NEWSLETTER

N°02 NOVEMBER 2022

i-GPCRnet
International Research Network (IRN) on GPCRs

Welcome to the i-GPCRnet network!

Dear colleagues, dear friends, dear GPCR-ists,

It is our great pleasure to congratulate and thank the ECS Committee for their commitment, not only to assemble this 2nd NEWSLETTER of the i-GPCRnet but also for the excellent organization of our meeting in Würzburg. It was not easy to assemble and manage a 1-evening + 1-day meeting and to find a balance between « to get the most out of it without being constantly in a rush » . Congratulations, well-done! Without you the meeting would not have been possible.

The last action of the i-GPCRnet for this year will be the 3rd i-GPCRnet workshop in November in collaboration with our long-term partner PerkinElmer-Cisbio. Great event!

The coming year is already casting its shadow with the new edition of our virtual « Educational Workshop » in spring with GPCR expert lectures and our next Annual meeting in autumn in Strasbourg (France). Thanks to our colleagues in Strasbourg for having accepted the challenge!

Thanks to the i-GPCRnet community, including the industrial partners, for your continuous support and enthusiasm!

Enjoy the reading of the i-GPCRnet-NEWSLETTER

Martin Lohse **Steve Hill** **Ralf Jockers**



Editorial

This is the second issue of the i-GPCRnet Newsletter.

This newsletter will provide you a brief summary of our 2nd Annual Meeting (and 1st in person meeting!) that just took place in Würzburg (Germany) last month, as well as all the information you need to be up-to-date on GPCR world (next important meetings, our upcoming Workshop, latest VIP (Very Important Publications) on GPCRs, and news from our members and Industrial partners.
We would like to remind you that we are willing to take into account any comments or suggestions regarding the newsletter sections, to accept contributions from everybody and to hear any criticisms you might have to improve the quality of the newsletter. Furthermore, anyone from each of the participating teams of the i-GPCRnet is more than welcome to contribute by using the address
i-gpcrnet@services.cnrs.fr

