

**Postdoctoral position (M/F) in Marseilles at the biophysics/chemistry/biochemistry interface on iron-sulfur cluster containing proteins**

**Title of the project:** Biophysical characterization of unusual cysteine-rich Fe-S proteins from giant viruses

**Application deadline:** 15 November 2020. **Funding:** 15-month post-doctoral position. Funding from the French National Agency (ANR grant number ANR616-CE11-0033-02). Minimum gross salary 2200 euros/month indexed on experience. **Starting:** Position available from the 1<sup>st</sup> December 2020.

**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 (France).

**Scientific environment:** The BIP laboratory is a Joint Research Unit (UMR) co-supervised by AMU and CNRS and gathers 70 people, including 43 permanent positions. The BIP lab is 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 scientific environment. The candidate will benefit from the personalised support offered by the Plinius Cursus program, with training in a wide range of cutting-edge technologies in a multidisciplinary and international environment. The recruited researcher will work in the interdisciplinary group of “Biophysics of Metalloproteins”, gathering 15 people (physicists, chemists, spectroscopists and biochemists), and strongly associated (scientific and technical management) to the national EPR Facility in Life Science at the Chemistry-Biology Interface.

**Project description:** Giant viruses were discovered nearly 20 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. Genomic and transcriptomic data revealed a large proportion of cysteine-rich proteins in giant viruses, whose function is unknown. These may contain unique iron-sulfur cluster patterns and belong to unique metabolic pathways. This project focuses on elucidating the structural properties and the role of these cysteine-rich Fe-S proteins in the physiology of giant viruses by the means of interdisciplinary approaches including bioinformatics, cell biology, biochemistry, and biophysics.

Claverie, J.-M., and Abergel, C. (2018) Mimiviridae: An Expanding Family of Highly Diverse Large dsDNA Viruses Infecting a Wide Phylogenetic Range of Aquatic Eukaryotes. *Viruses*. 10, 506 2.

Legendre, M., et al. (2010) mRNA deep sequencing reveals 75 new genes and a complex transcriptional landscape in Mimivirus. *Genome Res*. 20, 664–674

Villalta A., et al, Puzzling complexity of a minimal iron-sulfur protein conserved in Mimiviruses, *in preparation*

**Job description:** The recruited postdoc will be in charge of the biophysical part of the project and carry (bio)chemical experiments (elementary analyses, chemical assays, redox titrations, in vitro Fe-S reconstitution) and spectroscopic experiments (mainly EPR spectroscopy, CD and UV-Vis) in order to assess the nature, structure and reactivity of the Fe-S clusters of the targeted viral proteins. He/she will strongly interact with the two other partners of the project: The IGS laboratory (Marseille, C. Abergel, E. Garcin, A. Lartigue) for bioinformatics, cell biology, structural biology, and The “Physicochemistry of Metals in Biology” team (CEA Grenoble, G. Blondin) for Mössbauer spectroscopy.

**Candidate profile:** Postdoctoral applicants must have a PhD degree. The successful candidate will preferably be chemist, physicist or biochemist with strong interest in experimental work in an interdisciplinary team. Expertise in spectroscopy (especially EPR spectroscopy) is an advantage. Good practice of routinely used methods for protein characterization (chromatography, UV-Vis absorption, CD, chemical analysis) would be a plus. Fluent knowledge of English, French is not mandatory.

**Contact information and application process:** Dr. Bénédicte Burlat [bburlat@imm.cnrs.fr](mailto:bburlat@imm.cnrs.fr) and Pr. Bruno Guigliarelli [guigliar@imm.cnrs.fr](mailto:guigliar@imm.cnrs.fr). Interested candidates are invited to submit by email a cover letter, current CV and names of references.