IRB Barcelona – Joan Guinovart, Director – Spain

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Joan Guinovart, director of the Institute for Research in Biomedicine in Barcelona (IRB Barcelona), discusses the Institute's unique interdisciplinary characteristics and emphasises the need for Spain to foster technology transfer as a means to further innovation.

As a means of introduction, could you briefly outline your background and IRB?

I am a pharmacist by training. I obtained my PhD from the University of Barcelona (UB) and continued with postdoctoral work in the Department of Pharmacology the University of Virginia. I am professor of biochemistry and molecular biology at the UB. I am the founding director of the Institute for Research in Biomedicine, which was created in 2005 by the *Generalitat de Catalunya* (Catalan Government) and the University of Barcelona. IRB Barcelona is located in the Barcelona Science Park, which is part of the main Science and Technology Campus of the UB. IRB occupies a prominent position in a rich landscape of research centres of excellence, universities, hospitals, scientific infrastructures and pharmaceutical companies, all with a focus on the life sciences. In 2011, IRB received accreditation as a "Severo Ochoa Centre of Excellence" in the first call launched by the Ministry of Science to highlight centres of distinction.

IRB is a member of a network of research centres that belong to the Catalan Government: the CERCA centers. CERCA is a body that brings together a new type of research center that does not fit the traditional rigid structures common to Spain over decades. These new centers have been

made possible thanks to the vision of Dr. Andreu Mas-Colell, who was the first Minister of Research and Universities of the Catalan Government in the late 1990s. These centers are characterized by highly flexible and dynamic structures and they are subjected to evaluation. This model thus contributes to generating internationally competitive science. Thanks to such a structure, IRB is able to apply a flexible international recruitment strategy that is not typically used by universities. As an independent institute, our administrative system permits us to hire people on regular contracts.

Dr. Andreu Mas-Colell also created the Catalan Institution for Research and Advanced Studies (ICREA), an agency for recruiting and hiring first-class scientists to work in Catalonia. Most of those hired by ICREA go to these newly created research centers; for example at IRB 13 of the 23 group leaders hold ICREA positions while others join universities, hospitals, and the Spanish National Research Council (CSIC).

These tools, ICREA and CERCA, have given rise to a flexible system through which to attract and recruit talent while generating research centres that allow international scientists to integrate comfortably. Furthermore, despite new governments coming and going, the research centres and ICREA have continued to develop under different administrations. The Catalan system/Catalonia has maintained the same policy of attracting and recruiting the best international talent through open calls for over 15 years, avoiding endogamy, and the impact has rapidly become evident.

What is the competitive strength of the Catalan research community in the European context?

The way Catalonia has performed in European Research Council (ERC) calls for grants has proved beyond question that if you take the right decisions with the right people in the right atmosphere, you get immediate results. As a region, Catalonia is ranked third, behind only the Netherlands and Sweden, in the number of ERC grants per million inhabitants. A good indicator of the usefulness of the ICREA recruitment system is that many of the ERC grants went to researchers holding ICREA positions.

Is this statistic for Catalonia due to something special about the environment, or does the rest of the country lack something in terms of competitive capacity?

It is about having the appropriate organization and tools to attract international talent in a non-bureaucratic environment and offering outstanding conditions. The director is a prominent figure in these centers, holding decision-making capacity and being answerable to the board of trustees. Furthermore, these centers have an external scientific committee formed by outstanding scientists

from prominent universities and research centers, and so there is a constant system of evaluation of the function and results.

The institute has strength in many areas like cell and developmental biology, molecular medicine, chemistry and oncology. How are you able to engage in all of these areas?

IRB brought together outstanding individuals from various fields to work towards a unified goal of conducting multidisciplinary projects that address important biomedical problems affecting our society. IRB indeed has a unique combination of structural and computational biology, chemistry, and biology; this profile is uncommon and it opens a strategic window to gain insight into basic molecular processes in health and disease and provides unprecedented potential for the translation of basic biomedical research into innovation. It is not easy to mix these cultures as each one usually has its own department and faculty.