by ECS Committee

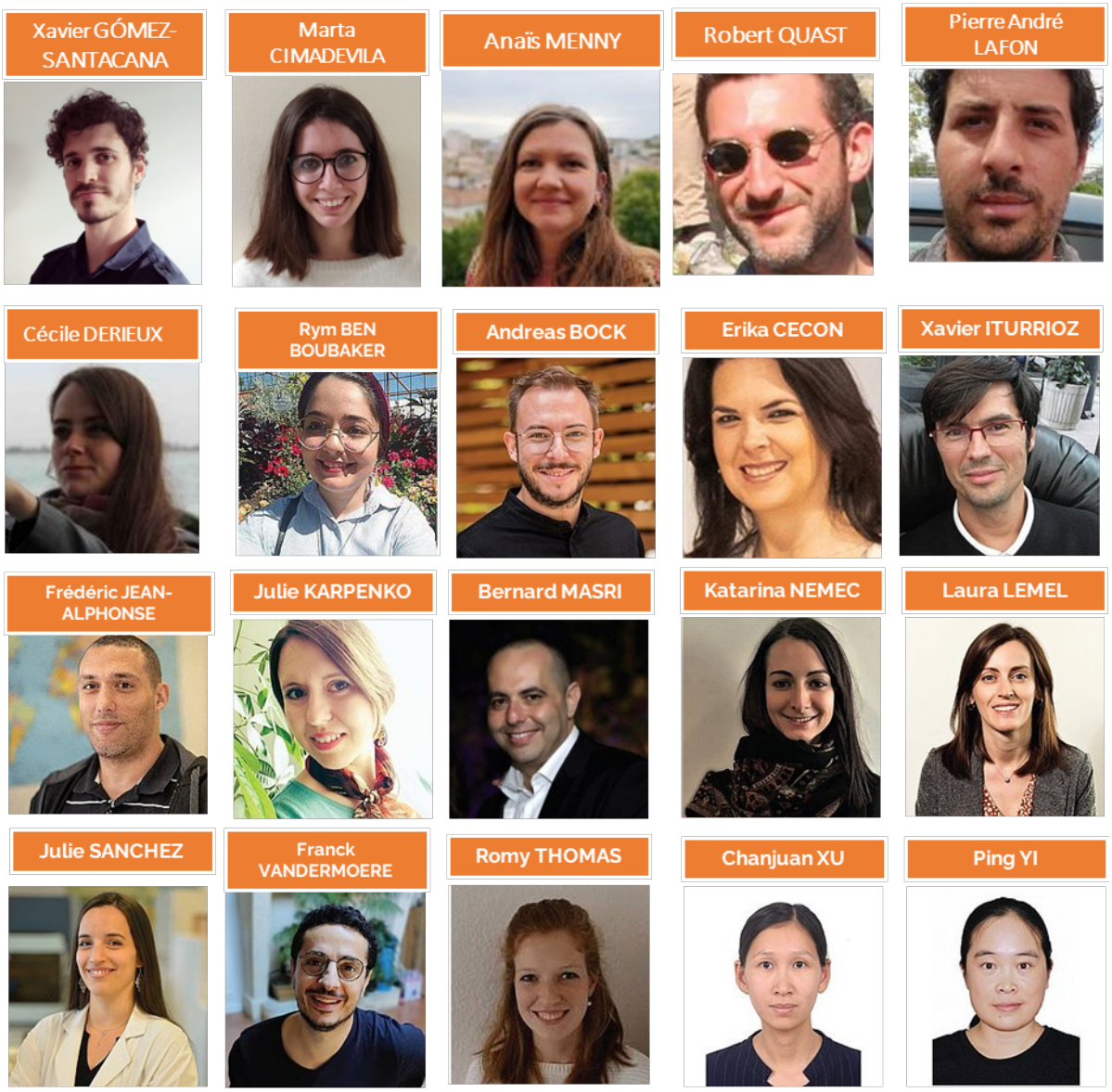
NEWSLETTER

N°02 NOVEMBER 2022

i-GPCRnet
International Research Network (IRN) on GPCRs

The Early Career Scientist Committee

is composed by young scientists from all levels, including PhD students, post-doctoral fellows and permanent researchers, from lab members of the i-GPCRnet IRN. The ECS committee aims to promote and support activities directed to young scientists of the i-GPCRnet IRN. Some of our actions include: active participation in the organisation of the i-GPCRnet IRN annual meeting; selection of oral short talks and poster prizes at the annual meeting; organisation and promotion of the annual i-GPCRnet WORKSHOP dedicated to ECS of the i-GPCRnet IRN; editing of the i-GPCRnet NEWSLETTER dedicated to all i-GPCRnet IRN members highlighting the latest news of the GPCR field and our industrial partners.



NEWSLETTER

N°02 NOVEMBER 2022

i-GPCRnet
International Research Network (IRN) on GPCRs

News from i-GPCRnet members

Floriane ESHASK, PhD student supervised by Francine Acher (Laboratoire de Chimie et Biochimie, Pharmacologiques et Toxicologiques (LCBPT), CNRS UMR 8601, Université Paris Cité, Paris, France), in collaboration with Philippe Rondard and Jean-Philippe Pin (Institut de Génomique Fonctionnelle, CNRS UMR 5203, Inserm U1191, Université de Montpellier, France), has been twice awarded for **Best Communication:**

https://www.sppin.fr/2022/09/22/floriane-eshak-is-twice-awarded-for-best-communication/

Philippe RONDARD, Research Director from INSERM (Institut de Génomique Fonctionnelle, CNRS UMR 5203, Inserm U1191, Université de Montpellier, France) received **the Léon Velluz prize 2022.**

https://www.academie-sciences.fr/fr/Laureats/laureat-2022-du-prix-leon-velluz-philippe-rondard.html

Jean-Philippe PIN, Research Director from CNRS (Institut de Génomique Fonctionnelle, CNRS UMR 5203, Inserm U1191, Université de Montpellier, France) received **the Lamonica de neurologie/ Fondation pour la recherche biomédicale PCL 2022** prize.

https://www.academie-sciences.fr/fr/Laureats/laureat-2022-du-prix-lamonica-de-neurologie-jean-philippe-pin.html

Lucie PELLISSIER (Physiologie de la reproduction et des comportements, PRC - CNRS, INRAE, Université de Tours, France) was awarded the **CNRS Bronze Medal 2022.**
https://www.cnrs.fr/fr/personne/medailles-de-bronze-2022

"Congratulations"

NEWSLETTER
N°02 NOVEMBER 2022

i-GPCRnet
International Research Network (IRN) on GPCRs

i-GPCRnet ACTIONS

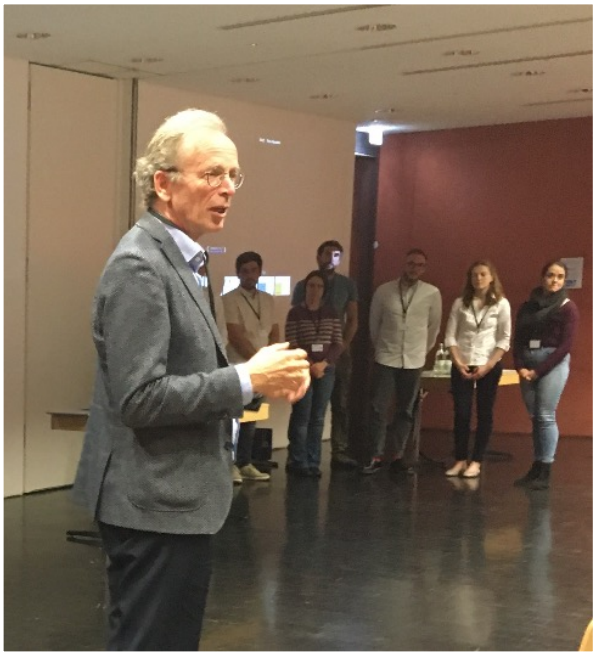
Summary of the 2nd IRN i-GPCRnet meeting

