



Institute for Bioengineering of Catalonia

# IBEC PhD FPI fellowships

Call September 2024



MINISTERIO  
DE CIENCIA, INNOVACIÓN  
Y UNIVERSIDADES



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## **IBEC PhD FPI fellowships associated with the MCIN funded projects "Generación del Conocimiento" (IBEC PhD FPI fellowships)**

### **1. PRESENTATION**

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The Institute for Bioengineering of Catalonia (IBEC) is one of the top research institutions named as a Severo Ochoa Research Centre by Ministry of Science and Innovation, which recognizes excellence at the highest international level in terms of research, training, human resources, outreach and technology transfer.

IBEC was established in 2005 by the Ministries of Innovation, Universities and Enterprises and Health of the Generalitat de Catalunya (Autonomous Government of Catalonia), the University of Barcelona (UB) and the Technical University of Catalonia (UPC). Today, IBEC's relationship with the UB and UPC researchers continues to operate under a framework agreement signed in 2008.

With the aim to train the next generation of experts in bioengineering, IBEC offers in this call **3 PhD fellowships associated to the research projects Generación de Conocimiento**, funded by the Spanish Ministry of Science and Innovation.

### **2. LABOUR CONDITIONS**

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The PhD fellowships offer a 4-year predoctoral contract with the following gross annual salary:

- 19.500 € for the 1st year
- 23.713€ for the 2nd year
- 23.713€ for the 3rd year
- 24.500€ for the 4th year

Moreover, 7.000€ is also offered for mobility and training, including the university enrolment fees, during the 4-year period. Indemnities will be paid at the end of the labour contract.

Predocctoral researchers will have to enrol in a university of their choice (mainly University of Barcelona-UB; Polytechnic University of Catalonia-UPC and University Pompeu Fabra-UPF). **IBEC doesn't grant the doctorate degree, instead, it provides the experimental experience you need to complete the PhD.** The awarding body of your PhD will be the University at which you are enrolled as a doctoral student.

University enrolment fees will be covered by the fellowship.

PhDs will provide an annual report from the Doctoral School confirming the positive scientific progress related to the PhD thesis carried out during the year. PhDs who finish and defend their PhD thesis before the end of the 4-year period of the fellowship will be able to sign an up to 1-year postdoctoral contract (POP). The aim of this contract is to provide an orientation period to consolidate the knowledge acquired during the PhD thesis and start looking for postdoctoral opportunities, including those through other competitive fellowships.

The total duration of the PhD and postdoc contract cannot exceed 4 years under no circumstance.

The expected initial date is between December 1<sup>st</sup> 2024 and January 1<sup>st</sup> 2025 (to be confirmed, depending on the publication date of the final resolution of the call *Proyectos de Generación de Conocimiento 2023*), when a predoctoral contract will be issued, once they have been admitted on a Doctoral Programme.

Other general conditions:

Gross salary provides full social security coverage, which includes health and accident insurance, pension and unemployment benefits. Working conditions at IBEC also include:

- Yearly 23 working days of paid holidays
- 9 leave days for personal matters
- Measures to reconcile work and family life, such as:
  - Parental leave (16 weeks)
  - Leave for breastfeeding
  - Shorter hours for guardianship or leave to care for children and relatives
- Flexible schedule working hours

- Induction programme to facilitate incorporation at IBEC
- Additional support is provided for foreigners to obtain Visa-working permit and to install in Barcelona

IBEC provides Training and PhD discussions specially devoted for PhDs to prepare the thesis and presentation skills. IBEC also provides Seminars with top names in bioengineering and nanomedicine from all over the world in order to offer the opportunity to discuss and network the developments. IBEC also offers different courses to give the opportunity to learn new skills such a leadership communication, time management, and language skills. The institute also holds an annual symposium on a different scientific theme, as well as hosting and organizing several other project-based or general scientific meetings and workshops throughout the year.

As part of the PhD fellowship, PhD's are encouraged to take up research placements in other centers. Thanks to these stay, young researchers benefit from transnational and multidisciplinary mobility and have the added value of enabling PhD Students to obtain an international PhD, a recognized distinction which significantly improves their chances of a successful career.

All PhDs should commit themselves to participate in outreach and education activities.

In order to enhance and acknowledge the excellence of the training program developed for IBEC's PhD fellows, we issue a Doctoral Certificate of Excellence funded by the Spanish Ministry of Science and Innovation through the Centro de Excelencia Severo Ochoa award. This certificate is awarded to those fellows who meet the quality requirements of the institute. Additionally, all candidates that received a Doctoral Certificate of Excellence will be eligible for a Doctoral Award. The awardees will receive a prize in an award ceremony at the IBEC Symposium.

