Opportunity for PhD candidates with chemistry background to work on photo-pharmacology of GPCRs and Mitochondria (Paris / Barcelona, double diploma option)

Job description

Photopharmacology is a multidisciplinary and emerging field in science that uses light to activate drugs with a high level of spatiotemporal precision. The use of light to specifically control receptor activity provides an advantage as it combines safety, easy delivery and high resolution. We will apply photopharmacology to G Protein-Coupled Receptors (**GPCRs)** which are excellent drug targets. GPCRs are exposed at the cell surface but emerging evidence indicates also localization in intracellular compartments like mitochondria. This is the case of the melatonin MT1 receptor, which is involved in type 2 diabetes risk and circadian and sleep disorders. To understand the function of mitochondrial MT1 receptors, we propose to design photo-regulated melatonin ligands for light-mediated control of receptor activity with a high spatiotemporal precision.

Your task

• We are looking for a highly motivated PhD candidates to synthesize and characterize in cells photoactivatable melatonin receptor ligands for mitochondrial receptors.
• Main techniques to be performed: computational design, chemical synthesis,molecular characterization of photo-activated compounds, cell culture, western blot, BRET assays, cell signaling assays.

Requirements

For this position, you qualify with a Master in chemistry or related disciplines
• You have a solid background in synthetic (medicinal) chemistry
• You have communication skills and the ability to work in interdisciplinary teams
• Fluency in oral and written English would be an advantage

The candidate will perform the chemistry work in Barcelona (Llebaria lab) and the biology work in Paris (Jockers lab). Double diploma (Barcelona/Paris) is possible. The candidate should have a competitive CV as she/he is expected to apply for various PhD fellowships. Predicted starting date: October 2026

Locations

The **Institut Cochin (Paris)** is a big research center of 33 research teams affiliated to INSERM, CNRS, Université Paris Cité. It is dedicated to high-level biomedical sciences assisted by 10 cutting-edge core facilities. Our international team directed by R. Jockers is composed of 15-20 members, is part of the " Metabolism and Endocrinology" axe and has a strong interest in **GPCRs involved in metabolic diseases (obesity, diabetes).**

The MCS (Medicinal Chemistry & Synthesis) group (**Barcelona, Spain)** is directed by A. Llebaria and is focused on **chemical research** to generate knowledge and **therapeutic technologies** combining the improvement and optimization of existing drug molecules and the definition of new therapeutic approaches.

Contact

Candidates should send their CV, letter of motivation and reference letter(s) with contacts to:
• Ralf Jockers (ralf.jockers@inserm.fr) ; Amadeu Llebaria (amadeu.llebaria@iqac.csic.es)

Application deadline: 27/02/2026

Recent references: Br J Pharmacol. 2017. doi: 10.1111/bph.13856; **Nature Comm** 2018 doi: 10.1038/s41467-018-03609-x; **Angew Chem Int Ed Engl**. 2022 doi: 10.1002/anie.202203449**; J Med Chem**, 2022. doi: 10.1021/acs. jmedchem. 2c00717; **Cell Chem Biol,** 2023. doi: 10.1016/j.chembiol.2023.07.009; **Nat Metab,** 2023. doi: 10.1038/s42255-023-00889-6. **Biochem Pharmacol.** 2025 Oct;240:117065. doi: 10.1016/j.bcp.2025.117065