The 2nd annual IRN i-GPCRnet (and first in person) meeting took place on 30th of September and 1st of October at the University of Würzburg (Germany). The meeting was organized by the i-GPCRnet ECS committee together with Ralf Jockers and Martin Lohse. We were happy to welcome 103 participants, including 36 non-IRN members, from a total of 13 different countries encompassing not only Europe but also Australia, Canada, Brazil and USA.

It has been 2 great days with 2 keynote lectures by Brian Kobilka and Jean-Pierre Vilardaga, 3 invited speakers (Michel Bouvier, Jean-Philippe Pin, Steve Briddon), 13 selected talks by ECIs and 45 posters – covering the main topics of GPCR signaling, spatial organization, functional dynamics and novel investigation techniques.

NEWSLETTER
N°02 NOVEMBER 2022
i-GPCRnet
International Research Network (IRN) on GPCRs

Summary of the 2nd IRN i-GPCRnet meeting



The two round table sessions were dedicated exclusively to the young scientists (mainly PhD students and postdoctoral researchers). In the first one the attendees had the opportunity to freely ask questions to two experienced and renowned scientists Prof. Brian Kobilka, USA (Nobel prize winner) and Dr. Jean Philippe Pin, France), exchanging opinions on the challenges and future directions in the GPCR field.

In the second round table on "Career challenges and opportunities in the GPCR field" the young scientists had the opportunity to discuss with early stage career as well as experienced scientists working in academic (Dr. Robert Quast, France; Prof. Michel Bouvier, Canada; Isabella Maiellaro, UK) or industrial sectors (Dr. Laura Lemel, UK; Dr. Xavier Leroy, France).

NEWSLETTER

N°02 NOVEMBER 2022

i-GPCRnet
International Research Network (IRN) on GPCRs

Summary of the 2nd IRN i-GPCRnet meeting

We are pleased to congratulate once more our 6 poster prize winners: Charlotte Kayser (Berlin), Xavier Gomez-Santacana (Barcelona), Floriane Eshak (Paris), Philipp Gmach (Berlin), Lauri Urvas (Strasbourg) and Ghazi Al Hamwi (Bonn).

We would like to warmly thank the speakers, poster presenters and attendees for having a great meeting full of insightful discussions.

A special thanks to our sponsors CNRS, ISAR Bioscience, Calixar, Berthold and Université Paris Cité for their support and the University of Würzburg and Martin Lohse for hosting the meeting.

Announcement of upcoming meeting

Keep in mind:
Next (3rd) i-GPCRnet Annual meeting:
Autumn 2023 - Strasburg, France.

NEWSLETTER

N°02 NOVEMBER 2022

i-GPCRnet
International Research Network (IRN) on GPCRs

Announcement of the upcoming
3rd i-GPCRnet workshop (Nov 17th-18th, 2022)

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cnrs

PerkinElmer ACADEMY
MASTER CLASSROOM

i-GPCRnet WORKSHOP 2022

Objective: Intensive and interactive theoretical & practical training on HTRF and AlphaLISA assays, focused on GPCR applications

- New classroom training at PerkinElmer/Cisbio location in Codolet (South of France)
- Facilities to host theoretical and hands-on training in small groups, provided by our experienced trainers
- Dedicated lab environment equipped to run cell-based assays

HTRF cAMP

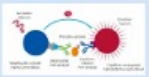
Monitoring cAMP accumulation as read out of GPCR activation

