

Interview with Fernando Pitossi, Treasurer, Instituto Leloir

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The appointment of Lino Barañao and the establishment of the Ministry of Science and Technology suggest that the government has realised what a large role innovation can play in the Argentine economy. As an institute that has been working in this field for many years now, how do you feel about these political developments?

Dr Parodi: We hope that the creation of the ministry will bring additional funds for research. In the last few years, the government has allocated these additional funds. Today, the financial crisis has affected this, but evidently in last six to seven years there has been a positive change in the government. In Argentina, as in most countries, basic research is mainly supported by the government. In the United States, for example, the NIH funds research. In Argentina there have been substantial increases in funding for heavy equipment, and more candidates have been admitted to CONICET, which shows that there is a commitment on the part of the government. They are also supporting the application of basic research to business, and there have been some grants in that direction from the Ministry of Science and Technology.

The Leloir Institute has existed for more than sixty years, and has always been an institution dedicated to basic research and helping PhD candidates complete their thesis work: currently there are between seventy and eighty PhD candidates at the institute. During the last four to five years, the institute has realised that more had to be done to increase the technological application of our findings, because that would be beneficial for the both country and the institution. As a result, the Leloir Institute started a non-profit company called Inis, dedicated to finding technological applications for the discoveries made at the institute.

Dr Pitossi: The funds available for basic research have increased. This has been a very clear signal that science is going to play a better and more coherent role in the industrial and productive sector in Argentina. Even in 2002, when there was no money around, state-funded scientists received a salary increase, which showed an intention at least that science has to occupy a more prominent role than it had done previously in the country.

The gesture of creating a Ministry of Science and Technology will pay off in the end. The government needed some time to build the Ministry, as there was no previous structure in place, and all the investment that has been done over the last year and a half will have consequences in the coming years. It's not easy to see the results immediately, but there has been a cultural change in the industry as a direct result of the creation of the Ministry. The pharmaceutical industry in Argentina has a long history of short-term thinking, because traditionally it was very easy to make a profit without having to consider long-term projects. Since companies were allowed to copy drugs and molecules, it was very easy to make a profit. It has been quite a job to change that short-term mentality to a view where companies see that profits will come, but in the longer term. The Ministry has been partly responsible for this, but it is also due to the changing nature of both the national and international situation for the pharma industry. Argentinean pharmaceutical companies have realised

that intellectual property regulation has arrived, and that they need to adjust their strategies towards this change. It has been a lot of effort to convince people from the pharmaceutical industry to change their traditional mindset and invest in research, which was rarely needed in their previous business models.

The other door that has been opened by the creation of the Ministry is that some multinational companies that had never before invested in research in Argentina are now trying to invest in the country. The multinationals that are present in the country, who have only previously been involved in clinical trials here are seeing that organisations like the Leloir Institute have the resources and abilities to compete internationally. As a result, they are starting to establish relations with us, and allowing us to do the basic research that they don't have the resources, time or expertise to do in-house.

As an institute that attracts a lot of academic and financial interest worldwide, where are your priorities? How do you define research topics and assign resources accordingly?

Dr Pitossi: There is no list of priorities at the Leloir Institute. The only priority is that the quality of the research done here has to be excellent, and to ensure that the institute is regulated by an external committee composed of renowned scientists, that evaluates every project, and this evaluation has direct implications for the research done here – research groups can be shut down after several negative evaluations.

Dr Parodi: The fields of research at the Leloir Institute are very diverse: from plant biology to biophysics, and from microbiology to glycobiology. We look for excellent research, not for specific subjects. However, over the course of the last year, we have decided to reinforce plant biology, which was a strategic decision of the institute, rather than a specific direction.

Dr Pitossi: The last two international calls to recruit new research groups at the institute did not ask for any specific subjects to be presented. The institute gives no priorities because it is the group leader who gets the funding for his or her research project. The institute then provides the group with the general facilities, the building, and the structure, and everything needed to do research. Every researcher has freedom to choose in which direction to go, as long as their research has the level of quality that the institute looks for.

The Leloir Institute has a responsibility to attract innovation into the country, and to sustain Argentina's level of quality development. Your programme of repatriation for Argentinean scientists working abroad is a critical step towards bringing innovation back into Argentina. What do you believe brings these people back to the country, and what encourages them to stay?

Dr Pitossi: Ten years ago, the default pathway for a scientist was to go abroad: at least twice as many Argentinean scientists are studying and working abroad than the number left in the country. Once a scientist has taken the step to begin work abroad, the next default pathway is to stay, rather than come back. Rather than asking these scientists why they would come back, we should be asking why they choose to leave in the first place. It should be natural for a researcher to want to stay in their own country. The problem was that working conditions were much better abroad, and in terms of education, it was much easier to stay abroad than to return.

The Leloir Institute announced a call for repatriation, and people answered positively to these initiatives: there were more than twenty applications for two or three positions in each of these calls. The first two calls were for senior group leaders and the last one was for junior group leaders. Our offer is very tempting: the institute can provide the scientist with a platform that is competitive at international levels, and with help starting back in the country for the first two years. This package

allows a researcher to come back, and have a little room to breathe, and time to readjust to the country.

Argentinean researchers who are at MIT don't expect the same facilities when they come back to Argentina. The equipment at the institute is competitive at international levels; we are simply lacking the same quantity of resources that MIT can offer. It's easier to work abroad, but if you give people the hope that they can do high quality research at home, even if it implies a greater effort, they will come back.

What about the next generation of Argentinean scientists?

Dr Pitossi: The next generation has a different situation. It's much easier to stay in the country now, because CONICET has opened the door to people who want a career in science: the number of scholarships given is much higher than before. Also, the level qualifications and personal production needed to begin a career in research is not as high as it used to be. People can begin their career after a PhD or a small post-doc project, which was impossible before. People have also discovered that institutes like Leloir have the same infrastructure level as the best research facilities in the world.

