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## 2024 Call for the IRB Barcelona International PhD Fellowship Programme (ref.01/24.3/IRB)

### TERMS & CONDITIONS

Section II, article 6, letters c) and q) of the Articles of Association of the *Fundació Institut de Recerca Biomèdica (IRB Barcelona)* (hereafter referred to as IRB Barcelona or the Institute) establish that the Institute will promote activities that address collaboration and knowledge transfer and also launch fellowship calls and subsequent granting of these awards.

Accordingly, this document is to announce a fellowship call included in the IRB Barcelona International PhD Programme. The fellowships are assigned to students enrolled on a PhD programme who perform and defend their PhD theses under the supervision of group leaders at IRB Barcelona.

### I. Objective

These Terms and Conditions serve to regulate the award of PhD fellowships for the academic year 2024-2025.

### II. Fellowship Call

The following will be offered in this call:

- Up to 5 FPI positions associated with the “Proyectos de Generación de Conocimiento 2023” Call (funded by the Agencia Estatal de Investigación AEI- MICINN).

The FPI positions will be regulated by the MICINN call, following the conditions of this government agency. Details of the evaluation criteria are provided in Annex 2.

All fellowship awardees will be contracted by IRB Barcelona. Fellowships will be renewable on a yearly basis and up to 4 years from the date of signature of the employment contract by the awardee, provided that he/she complies with all the requirements of point X of this call.

The awardee's supervisor will be the group leader at IRB Barcelona previously assigned and agreed with the awardee before the signature of the fellowship. This group leader will oversee that the duties assigned to the awardee are fulfilled and will notify IRB Barcelona's Academic Office and the Chair of Graduate Training of any incident, alterations in the fulfilment of the allocated duties, or other pertinent circumstances so that corrective measures can be applied and/or proceedings can be started to withdraw the fellowship.

### III. Requirements and Selection Criteria

IRB Barcelona will recruit prospective doctoral candidates of any nationality, gender, culture, religion, sexual orientation or age to undertake a PhD in biomedicine.

1. The programme is aimed at students who have completed one of the following options by December 2024:

- a) studies that lead to an official Spanish (or from another country of the European Higher Education Area) university degree in Biology, Chemistry, Biochemistry, Pharmacy, Physics, Medicine or related fields and that have 300 credits (ECTS), of which at least 60 must correspond to master level.
- b) a degree in a non-Spanish university not adapted to the European Higher Education Area and that gives access to doctoral studies in Biology, Chemistry, Biochemistry, Pharmacy, Physics, Medicine or related fields in Spain.

2. Candidates are selected exclusively on merit, on the basis of their curricula. The academic grades and curriculum vitae of each applicant are evaluated, as well as recommendation letters and a motivation letter. No selection criteria for positive or negative discrimination are applied.

Applicants should indicate the Research Group(s) to which they wish to apply (up to 2). Details of the projects available are provided in Annex 1.

## IV. Application Procedure

1. Applications can be made online at <http://phd.irbbarcelona.org/>. The application deadline is **15:00 CET on 22 September 2024.**

The tentative calendar for this call is as follows:

**Call opening:** 14 August 2024

**Deadline for candidacies:** 22 September 2024

**Deadline for referees:** 25 September 2024

**Pre-selection Period End:** 15 October 2024

**Candidate's Presentation Panels:** 21 October 2024

**Online Interviews:** 22-23 October 2024

**Notification to candidates:** 1 November 2024

**Start date of fellowships (depending on the official announcement by the State Research Agency (AEI-MICINN)):** 1 January – 1 March 2025

If the application deadline is extended, the updated information will be available on the IRB Barcelona's website.

2. For more information, applicants can consult IRB Barcelona's webpage or contact IRB Barcelona's Academic Office at [academicoffice@irbbarcelona.org](mailto:academicoffice@irbbarcelona.org)

## V. Applications

Applicants should send a completed online application form, together with the following documents:

1. Curriculum vitae specifying education and experience, including career breaks, and supported by pertinent documents.
2. A motivation letter (maximum 2 pages) highlighting their research experience and academic achievements and explaining why they are interested in IRB Barcelona and in a particular research group.
3. A scanned copy of their certified Academic Record. These documents must show the grades attained in exam periods. If the certified academic records are not in Spanish



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or English, applicants should also attach a translation in one of the above-mentioned languages.