The founding fathers of IRB deliberately put together people from different backgrounds in order to foster opportunities to talk and collaborate. This form of communication is strongly encouraged at IRB. Our chemistry is essentially chemical biology, meaning chemistry that ultimately has an application or provides a way to understand a biological problem that you might use for a biological target against a disease. Structural and computational biology offer very different tools. We have agreements for the use of facilities such as the *Marenostrum* Supercomputer, managed by the Barcelona Supercomputer Center, and the Alba Synchrotron located 20 km away from IRB, thus favouring the attraction of top scientists for this line of work. Our biology is separated into basic biology and the study of the bases of disease, with an emphasis on oncology. Our Oncology Program is focused primarily on the study of metastasis, this being one of the major health problems as 90 percent of cancer patients die as a result of the spread of this disease to vital organs. This focus has been shown to be a sound strategic decision and our researchers are producing very good papers and valuable knowledge on metastasis. IRB is now widely recognised as a key research centre in this field.

In addition, we have a long-standing tradition of researchers using the fly d*rosophila melanogaster* for genetic studies and as a model system for understanding what happens in normal tissues and in pathological conditions in humans. IRB is a pioneer in the use of flies to study human conditions like cancer and genetic diseases. We can then apply our knowledge from flies to mammals.

IRB has a produced number of spinoffs over the last decade; what has been IRB’s entrepreneurial capacity to generate commercial entities from the research produced here?

Early after the foundation of IRB, we set up a technology transfer office to optimize the translation of our discoveries and knowledge into benefits for society. Therefore, since its very beginning, IRB has been committed to developing an entrepreneurial culture, encouraging and supporting its research community in this endeavor. While researchers have the freedom to choose the lines of research that they pursue, our technology transfer office works with them to ensure the identification of commercial opportunities for their discoveries. This office is also actively engaged in entrepreneurial training initiatives to provide researchers with key business skills.

This entrepreneurial spirit is reflected in the establishment already of three spin-off biotech enterprises from our labs. This achievement is also attributed to the kind of research conducted at IRB, which is at the cutting-edge rather than merely incremental science.

IRB is focused on international partnerships. To what extent are you involved with pharmaceutical companies, and what makes you the partner of choice?

The IRB technology transfer office seeks to establish agreements and partnering with pharmaceutical companies, and we frequently organize networking events to bring together our researchers with representatives from the pharmaceutical industry. We have fluent communication with pharmaceutical companies as we talk the same language.

IRB is unique in that it has not only a scientific advisory board but also a business advisory board, the latter comprising outstanding professionals in their respective fields from several countries who counsel us on commercial opportunities for our science. Our business advisory board allows us to build a bridge between two poles, namely research and business, with the objective to transfer our research to society and in this way contribute to enhancing lives.

What are your expectations for the near future, as Spain finally begins to recover from its recession?

I am afraid that I have to criticize the research policies of some European governments. They have abandoned science and have shown no interest in investing in such a strategic field for many countries, including Spain. It gives the impression that politicians do not appreciate the benefits of having a modern, strong and well-organized science system. They perceive research as a consumable, not as an investment. In contrast, Catalonia has demonstrated that only small changes —as commented before— that do not require a huge financial investment can nurture the scientific environment. The benefits of this policy have become evident in less than a decade, and we already have a strong and competitive system. In this regard, there are centers that have weathered the crisis. An example is IRB, and in general the centers included in the Catalan science

system.

Another strategic issue to ensure a viable future refers to technology transfer and capital risk. In this regard, we also need a revolution in the mentality of the business sector that will bring about an appreciation of the value of investment in science. Barcelona has two of the top five business schools in Europe (IESE and ESADE), with whom IRB has established close ties, thus allowing some postgraduate students to work with our technology transfer office on their dissertations. Bringing together young people who excel in business and first-class scientists will breed a novel business culture that will favor economic growth.

The business sector should be made aware of the strategic value of science to generate wealth and return on investments. It would be nice if investors were to pick up on this idea and appreciate Barcelona's status as a knowledge hub.

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