

## POSTDOCTORAL RESEARCHER - CANCER HETEROGENEITY AND HIERARCHIES (REF.: PDR\_VR\_62)

The Josep Carreras Leukaemia Research Institute (IJC) is a non-profit research institute based in Barcelona and dedicated to advancing our understanding about leukaemia and related disorders, in partnership with the University of Barcelona and University Autònoma de Barcelona. The IJC has laboratories in three clinical campuses: i) Clinic Hospital, ii) Sant Pau Hospital and iii) Germans Trias i Pujol Hospital. IJC serves as a collaborative hub for basic investigators and physicians to work together on fundamental biological and clinical aspects of leukaemia. The IJC offers an excellent work environment built around a multi-disciplinary fusion of ideas and state-of-the-art facilities.

### Research Description

The **Cancer Heterogeneity and Hierarchies Group** led by **Dr Veronica Rodilla**, is looking for a **Postdoctoral Researcher**.

Cancer is a heterogeneous disease with a cellular hierarchical organization poorly explored in many tumour subtypes and, in some cases, hierarchical relationships between stem cells, progenitors and differentiated cells remain unsolved due to the high degree of cellular plasticity, which allows cells to switch between different cellular stages.

Lineage tracing is now considered the gold standard approach to study cellular hierarchies and cell fate *in vivo* and our chosen strategy to study tumour heterogeneity. The most commonly used lineage tracing method consists of an inducible form of the Cre recombinase to trigger the permanent expression of a reporter gene in defined cells to trace specific cells *in vivo* and monitor their progeny at high spatial and temporal resolution. This tool has been used to study cellular specification and evaluate stem cell potency in many tissues. In some organs, such as intestine or brain, clonal analyses have proved the existence of multipotent adult stem cells able to give rise to all differentiated cell types of their tissue of origin. In other tissues, instead, there are not adult cells with multipotent capacity and their different cell types are self-maintained separately, such as in the mammary gland.

Since 2020, we focus our efforts in understanding cellular organization within tumours, changes in cell fate, specific cellular behaviour upon different therapies and interactions between different tumour cell populations and with their microenvironment. In the era of the next generation sequencing, we use *in vivo* and *ex vivo* alternative models to reach a comprehensive cellular picture beyond genetics.

We are a newly-created group passionate for cellular hierarchies and tumour heterogeneity. Concretely, our main lines of research and specific goals are:

1. Illustrate cellular hierarchies within tumours
2. Discover cytotoxic agents for specific cellular subpopulations
3. Target the tumour niche to avoid cancer spreading

Please also visit our group webpage:

[https://www.carrerasresearch.org/en/cancer-heterogeneity-and-hierarchies\\_158539](https://www.carrerasresearch.org/en/cancer-heterogeneity-and-hierarchies_158539)

### What we need

- PhD background in cellular biology.
- Animal Manipulation Certificate (FELASA) with demonstrated animal handling experience.
- Bioinformatics knowledge, highly appreciated but not mandatory.
- Proficient in writing and speaking in English.
- Ability to handle varying workloads and aptitude for teamwork.
- Organized, proactive, self-motivated, and enthusiastic.
- Capacity for analysis and supervision.
- At least one first-author publication.

### What we offer

- Incorporation in a multinational institute and in a highly collaborative team.
- An exciting and innovative research project.
- Working in the mixed basic and clinical research environment of the Josep Carreras Leukaemia Research Institute.
- The stimulating environment of the Barcelona metropolitan area.

### Main Responsibilities

- Handling a PDX colony of immunodeficient mice.
- Identification and validation of predictive biomarkers associated with different breast cancer subtypes.
- Trace breast cancer heterogeneity upon conventional therapies in luminal subtype
- Examine the metastatic capacity of different mammary epithelial populations
- Generate a genetic model to target specific cell populations
- Search for new therapeutic compounds to treat heterogeneous tumours

### How to apply

To apply for this opportunity, please send your resume and a cover letter (incl. the contact details of two referees) to [jobs@carrerasresearch.org](mailto:jobs@carrerasresearch.org), including the reference **REF.: PDR\_VR\_62**.

### Deadline for Applications

Please submit your application by April 30th, 2021.

### Who we are?

We are a newly-created group passionate for cellular hierarchies and cancer heterogeneity. Our laboratory studies the key signals governing stem cell and cell fate specification during malignant progression and the mechanisms by which different signalling pathways controls cell plasticity in cancer. Concretely, we combine the use of murine transgenic models, human Patient-derived

xenografts (PDXs) and 3D-organotypic cultures to elucidate the presence of multipotent cells within tumours for better understanding cancer heterogeneity.

Our ultimate mission is contributing to improve the treatment of choice of cancer patients by searching for novel therapeutic strategies.

For further information, please, visit our webpage: <http://www.carrerasresearch.org/en> and the Josep Carreras non-profit organization: <https://www.fcarreras.org/en>



The European Commission awarded the IJC the HR Excellence seal in July 2019. The IJC continues to work to maintain its policies in line with the Charter and Code principles. The HRS4R has the main objective of ensuring that research centers of excellence implement and respect the requirements of the European Charter for Researchers and the Code of Conduct for hiring researchers (from here on referred to as the Charter and Code) within their human resources policies.

This EC initiative aims to promote training, professional development, and mobility for all European scientists. The IJC supports these values and principles, which will not only serve to strengthen its internal policies but will actively stimulate excellent research and firmly situate the organization as an institution with a stimulating working environment that favors the development of its scientists.

**IJC is an equal opportunity employer. We evaluate qualified applicants without regard to race, colour, religion, sex, national origin, disability, and other legally protected characteristics.**