4. Any additional files considered relevant to the application
5. Two recommendation letters from university lecturers or scientists with whom they have studied or worked. Candidates are responsible for ensuring that referees submit these letters. Applications not supported by these letters will not be eligible. If the applicant has previously worked with a researcher at IRB Barcelona, any letter of reference from said person cannot be included as one of the two reference letters requested. However, it can be sent to provide additional support for the application.

Applicants will be asked to upload the following documents in English. Please note that all the documents provided should be in PDF format.

## VI. Selection

An Evaluation Committee will appraise eligible. This committee will have representatives of group leaders at IRB Barcelona. The evaluation will be independent, impartial, objective, and free of conflicts of interest, and the selection will be open, efficient, transparent, fair, and merit-based. The PhD Advisory Committee and Academic Office will oversee the remote and interview stages of the selection process.

Applicants will receive continuous support from the Academic Office through the helpdesk (email, phone), which will notify them of the outcome of the preselection. Candidates with the highest scores will be invited for an online interview. Those who do not pass the threshold established will be excluded from further consideration. Applicants who do not pass this evaluation will be informed why and will be provided with the instructions to follow to start a redress procedure.

Offers of admission will be made to the successful candidates shortly after the interview period. Candidates positively evaluated but with an insufficient score to receive a fellowship will be put on a reserve list to cover possible renunciations and future positions.

Awardees will receive a formal invitation letter.

The following **evaluation criteria** will be used by the Evaluation Committee during the pre-selection phase:



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Evaluation criteria	Score (points)	Sub criteria	Weight	Threshold
<b>Academic record and CV</b>	1-10	Academic and/or professional curriculum in relation to the stage of the candidate's career (graduate studies, grades, institution), including career breaks.	50%	60%
		Research experience (diverse fields /sectors, publications, participation in projects).		
		International mobility (studies abroad, secondments, etc...).		
		Scientific-technological quality (courses, workshops...).		
		Fellowships/awards received, supervision, knowledge transfer, communication and other relevant merits.		
<b>Motivation Letter</b>	1-10	Strength and relevance of the candidate's motivation towards the research conducted at IRB Barcelona.	20%	50%
		Interest in any specific IRB Barcelona research group.		
<b>Letters of reference</b>	1-10	Reference letters supporting the candidacy will be assessed taking into account the relevance of the content and the person who signs the letter in relation to the candidate's target research groups.	30%	50%

The overall score of the pre-selection phase will be calculated by multiplying the score obtained for each criterion (1-10 points) by the weight assigned to each one (as seen in the table). Only applications that are above the thresholds established for all criteria will be considered. This procedure will lead to a score out of 10. A ranking will be obtained in a consensus meeting. In case of a draw in the total score between applications, candidates will be prioritized on the basis of the weight of each criterion. If two candidates have the same scores for all evaluation the criteria, both will be invited to interviews.

During the Candidate's Presentation Panels and Interview phases, additional criteria (see below) will be taken into consideration:



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Evaluation criteria	Score (points)	Sub criteria	Weight	Threshold
<b>Candidate's potential</b>	1-10	Ability to present complex reasoning in English.	40%	50%
		Independent thinking, creativity, and organisation capacity.		
		Leadership skills, team working capacity, and maturity.		
<b>Motivation</b>	1-10	Strength and relevance of motivation for applying to IRB Barcelona.	30%	50%
		Motivation towards the research lines offered by the different nodes.		
<b>Academic background and theoretical fundamentals</b>	1-10	Suitability of the candidate's academic background to undertake the research lines offering projects in the call.	30%	50%

The overall score in the interview phase will be calculated by multiplying the score obtained for each criterion (0-10 points) by the weight assigned to each one (as seen in the table in %). This procedure will lead to a total score out of 10. A ranked list of candidates will be drawn up. In the event of a draw in the total score, candidates will be prioritized on the basis of the weight of each criterion. When scores on all evaluation criteria are still the same, preference will be given to candidates from under-represented groups (e.g. on the basis of gender, disability or refugee backgrounds).

On 9 December 2014, IRB Barcelona was awarded the "HR Excellence in Research" logo. This recognition reflects the commitment of the Institute to continuously improving its human resources policies in line with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. More information about our OTM-R (Open, Transparent, Merit-based Recruitment) policy can be found at the following [link](#).

