

## PhD Student Position

Reference project:

### JOB DESCRIPTION

The *Brain Metabolism lab* (P.I. Dr. Jordi Duran), in collaboration with the *Grup d'Enginyeria de Materials (Gemat; P.I. Dr. Cristina Fornaguera)* is looking for a recently graduated MSc to develop his/her PhD thesis in the frame of a research project funded by Fundació Ramón Areces. The project is focused on the development of a polymeric nanoparticles, encapsulating therapeutic mRNAs and with ability to cross the blood-brain barrier, to become a novel therapy for a rare genetic neurodegenerative condition named Lafora disease.

Our previous work (Brain metabolism lab) demonstrates that restoring the expression of the mutated gene is a promising therapeutic approach for the treatment of Lafora disease. Furthermore, in Gemat previous work, a library of polymeric nanoparticles was generated with demonstrated ability to efficiently encapsulate mRNAs and cross the blood-brain barrier after systemic administration thanks to the functionalization with active targeting moieties. Based on these previous results, the project aims demonstrate at a preclinical level, the therapeutic efficacy of mRNA-loaded nanoparticles for the treatment of Lafora disease. Thus, we are looking for a PhD candidate to be integrated in the project. The candidate will be in charge on the synthesis of a library of nanoparticles, and the assessment of their efficacy. The candidate will formulate these nanoparticles, characterize them physico-chemically (using techniques such as spectroscopy, light scattering, microscopy), and test them both *in vitro* (using model cell cultures and analysis techniques such as confocal microscopy, flow cytometry, qPCR, and western blotting), and *in vivo* (using mouse models of the disease).

### Position

- PhD student

### Experience and knowledge

The candidate must:

- Hold a BSc and a MSc in Biotechnology, Bioengineering, Biomedical Sciences or Engineering, Materials Sciences, Chemistry or similar sciences.
- Have experience in a research laboratory focused to biomaterials / nanomedicine.
- Have knowledge and optionally expertise on the synthesis and design of polymers, formulation of polymeric nanomedicines, nano-characterization, cell culture experimentation and *in vivo* models.
- Holding the animal experimentation title will also be evaluated positively.

*This project is financed by the*



# JOB OFFER

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The candidate will:

1. Execute the proposed experiments.
2. Eventually supervise MSc or undergraduate students.
3. Support the research group in administrative, logistical and any other required task.
4. Be involved in a young and dynamic research group.

**Conditions:**

- Full-time (38,5 h/week)
- Incorporation in March-April, 2025
- Length of the contract until March, 2028

**How to apply:** Applicants should submit a full Curriculum Vitae and a cover letter with the reference CV's PhD student through the following link:

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