HTRF Taglite

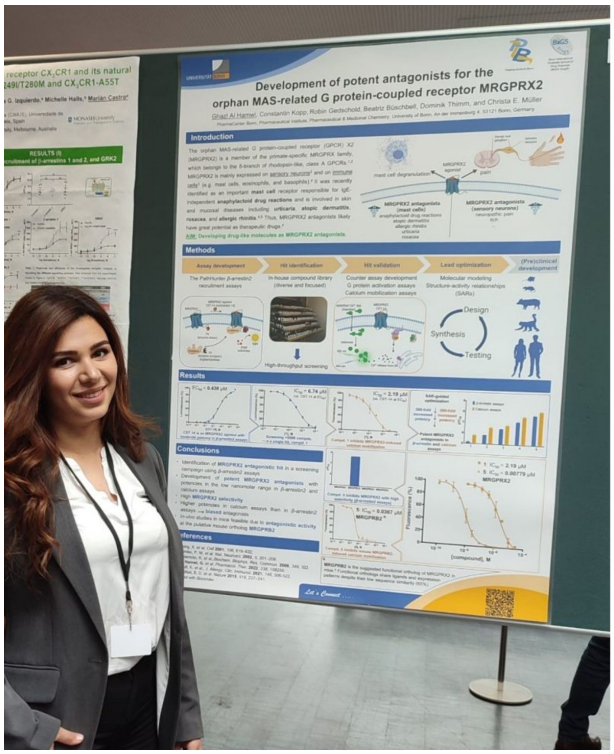
GPCR ligand binding assay

Alpha SureFire phospho-ERK

Monitoring the cell signalling pathway activation via the phosphorylation of ERK1/2



Sponsors / Partners corner



CALIXAR
FUNCTIONAL MEMBRANE PROTEINS FOR LIFE

Back to the 2nd IRN I-GPCRnet Annual Meeting in late September at Wurzburg University in Germany

CALIXAR was honored to sponsor for the second twice the I-GPCRnet.
Once again, congratulations to Ghazl Al Harmar, for her amazing work on the development of potent antagonists for the orphan MAS-related G protein-coupled receptor MRGPRX2 and winning the CALIXAR poster price.
Her work focused on MRGX2, an orphan MAS-related G protein-coupled receptor, with the aim of developing several powerful antagonists. Selected antagonists are now undergoing further characterization in preclinical models.
CALIXAR is currently working on MRGX2 receptor, and other promising targets, to enrich the pipeline, and respond to current and future therapeutic needs.
For collaboration opportunities, please contact us at **contact@calixar.com.**

NEWSLETTER
N°02 NOVEMBER 2022
i-GPCRnet
International Research Network (IRN) on GPCRs

VIP List of recent GPCR-related publications

Research Articles

We would like to show a brief review of the work that has been done in the last 6 months in the field of GPCRs. For that, we have selected several publications and divided them in 6 categories: molecular structure, dynamics, signal transduction, physiology and disease, drug development and novel tools

MOLECULAR STRUCTURE

Qian, Y. et al. Structural insights into adhesion GPCR ADGRL3 activation and Gq, Gs, Gi, and G12 coupling. Mol. Cell 82, 1-13 (2022). https://doi.org/10.1016/j.molcel.2022.10.009

Zhu, X. et al. Structural basis of adhesion GPCR GPR110 activation by stalk peptide and G-proteins coupling. Nat. Commun. 13, 5513 (2022). https://doi.org/10.1038/s41467-022-33173-4

In these sister papers, Qian et al. and Zhu et al. use single-particle cryoEM to solve structures of ADGRL3 and GPR110 bound to Gq, Gs, Gi and G12. GPR110 is also resolved bound to G13. They complement these structures with an array of functional recordings to interrogate their self-activation mechanisms. This colossal work sheds important light on the molecular determinants of aGPCRs coupling specificities

Haider, R.S. et al. β-arrestin1 and 2 exhibit distinct phosphorylation-dependent conformations when coupling to the same GPCR in living cells. Nat. Commun. 13, 5638 (2022). https://doi.org/10.1038/s41467-022-33307-8

Bous, J. et al. Structure of the vasopressin hormone–V2 receptor–β-arrestin1 ternary complex. Sci. Adv. 8, eabo7761 (2022) https://doi.org/10.1126/sciadv.abo7761

Yue, Y. et al. Structural insight into apelin receptor-G protein stoichiometry. Nat. Struct. Mol. Biol. 29, 688–697 (2022)**.** https://doi.org/10.1038/s41594-022-00797-5

Yang, X. et al. Molecular mechanism of allosteric modulation for the cannabinoid receptor CB1. Nat. Chem. Biol. 18, 831–840 (2022). https://doi.org/10.1038/s41589-022-01038-y

DYNAMICS

Asher, W. B. et al. GPCR-mediated β-arrestin activation deconvoluted with single-molecule precision. Cell 185, 1661-1675.e16(2022). https://doi.org/10.1016/j.cell.2022.02.011

Asher et al. use single molecule FRET to reveal that relieving autoinhibition to activate β-arrestin1, mediated by the C-terminal tails of β2-adrenergic receptor and arrestin, depends on the degree of receptor tail phosphorylation and concurrent agonist-mediated activation.

