

Interview: Ignacio Torres Alemán, Director, Cajal Institute, Spain

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“While the last five years of economic struggle and brain drain have been some of the most calamitous times for the country, I maintain a strong sense of optimism. Spain will succeed in its quest for scientific competitiveness,” says Ignacio Torres Alemán, Director, Cajal Institute, Spain.

How would you describe the state of biological research in Spain today?

It is a national disaster. Spain is losing the youngest and brightest people, who are all going abroad. As a director, this greatly concerns me because I am losing the best individuals due to lack of opportunity and limited funding. Spain is not able to compete against other players around the world. The last five years have been the most difficult I have ever seen in this country. Spain has often experienced such cycles in funding for science, but recent times are incomparable to anything in the past.

What will it take to bring people back?

It is difficult to say because we do not know when this pattern will change or when the government will be in a position to bring science funding back to pre-crisis levels. Until then, I doubt that Spaniards will return. Even if funding returned to pre-crisis levels, I doubt that most would trust in Spain's future until we see significant change. If the government suddenly started pouring money into science, we would need to wait at least a few years before starting to see results.

Do you think Spain has good capacity in terms of translational research?

Spain is not in a good position compared to other Western countries. We are in a struggle. The country has been involved with engaging in translation research for many years and has received help from many institutions, but it is still behind compared to surrounding, more competitive countries.

How do you perceive the culture of entrepreneurship versus innovation in Spain?

For a number of years, Spain has experienced radical changes in this regard. The authorities have greatly supported new enterprises arising from academia. But in actual terms of support I can tell you that it is not working that well because there is a lack of culture that champions this mantra. I think we should continue sending people abroad, because Spanish professionals receive little to no experience working here. As in the recent past, Spanish scientists had to move elsewhere to obtain proper training. The same approach should be used to train this new caste of professionals.

If you want to create a patent, ultimately you have to go to a private patent office rather than the small areas of support we have in academia, because the Spanish lack the resources and knowledge for this type of support. Essentially, this problem is a consequence of the Spanish mentality; actions speak louder than words.

What are some of the notable successes of the Cajal Institute?

I am very proud of this institute because every researcher here has garnered success with very limited resources. This is one of the few institutes in Spain where all researchers receive some funding support, which is difficult to achieve given the vast competition that exists throughout the country. Part of this success can also be attributed to our acquisition of some European funding. Furthermore, the rate of publication in Cajal is very high compared to our human resources. We have downsized from 300 to 200 individuals over the last five years, and many who visit Cajal are impressed by our output despite having such a small building.

What are some, if any, specific breakthroughs in terms of molecule development?

Researchers at Cajal mostly work at the basic level, but there is an interest in translating. Personally, I have been working on trials for markers centered on clinical assays with my own findings, particularly in areas like Alzheimer's and other neurological diseases. But all of this is still in a very early stage. Cajal has some research tools in the market but not many for pharmaceuticals.

In terms of partnerships, Cajal works with other international research institutes as well as private companies. Could you elaborate on this?

Science is a global business, and Cajal collaborates with institutes and companies in many industrialized countries. In that sense, we behave as any regular institute. In terms of specific successes surrounding these collaborations, we have individuals working in the "Human Frontiers" program as well as people coordinating pan-European projects. Historically, the Cajal Institute has significantly advanced neuroscience. In terms of industry, Cajal collaborates with many pharmaceutical companies, but these collaborations are usually unsatisfying for us. The Institute is simply hired as a contractor for activities that are not particularly interesting but do provide cash flow. In that sense, the intellectual exchange with pharmaceutical companies is not that challenging.

As big pharma continues to outsource its R&D pipeline more and more, does that help Cajal obtain funding?

This is not evident at Cajal, as the outsourcing of pharmaceutical companies usually takes place in more advanced countries like the UK. For specific areas like clinical research, there are big centers in Spain that obtain some support at the clinical stage.

In addition to our collaborations with international companies for small side projects, the Cajal Institute also engages with other Spanish companies at a much higher level. This is a very different situation, as our relationship with local companies has always been much more satisfying and allows us to achieve more. Spanish companies trust in Spanish people, and Cajal has enjoyed a strong history with companies like Faes Farma, Almirall and Ferrer.

How does neuroscience in Spain compare to the rest of the European community?

In terms of sheer size, Spain is small, but in terms of competitive edge, Spain is very good in neuroscience for historical reasons. Since the foundation of Cajal, neuroscience has always had a strong devotion in Spain. In fact, the number of Spanish neuroscience research centers is disproportionate compared to centers focused in other areas of human health. In terms of numbers,

neuroscience is the therapeutic area with the second largest workforce in biomedicine in Spain.

What is this institute's competitive advantage in the world of neuroscience?

Our competitive advantage is our brand name. The Cajal Institute is recognized worldwide, and this makes a tremendous difference. Most of the neuroscience community in Spain has been trained at Cajal.

What defines your loyalty to this institution?

The Institute has a very nice mixture of people working in all areas of neuroscience despite its size. There are less than 30 people working in independent groups, but each of us is tackling very different areas of neuroscience. We can collaborate and help each other out at any time, and this really enriches the Institute. The majority of smaller institutes are focused in a single area, but Cajal is exactly the opposite. At the moment, we are trying to incorporate bio-engineers as a means of broadening our approach.

My background is in neurobiology. I studied at the Universidad de Complutense de Madrid, and then spent five years in the US as a postdoctoral in two different centers between Tulane and Yale. Afterwards, I returned to Spain and became an assistant professor at the Cajal Institute; in 2009, I became Director of the Institute.

My interest in Cajal is its devotion to neuroscience research, in which I have always been involved since I did my PhD thesis at the Hospital Clinico de Madrid. Cajal was the natural choice for a Spaniard in Madrid, and it is certainly the most wellknown neurobiology institute in the country. My research interests focus on neurotrophic factors in brain health and disease, which also encompasses diseases like Alzheimer's. Rather than focus on any specific disease, I spend more time studying the biology and pathology of these factors.

If we returned to Spain in five years, where do you expect to see the Institute in that time?

While the last five years of economic struggle and brain drain have been some of the most calamitous times for the country, I maintain a strong sense of optimism. In five years' time, I hope that Cajal will have moved to a new site in a new building, and that we will have incorporated new people in other areas. In five years, I also hope that we will have greatly improved our capacity for translation research. We are trying to reinforce our position in this not only through clinical medicine but also through industry. While we have no real convincing reasons to be optimistic about the future, we must absolutely be optimistic; without optimism, our way of thinking would be impractical. Spain will succeed in its quest for scientific competitiveness; it is simply a matter of needing the time to recover first.

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