

# Postdoctoral position in “GPCR cell surface architecture”

## Toulouse, I2MC, France

A **33 months post-doctoral position** (ANR french funding “**GRApHICS**”) is available for a highly motivated post-doc fellow to join a research group specialized in the pharmacology of G Protein Coupled Receptor (GPCR) to study the cell surface organization of these receptors in living cells using AFM-single molecule force spectroscopy.

**Project summary.** G protein-coupled-receptors represent the largest family of cell surface receptors and major drug targets. The existence of active GPCR oligomers, that could constitute novel targets for drug development, is still a matter of debate. AFM-single molecule force spectroscopy (SFMS) has recently been used to probe/unfold reconstituted GPCR in liposomes but such studies are still lacking in living mammalian cells mainly owing to interferences between the AFM tip and the plasma membrane. We recently succeeded to unfold GPCRs at the surface of living mammalian cells using AFM-SMFS (*unpublished data*), allowing us to depict specific clusterization of these receptors. The present project aims now to extend our study in living CHO cells to: **i/** understand the molecular determinants influencing their surface organization, **ii/** probe ligand-receptor interactions, **iii/** refine the AFM tip chemistry for native cells analysis, **iv/** automate SFMS analysis, **v/** deepen the statistical mathematical analysis.

This fundamental project should have major impact for the search of future innovative drugs targeting GPCRs as it will pave the way for developing “specific oligomeric-receptor” drugs with optimized clinical benefit/risk balance.

The Sénard/Galés team at the “Institute of cardiovascular & metabolic diseases” (I2MC) (<http://www.i2mc.inserm.fr/index.php/en/>), University of Toulouse III, France, provides a unique training environment for both discovery-based and translational therapeutic cardiac research combining cardiac medical doctors and researchers from both fundamental and physiological fields. Current projects in GPCR pharmacology in the team focus on investigating the molecular mechanisms underlying **biased agonism**, a recent concept in the field that allows alleviating II adverse effects associated with GPCR drugs.

The candidate will be hosted at I2MC in a quite new laboratory but will work in close interaction with a biophysicist Dr Etienne Dague, CNRS, LAAS-Toulouse) specialized in the use of AFM in living cells and working with Céline Galés since several years (AFM experiments will be performed at LAAS), but also together with a chemister (Emmanuelle Trevisiol, CNRS, LAAS-Toulouse), a mathematician (Pr Jean-Marc Azais, Institut de Mathématiques, UPS Toulouse) to refine the AFM chemistry and process the AFM data.

### Requirements:

The ideal candidate should hold a PhD or MD with a strong background with cell surface organization of transmembrane receptors **AND** cell biology. Individuals with additional working knowledge in GPCR pharmacology and Atomic Force Microscopy are strongly encouraged to apply. Excellent knowledge of English, good interpersonal and communication skills are also required.

Please send a CV, names and contact information of three references and a short description of your scientific interests by email to Dr. Céline Galés ([celine.gales@inserm.fr](mailto:celine.gales@inserm.fr)) and Dr Etienne Dague ([edague@laas.fr](mailto:edague@laas.fr))

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**Starting:** 01 /01 /2018