

Job offer –Post-doctorate in Cell Biology
(For non-French scientists only)

Research Project Short Title as Submitted to CEFIPRA: “Characterization of novel protein complexes involved in membrane contact site formation”

Principal Investigator contact (Name and email id): “Fabien Alpy, Biologie moléculaire et cellulaire du cancer du sein, Institut de Génétique et de Biologie Moléculaire et Cellulaire (IGBMC), Fabien.Alpy@igbmc.fr”

Reference Number of the Job Offer: IFI_CEF_26_14

Project description

- **Keywords :** Membrane contact sites; Organelle communication; Protein complexes; Endoplasmic reticulum; Membrane tethering; Quantitative imaging.
- **Context :** Cellular organelles communicate through membrane contact sites, specialized regions where two membranes come into close proximity without undergoing fusion. These contacts support lipid and ion exchange and contribute to the coordination of organelle function and dynamics. Their formation relies on protein complexes that bridge opposing membranes, yet the molecular composition and assembly mechanisms of many of these complexes remain poorly understood.

Endoplasmic reticulum proteins of the VAP family and related MOSPD proteins provide a framework for investigating how interactions with organelle-associated partners generate distinct contact sites. Characterizing new complexes involving these proteins will help explain how cells establish specific connections between organelles and regulate their organization.

This postdoctoral project will investigate the composition, assembly and cellular activity of novel protein complexes involved in membrane contact site formation.

- **Abstract of the Research Project :** The aim of this project is to characterize novel protein complexes that contribute to the formation of membrane contact sites between the endoplasmic reticulum and other cellular organelles. A central question is how specific protein interactions drive the assembly of functional bridges between organelle membranes.

The project will focus on selected candidate partners of endoplasmic reticulum-resident tethering proteins, with particular interest in VAP and MOSPD proteins. Candidate complexes will be investigated using complementary approaches in cell biology, biochemistry and quantitative fluorescence microscopy.

The postdoctoral researcher will validate protein interactions, establish where the corresponding complexes assemble within cells and identify the domains or sequence motifs required for their association. Functional experiments will then determine whether disrupting these interactions alters the formation or organization of membrane contact sites. Loss-of-function approaches, combined with rescue experiments using wild-type or interaction-deficient proteins, will distinguish the contribution of complex assembly from other activities of the individual components.

Where appropriate, the study will also examine consequences for organelle distribution, dynamics or lipid homeostasis, thereby linking the molecular properties of the complexes to their cellular functions.

By integrating interaction analysis with functional characterization, this work aims to identify new molecular determinants of organelle connectivity and establish how specific protein complexes contribute to the organization of membrane contact sites.

- **Scientific Objectives of the Project :** The project aims to characterize novel protein complexes at membrane contact sites by validating their interactions and determining their localization within cells. It will identify the protein regions required for complex assembly and recruitment to contact sites, and investigate how disrupting these complexes affects contact-site formation, organelle organization and lipid homeostasis.

- **Methodology and Timeline of the Project :** The project will combine mammalian cell culture, molecular biology, biochemical interaction assays and quantitative microscopy.

Candidate profile

- Candidates can be all nationalities except French. In case of double nationality (French and another one), the candidate is not eligible. In the context of CEFIPRA, Indian candidates are preferred
- Applicants for post-doctorate must have a PhD degree (or be in the process of obtaining one);
- No competences in French language is required
- Candidate competences: training in biochemistry, cell biology, imaging and image analysis. Good computer skills.
- Candidate know-how: strong organizational, interpersonal, and communication skills, advanced analytical reasoning, autonomy, rigor, responsiveness, versatility, and a collaborative team spirit.
- Expected starting date: 01-02-2027
- Expected duration: 18 months

How to candidate?

Documents to be provided :

- i. A cover letter (reasons for the candidature, professional project ...) max 2 pages
- ii. A copy of the master's degree or a proof of the program followed (and expected date of end) OR A copy of the PhD degree or a proof of the PhD program followed (and expected date of defense) max 1 page
- iii. A copy of results for previous scholarship (max 3 pages)
- iv. International curriculum vitae (max 2 pages)
- v. One letter of recommendation from any Indian institution –mandatory- (max 2 pages)
- vi. All should be submitted within 1 pdf file of no more than 10 pages.
- vii. Applications must be submitted through this [Google Form](#) selecting the appropriate reference number for the job offer.



Research Project Title as Submitted to CEFIPRA: ““Characterization of novel protein complexes involved in membrane contact site formation”

Benefits:

- Monthly allowance of 2400 euros for Post-Doc
- Travel allowance
- University fee
- Carte de séjour fee
- Campus France management fee
- Registration to the French social security scheme

Selection process:

The final selection is made by a dedicated selection committee of scientific experts after a pre-selection phase by the French principal investigator. Decisions will be transmitted by the Embassy of France to CEFIPRA.

Criteria for applicants' selection:

Academic excellence

- Excellence of the Academic background, Academic records, Honors, Letters of support, Participation to international research projects, exchange programmes and conferences.

Motivation and qualities

- Academic maturity: appropriation of the thesis project (stakes and contexts) • Quality of the presentation (oral expression, skills for synthesis, English level) • Maturity of the professional project: capacity to project her/himself within five years in terms of career development.

About CEFIPRA:

Indo-French Center for the Promotion of Advanced Research (CEFIPRA/IFCPAR) is an Indian body which promotes scientific cooperation between France and India in advanced fields of Science and Technology. It is supported by the Department of Science and Technology, Government of India and the Ministry of Europe and Foreign Affairs of the French government