

Francesc Posas Director, IRB Barcelona, Spain



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Francesc Posas, the newly appointed director of the Institute for Research in Biomedicine (IRB Barcelona), explains the evolving role of the institute as a bridge between basic research and concrete patient treatments.

Can you give us an overview of IRB Barcelona?

IRB Barcelona is a biomedical centre, an institute of basic research to identify solutions for unmet medical problems. It was founded in October 2005 by the Government of Catalonia (Generalitat de Catalunya) and the University of Barcelona (UB). Joan Guinovart, who served as director until I took over in May 2018, played a key role in setting up the institute and ensuring a solid scientific strategy that would allow it to become a centre of reference in biomedicine.

Initially, the institute was a local research centre, but thanks to efficient talent recruitment, success in securing European funding and investments from the Catalan authorities, we have become one of the best centres in Spain, hiring scientists renowned at national and international level.

What would you like to achieve in your time as a director? What are your priorities?

The challenge is to consolidate the institute as a leading centre at a global level. A key to achieving this is to recruit young scientists and adapt to the changes in science by covering new research areas. For example, we are reorganizing the programs: we have reduced the number from five to three in order to be more focused. While we will keep a program on cancer, as we are very strong in this field – particularly in the study of metastasis – we have a new program on ageing and metabolism, an important issue now. The third program is broader, as it is devoted to the mechanics of diseases.

Why did you decide to focus on three areas instead of the five?

This is the natural way to organize the institute. We had, for example, a program addressing oncology and other programs studying aspects of oncology [i.e. structural and computational biology, cell and developmental biology]. Now we differentiate between the things that we want to address [cancer, ageing and metabolism, disease mechanisms] and the tools that we are going to use. We still have a multidisciplinary approach to biomedical problems based on cell, computational, chemical and structural biology.

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The way that drug companies and researchers look for solutions is changing. Can you explain how IRB fits into this new world of drug development and how it is preparing Spain for the future health scenario?

I think we are on the right track. More and more companies are becoming oriented towards open innovation and are becoming more interested in basic research, and not only in compounds that have passed the first two phases of clinical trials. One of our researchers is working on ageing and he just set up a company through US investments. Although the company does not yet have a product, investors are interested in the concept. However, in order to play this game, it is necessary to do science that meets the highest pharmaceutical standards.

Can you give us some other examples of how IRB's basic research is being translated into concrete patient solutions?

There are several good examples. A group was studying how cells become metastatic, and the results led them to set up a company, named Inbiomotion, aimed at identifying biomarkers to predict this process. In the same field of advanced cancer, another group investigating colorectal tumours has successfully used immunotherapy to tackle colon cancer metastasis in mice, which may find clinical applications in the short term.

Another example is Nostrum Biodiscovery, which uses computational biology to predict the success of a drug before the experimental phase, thus reducing the investment risk and accelerating the drug pipeline.

Another spin-off is called Iproteos, a company specialized in the discovery of drugs for diseases of the nervous system. They have demonstrated the effectiveness of a novel compound to reverse the cognitive deficit associated with schizophrenia in mouse models. At present, this peptide is in the preclinical phase.

How has your relationship with private industry evolved over time?

We have very strong business relationships – the chair of our Business Advisory Board is also the president of the Foundation for the National Institutes of Health (FNIH), and the Board also includes business angels, CEOs and other industry insiders. On top of that, we have a team devoted exclusively to sourcing private partners and establishing dialogue with them.

The Barcelona Institute of Science and Technology (BIST) brings together seven of the best research institutes in Catalonia, including IRB Barcelona, and provides us with an additional channel to maintain dialogue with the private sector, allowing us to reach a critical mass by joining forces.

What is the state of translational research in Spain?

It depends on the field. In technology it is very easy and straightforward, all the universities have very good transfer offices and a strong entrepreneurial culture. In biology there is still a gap between research and the final product, which can be bridged only with money. Even though the investment levels are not comparable to what a project could receive in Boston, for example, the situation here is changing. There is an increasing awareness of this, and scientists are taking up the challenge. There was a time when researchers used to focus on getting their work published, now there is a stronger purpose of doing something that can have a direct impact on society.