The main problem today is that there are not that many institutes in the country where a researcher can collaborate and compete at the international level. Issues that used to be a barrier to staying in Argentina, such as remuneration, are not as large a hurdle as they used to be. The salary for a scientist in Argentina is still relatively low. Only exceptionally are there other sources of income available to researchers, like private foundations that can supplement their salary, or conducting research for pharmaceutical companies.

Inis was established in 2006 to aid with the transition from scientific breakthrough to industry. What was the vision behind its establishment at that moment in particular? Can you talk a little about the practicalities of how the company works?

Dr Pitossi: Inis is essentially the technological branch of the Leloir Institute. There were many reasons to start Inis. One was to organise ourselves in terms of technology transfer, and provide institutional help for scientists that think that their discovery has some transfer potentiality. CONICET was there for researchers, but inside the Institute there were only friends and colleagues to give advice.

We feel that if we can comply with the basic requirements of doing basic research, sooner or later this research will have some impact in an industry or in the clinic. We created Inis to detect those opportunities, and to aid their transfer. Even if this is a basic research institute, since we are funded by the state, it is our obligation to contribute to society in whatever ways we can. There is no doubt that we can contribute with basic research, and with human resources, but we can also contribute in trying to apply what we know and what we generate in the labs to society.

The institute decided that it needed to have an institutional alternative for any type of discovery here that can have an impact in society, through industry and through clinics. Recently, we were in a position where industry was coming to us. Because of this, the institute needed then a representative body that could speak the languages of both basic research and business.

Inis has effected a cultural change within the institute. Five years ago, to talk about combining basic research with business was not well looked upon, but today it's seen as a necessary part of doing research.

The institute is proud of its initiatives, which have made a huge change in the culture here. One is Inis; another is the international call for people to come back, and the third is the external evaluation that takes place here, which puts international pressure on the institute to achieve results. Naturally, these last two have had some measurable impact. We have doubled the amount of PhD theses, and doubled the amount of publications in four years. We have increased the impact factor by 1.5 on average of all the publications of the institute. It took time, but the impact now is measurable, and we hope that Leloir will present this kind of data over the next few years.

The Argentinean government together with ProsperAR have recently announced large investment opportunities for biotech. Argentina has long been at the forefront of applying biotechnology to agribusiness: how do you think these opportunities will relate to the human healthcare industry?

Dr Pitossi: Biomedicine is lagging behind the agricultural industry, but there are some signals that they will catch pace very soon. Multinationals are starting to invest in basic research in Argentina. Pfizer has invested in the Leloir Institute in the field of Parkinson's research. There was an internal contest for projects that could be of benefit to both the institute and to Pfizer, and after eight months of dialogue with Pfizer headquarters, the Parkinson's project was selected.

The partnership has broken preconceptions. Pfizer is a huge multinational pharmaceutical company, and the Leloir Institute is based in Argentina, a developing country. Although the institute is renowned, the scale of our two operations is completely different. The alliance has helped to change the vision of how possible it is to interact with a multinational company without being hurt in any sense.

The institute profited from a lot, not only from the economic support, but also the access to Pfizer's international research tools: every time the research group had a question or needed research tools, Pfizer would ask the whole company. Access to these kinds of resources is often more valuable than money.

As a result of this alliance becoming public knowledge, the national pharmaceutical companies are also looking at research, and also talking with multinationals, discussing possible synergies and partnerships. The national companies tend to do most of their research in-house, and when they want new skills and resources they would rather buy a company than collaborate. This is beginning to change, because when research reaches a certain scale, companies need to collaborate. This is true even for companies like Pfizer. Research and development at Pfizer is changing, and the company is starting to involve itself in more collaborations. My dream is that one day both national and multinational pharma companies will come to the Leloir Institute in order to discuss trilateral research strategies.

What do you think needs to happen for this to become a reality?

Dr Pitossi: The first thing that needed to happen is that these companies need to sit down and talk. Sometimes it only needs a bit of imagination to create a win-win situation. First one needs to see other pharma companies not as enemies or competitors but as a company that might be a competitor in one project, but a partner in another.

How do you think this translates to Argentina developing into an innovative hub?

Dr Pitossi: Argentina is very well known for producing three Nobel Prize winners, and is highly regarded for the quality of its basic research. I hope that we can keep this reputation and also grow in the field of basic research, and see if we can position research in a different place in the production chain: to add value to products or create treatments for people to benefit from.

I am the head of a group of basic researchers who are focusing on stem cell research and degenerative diseases such as Parkinson's, and I hope that sooner or later our work will impact on something more than publications. My hope is that since the human resources are there, when they are combined with infrastructure and dialogue, then all the ingredients will be present to make an impact on the economy of the country.

In the next few years, what developments do you think will drive the Leloir Institute's agenda? What are the exciting projects ahead?

Dr Pitossi: An area that has grown rapidly during the last few years is neuroscience. The institute has a group working on Alzheimer's disease, two groups working on stem cells, one group working on circadian rhythms, and one group researching neural cells. Although the institute has no set priorities, some areas are being consolidated. These are neuroscience, cancer research, protein biochemistry, protein structure biology, microbiology, and carbohydrates, which was the area that gave Leloir the Nobel Prize. The other area, as Dr Parodi mentioned, is plant biology. What is happening in the institute is that groups are interacting more with themselves, which can act as a form of self-improvement. Since most of the researchers here went abroad for their education, it has always been easier to collaborate with people abroad than people in the country. I cannot tell you which of the areas will prove to be the most successful line of research, but there are high hopes all round.

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