## VII. Documentation

Each candidate selected during the interviews must present the following documents to complete the selection procedure.

1. Degree certificate or official notification of degree award.



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Non-Spanish nationals must present: 1) a certified copy and sworn translation of the degree certificate or equivalent obtained in a university abroad; and 2) a certified copy and sworn translation of the certificate showing the subjects studied.

If the certified academic records are not in Spanish or English applicants should also attach a sworn translation in one of the above mentioned languages.

2. A sworn statement expressing intention to enrol on a university doctoral programme.

3. A sworn statement stating that he or she does not receive any other funding or fellowship grant.

(Non-compliance with points 2 and 3 will automatically lead to withdrawal of the fellowship and the awardee must return any amounts received to IRB Barcelona).

## VIII. Communication of Fellowship Award

The Head of Human Resources and Academic Affairs department will officially inform successful candidates of the fellowship award.



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## IX. Rights of Awardees

1. Awardees will have the following general rights:
  - a) To be provided with the necessary assistance to perform their studies and research activities.
  - b) To become a member of the research programme in which they will be undertaking PhD studies.
  - c) To participate in bodies governing and representing the student community.
  - d) To participate in complementary calls for funding to attend scientific congresses or to spend training periods in other centres upon approval of their supervisors and the director of IRB Barcelona.
  - e) To have their intellectual and industrial property rights regulated in the employment contract with IRB Barcelona.
2. Awardees will have employment and Social Security rights derived from the employment contract with IRB Barcelona.
3. Awardees will be able to exercise intellectual property rights derived from their training activity in accordance with their contribution, as established in the Intellectual Property Law, Royal Decree 1/1996, 12 April. These rights will be independent, compatible, and accumulable with other rights that may arise from the research developed, without negatively affecting the rights of the joint effort when the awardees participate in or are associated with a joint research project.
4. Regarding possible industrial property rights of the awardees, these will be regulated by Law 24/2015, of July 24, 2015, on Patents, and Royal Decree 55/2002, of January 18, 2002, governing the exploitation and license of rights on discoveries made in public research organisations.

Said rights will not be linked to salary.



## X. Responsibilities of Awardees

1. To fulfil the terms and conditions established in this call.
2. To enrol on a university doctoral programme.
3. To perform their research activity under the supervision of a group leader at IRB Barcelona for the duration of the fellowship. In addition, they must perform the activities foreseen in the research training and specialisation programmes of the Institute, as well as satisfactorily fulfil the objectives of the training programme.
4. To comply with the internal regulations of IRB Barcelona, particularly regarding working conditions and the prevention of occupational risks.
5. To prepare a report each year informing on the scientific progress of their theses. Moreover, they will present this report to their Thesis Advisory Committee, designated by the Institute.
6. To request approval from the group leader supervising their activity prior to the submission for publication or disclosure of any abstracts and/or publications based on research carried out at IRB Barcelona.
7. To undertake the duties that correspond to them as a result of being contracted by IRB Barcelona, as well as those associated with inclusion in the Social Security System.
8. To defend their theses and obtain the respective PhD degree by the end of the fourth year after the start of the fellowship. In exceptional cases, an extension of one year may be given for the defence of the thesis.

## XI. Termination of Fellowships

The fellowship will be revoked if the awardee has withheld or falsified information. The fellowship will also be revoked if the awardee does not fulfil the responsibilities described in point X.



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## XII. Incompatibility

Awardees will be devoted exclusively to the research or technical training and specialisation activities defined in this call. The fellowships included in this call are not compatible with any other type of grant or fellowship from other public or private organisations.

## XIII. Legal Regime

Awardees will be subjected to the legal regime applicable to PhD fellowships according to the law in force at the time of drawing up the contract.

## XIV. Data Protection

In accordance with Regulation (EU) 2016/679 (General Data Protection Regulation), Organic Law 3/2018 of December 5, and other applicable regulations governing personal data protection, any personal data provided by applicants will be incorporated into the Academic file of IRB Barcelona, for which the Institute is the data controller. The purpose of keeping such data is to manage the relationship of the Institute with applicants. Applicants may exercise the rights of access, rectification deletion, opposition, transfer and expiry, as well as limitation in data processing of said information by contacting the Institute at the following e-mail address: [dataprotection@irbbarcelona.org](mailto:dataprotection@irbbarcelona.org), or by writing to the following postal address: C/ Baldiri Reixac, 10, 08028, Barcelona.