Within the Wellbeing Programme, IBEC offers a catalogue of activities on healthy habits, wellbeing and mental health.

IBEC is committed to awareness of diversity and gender equality in science and society. This follows our mission to carry out interdisciplinary research at the highest international quality level which, by crating knowledge, helps to improve health and quality of live, and generate wealth.

### 3. REQUIREMENTS

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Highly qualified researchers of all nationalities willing to join a stimulating, interdisciplinary research and high-quality scientific environment are welcome to apply.

The following **requirements** are common to the fellowships available:

- Candidates should be ready to enter an official doctoral programme in December 2024 (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 2024 are eligible to apply.
- Candidates must have a strong commitment to scientific research and an excellent academic record.
- Candidates must have good working knowledge of English.
- Candidates must not yet have been awarded a doctoral degree.
- Candidates must not have held a PhD contract exceeding twelve months by the beginning of the fellowship (December 2024 to January 2025).

### 4. PhD RESEARCH PROJECTS

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The involvement in the following research groups with the detailed research projects is offered in this call:

- **Group:** Pluripotency for organ regeneration

**PI:** Nuria Montserrat on leave of absence, Elena Garreta as representative

**Project:** [Developing Complex Human Organoids To Model And Target Genetic And Systemic Conditions During Congenital Anomalies Of The Kidney And Urinary Tract \(COMPLEXORG\)](#)

**Abstract:** Lessons learned from the reprogramming fields and the use of genome editing technologies, namely CRISPR/Cas9, might apply to the identification of novel conditions controlling organogenesis and disease modelling. For this reason, COMPLEXORG proposes a binomial strategy

with the objective to generate cutting-edge methodologies for modelling of Congenital Anomalies Of The Kidney And Urinary Tract (CAKUT) into the fields of chronic kidney disease treatment and Regenerative Medicine since CAKUT compromises different tissues and organs aside from kidney). We will first generate CRISPR/Cas9 engineered human pluripotent stem cells (hPSCs) capturing CAKUT genetic backgrounds. Then we will further develop complex organoids with a vascular component which will increase lifespan of our organoid models while allowing to understand and model early-to-advanced CAKUT-related complications. In this manner COMPLEXORG will uniquely explore the cross-talk between CAKUT genetics and environmental factors during kidney, cardiac and retinal differentiation.

This approach will lead to the identification of new pathways and markers altered during CAKUT initiation which will be assayed in novel culture formats, including microfluidic platforms to identify new therapeutic compounds modulating CAKUT initiation in hPSCs-organoids. Our results will be validated in CAKUT retrospective patient samples. Based on the results of a previously funded project under the call Proyectos I+D+i 2020 - Modalidades Retos Investigación, COMPLEXORG will go one step forward by incorporating new organoid models allowing to increase the life span of the organoids while modelling early hallmarks of CAKUT related to imbalances in the tissue microenvironment by vascularizing kidney, cardiac and retinal organoids while incorporating an entire new pipeline for organogenesis and disease modeling based on the development and exploitation of vascularized cardiac organoids.

- **Group:** Nanobioengineering

**PI:** Aranzazu Villasante

**Project:** [Magnetic Hyperthermia Studies Using Bioengineered Models of Pediatric Cancer \(MAGNETO\)](#)

**Abstract:** Ewing's sarcoma, a pediatric cancer marked by its aggressive bone and lung involvement, poses formidable clinical challenges, especially in metastatic cases where existing treatments face limitations, urging the exploration of innovative therapeutic approaches.

In response, MAGNETO addresses this urgency with tailored strategies for pediatric patients, incorporating the use of biomimetic iron nanoparticles for precise targeting, the creation of tissue-engineered models simulating metastatic bone and lung scenarios in Ewings sarcoma, evaluating the effectiveness of Magnetic Hyperthermia treatment, and fostering international collaborations.

These endeavors collectively aim to deepen our understanding of pediatric cancer, introduce groundbreaking therapies, ensure safe applications, provide precise evaluation methods, and contribute valuable insights to the field's knowledge on metastasis and targeted therapies. Importantly, these contributions aspire to advance scientific-technical knowledge in the thematic area of pediatric oncology, potentially influencing personalized medicine and enhancing outcomes for rare diseases.

