists from the SyMMES laboratory in Grenoble and the BIP and LCB laboratories in Marseille. We aim at determining the role of methionine-rich domains in the strategies adopted by microorganisms to tackle copper stress in various environments, with a particular focus on Met-rich domains in CueO(-like) proteins.

These Met-rich domains exhibit diverse copper-binding sites, which respective contributions are challenging to identify. To disentangle this, we propose a small-molecule, peptidomimetic approach. The SyMMES laboratory has a strong experience in Cu⁺ binding in biology^[1,2] and previously demonstrated that the extracellular Cu⁺ binding site of the Cu transporter Ctr1 could be modelled with a pseudopeptide containing three Met residues.^[3]

Using a similar approach, the postdoctoral fellow will design, synthesize and characterize small-molecule models that reconstitute copper binding environments in Met-rich domains. Key parameters will be evaluated, such as copper affinity or redox potential of Cu²⁺/Cu⁺ complexes, using a wide range of experimental methods (MS, NMR, EPR, etc.)

PROFILE:

We are looking for a highly motivated candidate having a PhD in organic chemistry, bioinorganic chemistry or chemical biology, and a strong interest in the Chemistry/Biology interface.

To apply, please send a CV, a motivation letter and two contacts able to provide a recommendation letter to Dr Sarah HOSTACHY (sarah.hostachy@cea.fr) and Dr Pascale DELANGLE (pascale.delangle@cea.fr).

REFERENCES:

- [1] M. Monestier, A. M. Pujol, A. Lamboux, M. Cuillel, I. Pignot-Paintrand, D. Cassio, P. Charbonnier, K. Um, A. Harel, S. Bohic, C. Gateau, V. Balter, V. Brun, P. Delangle, E. Mintz, *Metallomics* **2020**, *12*, 1000–1008.
- [2] A. M. Pujol, C. Gateau, C. Lebrun, P. Delangle, *J. Am. Chem. Soc.* **2009**, *131*, 6928–6929.
- [3] A.-S. Jullien, C. Gateau, C. Lebrun, P. Delangle, *Inorg. Chem.* **2015**, *54*, 2339–2344.