## XV. Dissemination

Any information regarding this fellowship call will be placed on the announcement board on IRB Barcelona's website.



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## XVI. Clarification

The Director of IRB Barcelona or a designated representative will be responsible for clarifying queries regarding these terms and conditions.

Barcelona, 14 August 2024

A handwritten signature in blue ink, appearing to read "Maribel Labrid".

Maribel Labrid  
Head of Human Resources and Academic Affairs



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## ANNEX 1. Research projects

IRB Barcelona research group	Group Leader	Research Node	Description of the research project
<b>Pediatric Cancer Epigenetics Lab</b>	<b>Dr. Alexandra Avgustinova</b>	<b>Preclinical Models of Cancer;</b>  <b>Cell Pathophysiology</b>	The PhD position on offer will study of the factors that determine which cells are able to undergo malignant transformation during development to give rise to childhood cancer. The project is multidisciplinary and will involve the use of cell and molecular biology techniques, CRISPR/Cas9 genome editing, cytometry, microscopy, (epi)genomics and animal models.
<b>Translational Control of Cell Cycle and Differentiation</b>	<b>Dr. Raúl Méndez</b>	<b>Preclinical Models of Cancer;</b>  <b>Cell Pathophysiology</b>	<b>Reactivating the chronic integrated stress response to prevent liver cancer in obesity and aging</b>  Liver cancer is the second leading cause of cancer deaths worldwide and treatment options are extremely limited. Its incidence is rising rapidly, linked to the global epidemic of obesity and an aging population. Liver metabolic adaptation to a high-fat diet and the microenvironment of hepatocellular carcinoma (HCC) activate the integrated stress response (ISR). The ISR is a homeostatic mechanism



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			<p>that decreases global protein synthesis while activating the translation of specific mRNAs encoding proteins implicated in stress resolution.</p> <p>Most of the studies until now have focused on the “acute” phase of the IRS, aimed to resolve the stress or trigger cell death. However, obesity and cancer generate “chronic” stress to which the liver must adapt. We have recently unraveled a unique and previously unrecognized chronic ISR program that protects liver cells from a high-fat diet and aging-induced stress. Preliminary results indicate that this circadian-chronic-ISR is also antitumoral while allowing translational reprogramming that permits simultaneous hepatocyte cell division and differentiation and promotes liver regeneration. Disruption of this chronic branch of the ISR leads to hepatic steatosis, increased liver damage, and HCC. Here we aim to understand whether, when and how abnormalities in the balance between the acute IRS and the novel chronic ISR programs predispose to fatty liver-to-liver cancer progression and tumoral niche establishment upon high-fat diet and aging.</p> <p>We will use clinically meaningful and genetically modified in vivo mouse models and in vitro systems, combined with cutting-edge techniques (multi-omics data), to identify druggable targets/pathways that will be further validated in human samples.</p>
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<p><b>Research Unit on Asymmetric Synthesis</b></p>	<p><b>Dr. Antoni Riera</b></p>	<p><b>Chemical and Structural Biology</b></p>	<p><b>Synthesis of new protein degraders</b></p> <p>Targeted protein degradation (TPD) approaches to drug discovery have experienced an exponential growth in the last decade. The possibility to target proteins that were considered undruggable, as well as the advantages of the event-driven mechanisms vs the occupational-driven mechanisms of traditional inhibitors, are the main factors of this success. The so-called protein-targeting chimeras (PROTACs) are the most general chemical approaches to TPD.</p> <p>PROTACs are bifunctional compounds able to bring the protein of interest in proximity to ubiquitinating enzymes, with the final scope of inducing its poly-ubiquitination and degradation via the proteasome pathway. Structurally, PROTACs consist of one end that binds to the protein of interest (warhead) covalently linked to an E3 ubiquitin ligase ligand. Our group, in collaboration with several biology groups, has already developed PROTACs of the oestrogen receptor and p38. The project will consist of the design, synthesis, and biological evaluation of new PROTACs of several proteins of pharmacological interest.</p>
<p><b>Colorectal Cancer Laboratory</b></p>	<p><b>Dr. Eduard Batlle</b></p>	<p><b>Preclinical Models of Cancer</b></p>	<p><b>Residual disease and metastatic relapse in colorectal cancer</b></p>

