Interview: Ignacio Pino – President, CDI Laboratories Inc. – Puerto Rico



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Ignacio Pino, president of CDI Laboratories Inc., discusses how his novel technology platform Hu-Prot will help pharmaceutical companies and academia develop drugs more efficiently through development of advanced antibodies.

How do you perceive the local life sciences industry of Puerto Rico?

There is an increase in activity but still ample room to grow. The talent and scientists are here, as is the technical staff to drive the large labs that are required to do such R&D. We just need more clients to come. The networking with users and providers needs to increase.

Can you briefly explain the main concept behind CDI Laboratories Inc.?

We create tools that help accelerate research in academia and pharmaceutical companies. These tools are designed to improve research in the area of proteomics. That is important for our colleagues in pharmaceuticals or biotechnology because proteins are what we are made of. Drugs work by blocking or binding to a protein, for example. We create tools that accelerate their knowledge in the proteins they are working on. We do that by selling them ready-made products or doing research for them using those tools that we have generated.

Is there sufficient interest from venture capital groups or angel investors in the United States to see Puerto Rico's potential for creating spinoffs?

This is just starting. In fact, CDI just closed a round of angel financing, as we have succeeded in getting grants for revenue and we needed a push to make a leap forward. In that sense, this company is living proof that it can be done. However, I do not see people flocking to Puerto Rico to look for companies because we are not yet known for giving birth to companies with global reach. We need a couple of success stories; CDI hopes to be the first. We have been privileged to be the first ones out of the gate. Once we move to Series B, we will see investors from the US which will open eyes for Puerto Rico in terms of interesting opportunities. Laws 20 and 22 have piqued the interest of many people with investment potential for Puerto Rico. I hope to see them not only benefit from these laws but also get involved with the economic development of Puerto Rico. This would fill a void; although I was recently successful in raising investment, it was not easy.

Law 135 provides many tax exemptions to young people in Puerto Rico, particularly startups. How much does this incentivize people in the life sciences area?

Life science projects are complicated; they require multiple team members to get them started. For example, six people founded CDI Laboratories, with all sorts of different expertise. I have not seen it directly in that sense, but Law 135 has allowed some of my employees within that particular age bracket some economic advantages. That has allowed me to retain them, staying in Puerto Rico rather than moving elsewhere. Indirectly it is helping life sciences companies that include multiple people, and adds to our package of advantages to make it happen.

How did the idea of CDI Laboratories come to fruition?

The company was founded by a six-person team. We licensed technology developed by one of our founders in collaboration with two other founders at Johns Hopkins University. This technology, called Hu-Prot, is the cornerstone of everything we do. Hu-Prot is a protein microarray; while there are many such microarrays in biotech, ours is the largest. Essentially it is like having a human being on a slide for *in vitro* tests; every protein is on a glass surface for drug and antibody testing. This allows us to quickly discover how proteins interact with each other.

Hu-Prot has many advantages; it is a platform technology, so there are many ways in which this can be directed. We decided to focus on some of the low-hanging fruits of the technology. Firstly, with a human on a slide, an antibody’s specificity can be determined for its use as a drug or its use in an experiment that will lead to another drug. This specificity is very important; antibodies are the most successful biologic – they are blockbusters, research tools, and part of many diagnostics that currently account for $60 billion in sales worldwide. To be good at what they do, antibodies need to be specific. That has not been well understood until now; with our chip we can detect if an

antibody binds to its intended target or if some clinical trial side effects are related to an off-target event.

How does this work in tandem with your clients?

We test molecules from clients and ensure they work correctly. We also teach our clients if they really want to embed this in their own development and how to use it Antibodies are so important that we decided to start buying and testing them for our own research, but half of them did not work as they bound to many unintended proteins. Therefore we focused only on great antibodies that could lead us to a therapeutic. The Puerto Rico Science, Technology and Research Trust gave us the money to test this theory regarding great antibodies. We became very good at making antibodies and now we are producing around ten antibodies to ten human proteins each week in this facility, heavily sponsored by the NIH who paid for the research. They want the better antibodies available quickly so now we are accelerating in this area. Now we have protein microarrays, great antibodies, and potentially one could become a therapeutic one day as a byproduct of our efforts. Now we can take these great antibodies that work alone and put them on chips and build on our expertise further develop great tools to accelerate research.

We can also use this tool to identify biomarkers. Autoimmune diseases like lupus and cancer are both huge and markedly different; with our tool we can decipher targets that antibodies try to identify in the serum of the patients. That is our next level; we are also engaged in biomarker discovery, mostly through partnerships locally in the US and abroad in China for example. We are building a network, collaborating with Fundación de Investigación using their clinical trial unit; we are using our technologies to plug into these trials and produce information on biomarkers or companion diagnostics for the drugs being tested. We are doing our own research because we have the tools and will not wait for someone else to do it first.

What is the potential revenue that this technology could bring in?

Our business plan is to win based on hits, meaning creating great research products that accelerate projects in the pharmaceutical industry and academia, plus the identifying biomarkers which can enter into licensing deals with diagnostic or therapeutic companies. In three years we could be in the $25-40 million range for revenue. There have been no royalties yet.

Has there been interest by major companies looking to invest in CDI Laboratories?

You may have the greatest tool, but when it is new you have to educate the big companies. We have done this to a great extent, and finally some companies with a strong vision are opening their

doors to us; they like what they see based on our experiments with them.

We are 26 employees in total. Alongside that revenue, this number should grow to 100 people. The bulk of our workforce is here but we also have our office in Baltimore and Johns Hopkins is our first client as they gave birth to the technology that we are commercializing. We established a lab at their Technology Park to introduce the technology to people in the US, but most of it is done here. My clients are in labs in the US, so we really have to be there. We also use a distributor network in Europe and China, where we recently established a five-year project with a large hospital. We will supply microarrays and bioinformatic support in exchange for rights to biomarkers for a number of diseases.

What is the exit strategy for CDI Laboratories?

In three years, we will be in a crossroads position. We have a great research product along with three biomarkers in different stages of development with partners. Now we have this interesting antibody that could lead to a therapeutic. We can either keep growing or start listening to companies that are interested who grow by acquisitions. We hope to be interesting to them while being able to decide our own future.

As Hu-Prot is platform technology, it could potentially give birth to many things. There will be a relatively young part of the company that could be detached, with a very specific use of these chips combined with bioinformatical analysis that is very unique and novel and still needs much development and could be detached from the mature core, which is kept to do all over again and build up. I might sell the bulk and keep one spinoff and build from there. Our team members work really well together. The founders of CDI Laboratories have talked every Tuesday for the last seven years, and we meet regularly.

What is your long-term vision for research in Puerto Rico?

It is going well but we need a success story which we hope to be, as this will open more doors. That will lead to confidence and people will see great things coming from our talent, leading to newer opportunities. Many people leave and stay in the US, but many hope to return to Puerto Rico. As we open opportunities they will look back and propose new things we have not even thought of. We should also build on our opportunities, very talented people who become the experts on specific technology.

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