- **Group:** Spatial Biotechnology

**PI:** Xavier Rovira

**Project:** [Development of new multi-omic spatial methods to profile clonal events in cancer \(MOMIC\)](#)

**Abstract:** Most solid tumors are composed of genetically, epigenetically, and phenotypically distinct cancer cell clones and the co-existence of certain clones can have a dramatic implication for tumor development and response to therapy. How the co-existence of cancer cell clones in a tumor drives solid tumor development is not well understood, partly due to the shortcomings of existing experimental techniques and analytical approaches. The MOMIC project aims to develop multi-omics spatial technologies to advance the profiling capabilities of clonal events in cancer. Specifically, we aim to: (1) characterize CNV heterogeneity in clonal tumor patches, (2) characterize clonal events in primary tumor samples and correlate their growth with histopathology-grade spatial proteomics, and (3) examine N-glycosylation state of clonal spatial patterns. To achieve these goals, we have designed a ground-breaking interdisciplinary research program that builds on our expertise developing and applying highly multiplexed spatial technologies, engineered 3D tumors, super-resolution imaging, mass spectrometry imaging, and computational algorithms that reveal multicellular patterns in tissues. The methods developed in the MOMIC project will be applied to *in*

*vivo* models and human biopsies of colorectal cancer, and the results will exemplify how other tumors might be similarly investigated. Ultimately, a more profound understanding of clonal evolution will pave the way for groundbreaking cancer treatments and personalized medicine approaches.

## 5. HOW TO APPLY

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**From September 19<sup>th</sup> until October 16<sup>th</sup> 2024**, an online application form will be available through the IBEC dedicated site [www.ibecbarcelona.eu/phd](http://www.ibecbarcelona.eu/phd)

You will be required to provide the following information in your application:

- Personal data
- A scan of your degree and Certified Academic Record, showing grades obtained (degree and masters). It should include the grades obtained and the date of obtention for each individual subject. If these are not in Catalan, Spanish or English, applicants should attach a translation in one of these languages<sup>1</sup>.
- Education, training and research experience.
- Explanatory document certifying that the candidate is eligible to apply for a doctoral programme when the number of ECTS does not appear in the Certified Academic Record. This explanatory document may be an official description of the country's educational system issued by the university or published on its website, or the admissions requirements to the university's doctoral programme.
- Research outputs, including publications, Presentations in conferences, Awards/fellowships
- Scientific and technical skills acquired during your academic and research track
- Cover letter, including motivation for applying and adequacy to the group and IBEC

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<sup>1</sup> For the future enrolment in the Doctoral program, Official University only accepts an official translation of educational certificates. The verification of an equivalent level of studies will be made by the university when the admission to the PhD Programme procedure starts. Should this verification not be successful, the fellowship would be withdrawn.



- Up to 2 contacts from lecturers or researchers with whom you have studied or worked and who can judge your potential as a PhD.

Only those applications submitted before the deadline provided with all the required information and documents will be evaluated.

Once the application is submitted, candidate will automatically receive an acknowledgment of receipt.

## **6. SELECTION PROCEDURE**

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IBEC holds the HR Excellence in Research Award in recognition of our ongoing commitment. The recognition by the European Commission has been renewed several times, last one in February 2022.

Our Recruitment and Selection Policy is based on the OTM Strategy (Open, Transparent and Merit-based recruitment) <http://www.ibecbarcelona.eu/jobs/> and accept applications without distinction on any grounds. Candidates with disabilities are strongly encouraged to apply. Our commitment to OTM-R principles can also be found in our Gender and Diversity plan. In line with the principles defined in the OTM-R procedure, selection processes are governed by the following principles:

- Transparency throughout the whole process
- Equal opportunities in the selection and hiring of personnel
- Non-discrimination on grounds of sex, age, ethnic, national or social origin, religion, sexual orientation, language, disability, political opinions or social and economic condition
- Merit based evaluation
- Confidentiality as the cornerstone of the selection process
- Principle of public dissemination of the selection processes, which must also be internationally comparable

Applications will be reviewed by a selection committee led by the corresponding IBEC Principal Investigator of the Research Group.

Criteria	Score
1. Academic and professional career of the candidate	0-50
a) Scientific and technological contributions	0-45
b) Mobility and internationalization	0-5
2. Adequacy of the candidate to the research activities to develop	0-50
<b>TOTAL SCORE</b>	<b>100</b>

## 7. CALENDAR AND USEFUL DATES

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- **September 19th, 2024:** Launch of the call.
- **October 16th, 2024:** Deadline for submission of applications.
- **October 17th - November 11th, 2024:** Evaluation of the candidates: CVs and online interviews.
- **November 14th, 2024:** Communication of the results: the acceptance letters will be sent to the shortlisted candidates. Applicants who have not been successful but have received a positive evaluation will be put on a waiting list for future positions in case a final candidate withdraw the offer.
- **As of December 1st, 2024:** Start of the predoctoral contract (to be confirmed, based on the resolution of the call *Proyectos de Generación de Conocimiento 2023* by the Spanish Ministry of Science and Innovation).

## 8. CONTACT

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If you have any further questions about PhD fellowships, or if there are particular issues you'd like to discuss regarding your application, please contact [phd@ibecbarcelona.eu](mailto:phd@ibecbarcelona.eu)

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