

**Research Engineer position (M/F) in Marseille (France) in biochemistry/ biophysics,
for the structural and functional characterizations of viral Fe-S proteins**

Application deadline: 30/04/2023 (with deadline extension until the position is filled). **Funding:** 18-month Research Engineer position (possibility of contract extension on a related project). A*Midex funding, starting gross salary between 2100 and 3800 euros, indexed on experience. **Starting:** Position available now.

Location: **Laboratory of Bioenergetics and Protein Engineering (BIP)** (<https://bip.cnrs.fr/>), **Aix-Marseille University (AMU) & CNRS**, Mediterranean Institute of Microbiology (IMM), CNRS research campus, 31 Ch. Joseph Aiguier, 13009, **Marseille** and **Laboratory Information and structural Genomics (IGS)** (<https://www.igs.cnrs-mrs.fr/>), **Aix-Marseille University (AMU) & CNRS** Mediterranean Institute of Microbiology (IMM), Luminy campus, 13009, **Marseille**.

Scientific environment: The BIP and IGS laboratories are two Joint Research Unit (UMR) co-supervised by AMU and CNRS. These two labs are part of the “Mediterranean Institute of Microbiology” (IMM) and of the “Institute of Microbiology, Bioenergies and Biotechnology” of Aix-Marseille University (IM2B), providing a stimulating and enthusiastic international scientific environment. The candidate could also benefit from the personalised support offered by the Plinius Cursus program, with training in a wide range of cutting-edge technologies in a multidisciplinary environment.

Project description: Giant viruses were discovered 23 years ago and shifted the paradigms of the virology field by their large capsid and double-stranded DNA genome size (between 1 to 2.8 Mb). About 2/3rds of their genome encodes proteins with no homologs in the cellular or viral worlds. In *Mimiviridae*, we recently discovered a new family of Fe-S cluster-binding proteins, named GciS (for Glycine/Cysteine-rich Iron-Sulfur), of unknown function, and characterized by small sizes and simple amino-acid compositions peculiarly rich in glycine, cysteine, and aromatic residues. These proteins are among the most abundant proteins composing the viral particles and are likely essential for the virus/host interaction. The GciS proteins display very unusual Fe-S cluster binding properties, likely related to their large conformational flexibility properties. **The project aims to study the role of iron-sulfur proteins in virology by the means of interdisciplinary approaches including bioinformatics, cell biology, structural biology, biochemistry, and biophysics. An important milestone of the project will be to decipher the structural properties as well as the functional role of these viral Fe-S proteins.**

References related to the project:

- a) Schulz, F., Abergel, C., Woyke, T., *Nat Rev Microbiol* **2022**, 20 (12), 721-36, doi: 10.1038/s41579-022-00754-5.
- b) Abergel, C., Legendre, M., Claverie, J. M., *FEMS Microbiol Rev* **2015**, 39 (6), 779-96, doi: 10.1093/femsre/fuv037.
- c) Villalta, A., Srour, B., Lartigue, A., Clémancey, M., Byrne, D., Chaspoul, F., Loquet, A., Guigliarelli, B., Blondin, G., Abergel, C., Burlat, B., *J Am Chem Soc* **2023**, 145 (5), 2733-38. doi: 10.1021/jacs.2c10484.

Job description: The recruited research engineer will oversee the biochemical and biophysical aspects of the project in order to investigate the structural and functional properties of the viral Fe-S proteins. This will include the samples production (cloning, production, purification of heterologous recombinant viral proteins and mutants, *in vitro* Fe-S cluster reconstitutions), biochemical, structural, and spectroscopic experiments (chromatography, electrophoresis, electronic microscopy, activity assays, UV/vis, CD, EPR). He/she will strongly interact with the other partners associated to the project, namely the team of Geneviève Blondin (BCM, CEA Grenoble) for Mössbauer experiments, and the team of Beatrice Py (LCB, CNRS, Marseille) for functional studies in *E. coli*.

Candidate profile: Applicants must have a PhD degree, or a diploma in engineering (or equivalent) with at least one first experience in academic research. The successful candidate will preferably be chemist, physicist, or biochemist with a strong background on metalloproteins. Good practice of routinely used methods for protein purification and characterization. Expertise in EPR spectroscopy would be an advantage. Fluent knowledge of English, French is not mandatory.

Contact information and application process: Interested candidates are kindly invited to *rapidly* contact by e-mail Bénédicte Burlat, BIP lab (bburlat@imm.cnrs.fr), and Audrey Lartigue, IGS lab (audrey.lartigue@igs.cnrs.fr), for pre-selection process. Preselected candidates will be asked to send a CV including their main publications and two letters of recommendation (alternatively the names of two references with their contact information).