Predoctoral researcher at the Molecular and Cellular Neurobiotechnology Group (Project THRIVE)

Proyecto de Generación de Conocimiento 2024 by the Spanish Ministry of Science, Innovation and Universities

Introduction to the vacant position:

The Molecular and Cellular Neurobiotechnology Group at the Institute for Bioengineering of Catalonia (IBEC) is seeking a highly motivated Pre-doctoral Researcher to join an exciting PhD project focused on modeling human tauopathies.

The successful candidate will work with mouse models, cerebral organoids, and advanced *in vitro* platforms to investigate the molecular and cellular mechanisms underlying tauopathies and to explore potential therapeutic interventions. The project will involve the analysis of gene expression and neuronal activity across different models, with the ultimate goal of contributing to the development of treatments that could modify the neurodegenerative progression of the disease.

This position offers an excellent opportunity to develop your skills in a multidisciplinary and international research environment, at the interface of neuroscience, stem cell biology, and disease modeling. You will gain hands-on experience with cutting-edge methodologies while contributing to a project with direct relevance to neurodegenerative disorders and translational medicine.

The PhD project will be conducted within the framework of the project entitled: *"Hipersincronía y desacoplamiento secuencial mediados por Tau en Taupatías primarias 4R: Conocimientos funcionales bioquímicos y intervenciones genéticas y farmacológicas" (THRIVE).*

This fellowship is associated with the research project *Generación de Conocimiento*, funded by the Spanish Ministry of Science, Innovation and Universities.

Main tasks and responsibilities:

As a PhD researcher, you will have the opportunity to work at the intersection of stem cell biology, bioengineering, and neuroscience. Your work will contribute to advancing our understanding of tauopathies and exploring innovative therapeutic strategies. Specifically, you will be involved in:

- **Generating cortical and subcortical brain derivatives from human pluripotent stem cells (hPSCs)** using 2D and 3D culture systems, including cerebral organoids.
- **Developing and characterizing patient-derived and mouse-derived models of tauopathies**, both *in vitro* and *in vivo*, to uncover disease mechanisms and gain new insights into pathophysiology.
- **Designing and applying advanced bioengineering tools**, such as lab-on-a-chip and microfluidic devices, to study neuronal networks and model disease progression.

- **Exploring cell-to-cell and organoid-to-organoid interactions** using microfluidic platforms to better understand neurodegenerative processes.
- **Implementing cutting-edge assays** (quantitative and qualitative) to monitor gene expression, neuronal activity, and metabolic changes during disease modeling and therapeutic testing.

This PhD project offers the opportunity to work in a multidisciplinary and international environment where stem cell biology, bioengineering, and translational neuroscience converge. You will contribute to developing innovative treatments for tauopathies while gaining cutting-edge skills to drive future biomedical breakthroughs.

Requirements for candidates:

Essential:

- BSc and MSc in Biology, Biotechnology, Biomedical engineering, or Biomedicine.
- Candidates should be ready to enter an official doctoral programme in December 2025 (under Spanish Law). By this time, they must have obtained a University degree and a Master's degree; or must hold an official university qualification from a country of the European Higher Education Area with a minimum of 300 ECTS of official university studies, of which at least 60 are at master's level. Candidates who expect to be awarded with such degrees by October 2025 are eligible to apply.
- Candidates must have a strong commitment to scientific research and an good academic record.
- Candidates must have a good working knowledge of English.
- Candidates must not yet have been awarded a doctoral degree.
- Candidates must not have held a Ph.D. contract exceeding twelve months by the beginning of the fellowship (December 2025 to January 2026).
- Good skills in communication, teamwork, proactivity, characterization, integrity, time management, critical and analytical thinking, precision, and focus.

Desirable:

- Experience in general cell culture techniques or stem cell cultures.
- Previous experience in neurobiology studies (BSc or MSc level) involving histology or research using mouse models (behavioral studies, etc.).
- Experience in basic molecular biology and laboratory techniques (e.g., qPCR, immunofluorescence, among others).
- Knowledge of image analysis using ImageJ or similar software.
- Proficiency in MATLAB and Python will be considered an advantage.
- Scientific writing skills.

