

PhD Position at the Biomaterials for Neural Regeneration Research Group

Introduction to the vacant position:

The Biomaterials for Neural Regeneration group is excited to announce a fully funded PhD position for a motivated and talented student to join our multidisciplinary research team. This PhD position is funded during the first year by the International Foundation for Research in Paraplegia and from the 2nd to the 4th year by the National Institutes of Health (NIH) under R01 grant number 1R01AG086270 - 01. We are seeking a candidate to work on an innovative project focused on developing advanced extracellular matrix (ECM) platforms for iPSC-derived spinal cord organoids.

Project Overview:

Supported by the NIH R01 grant, this PhD project aims to address current limitations in iPSC-based models of the spinal cord by developing and applying ECM biomaterials tailored to specific stages of spinal cord development and disease modeling. The research involves creating structured scaffolds and synthetic matrices to enhance the growth, maturation, and functionality of spinal cord organoids and motor neurons derived from iPSCs.

Main tasks and responsibilities:

- **Design and Development:** Create novel ECM platforms, including hydrogel-based matrices with bioactive sequences and structured scaffolds, to mimic the physiological conditions of the spinal cord environment at various developmental stages.
- **Characterization and Optimization:** Perform a comprehensive biochemical, structural, and functional analysis of the developed ECM platforms using state-of-the-art techniques such as mass spectrometry-based proteomics, single-cell RNA sequencing, and electrophysiological assessments.
- **Application in Disease Modeling:** Utilize the optimized ECM platforms to advance the fidelity of iPSC-derived spinal cord models for studying neurodevelopmental and neurodegenerative diseases, including amyotrophic lateral sclerosis (ALS) and spinal muscular atrophy (SMA).

Requirements for candidates:

We are looking for a highly motivated PhD candidate who is eager to engage in interdisciplinary research in the fields of biomaterials, tissue engineering, and neuroscience. The ideal candidate would meet the following criteria:

Essential:

- **Educational Background:** A Master's degree in Biomedical Engineering, Neuroscience, Tissue Engineering, or a closely related field is preferred.
- **Laboratory Experience and Technical skills:** Experience working in a wet lab setting is highly recommended. Familiarity with biomaterials, stem cell culture, or 3D biofabrication techniques would be advantageous. Experience with advanced microscopy methods and molecular biology techniques for cell and tissue analysis would also be beneficial, but we are open to candidates who are enthusiastic to learn these skills.
- **Teamwork and Communication:** We value candidates who enjoy working collaboratively in a multidisciplinary team, have strong problem-solving skills, and can effectively communicate their research findings through both oral and written presentations.

Advantageous:

- Animal Handling and In Vivo Studies: Experience with animal models is a plus. However, if you do not have prior experience, the candidate will get the necessary training through an accredited animal handling course during your PhD

We Offer:

- Number of available positions: 1
- Starting date: **January 2025**
- Gain hands-on experience with advanced biofabrication and biomaterials engineering techniques.
- Work in a cutting-edge research environment with access to state-of-the-art equipment and facilities.
- Collaborate with leading experts in the fields of stem cell biology, neuroscience, and biomedical engineering.
- Opportunity to contribute to high-impact research with potential applications in regenerative medicine and disease modeling.
- Support and guidance in publishing your work in peer-reviewed journals and presenting at international conferences.

Working conditions:

- Full time 4-year contract.
- Measures to reconcile work and family life (parental leave, flexible schedule working hours, 23 working days of paid holidays, 9 leave days for personal matters, among others).
- 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 including mobility grants and a Mentoring programme for predoctoral and postdoctoral researchers.
- Stimulating, interdisciplinary research and 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 November the 15th 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: Phd-ZA.

If you have any further question regarding your application, please contact us at jobs@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:

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."

IBEC actively looks for female candidates for Senior positions ensuring that at least 40% of shortlisted applicants invited to interview have to be women with comparable level of CVs as the male candidates. At the end of the evaluation process, in case of equal merit, priority will be given to female candidates.

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.

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