Kleist, A. B. et al. Conformational selection guides β-arrestin recruitment at a biased G protein–coupled receptor. Science 377, 222–228(2022). https://doi.org/10.1126/science.abj4922

Culhane, K. J., Gupte, T. M., Madhugiri, I., Gadgil, C. J. & Sivaramakrishnan, S. Kinetic model of GPCR-G protein interactions reveals allokairic modulation of signaling. Nat. Commun. 131 13, 1–9 (2022). https://doi.org/10.1038/s41467-022-28789-5

SIGNAL TRANSDUCTION

Kwon, Y. et al. Non-canonical β-adrenergic activation of ERK at endosomes. Nat. 2022 6117934 611, 173–179 (2022). https://doi.org/10.1038/s41586-022-05343-3

Using subcellularly-targeted biosensors, Kwon et al. reveal a non-canonical mechanism for the spatial regulation of ERK activation through endosome-localized β2-adrenergic receptors and Gαs.

Moreno, E. et al. Pharmacological targeting of G protein-coupled receptor heteromers. Pharmacol. Res. 185, 106476 (2022). https://doi.org/10.1016/j.phrs.2022.106476

Shin, H. R. et al. Lysosomal GPCR-like protein LYCHOS signals cholesterol sufficiency to mTORC1. Science 377, 1290–1298 (2022). https://doi.org/10.1126/science.abg6621

Chen, S. et al. Capturing a rhodopsin receptor signalling cascade across a native membrane. Nature, 6047905 604, 384–390 (2022). https://doi.org/10.1038/s41586-022-04547-x

Liu, J. et al. Biased signaling due to oligomerization of the G protein-coupled platelet-activating factor receptor. Nat. Commun. 2022 131 13, 1–16 (2022). https://doi.org/10.1038/s41467-022-34056-4

Anton, S. E. et al. Receptor-associated independent cAMP nanodomains mediate spatiotemporal specificity of GPCR signaling. Cell 185, 1130-1142.e11 (2022). https://doi.org/10.1016/j.cell.2022.02.011

PHYSIOLOGY AND DISEASE

Meng, J. et al. Nanobody-based sensors reveal a high proportion of mGlu heterodimers in the brain. Nat. Chem. Biol. 18, 894 (2022). https://doi.org/10.1038/s41589-022-01050-2

Using nanobody-based sensors specific for both mGlu2 and mGlu4 subunits, authors were able to reveal the existence of endogenous mGlu2-mGlu4 heterodimers, in addition to mGlu2 and mGlu4 homodimers, in various brain regions, by FRET. Surprisingly, mGlu4 subunits appeared to be mainly involved in heterodimers than in homodimers in the brain

Schulze A.S. et al. Evolutionary analyses reveal immune cell receptor GPR84 as a conserved receptor for bacteria-derived molecules. iScience 25 (10), 105087 (2022). https://doi.org/10.1016/j.isci.2022.105087

Si M. et al. CXCL12/CXCR7/β-arrestin1 biased signal promotes epithelial-to-mesenchymal transition of colorectal cancer by repressing miRNAs through YAP1 nuclear translocation. Cell & Bioscience 12, 171 (2022). https://doi.org/10.1186/s13578-022-00908-1

Huang Y. et al. G protein–biased GPR3 signaling ameliorates amyloid pathology in a preclinical Alzheimer's disease mouse model. PNAS 119, e2204828119 (2022). https://doi.org/10.1073/pnas.2204828119

DRUG DEVELOPMENT

Fink, E. A. et al., Structure-based discovery of nonopioid analgesics acting through the α2A-adrenergic receptor. Science, 377, 6614 (2022). https://doi.org/science.abn7065

The authors aimed to seek for new non-opioid analgesics targeting α2A, but with no sedative side-effects and orally bioavailable. After a virtual screening of +300 million molecules, they identified new α2A agonists. Experimental structures and subsequent hit optimisation led to new promising leads effective in a neuropathic pain model without causing sedation.

Kaplan, A.L., et al., Bespoke library docking for 5-HT2A receptor agonists with antidepressant activity. Nature, 610, 582–591 (2022). https://doi.org/10.1038/s41586-022-05258-z.

Huang, Y., et al., G protein–biased GPR3 signaling ameliorates amyloid pathology in a preclinical Alzheimer's disease mouse model. PNAS 119 (40) e2204828119 (2022) https://doi.org/10.1073/pnas.2204828119

García-Cárceles, J., 2-(Fluoromethoxy)-4′-(S-methanesulfonimidoyl)-1,1′-biphenyl (UCM-1306), an Orally Bioavailable Positive Allosteric Modulator of the Human Dopamine D1 Receptor for Parkinson's Disease. J. Med. Chem., 65, 18, 12256–12272, (2022) https://doi.org/10.1021/acs.jmedchem.2c00949

Baidya, M., et al. Allosteric modulation of GPCR-induced β-arrestin trafficking and signaling by a synthetic intrabody. Nat. Commun. 13, 4634 (2022). https://doi.org/10.1038/s41467-022-32386-x

Duran-Corbera, A. et al., A Photoswitchable Ligand Targeting the β1-Adrenoceptor Enables Light-Control of the Cardiac Rhythm,(2022). Angew. Chem. Int. Ed., 61, 30, e202203449 (2022) https://doi.org/10.1002/anie.202203449

NOVEL TOOLS

Wang, L. et al. A high-performance genetically encoded fluorescent indicator for in vivo cAMP imaging. Nat. Commun. 13, 5363 (2022). https://doi.org/10.1038/s41467-022-32994-7

The authors engineered a fluorescent cAMP sensor that can be used to selectively monitor cAMP changes in vitro and in vivo. This sensor emerges as a novel tool to detect the modulation of intracellular pathways in living animals in real time.