For the conditions, requirements, details of the research project and other relevant data, please check the general call Proyectos de Generación de Conocimiento 2024 by the Spanish Ministry of Science and Innovation at http://www.ibecbarcelona.eu/phd

We Offer:

- Number of available positions: 1
- Predoctoral researcher contract: 4 years

- Starting date: As of January 1st, 2026 (to be confirmed, based on the resolution of the call Proyectos de Generación de Conocimiento 2024 by the Spanish Ministry of Science, Innovation and Universities).
- For labor conditions, please click in the call at www.ibecbarcelona.eu/phd
- IBEC ensures equality of access to professional development opportunities irrespective of employment status, length at IBEC or other factors. The IBEC's yearly training catalogue offers a wide range of training in technical and transferable skills.
- High-quality international scientific environment.
- Induction programme to facilitate incorporation at IBEC and additional support is provided for foreigners to obtain Visa-working permit and to install in Barcelona.

How to apply:

Until October 16th an online application form is available through IBEC dedicated site: https://careers.ibecbarcelona.eu/
Only those applications submitted before the deadline will be evaluated.

Reference: FPI_JADR/RG
If you have any further questions regarding your application, please contact us at phd@ibecbarcelona.eu

Principles of the selection process:

IBEC is committed to the principles of the Code of Conduct for the Recruitment of Researchers of the European Commission and the Open, Transparent and Merit based Recruitment principles (OTM-R) https://ibecbarcelona.eu/careers-at-ibec/jobs/

IBEC´s Commitment on equal opportunity, diversity, and Inclusion:
Our strength and excellence as an international transdisciplinary Research Institute are based on diversity. Being an equal opportunity employer, we are committed to diversity and inclusion, so that we support employees irrespective of their gender, nationality, religion, disabilities, age, sexual identity or cultural and socioeconomic background.
Visit our devoted webpage on Equality, Diversity and Inclusion.

For candidates with children that come from outside Barcelona, we offer babysitting services during the interview, so you don't have to worry about anything else than doing a good interview. Contact us if you are interested in this service.

In categories where women are underrepresented, such as Group Leader positions, and with the aim of ensuring gender balance in recruitment processes, women candidates must represent at least 50% of those interviewed for Junior-level positions and 40% for Senior-level positions, provided they have CVs comparable to those of male candidates. At the end of the evaluation process, in cases of equal merit, preference will be given to women candidates.

IBEC, as a signatory of the San Francisco Declaration on Research Assessment (DORA), will consider, especially for early-stage investigators, much more the scientific content of research outputs, than publication metrics or the identity of the journal in which it were published.

Protection of personal data:

IBEC guarantees that candidates' personal data are processed in accordance with the requirements of the EU General Data Protection Regulation (GDPR) and Law 3/2018 on Data Protection.
Personal data will be processed solely for the purposes of the selection process.

Who we are?

The Institute for Bioengineering of Catalonia, IBEC is an interdisciplinary research center focused on Bioengineering and Nanomedicine based in Barcelona. IBEC is one of the top research institutions named as a Severo Ochoa Research Centre by the Ministry of Science, Universities and Innovation, which recognizes excellence at the highest international level in terms of research, training, human resources, outreach and technology transfer.

IBEC's mission is to develop international high-quality interdisciplinary research that, while creating knowledge, contributes to making a better quality of life, improving health and creating wealth. A close link with key universities, reference hospitals and corporations, are assets that facilitate achieving the mission.

IBEC was established in 2005 by the Generalitat de Catalunya (Autonomous Government of Catalonia), the University of Barcelona (UB) and the Technical University of Catalonia (UPC).

IBEC is located within the Barcelona Science Park and is managing 3.800 square meters facilities, with an annual budget of 22 Mio€; 4.150 square meters of facilities; 21 research groups and a team of researchers and support services of 400 people from 35 different countries. www.ibecbarcelona.eu

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HR EXCELLENCE IN RESEARCH

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