What are the advantages of being in the bioregion of Catalonia and having access to the region's network of universities and research institutes?

The biomedical cluster is very strong in Catalonia for historical reasons. It started with research in hospitals, and the establishment of the Catalan Institute for Research and Advanced Studies (ICREA) in the early 90s and other specific research centers, like the Center for Genomic Regulation (CRG) and IRB Barcelona itself. This environment, together with the presence of pharmaceutical companies, has allowed a strong interactive network.

ICREA has the important mission of attracting talent to the Catalan system, as each year it recruits outstanding scientists and allocates them to the research institute of their choice. This has managed to attract talents from outside the region.

How easy is it for you to attract good quality talent? Is it more difficult now than before?

We could compare Catalonia with some regions in Germany or in the Netherlands. I would not say the UK, because the system there is highly concentrated and it is very hard to match that. Brexit, however, could be a challenge for British research and may ultimately benefit us, especially in terms of recruitment.

What are the aims of this project and what you are hoping to achieve in the lab?

We are working on *signalling*, how cells sense and transmit information. In particular, we are studying stress responses: why cells respond in a certain manner when they are in danger.

How is this useful? you might ask. In reality, this research can be applied to almost any disease. For instance, we have uncovered a new mechanism that regulates the cell cycle in response to stress, which could be important in breast cancer, for example. Also, by understanding the signalling mechanisms, we have been able to make cells produce insulin even when they would not normally do so, a vital step towards the treatment of diabetes.

Every Saturday we offer high school kids the possibility to come here and study biomedicine

Your predecessor was very keen on the idea of popularizing science in Spain. Can you give any insight into some of your initiatives?

We will keep doing this for sure, as it is one of IRB Barcelona's greatest assets. For example, the Crazy About Biomedicine program, which we launched in 2013 with the funding of the Catalunya La

Pedrera Foundation, has been a total success and has even served as a model for other institutes in Catalonia. Every Saturday we offer high school kids the possibility to come here and study biomedicine, and now other centres are offering mathematics, chemistry, and economics. More recently, we have even started to give courses to primary school kids.

Educating and engaging these kids can inspire them for their future academic path. Also, it is a way for us to give something back to society.

All these efforts devoted to educating and also disseminating our results have a very positive return for IRB. We have just received a donation of EUR 1.5 million – an incredible amount in Spain – and these private donors preferred to remain anonymous. They wanted to support our research because they knew about us and appreciated our work. This shows that it is important to bring not only innovation but also education and the communication of our discoveries to society.

Your career trajectory is impressive. What is a pet project that is very close to your heart?

I am a scientist. I might have a managerial role but science is my project. If you work for something you really believe in, you get things done. The role of vice-rector for Science Policy and Commissioner for Scientific Strategy at the Pompeu Fabra University (UPF) allowed me to push the boundaries and introduce innovative policies, such as research evaluations, which are a common practice in research centres but not in academia.

What are the main challenges IRB is facing?

In 2018 we have received three European Research Council (ERC) Proof of Concept grants and the results are promising. Although 12 out of the 26 groups have received a total of 19 ERC grants, we are still heavily dependent on funding from the Spanish government, which is still below the pre-crisis levels. For example, I was a manager of the Plan Nacional [de Investigaci3n Cient3fica], to which projects are submitted for government funding; I had twice as much money for funding projects in 2007 as in 2017.

Another issue is the current application of “regular” legislation in the scientific field. The current legislation makes little sense and needs reforming. For example, yearly expenditures larger than EUR 15,000 need to be approved through a complex process. This money might seem like a lot, but it is nothing in research and could easily be spent in just one month by sending samples for high-throughput sequencing.

What would be your message for our international readers about Spain and about IRB?

I would like the world to know that there is a lot of outstanding science being done in Spain, which will bring about new products: investing here is good business.

IRB Barcelona is well positioned to contribute to this. Our exceptional faculty is producing some excellent science that will undoubtedly improve people’s quality of life.

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