			<p>30-40% of colorectal cancer (CRC) patients undergoing curative resection of the primary tumor will relapse in the following years. In these patients, disseminated tumor cells are undetectable until they regenerate the disease in foreign organs, such as the liver and lungs. The identity and features of the residual tumor cells responsible for CRC relapse have remained elusive due to the impossibility of analyzing this clinically occult population in patients. By analyzing the transcriptomes of individual tumor cells in multiple primary CRC patient samples, we discovered that genes associated with an elevated risk of relapse are expressed by a defined subset of tumor cells that we named High Relapse Cells (HRCs). HRCs are abundant at invasion fronts, retain an epithelial program, and express genes involved in cell adhesion, locomotion and extracellular matrix remodeling.</p> <p>To investigate HRCs, we established a human-like CRC mouse model that undergoes metastatic relapse following surgical resection of the primary tumor. We also developed a methodology to isolate residual disseminated tumor cells before metastases are detectable. Single-cell profiling demonstrated that residual tumor cells occult in mouse livers after primary CRC surgery resembled the HRC population present in patients. Over time, HRCs gave rise to multiple cell types, including Lgr5+ stem cell-like cells, and generated macrometastases that can kill</p>
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			<p>the host. Genetic ablation of HRCs prior to extirpation of the primary CRC prevented metastatic recurrence and mice remained disease-free after surgery. The project will focus on the tumor microenvironment niche that specifies HRCs. We will study determinants of tumor cell plasticity during metastatic progression and develop therapies that can prevent metastatic recurrence in CRC.</p>
<p><b>Structural Bioinformatics and Network Biology</b></p>	<p><b>Dr. Patrick Aloy</b></p>	<p><b>Mechanisms of Disease</b></p>	<p><b>AI-guided design of a chemical toolbox to probe disease biology</b>            Genomic initiatives are providing new target opportunities but unfortunately, with some remarkable exceptions, global approaches have not yet translated into new drugs. The amount of biological data generated in the last years, which is virtually flooding biomedical research, has revealed that an effective perturbation is seldom exquisite and, to tackle complex phenotypes, we need to move away from the ‘one disease, one target, one drug’ paradigm and consider the complexity of human pathologies from the early stages of the drug development process. Recently, we have developed computational strategies to harmonize small molecule bioactivity and biomedical information, and format it as vector-like descriptors (i.e. embeddings) amenable for modern machine learning. Now, the main aim of this proposal is to profit the Chemical Checker and Bioteque descriptors to train generative AI models, so that they can learn not only the chemical</p>





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			<p>grammar of bioactive compounds but also how the chemical structure is related to specific bioactivity functions. We will exploit these generative AI models to devise and experimentally validate a chemical toolbox with directed bioactivities, guiding the design of these compounds with increasing levels of biological complexity.</p> <p>We believe that AI has the potential to transform drug discovery, as it is reshaping other areas of science and technology. In particular, by incorporating the biological complexity in the first steps of the drug discovery process we hope to overcome some of huge translational problems that current pipelines suffer when transitioning from pre-clinical to clinical efficacies. Overall, our approach to create and navigate a bio-rich embedded (latent) space might allow the AI-based design of new first-in-class molecules with completely novel pharmacological properties, and pave the way for tackling rare and orphan diseases and, eventually, enable personalized systems pharmacology.</p>
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## ANNEX 2. Evaluation criteria

### 1. Academic and/or scientific-technical trajectory of the candidate (up to 50 points).

Sub-criterion 1.a): Scientific-technical contributions (up to 45 points). The candidate's academic record and other curricular merits will be assessed, as well as their suitability for the tasks to be performed based on their training and professional experience.

Sub-criterion 1.b): Mobility and internationalisation (up to 5 points). The relevance and impact on the candidate's research trajectory of stays at national and international centres and/or in the industrial sector will be assessed, taking into account the prestige of the host institution and the activities carried out during the stay.

### 2. Suitability of the candidate for the research activities to be conducted (up to 50 points).

The candidate's suitability for the program, project, or research activities to be carried out will be assessed based on their prior education and experience. This assessment will take into account the added value that the completion of the project will bring to their research career, as well as the value contributed to the hosting institution and team.