

# Bioceres – Federico Trucco, CEO – Argentina

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*Bioceres manages investments in agricultural biotechnology and related sciences. The company's CEO, Federico Trucco, discusses the potential of Argentina's biotech scene to become a world-class drug developer in biopharma as well as Bioceres' own investments in the sector.*

## **How did you become involved with Bioceres?**

I have known the company since its start in 2001. My background is in science; I am a biochemist by training and a molecular biologist applied to agriculture in terms of studies. I was recruited in 2005 by a subsidiary of Bioceres called Indear to work on certain projects as a project leader, developing new crops for drought-prone regions of Argentina. I was in that position for a few years. I ran the product development department within Indear until I was offered a general management position at Indear and then the CEO position at the group level in 2011.

## **What is the state of biotechnology in Argentina today?**

In terms of life sciences overall, Argentina has a very strong tradition in biological sciences. We are the only country in Latin America with three Nobel laureates in the field; this has generated a local school for people that were trained in biological sciences. Many of the current players in the pharma sector have recruited from that pool of talent, who lead in biopharmaceuticals because of their renowned expertise, and I believe that Argentina is very strong for biology in terms of know-how. A whole school of professionals started a number of companies in the 1980s. Some of these companies have matured and many have excelled at perusing state-of-the-art pharmaceuticals to generate competitive production platforms, but very seldom have they been involved with innovative R&D. Essentially, the core strength is not in developing new drugs, but producing existing technology at a lower cost with high quality. Although that has traditionally been the case, as companies have grown I believe there is now an ongoing shift from being good producers to developing innovative drugs in niche markets where Argentina excels such as antibodies, or where the big players are not interested. The more advanced science is related to the earlier school and

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that is where new ideas can be generated.

**Is this new focus a consequence of greater investment by the government in these areas, as seen with the Ministry of Science and Technology?**

It has certainly filled a role in terms of pre-competitive research. Local companies tend to invest in scaling up and taking to market, but not in pre-competitive research, which is viewed as high risk. The Ministry of Science and Technology has filled that gap in terms of providing significant funding for pre-competitive research. Instead of traditionally directing funding to government-based scientific organizations in like universities and CONICET, the Ministry has promoted that funding through public-private ventures. This has caught the attention of the private sector, allowing companies to engage in activities that they otherwise would not have been able to simply due to a lack of resources.

**How does Argentina compare in terms of competitiveness in relation to other countries strong in biotechnology?**

I believe that we are cost-competitive. If you have a discovery company, you can probably run an operation in Argentina for a fifth of the cost compared to the UK or US. With highly qualified scientists, you will still not get the tier-1 level in premier institutions, but I doubt you need that. In many cases, discovery is about a method and being able to deploy it effectively. That can be done to a certain extent here. The venture capital industry in the US and UK is very mature, aware of the risks, and is more actively engaged in the discovery phase. Here it is a learning curve; we are just getting comfortable now. Discovery efforts have high burn rates, and if you can do the same for a fifth of the cost, you have a competitive advantage. If a fifth is still too high for local entrepreneurs or businessmen, then that is a problem.

**How do you assess the collaboration between the different public and private actors in Argentina to grow the biotech business in Argentina?**

It is improving. The business is not as mature as in other countries, and much of that has to do with building trust. We need collaboration, a few successful stories to build that trust, and ultimately be less emotional and more rational. The Argentine community in general is driven far too much by emotion and less by rationale. If we adhere to a method and establish certain frameworks, we should be able to collaborate more effectively. Bioceres is not a success story, but over the ten years that we have existed we have delivered in our part of the commitment and we are happy with what the other side has done. Ten years ago it was more difficult to collaborate. There are some success examples within CONICET, but none big enough to trigger a cascade effect; someday we will.