Beerkens, B.L.H. et al. A Chemical Biological Approach to Study G Protein-Coupled Receptors: Labeling the Adenosine A1 Receptor Using an Electrophilic Covalent Probe. ACS Chem. Biol. (2022). https://doi.org/10.1021/acschembio.2c00589

Chen, S. et al. Capturing a rhodopsin receptor signalling cascade across a native membrane. Nature. 604, 384–390 (2022) https://doi.org/10.1038/s41586-022-04547-x

Garrido-Charles, A. et al. Photoswitchable Molecular Prosthetics Control Neuronal Activity in the Cochlea. J. Am. Chem. Soc. 144 (21), 9229-9239 (2022) https://doi.org/10.1021/jacs.1c12314

White, A.M. et al. Late-Stage Functionalization with Cysteine Staples Generates Potent and Selective Melanocortin Receptor-1 Agonists. J. Med. Chem. 65 (19), 12956-12969 (2022) https://doi.org/10.1021/acs.jmedchem.2c00793

Zhang, K. et al. Fusion protein strategies for cryo-EM study of G protein-coupled receptors. Nat. Commun. 13, 4366 (2022) https://doi.org/10.1038/s41467-022-32125-2

On top of that, we would like to share the Community guidelines for GPCR ligand bias, the last guideline published by the IUPHAR on GPCRs:

Kolb. P, et al. Community guidelines for GPCR ligand bias: IUPHAR review 32. Br. J. Pharmacol. 179(14):3651-3674 (2022) https://doi.org/10.1111/bph.15811

JOB OFFERS

University of Nottingham
UK | CHINA | MALAYSIA

RESEARCH ASSOCIATE/FELLOW (FIXED TERM)

https://jobs.nottingham.ac.uk/vacancy.aspx?ref=MED478222

Location:	UK Other
Salary:	£28,762 to £36,386 per annum, (pro rata if applicable) depending on skills and experience (minimum £32348 with relevant PhD). Salary progression beyond this scale is subject to performance
Closing Date:	Wednesday 23 November 2022

The role will provide support to a new MRC project grant that aims to design and synthesise an armoury of high-affinity fluorescently-labelled antagonists and agonists for the P2Y2R receptor. These will be used to develop novel P2Y2R fluorescence and luminescence based assays and state-of-the-art imaging to unravel the interaction of P2Y2R with other cell surface receptors using 3D cell culture models involving multiple cell types, such as endothelial, fibroblasts and cancers cells (for cancer models) and epithelial, smooth muscle cells and fibroblasts for airway fibrosis models.
The role holder will work closely with a postdoctoral medicinal chemist and undertake resonance energy transfer measurements (both BRET and TR-FRET), confocal and super-resolution imaging, fluorescence correlation spectroscopy, CRISPR/Cas9 genome editing and complex molecular and cellular biology assays.
Candidates should have a PhD (or close to completion) or equivalent in pharmacology or a related discipline, along with a proven track record of molecular pharmacology research and experience with using imaging based approaches to study G protein-coupled receptors in cell systems.
The successful candidate will join a vibrant cell signalling research group within the Centre of Membrane Proteins and Receptors in Nottingham.
The post is offered on a full time (36.25 hours per week), fixed term contract available from 01 January 2023 to 30 June 2026. Job share arrangements may be considered.
Informal enquiries may be addressed to Professor S J Hill tel: 0115 8230082 Or email **steve.hill@nottingham.ac.uk**. Please note that applications sent directly to this email address will not be accepted.

NEWSLETTER
N°02 NOVEMBER 2022

i-GPCRnet
International Research Network (IRN) on GPCRs

JOB OFFERS

POSTDOCTORAL FELLOWS ON CELLULAR COMMUNICATION IN CANCER, DEVELOPMENT AND NEUROTRANSMISSION AT BOSTON UNIVERSITY (BOSTON, MA, US)

We are seeking to fill two postdoctoral positions broadly related to the topic of signal transduction via G protein-coupled receptors (GPCRs). Our laboratory is in a phase of expansion with multiple active NIH-funded grants to provide stable support for personnel. You would join a dynamic team of international researchers (PhD students and other postdocs) with an interest in collaborating and helping each other. Dr. Garcia-Marcos seeks to mentor the next generation of scientists by providing abundant one-on-one time and the support required to transition into subsequent career stages, including establishing their independent research programs. The laboratory has an excellent track record of facilitating the transition of former postdoctoral fellows to competitive positions.

We are located at the heart of Boston, a scientifically and culturally vibrant location. The minimum salary is $58,000/ year plus a sign-on bonus for relocation expenses. Health plan and other benefits included.

Our laboratory is interested in the following general lines of investigation:
Defining new mechanisms of signal transduction via GPCRs and heterotrimeric G proteins across scales, from molecules to whole organisms
Non-canonical heterotrimeric G protein signaling in epithelial planar cell polarity, cilia and development
Development of optical biosensors and chemogenetic tools to detect and manipulate the signaling activity of heterotrimeric G proteins
Characterization and pharmacological targeting of non-canonical heterotrimeric G protein signaling in cancer metastasis
Biochemical, functional and structural characterization of atypical G protein signaling complexes.

The candidate should have at least one of the following technical skillsets:
- Extensive experience with fluorescence microscopy and image analysis. Live-cell microscopy desirable.
- Xenopus and/or zebrafish experience. Egg microinjections and other general aquatic model procedures.
- High proficiency in cell culture. Viral gene delivery, generation of stable cell lines, different types of cells (e.g., transformed and non-transformed, primary cell cultures), signaling assays. Basic knowledge of mouse colony maintenance desirable.

Fast paced in molecular biology (cloning by Gibson assembly, Golden Gate, etc), and knowledge of protein purification (batch, FPLC) and protein binding assays (pulldowns, immunoprecipitations). Structural biology background desirable.
See “Representative publications” by scrolling down in:
https://www.bumc.bu.edu/biochemistry/profiles/mikel-garcia-marcos/

Complete list of publications in:
https://www.ncbi.nlm.nih.gov/myncbi/1ZIXmzi80H8Q6/bibliography/public/

Please submit a cover letter with details on what project you want to pursue, a CV and names/contact for 3 reference letters. Mikel Garcia-Marcos, PhD. Professor. mikel.garcia.marcos@gmail.com

NEWSLETTER

N°02 NOVEMBER 2022

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JOB OFFERS

BACKGROUND

G-Protein Coupled Receptors (GPCRs) form a large family of membrane proteins that constitute key privileged targets for the design of new drugs. Despite a large set of available structures, their regulation mechanism at the molecular scale still requires to be characterized. This is principally due to the fact that this mechanism involves the modulation by different partners (ligands, lipids, ions, intra-cellular effectors, etc...) of the equilibria between different intrinsic conformations, some features that are hard to be captured by structural methods. Things are even more complicated if we consider homo- or hetero-dimers of GPCRs. Only a few structures in the PDB describe the possible orientation of GPCR protomers in such assemblies. Some years ago, we proposed a model of the Ghrelin:Dopamin hetero-dimer in which each receptor was bound to its favorite G-protein partner at the same time. This model was experimentally validated by the measurement of crossed distances between the two receptors and the two G-proteins. Thanks to the "Grand Challenge" phase on the Jean-Zay machine provided by GENCI, we already performed extensive simulations of this dimeric model and its isolated entities. The objective of these simulations is to understand the cross-talk that operates in such large molecular assemblies and help to the design of new potent ligands.

We propose here an **18 months** contract, funded by FRM (foundation pour la recherche médicale) for a highly motivated post-doctoral fellow, ideally beginning in **January 2023**. The objective of the recruited post-doc will be to analyze the already obtained data and run complementary molecular dynamics simulations to provide a global mechanical view of how these complex systems behave at the membrane surface. The work will be performed in close collaboration with experimentalists in the laboratory, including biochemists and chemists for validation purposes. This collaboration could include the production of protein variants and the synthesis/testing of new ligands.

CANDIDATE PROFILE

The seeked candidate would ideally have a good experience in running / analyzing molecular dynamics simulations of peptides and proteins, and a validated PhD in a related field. She/He will have good knowledge of classical force-fields and MD codes and especially Gromacs; a plus would be to already have practiced coarse-grained force-fields (MARTINI FF). The candidate must be autonomous under the linux environment, and know at least one scripting language to analyze all produced data (python, R, etc ...). The candidate must be fluent in English and able to present her/his results either to specialists or non-specialists.

Contact us @ nicolas.floquet@umontpellier.fr for further detail and planification of an interview.