**What is Bioceres's general strategy in terms of deciding where to develop new research projects?**

We look for technology that will improve productivity of agricultural ecosystems. We view agriculture as a way of managing photosynthesis, and it is our source of organic molecules. We need to engineer living organisms to redirect that photosynthetic carbon flow into the molecules we want. Bioceres look for solutions that will either allow us to deal with drought and salinity in agricultural environments to converting simple sugar into a biopolymer. The company has an industrial biotech effort and a seed biotech effort. We do not do pre-competitive research like universities and government organizations do. But Bioceres does open its doors for scientists to demonstrate their projects; we have created a platform company that has many technologies that Argentine scientists do not have within their laboratories. For example, Indear has the only high throughput sequencing facility in Argentina through genomic research. We also have a highly trained bioinformatics and synthetic biologic group. We have a plant transformation facility that can get your gene to whatever crop you want to grow. The company communicates to scientists that their ideas can be developed

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through a joint project and funded through a government agency. If all of that goes through a POC stage, then there is an option to scale that up and internationalize that technology. We do not get exposed to the risk of pre-competitive research unless we have matching government dollars. That in essence allows us to be viewed as a mechanism to obtain funding for many groups within the public system. It allows us to do much more than we would otherwise do with our own profits. This method has been proven; through POC trials and tests we can immediately scale that up and generate new ventures and businesses.

**Bioceres has invested \$50 million between 2012 and 2016 for the development of new projects. What are you expecting to gain out of this investment?**

Most of that investment has gone towards a particular technology called HB4, a drought-tolerance technology for which we have proprietary rights in many regions and for which we are deploying for the four major crops: soybean, wheat, maize and alfalfa. That funding has gone towards taking prototypes into marketable products through toxicity and clinical work that a pharma company would need to do for seeking approvals for FDA and USDA and the likes in different markets. Doing that basically puts us in a very selective club because very few players have transgenic seeds approved for sale anywhere in the world. Most of those players are companies worth \$20 billion or more. While this is a nice group to be a part of, we still have a long way to go.

**Is there any crossover between agrarian-based technology and biopharmaceuticals?**

Our major asset today is our set of capabilities that we use to get good science to come to us for joint projects for which we seek government funding. One of those core capabilities is our high throughput sequencing platform. This technology has huge potential for personalized medicine. The platform is the same whether you use it for agriculture or genotyping a human being. I believe that having that capability in place will allow us to participate in the diagnosis business indirectly, through someone already well established there â?? but by having the back end technology already subsidized and constantly updated. There is much to be done in this realm, and none of the players in Argentina have a huge effort into putting a world-class platform in play.

The solutions that are being provided by companies that have developed the technologies, such as panels for cancer screens, can be operated by Bioceres, allowing the company to essentially be a service provider. There are specific aspects unique to the Argentine population. Given that individuals are unique, using broad spectrum approaches to treating that uniqueness, it is not utilizing the full power we get from personalized medicine. Argentina should have a country initiative in which it characterizes its uniqueness and design therapies or diagnosis tools particular to the Argentine ethnicity. Other countries are focused on genotyping their populations; the ideas are ultimately not that clear, but having the technology in play is important and, Argentina should follow to better understand the genetics of its population. That can allow you to design better public policy in terms of healthcare and prevention.

**What is Bioceresâ?? role in terms of being an important and strategic component of biotechnology in Argentina?**

We have done part of the investment because we think those platforms can be of use to biotech for the discovery work. But those are the same platforms that can be used in this world for personalized medicine. I do not feel that we would go into the pharmaceutical or personalized medicine world, but we can be a service provider to it by avoiding redundancies in capital investment locally. Bioceres does have a common public agenda with pharmaceutical companies in trying to promote initiatives here governments can accelerate or slow down certain processes. We would certainly advocate for a local human genome effort and similar projects, and we would join companies that want to help in

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moving the public agenda forward.

**Where do you see Bioceres and Indear in the next five years? What would you like to achieve by then?**

I would like us to be participating fully in the "bio-economy". Bioceres should be a significant player in improving productivity of agro ecosystems. We are moving from a business as usual agriculture to a biomass agriculture. That opens up a huge world of opportunities with a different development model behind, which is not an economy of scale but of repetition. We can drive that process forward as the leading technology provider in the region.

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