Institut des Biomolécules Max Mousseron (IBMM CNRS UMR5247)

Pôle Chimie BALARD, campus CNRS 1919 route de Mende, MONTPELLIER, France.

https://www.ibmmpharmaco.com/

Some of our last publications in the field :

(1) Louet, M.; Casiraghi, M.; Damian, M.; Costa, M. G.; Renault, P.; Gomes, A. A.; Batista, P. R.; M'Kadmi, C.; Mary, S.; Cantel, S.; Denoyelle, S.; Ben Haj Salah, K.; Perahia, D.; Bisch, P. M.; Fehrentz, J.-A.; Catoire, L. J.; Floquet, N.; Banères, J.-L. Concerted Conformational Dynamics and Water Movements in the Ghrelin G Protein-Coupled Receptor. ***Elife* 2021**, *10*, e63201. https://doi.org/10.7554/eLife.63201.

(2) Damian, M.; Louet, M.; Augusto Severo Gomes, A.; Mkadmi, C.; Denoyelle, S.; Cantel, S.; Mary, S.; Bisch, P.;

NEWSLETTER

N°02 NOVEMBER 2022

i-GPCRnet
International Research Network (IRN) on GPCRs

Upcoming GPCR meetings

Dr. GPCR Summit 2022
(Still available talks online!)
Virtual
October 10-14, 2022

2022 Chemistry and Biology of Peptides (GRC)
Rising Tide of Peptides as Research Tools, Therapeutics, and Biomaterials
October 29 - 30, 2022

2022 Chemistry and Biology of Peptides
Exploring the Natural and Unnatural of Peptide Sc
October 30 - November 4, 2022

2023 GPCR WORKSHOP
Kona, Hawaii
January 3 -6, 2023

2nd GPCR-Targeted Drug Discovery Summit
Hyatt Regency Boston, MA, United States
February 21-23, 2023

8th German Pharm-Tox Summit
Ulm, Germany
March 6-9, 2023

GEMXXII CONGRESS - Structure, dynamics, and function of membranes
Autrans, France
March 14-17, 2023

Genomics in Drug Discovery and Development (Training Workshop)
online
March 23, 2023

Binding Kinetics and Mechanistic PK/PD modeling in early Drug Discovery
online and in-person: Cambridge, UK
March 27 - 28, 2023

ICEBA 2023: 17. International Conference on Experimental Biology and Applications
Athens, Greece
April 3-4, 2023

Cell and Experimental Biology
Houston, TX
April 24-26, 2023

8th and final ERNEST Meeting & Celebration
Crete, Greece
May 3th -7, 2023

The ASPET Annual Meeting
St.Louis, USA
May 18-21, 2023

2023 Molecular Pharmacology (GRC)
Insights Into GPCR Action: From Molecules to Mechanisms
June 10 - 11, 2023

19th World Congress of Basic & Clinical Pharmacology 2023
Glasgow, Scotland
July 2 - 7, 2023

3rd Transatlantic ECI GPCR Symposium
online
Summer 2023

iGPCRnet conference
Strasbourg, France
Autumn 2023

GPCR Retreat
Quebec, Canada
November 2023

ONLINE GPCRs RESOURCES

http://www.i-gpcrnet.com/

https://ernest-gpcr.eu/
- Past conference recordings, Member list with topic and methods assignment,

https://www.drgpcr.com/
- Career, Connect, Consulting, Member Form, Newsletter, Podcast, Store, Summit, Virtual Cafe, …

https://druggablegenome.net/IDG-Events - NIH Common Fund-sponsored consortium, series of 1-hour sessions to learn about new experimental resources and digital tools illuminating the understudied targets in three main druggable protein families: GPCR, kinase, and ion channels…

https://biasdb.drug-design.de/
- A manually curated database of biased GPCR ligands

https://submission.gpcrmd.org/home/
- molecular dynamics database for GPCRs

https://gpcrdb.org/
- Reference data, Analysis tools, Visualization, Experiment design, Data deposition for GPCRs for GPCRdb, GproteinDb, ArrestinDb and Biased Signaling Atlas

https://gpcrladies.com/
https://gpcrm.biomodellab.eu/ - Structure Modeling Server

http://www.ssfa-7tmr.de/ssfe2/
- GPCR-Sequence-Structure-Feature-Extractor

https://gomodo.grs.kfajuelich.de/php/begin.php
- GPCR Online Modeling and Docking server

https://mmcg.grs.kfa-juelich.de/
- Hybrid Molecular Mechanics/Coarse-Grained (MM/CG) simulations

http://gpcr-modsim.org/
- A pipeline for computational modeling and simulation of GPCRs

https://gpcrsignal.biomodellab.eu/
- Service for the GPCR-effector protein complexes (molecular dynamics in implicit environments, making mutations, analysis/comparison of dynamic interfaces)

https://www.guidetopharmacology.org/

https://bisejdiu.github.io/GPCR-lipid-interactions/

https://www.gpcr-hetnet.com/

https://gproteindb.org/

https://arrestindb.org/

https://biasedsignalingatlas.org/